

**HEALING DESIGN:
A PHENOMENOLOGICAL APPROACH TO THE RELATION OF THE
PHYSICAL SETTING TO POSITIVE SOCIAL INTERACTION IN PEDIATRIC
INTENSIVE CARE UNITS IN THE UNITED STATES AND TURKEY**

A Dissertation

by

HILAL OZCAN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2004

Major Subject: Architecture

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ABSTRACT

Healing Design: A Phenomenological Approach to the Relation of the Physical Setting to Positive Social Interaction in Pediatric Intensive Care Units in the United States and Turkey.

(December 2004)

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This study examines the impact of the physical setting in the care and healing process of hospitalized children, their families, and the caregivers in two selected pediatric intensive care units (PICUs) in the U.S. and Turkey. A holistic, cross-cultural, comparative, and naturalistic approach emphasized the importance of the total (*i.e.*, physical, social, cultural, spiritual, organizational, political) environment and quality of life to health and healing. Information was gathered through qualitative methods such as participant observations, behavioral maps, in-depth interviews, and floor plan analysis. Despite some universal features of the PICU atmosphere, the value and place ascribed to pediatric critical care in Turkey and the U.S. present different worldviews. Field studies revealed social interaction as a universal healing function despite its cultural specificity stemming from socio-cultural, ethnic, economic, and religious differences between different groups.

Crowding, parental absence, and over-stimulation, which stem from the lack of individual patient rooms, and organizational problems related with human resources and staffing shortage play against the critically ill child's deep need to heal in the Turkish PICU. Despite spatial limitations, informal social interactions and cooperative relationships among caregivers, their devotion, and their ability to adapt to the existing physical and social environment enable care delivery. While staffing shortage continues to be a crucial problem in the U.S. model, specialization of labor and the systemic organization in general support care delivery, reducing the importance of informal social interactions and cooperation among caregivers. However, emphasizing the role of the family in the child's care, social interaction is also identified as a healing function in this setting. Therefore, despite the significant role the physical setting may play in healing, social interaction is found to be more important for improving patient outcomes and the well-being of families and caregivers. The study focuses on six healing design interventions to increase the chances for positive social interaction and collaboration. These are programmatic (provisional, scale, locational), functional, ambient, symbolic, social and psychological interventions.

This work is dedicated to:

*Huriye and Ali,
for the 31 years of caring, love,
hard work and dedication they provided.*

*Bulent,
for the meaning
he brought into my life.*

*And Zuhail,
for her sweet care
in the most critical moments.*

ACKNOWLEDGMENTS

I would like to express my sincerest appreciation to:

Dr. Mardelle Shepley, the chair of my committee, for her knowledge, inspiration, mentorship, friendship and her generous support and assistance during my Ph.D. journey;

Dr. Donald Sweeney, for his support as a member of my committee, our meetings and the many insights he gave me whenever we met and his general support and respect of developing countries;

Dr. Malcolm Quantrill, for the knowledge, encouragement, care and support he gave me during the production of this dissertation and before;

Dr. Phillip Tabb, for challenging me, sharing his knowledge with me, and urging me “to be the person I am waiting for,”

Dr. Stephen Daniel, for his passion, talent and dedication in teaching philosophy, the creative ideas he shared with me, our meetings, and constantly encouraging me to explore *home*;

Dr. Elizabeth Maret, for the love, respect and friendship she offered and her concern for world;

All care providers for choosing their career, especially Turkish nurses and physicians, whose spirit overcomes practical constraints in the delivery of critical care. I also want to express my gratitude to Dr. Tezer Kutluk for allowing me to use their facility, and to Benan and Tolga, for their friendship, hard work and dedication, and for inspiring me to do the same;

The U.S. children’s hospital observed, for offering state-of-the-art services for children, and allowing my presence at their facility. Special thanks to Deborah for helping me gather my data for this study, and Diane for sharing her knowledge generously with me;

The Turkish High Education Council and Izmir Institute of Technology, for realizing my dream for receiving graduate education in the U.S., and supporting me generously with their scholarship;

The College of Architecture, Texas A&M University, for their financial support. Special thanks to the 1999-2000 Caudill Fellowship Committee, for increasing my dedication to this work;

The American Institute of Architects and the American Hospital Association, for encouraging me to pursue a career in the practice of healthcare architecture, and special thanks to Mr. James Easter, AIA, for his support and mentorship;

The 2004-2005 Tradewell Fellowship Committee, particularly Mr. Kirk Hamilton, AIA, for giving me the possibility to carry the conclusions of this work to practice;

Pinar, Gwendoline, and Jennie, for their friendships, and for opening their homes to me, which contributed to the cross-cultural insights of this study; and

Last but not least, *Sugar*, for providing me with constant joy and happiness through my journey in a foreign country.

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CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

The physical environment of an intensive care unit (ICU) may be the most challenging area in architecture in terms of careful and humanistic design and planning. ICU patients experience an intense fear of death and excessive stress levels, due to lack of control of their body, their behavior and movement, and their proximate environment. Vulnerability is also experienced by their families since they fear losing their patient, and may have to make critical decisions about the patient's care.*

The excessive level of vulnerability experienced by the critical care patient is documented most strikingly by Baier & Schomaker (1995) in *Bed Number Ten*. A victim of Guillain-Barre syndrome, Baier became paralyzed for six months in an ICU in Houston, Texas. Although she was totally alert during her hospitalization, and could perceive problems related to nursing care and the environment, she did not have control over her body to fulfill her most fundamental needs, such as eating, swallowing, and breathing. This made her go through an adaptation process to communicate with the people who helped her or sabotaged her basic needs. The negative impacts of the physical setting on her healing process were shown clearly in *Bed Number Ten*, particularly the objects she was forced to stare at twenty-four hours a day.

Thoughtless ICU design may increase the vulnerability, stress, alienation, isolation, and illness of patients, families, and caregivers. Therefore, the possibilities that can be achieved with careful design and planning of the ICU to fulfill important needs of patients and their families are well-documented in healthcare design literature. Malkin (1992) identifies the psychological and practical issues of fear of death, noise/sound perception, boredom, dependency on others for life support, fear of abandonment, isolation, worries about family, job, money, staff access to patient, and ICU psychosis to inform the ICU design. Additionally, the physical setting should fulfill patients' needs for privacy, reality orientation, visibility, comfort and personal control over environment, communication, family support, security, and reassurance.

Despite awareness of the beneficial role of the physical environment in the healing process of an ICU patient, a majority of studies in healthcare design literature focus on adult critical care environments. Much remains to be studied to improve the physical environment of pediatric critical care. Shepley (2000, personal communication) argues, "Because of the lack of research on this building type, the frailty of the user group and their resultant susceptibility to the physical environment, and inherent technological and demographic complexity issues, all research on PICUs is critical."

This dissertation follows the style and format of the *Journal of Environment and Behavior*.

Current PICU literature is dominated by research studies exploring the emotional needs during the pediatric critical care experience. Various needs of children are offered (Pringle 1974; Doyal & Gough 1991; Purcell 1993; Price 1994)-- critically ill or not. Healthcare authorities also recognized during the last twenty to thirty years that the concept of total care of a critically ill child does not only include the fulfillment of the child's needs but also those of the parents (Kasper & Nyamathi 1988; Kirshbaum 1990; Warren 1993; Shepley 2000). Recently this notion has included the needs of the caregivers, yet very few studies focus on their needs. Therefore this study highlights caregivers' needs to inform PICU design.

Recognizing the importance of fulfilling the needs of all who play a role in the healing process of the critically ill child led to more humanistic care practices in the West. Especially, the emphasis has been on a family-centered care (FCC) approach. The provision of a holistic model of care for the child and family includes a number of modifications emphasizing family-centered and patient-focused care, and the concept of the "whole" child. The delivery of a holistic and patient-focused care, the development of therapeutic social and professional relationships among patients, families and caregivers, and the focus on mind-body relation have emerged as more holistic and postmodern approaches in pediatric critical care.

The rest of this chapter provides information regarding various approaches to evaluate the physical, psychological, social, and existential environment of the PICU, as well as its history and geography (i.e., the cross-cultural section). The reason for incorporating different interpretations of the PICU stems from the choice of a holistic and pluralistic approach.

1.1 A Holistic Approach To Healing Environments

When we speak of man and space, it sounds as though man stood on one side, space on the other. Yet space is not something that faces man. It is neither an external object nor an inner experience. It is not that there are men, and over and above them space, for when I say "a man"... I already name the stay within the fourfold among things. Even when we relate ourselves to those things that are not in our immediate reach, we are staying within the things themselves.

Martin Heidegger (1971)

This study is based on a holistic approach to explore the relationship between human behavior and physical environment, with a focus on the PICU. However, the term "holistic" has been used extensively in the literature, and may have lost its meaning. Therefore there is a need to redefine "holism" in this study, or find a new term. First, the intention to include emotions, thoughts, anxieties, meaning, and experience of the ICU may be linked with a phenomenological approach. Particularly, the study focuses on the meaning of health and healing, and views health as wholeness resulting from the harmonious relationship of humans to the spatial world, in which they are located.

Krell (1997) argues, "We are not wan inmates in the gloomy house of detention that is *inner sense*, a house with doors and windows to the outside but with bars of subjectivity covering them." Therefore, man's spatial relation to the entities around himself brings forth problems due to his essential separation from the "outside," yet at the same time his connection to the world because of the unique structure of

being human (*Dasein*), which means being contained in one's own body as the "outside." Like a turtle, man carries space with himself: In the car, elevator, office, he is occupied with space everywhere (Krell, 1997). In this way, the "outside" becomes his master. Most importantly, this relationship reveals "Being" by revealing fundamental possibilities like Anxiety, or the "uncanny" ("unhomelike"), which is the nature of man's Being. Hence, Anxiety can be viewed as man's Dwelling.

It follows there is a good purpose for the function of matter, which is the revelation of Truth through a conscious awareness of Anxiety. Consequently, the work of art and architecture, which bring an object into presence, have the potential to manifest Truth through health and healing.

Architecture in our age has health giving potential by defining the whole environment in which humans live, thereby defining the location of human existence, and conditioning humans through the context they occupy: Heidegger calls this context the "fourfold," which consists of earth, sky, divinities, and our mortality that belong together in one. In other words, the location of human existence is "between the sky and earth, and in front of the divinities" (Norberg-Schulz, 1996). Therefore architecture plays a key role on human existence by clarifying its location, making the world visible and spatial, and gathering its presence in a *thing*, a material object. In this way, the work of architecture also presents, or "brings something into presence."

Heidegger's thinking on architecture reveals that architecture is a "setting-into-work of truth, or visualization of truth" (Norberg-Schulz, 1996), which underlines the essential interrelatedness between Truth and its material manifestations. Therefore, in contrast to the knowledge-based-design approach, which uses knowledge and evidence to inform architecture, Heidegger's phenomenological view draws attention to the *instrumental* role of architecture to reveal knowledge. The essential interrelatedness and harmony between the elements of the "fourfold" also call for a holistic and phenomenological vision of the world, which has been the departure point for this study.

Within this framework, architecture has a potential to positively influence human existence and well-being, if the design process of the physical environment is informed by the highest levels of knowledge. Alternatively, architecture may have very powerful negative effects such as stress, alienation, isolation, illness, and "forgetfulness of Being."

The scope of this study is the healing design of the PICU, which is chosen as a symbol of sacred place in contemporary age, with a capacity to inform design with a higher function. The pediatric population is chosen purposefully due to the thinking abilities specific to children, which are recognized by Plato and Heidegger, and the Anxieties of childhood, as described by Freud. Following the threefold relational approach between man, space, and health, healing in this study is perceived as an emergence of health, or Truth, a sacred experience independent of human will. Yet a relational and holistic approach to health may increase the chances for healing, which contradicts the traditional "bio-medical" approach resulting from the conventional positivist and techno-scientific worldview. The specific constructs, which emerged within this context, are "positive social interaction" and reduction of stress (or Anxiety), which may open up new possibilities for healing.

1.1.1 Modern Cartesian Medicine and the Shift from Techno-Scientific Domination to Holistic Health

Western medical practice has been the subject of extensive criticism by many sociologists, philosophers and scientists due to its reductionist, bio-medical, and Cartesian approach to health, which stems from the techno-scientific world-view (Peplau, 1952; Carlson, 1975; Illich, 1976, 1981; Capra, 1982). The techno-scientific and positivist conception of health and the universe is based on separating phenomena from their context for the sake of accurate measurement, thereby reducing the essence of all phenomena. By separating the mind from the body, the techno-scientific view also restricts the understanding of health and human being. According to Capra (1982), Cartesian medicine and the bio-medical approach to health present three major problems. 1) In this model, the human body is regarded as a machine, disease as the consequence of the breakdown of the machine, and the doctor's task as repair of the machine. 2) Concentrating on smaller and smaller fragments of the body, modern medicine often loses sight of the patient as a human being, and reducing health to mechanical functioning, it is no longer able to deal with the phenomenon of healing. 3) Healing cannot be understood in reductionist terms because it involves a complex interplay among the physical, psychological, social, environmental, and ecological aspects of the human condition.

Based on a bio-medical health approach, Western medicine traditionally focused on curing, which is a short-term goal, rather than acknowledging self-sufficiency and self-responsibility, and the healing potential of mind and body. However, curing does not support the long-term benefit of the patient by maintaining health, or preventing disease. On the contrary, it often alienates a patient from the highly specialized, highly technical medical treatments conducted on her or his own body, thereby eliminating self-sufficiency, and supporting the capitalistic ideal of predicting and controlling human behavior. Additionally, the current healthcare system focuses on expensive and marginal operations (like artificial heart transplants) that impact the health outcomes of a small group rather than emphasizing public health education programs to encourage people to adopt healthy ways of living (e.g., healthy diets, daily exercise).

Highlighting provocative themes like the illusion of the competency of healthcare practitioners, and the harms caused by them through invasive medical treatments and procedures that are unnecessary, Illich has been one of the leading critics of modern Cartesian medicine. In *Limits to Medicine* (1976a), and *Medical Nemesis: The Expropriation of Health* (1976b), he discusses the ill effects of the Cartesian medicine, identifying its clinically, socially, and culturally "iatrogenic"¹ effects. He claims that modern medicine, as an institution, has become dangerous to health by eliminating patients' basic human need for autonomy and empowerment regarding their treatment. Particularly, he focuses on the meaning of death and dying in the intensive care unit, which he views as a pure form of cultural iatrogenesis. He argues that the meaning of death in highly industrialized societies is different from rurally inclined communities, where death is accepted less fearlessly and more naturally.

¹ *Iatrogenesis* is based on *iatros*, which means "physician," and *genesis*, which means "origin."

Illich (1976b) argues that hospitalization expenses in the U.S. have increased five times in the last 50 years: Particularly, intensive care units are very expensive. He argues that in highly industrialized societies, death “attracts” people with unlimited health insurance policies and programs. Comparing the healthcare systems of developed and underdeveloped countries, he also notes that all countries demand more and more hospitals with cutting edge technology. However, the poorer the country, the more expensive it is to provide for the most current technology, such as modern patient beds, mechanical ventilators, and operating room equipment since they are imported from developed countries. The maintenance of “imported”² technology in developing or underdeveloped countries is also very difficult due to unpredicted local factors such as climate, and lack of adequate repair and maintenance services, reducing the performance of technology. In addition to technology, the training of practitioners, who are sent abroad for their specialty training, is also very expensive since no specialty programs (such as pediatric ICUs) are developed in those countries to provide for this training. Illich (1976b) argues further that the current Western healthcare system transforms power from tax-paying masses to small groups of individuals with medical privileges selected due to their medical background.

During the same period Illich criticized modern medicine, Carlson (1975) called for the end of medicine. Other critics such as Peplau (1952) described the reductionist Cartesian dualistic medicine and its failures in *Interpersonal Relations in Nursing*.

Capra (1982, 1996), on the other hand, has been utilized extensively in the professions of architecture and urban planning. In his terminology, the holistic approach that is offered to replace the reductionist, mechanistic, or atomistic worldview becomes “systemic,” and the way of thinking it implies “Systems Thinking,” or “Systems Theory.” According to Systems Theory, systems cannot be understood by analysis but from the organization of the whole. Additionally, an understanding of the process includes grasping the ecological nature of the context as a whole (Morgan & Smircich, 1980). Emphasizing a holistic and systemic approach, this study argues that: 1) The reductionist approach of the modern bio-medical model of health fragments an individual’s particular physical well-being from all other aspects of his or her existence, whereas a holistic model of health would be inclusive of all aspects of an individual’s existence. 2) The replacement of the current bio-medical approach in healthcare by a holistic and ecological approach, which emphasizes the importance of the total urban environment and quality of life to health, might improve the chances of physical, psychological, and social well-being for all individuals.

Capra (1982, p. 305) argues that modern scientific thought is leading to a view very close to the views of mystics and many traditional cultures, in which knowledge of the human mind, body and healing

² The researcher’s observations support Illich’s argument that foreign technology is used in developing countries without a full understanding of its applications, and creates problems and anxiety among care providers when it fails to function. Turkish caregivers revealed that the lack of knowledge regarding operating the mechanical ventilator during emergencies caused problems in the past. It is also hard to inform families about the failures and challenges with technology. In an environment where family rights are not identified and standardized, it may even be possible to misinform the parents. Therefore a humanistic approach is needed to transform the operational policies of Turkish hospitals. However, as Illich suggests, modern medicine is also not without its failures, and may block fundamental human needs like “autonomy,” while claiming to provide humane health care practices.

are integral parts of a natural philosophy. In these cultures, health is considered as the result of the balance between individual, social and ecological systems, or the balance within the cosmic order. This notion relates to the function of the “holistic” approach for this study: “To see the world as an irreducible whole rather than a collection of parts, and welcome the continual changes of one’s organism in relation to the changing environment.” Unlike the positivist view, the holistic view puts things back into their context to establish the nature of their relationships (Capra, 1996, pp. 24-29).

Another shift during the last 15 to 20 years in Western medicine has been towards autonomy, empowerment, and humanism by embracing patient and family centered care philosophies that emphasize healing. While staff needs have not been emphasized, there is a growing awareness of the importance of staff functioning to healing. Other philosophies such as psychoneuroimmunology emphasize the relation between human mind and body in the healing process. The importance of these approaches is that they signify a paradigm shift in healthcare. Therefore, the criticism of Illich and other theorists during the eighties led to a new awareness of the need for creating a Post-Cartesian medicine, which is emerging simultaneously with interrelated shifts in many other disciplines, particularly in physics, through systems thinking, quantum physics, chaos theory, and the uncertainty principle. The qualitative and naturalistic inquiry, on the other hand, supports this shift, focusing on the fact that the observer impacts the outcome of what she or he is observing, thereby calling for a new definition of science and scientific research.

Finally, according to Capra (1982, 1996), “every contemporary physicist agrees that modern physics has transcended the mechanistic Cartesian view of the world and is leading us to a holistic and intrinsically dynamic conception of the universe.”

1.1.2 The Need for a Holistic and Post-Cartesian Medicine

A Holistic Approach to Health

The word “health” has the same roots as the word “whole.” A holistic approach to health and healing was common in traditional times, when health was considered as the result of the balance between individual, social, and ecological systems, and the balance within the cosmic order. Shamanism, for instance, was a system that associated illness and healing with forces belonging to the spirit world. A shaman could enter a non-ordinary state of consciousness to contact the spirit world for her or his community. But she or he was needed only for difficult cases since self-care and self-medication were common, and most adults had sufficient medical knowledge (Capra, 1982, p. 306).

Similarly, Hippocratic medicine is based on the fundamental relationship between mind, body, and the environment. Capra (1982, p. 311) notes that in Hippocratic medicine illness was viewed as a natural phenomenon that could be influenced by wise management of one’s life. Nevertheless, in the modern era, this view has been transformed to a limited understanding of health, which is explained through metaphors like “body as a machine,” and emphasis on “parts” rather than the “whole.” More and more, the separation of mind from body has become the most serious shortcoming of the modern attitude to health.

A holistic approach to health 1) organizes the disparate parts into interrelatedness between the physical, psychological, social, and ecological levels of health; 2) recalls keeping the organism in balance, and preserving well-being through simple rules before illness comes (preventive medicine); 3) welcomes the continual changes of one's organism in relation to the changing environment (systems view of health); 4) accepts illness as an opportunity to learn and grow (dynamic balance); and 5) recognizing the primary role of stress in illness, it underlies stress management (Capra, 1982).

Modern medicine treats patients in a fragmenting way, and separates an individual's health and well-being from all aspects of her or his existence, including psychological, spiritual, and social health. A holistic model of health, on the other hand, would be inclusive of all these aspects. Hence the replacement of the bio-medical approach by a holistic, humanistic, and ecological approach would improve the chances of physical, psychological, and social well-being, and recognize the impact of the total environment, quality of life, and self-responsibility on health.

Consequently, a holistic approach to health reemphasizes healing (of children, families, and caregivers in the PICU). In this study, it also uses a pluralistic approach by expanding the case study to "another" setting, and comparing the two cases. Finally, it recognizes the impact of social, cultural, organizational, operational, political, and economic factors on the resulting physical environment of pediatric critical care and vice versa.

The Techno-Scientific World-View Introduced By Modernism

The postmodern awareness of healing transcends the positivist worldview introduced by Modernism, which is dominated by functionalism and rationalism. Following the previous states of scientific evolution, the Modern movement introduced a reductionist and techno-scientific world-view, which proposed a deductive approach towards all human endeavors, fragmenting science from spirituality, and fragmenting our approach to health and well-being. Postmodernism introduced a more holistic worldview, which suggests that human existence must be understood in context and in the natural complexity of human experience, thereby creating chances to return to spirituality and healing.

Architecture reflected the changes in the conception of the world: Gelernter (1995, p. 251) argues that the Modern Movement took a positivistic position in stressing function and deriving architectural form "positivistically" from function. Modernists spoke of architecture as a "problem-solving" activity: Given any set of technical, economic, or social conditions, they would find the most functional solution.

The challenge to Modernism emerged as a more expressionistic and intensely personal movement. This was "a struggle to reconcile the subjective self with an objective world" (Gelernter, 1995, p. 260). However, personal expression and creative "shape-making" became such an end in itself that this movement was attacked due to its detachment from world problems. Therefore new faith in science and technology, and a quest to remove architecture from the world of subjective aesthetics appeared. After an

attempt to make architecture a “rigorous empirical science,” Postmodernism³ emerged in complete opposition to Modernism, rejected empirical behaviorism, and returned to subjective formalism (Gelernter, 1995, p. 278).

In investigating human-environment relationships, Modernists expected humans and environment to affect each other in a causal way. Gelernter (1995, p. 251) argued that the “architectural determinism” of Modernism was a result of the positivist tradition, which viewed the individual as “an object in a purely materialistic world, whose behavior is completely determined by outside physical forces.” However, people do not behave the same in the same settings. Moreover they may adopt the same behavior to different settings, or may change behavior in the same setting.

Finally, other factors like cultural background and personality shape behavior as much as the environment (Gelernter, 1995). In the holistic view, there are no causal, one-dimensional relationships between man and environment but rather complex interrelations between human and ecological systems. The holistic view recognizes that the human organism is an integral part of larger systems. The individual organism is in continual interaction with its physical and social environment, and is constantly affected by the environment but can also act upon it and modify it (Capra, 1982, p. 317).

Holistic Definitions of Health

Lee (1996) recognizes the holistic nature of health, and that it grows out of a continuum of society, community, organizational behavior, lifestyle, human function, medical interventions, environment, and the self. Health and quality of life of the living system as a whole is defined by the relationships between these elements, which feed back into the health of the individual and the community. According to him, aggregate effects of the whole, while not determining any individual outcomes, shape the community’s health and quality of life.

Health is not just an absence of disease. It is more than a physiologic balance with a hostile world of germs. Health is a measure of an individual’s ability to move toward potentials in all levels, including participation in and contribution to the world around. Health is “circular” because the health of the individual contributes to improvement in the health of the group, to which they belong. Thus determinants of health are multi-directional: “This is not a two-way street but a five-way intersection” (Lee, 1996).

A holistic approach to health does not exclude the Western model altogether. Instead it calls for a pluralistic approach, in which the benefits of technology and invasive procedures are balanced with the healing power of love, prayer, touch, positive attitude and positive talk, exercise, and nutrition. Additionally, the theoretical foundation of holism views the health of the individual as based on the interconnectedness of: 1) Social and environmental influences, 2) cultural identity, 3) the physical self, 4) emotions and thoughts, 5) spiritual beliefs and rituals, and 6) interconnectedness with community.

³ On the downside, postmodern design was criticized since it was very capricious, disregarding the input of the user (Shepley, 2003; personal communication).

The Impact of the Physical and Social Environment on Health

Although WHO (1948) provides a holistic definition of health suggesting that “health is not merely the absence of disease, but a state of complete physical, mental and social well-being,” the bio-medical model has been the conventional view. Consequently, doctors and hospitals are assumed to be synonymous with health. By the early 1970s, the limits to the biomedical medical model were recognized. McKeown (1971) points out that the major improvements in health in the nineteenth century owed little to medical care and suggests moving beyond “medical issues,” while Illich (1976a) writes of the limits to medicine, and Carlson (1975) calls for the end of medicine. In Canada, the 1974 Lalonde report⁴ suggests that future improvements in health care will result from improving the environment and lifestyle.

The important role of lifestyle was the first outcome of the Lalonde report. Personal responsibility was stressed to the point of victim blaming, while the role of the physical and social environment in determining health was largely ignored, since to acknowledge the crucial role of the physical and social environment, particularly the latter, would have meant questioning the very basis of our society (Labonté & Penfold, 1981). As long as health is considered to be a matter for doctors and hospitals on the one hand, or personal responsibility on the other, the environment has a limited role to play. If, however, health results mainly from the influence of the physical and social environment, the role of the environment in creating health may be crucial.

1.2 Current Literature On Pediatric Intensive Care Units

Current healthcare design literature is dominated by neonatal ICU studies. There are only a handful of studies on PICUs, and fewer that call for a holistic approach instead of an objective, fragmental, and reductive approach to the evaluation of the PICU. The goal in adopting a general approach to a specific case is to seek out general experiential structures and patterns within the uniqueness of the chosen phenomena, thereby emphasizing the view that the whole is contained in the part. Additionally, a holistic line of thought supports wholeness in a geographical and ethnographic sense, supporting the lessons to learn from other cultures and places, particularly developing countries (where pediatric critical care has rarely been evaluated). Finally, an extensive amount of work on pediatric critical care is developing in the U.S., which would provide valuable lessons for the PICUs in other parts of the world.

1.2.1 History of Pediatric Intensive Care Units and Children’s Hospitals

History of Children’s Hospitals

The children’s hospital has its roots in the eighteenth century, when hospitals were transformed into the *Krankenhaus* designed for the care of the sick. Before that time, the hospital was a setting for

⁴ *A New Perspective for Canadians* (1974) was the first acknowledgement by a major industrialized country that biomedical interventions (physician and hospital services, pharmaceuticals, etc.) were not primarily responsible for individual well-being. It identified four health fields interdependently responsible for individual health (environment, human biology, lifestyle, health care organization).

pilgrims, misfits, the poor, and the lame. In the course of history, the children's hospital accommodated the unwanted, the abandoned, the orphaned, but hardly any truly sick children. Only with the Enlightenment did the child begin to represent new significance as a concept and social entity (Seidler, 1989).

During the same time, society was transformed from looking upon the child as a "poor weak wretch" who might as well die as live to celebrating its children as the bearers of its hopes for the future, and the only guarantee of its continuing existence (Seidler, 1989). For sick children, two care models were offered: 1) home-care; outpatient care, or care for the child by the medical profession which allows it to remain in its own familiar surroundings at home, and 2) hospital care, or inpatient care, which takes the sick child into a special institution with the aim of re-establishing its health before returning it to its family.

Mastalier's *Kinderkrankeninstitut* (1788) emerged as an expression of the philanthropic impulses of an enlightened Viennese absolutism (Kinderchirurgie AKH Wien Universitaet, 2004), emphasizing: 1) the theme of the charitable act of providing children "with necessary aid in the simplest manner and with minimum costs," 2) that the nation as a whole would "profit greatly" if mothers were better informed on healthy living rules, 3) that the new institute would offer "an important advantage for the medical sciences," allowing them to make useful discoveries through closer observation of children's illnesses.

The true children's hospital concept emerged with *Hopital des Enfants Malades* in Paris, France, providing an administrative and social statement (more than a medical). In France, since the Renaissance, it was widely agreed that children had no business in hospitals and other institutions designed for adults. The fact that they were sent to such places was denounced as a scandal and a disgrace: A report from the Hotel-Dieu discussed that in the nursery and adult wards, up to eight children were forced to share one bed, resulting in 90% death due to infection. The memorial written by Jacques Tenon (1724-1816) in 1788 strongly argued for equipping the new hospitals with special wards for children under 12 years old. Consequently, 250 beds for children under 15 were added in (Tenon, 1996).

The main objectives of *Hopital des Enfants Malades* were: 1) to set up a precise line of demarcation between adults and children, 2) to put itself in a position to achieve a more precise classification of the children according to illness, and 3) to encourage the ethically-desirable possibility of discharging the children less "corruptus" than had been the case when they were mixed indiscriminately in with the adults in general hospitals.

The Russian internist Rauchfuss⁵ provided an analysis of the children's hospital in *Handbuch der Kinderkrankheiten* (1877, pp. 463-528). He wanted to unite all elements of child care under one roof. Particularly, the provision of the following spaces were important: 1) An outpatient department, separate from that of the inpatients, 2) an observation or quarantine ward, connected to each of the different main

⁵ Collaborating with the architect Y. Kavos, Rauchfuss was in charge of the building and fitting up of the Prince Peter von Oldenburg Children's Hospital (1867 to 1869) and from 1875 to 1876 of the Wladimir Children's Hospital in Moscow. At both hospitals he maintained the principle of strict isolation of contagious diseases, both at the children's hospital and the polyclinic (available on-line at <http://www.whonamedit.com/doctor.cfm/2807.html>).

wards, 3) isolation houses serving every conceivable form of illness, including mixed cases, and 4) play and gymnastic halls, rooms for physiotherapy, and garden areas.

If one were simply to build children's hospitals along exactly the same construction and with the same furnishing, equipment and organization as the general hospitals, then it would not be worthwhile building them at all; it would then be advisable to recognize the appropriateness of expanding on the practice of many already established general hospitals of treating sick children in a children's ward. The requirements of a children's hospital are, however, more complicated than those of a general hospital, and these incorporated children's wards are compelled under the circumstances to do without.

The objections to the Rauchfuss's proposal showed clearly how susceptible the concept of the children's hospital was at that time. The high infection and mortality rates within these institutions raised the question whether children's hospitals deserved to exist. Florence Nightingale argued, "children were incapable of mature analysis and assessment, and so their complaints could not be taken into consideration as a guideline for assessing the care they required" (Seidler, 1989, p. 190). Without such a feedback it would be difficult to run a hospital efficiently. These led Nightingale to recommend that sick children be put alongside the adults, preferably women.

Schlossmann (1930) argued, "The children's hospital is dead! Long live the home for sick children!" He argued that the most ideal and economic solution for sick children was large pediatric departments in general central hospitals rather than independent children's hospitals. He proposed that all individuals under the age of 14, with respect to "hygiene, finance, and general medical management should come under the supervision of the pediatrician."

In 1957, in the meeting of the *Deutsche Krankenhausinstitut*, the problem of infection was no longer associated with "children's diseases." Fanconi, a pediatrician from Switzerland, saw the epoch of single cubicles and crowded wards as ending, arguing for the establishment of four-to-six-bed rooms, or wards, where the children might feel "very happy." He also suggested to distinguish between hospitals for the chronically sick, in which "family life should be reproduced as far as possible," and hospitals for patients with acute conditions, for whom the optimal solution is a "self-contained high-rise building," allowing the shortest possible traveling distance from one department to another. He proposed to build larger children's hospitals to properly put recently developed and expensive specialized equipment into use. Smaller children's hospitals could only function efficiently in liaison with a larger general hospital.

To conclude, the history of pediatrics in Europe is linked with the development of hospital establishments (Stevens & Meyer, 2002). Before 1850, 25 children's hospitals existed, the oldest being the Hôpital des Enfants Malades in Paris (1802), followed by the Pediatric Pavilion of the Charite of Berlin (1830) and those of St. Petersburg (1834), Vienna and Breslau (1837). From 1850 to 1879, 67 pediatric hospitals opened, although many of these were pediatric departments integrated into general hospitals (Ballabriga, 1991). In Britain, Charles West created the Hospital for Sick Children in Great Ormond Street, London, in 1852, after founding the National Children's Hospital in Dublin in 1827 (Higgins, 1952).

In 1855, Dr. Lewis from the U.S. visited the Hospital for Sick Children in London to establish the first pediatric hospital in the U.S., the Children's Hospital of Philadelphia, founded in the same year. Yet

this was a time of the turbulent and unsanitary conditions of the Industrial Revolution. Most childhood illnesses were treated at home in the U.S. because infants and children admitted to adult hospitals often died due to cross-infection or neglect. Sisli Etfal Children's Hospital in Istanbul, Turkey, founded in 1899, on the other hand, was the first pediatric hospital not only in Turkey, but also in Balkan region (Figure 1.1).

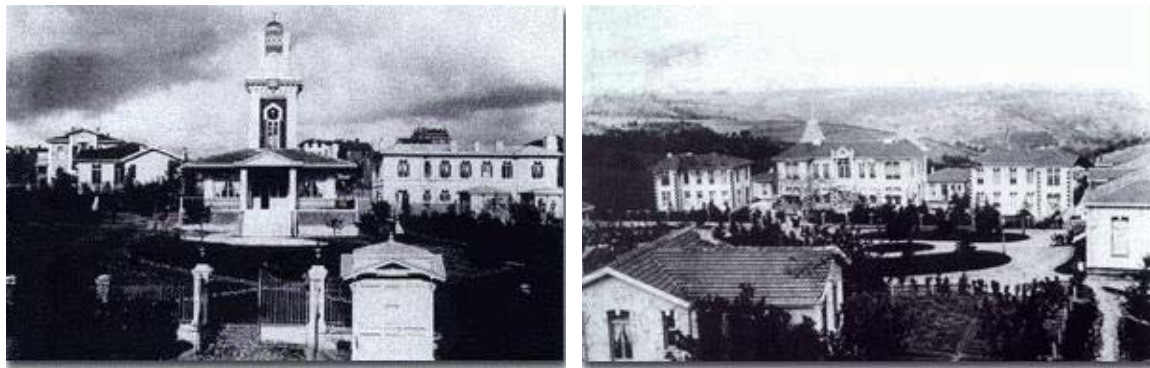


Figure 1.1: Sisli Etfal Children's Hospital in Istanbul, Turkey (Source: Hospital's Archives)

History of Critical Care Design

Diaz (2000) reviews the history of ICU design from 1950 to 2000. Historians theorize that the ICU was invented because of World War II, when important changes in healthcare took place including teaming, anesthesiology, growing concern about the physiology of fluid and respiratory care, modern resuscitation, and the use of oxygen. These changes were followed by the idea of creating special care units, and gave way to a departure from the private nurse concept to nurses working in teams. However, the first published ICUs did not appear until 1963, when the U.S. Department of Health prepared a drawing of an ideal ICU. The first built ICU, on the other hand, is at El Camino Hospital in Sunnyvale, California, which had 150-square-feet per bed in the ICU. Each cubicle was only 6 by 10 feet with a hand-washing sink. This unit had two isolation rooms, a sink, and a folding partition.

Despite the difference in date of construction, and the patient population served (i.e., adults versus children), the similarity of the floor plans of the first built North American ICU from late 1960s, and the selected Turkish PICU from 2002 is significant. The most obvious difference between their floor plans is the provision of a single isolation room in the Turkish ICU and the lack of critical functions (waiting, conference) as opposed to the two isolation rooms in California, the provision of a waiting and conference room, and the storage function located in close proximity. This may indicate that the needs of the critically ill, their families and the caregivers were better recognized and satisfied in the U.S. 35 years ago than the current state of the Turkish PICU (Figure 1.2).

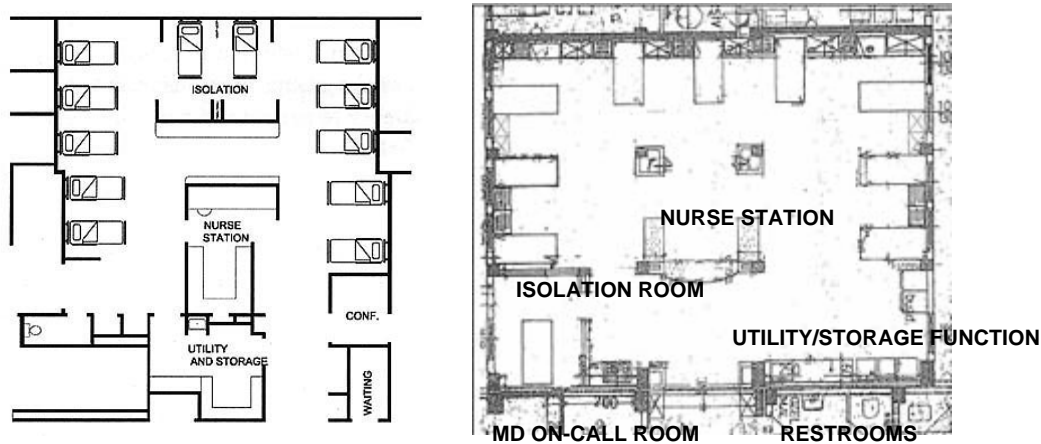


Figure 1.2: Left: Floor Plan of El Camino Hospital, El Camino, California, Late 1960s (Source: Diaz, 2000). Right: The PICU of the Observed Turkish Hospital, 2002 (Source: Author)

Noting the development in room size of the patient's room, Diaz focuses on the Bethesda Conference of the American College of Cardiology in 1965, which established the standards for the training of staff and for the CCU design. While in 1962 there were only two CCUs in the U.S., in 1965 this number was reported as fifty. The Bethesda Conference suggested that no less than 150 square feet, with no dimension less than 10 feet be provided for patients that need surveillance. Additionally, ICU rooms had to be at least three feet longer in each dimension than the rooms of those patients that only need surveillance. This would change the room size from 150 square feet room to a room of a minimum of $15\frac{1}{2}$ by $15\frac{1}{2}$, or 230 square feet. In contrast to the minimum room size proposed as $15\frac{1}{2}$ by $15\frac{1}{2}$ at the Bethesda Conference, the standard room size by code was 132 square feet (i.e., eleven by twelve feet) so that the existing ICUs could continue to operate. Today, after much debate, 150 square feet is accepted as the minimum standard, despite the vision offered in 1965 in the Bethesda Conference.

During 1975-1980, minimum ICU standards were redefined. In 1980, the *New England Journal of Medicine* published *Intensive Care Units: Who Needs Them?* (Relman, 1980). The author agreed ICUs were purposeful, yet she criticized they were frightening to patients and visitors, too expensive (two or three times more than the typical room rate), as well as the extensive diagnostic tests and procedures.

Reviewing current ICU examples from the U.S., Diaz (2000) focuses on the Harborview Medical Center in Seattle. Unlike many states that only mandate the awareness of light, the State of Washington requires an exterior window in every patient room, six feet of clean space at the foot of each bed, and three feet of clean space at the head when the bed is pulled away from the wall. That results in a dimension of nine feet in addition to the seven feet occupied by the bed. In other words, a patient room has to have a minimum dimension of 16 feet, which can be achieved in either direction. This is the largest dimension required by any state in the U.S. Consequently a 24-bed ICU with beds placed parallel to the window results in a very large building with ample interior support space (Figure 1.3).

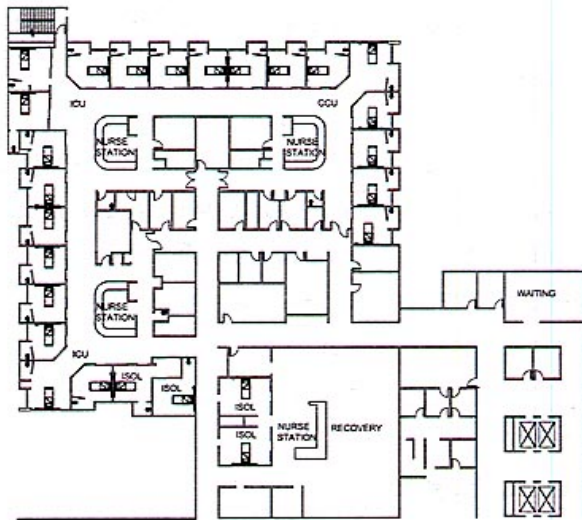


Figure 1.3: ICU Floor Plan at Harborview Medical Center in Seattle, Washington (Diaz, 2000)

Another important outcome of room size is the distance between patient beds, which is 16-18 feet bed-to-bed in the State of Washington. Another trend in patient room design is hanging the required equipment from the ceiling, which began as early as 1970. Two other options for bringing the equipment close to the patient are the headwall system and the power column, and their relative merits are debated.

A current trend regarding the design of the ICU room is the notion of making a “universal” room, which can be switched back and forth between an ICU and an acute care unit, in response to the frequently changing acuity levels and number of patients. The universal room has a toilet, and an area for the family next to the window, which is wide enough for a two-seater couch. The rest of the room is for the patient and caregiver, which is as large as 200 square feet. Diaz (2000) calls this model “the community hospital standard for a universal room that works both ways.”

In summary, the ICU progressed from rooms that were just observation rooms of 150 square feet per bed, to large units approaching 700 square feet per bed (*i.e.*, the department size per bed, and not the room size), which is almost five times more. Diaz argues these new standards for the room size still cannot satisfy everybody’s need for space. Despite the many visions provided for ICUs, many current facilities follow the standards established during the period of 1975-1980, when higher standards for ICU design and staff training were introduced (Figure 1.4).

Looking at 2010, Diaz notes that new ICU design trends focus on technology, family-centered care, and more specialization. Additionally, intensive care for ambulatory patients has been recently introduced, where a patient receives intense care for a few hours, and goes home in one day. In summary, today’s most important ICU design issues are: 1) the amount of space around each patient bed, 2) the level of privacy afforded each patient, and 3) the need for additional space for supplies, staff, and families.

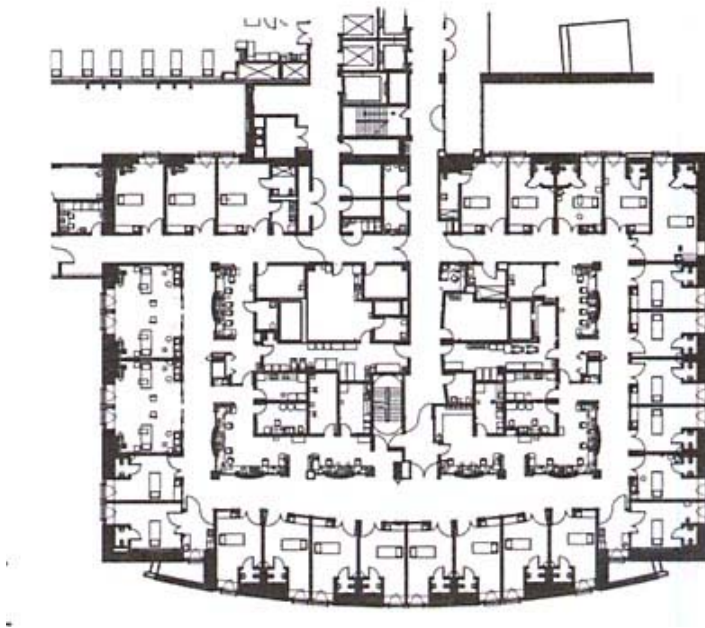


Figure 1.4: Floor Plan of the 28-Bed ICU, Little Company of Mary Hospital, Torrance, California (Source: Diaz, 2000)

History of Pediatric Intensive Care Units

The following review of the development of PICUs in the West aims to set the stage for a comparison with Turkey, which is important to show the similarities between the initial stage of the PICU concept in the U.S. and the significance of the same concept in contemporary Turkey, indicating a difference of at least 30 to 35 years for needed future development of Turkish PICUs.

Downes' article "The historical evolution, current status, and prospective development of pediatric critical care" (1992) describes the multiple historic origins of pediatric critical care medicine and the evolution of the subspecialty, from the late 1950s with the first units dedicated to the care of critically ill and injured infants and children, to the present status as a recognized medical subspecialty. Also discussed are current major issues and future challenges that flow from both this historic background and a commitment to critically ill children (Downes, 1992).

Similar to the development of ICUs in the U.S., the first PICUs were opened in the 1950s. However, the origins of pediatric critical care can be traced back further to 1889, when Egon Braun constructed the first infant ventilator in Vienna. The PICU was invented in Sweden and France due to polio epidemics, a child disease related to the disfunctioning of respiratory muscles. The first respiratory machine was produced in Sweden, accompanied by the first design for a specific room for children. The first PICU was established in 1956 in Sweden, 40 years after the first NICU was opened in Chicago. During the 1960s, polio epidemics were less common but respiratory problems continued to be the main child disease in the West.

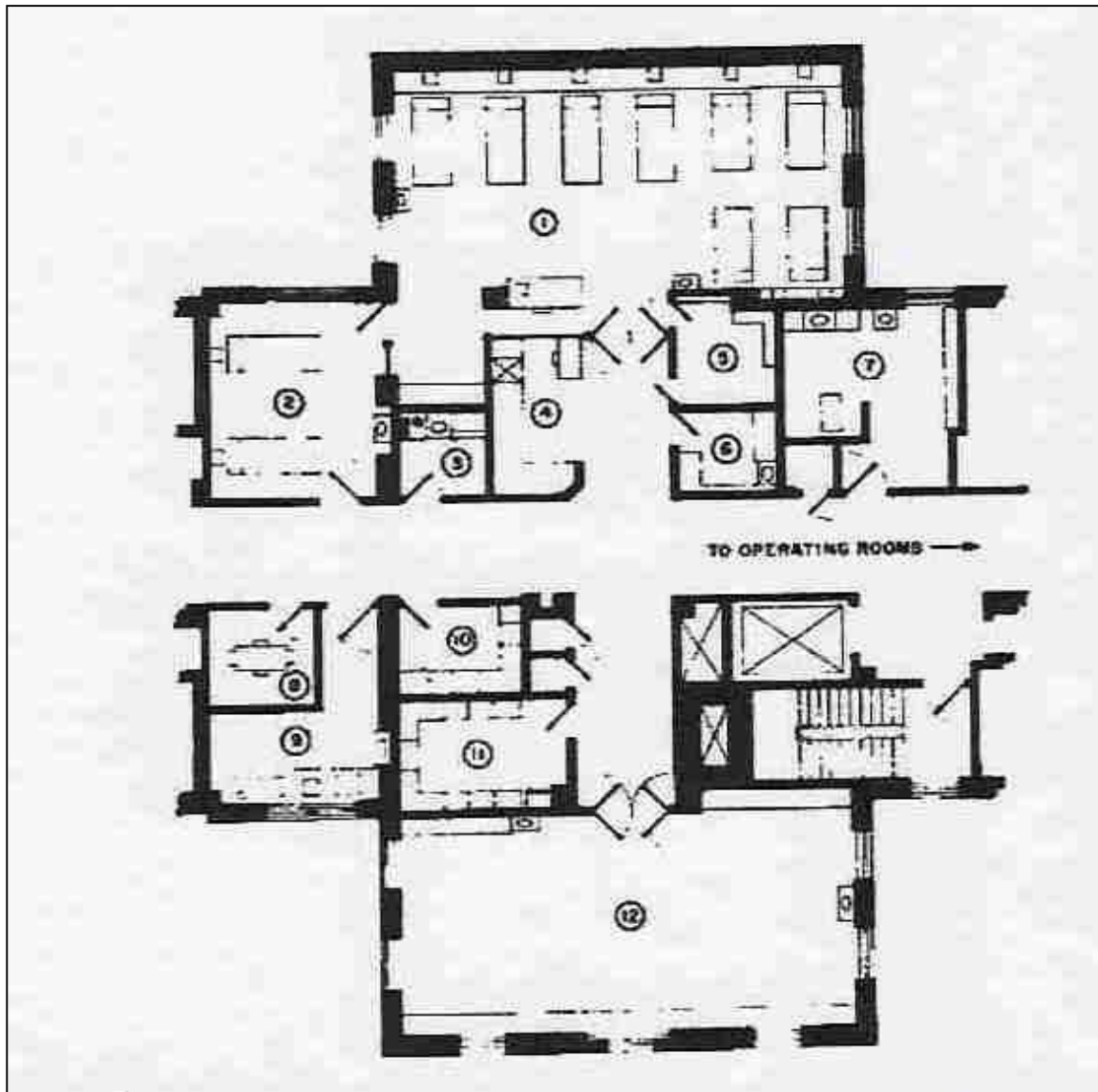


Figure 1.5: Floor Plan of the PICU at Children's Hospital of Pittsburgh Indicating the Spatial Organization of the Second U.S. PICU (Source: Kampschulte, 1973)

In the U.S., the first PICU was built in 1969 in Children's Hospital of Philadelphia, along with the first pediatric critical care fellowship and physician directed PICU. The second U.S. PICU was established at Children's Hospital of Pittsburgh (Figure 1.5), which is described by Kampschulte in *Development of a multidisciplinary pediatric intensive care unit* (1973). Children's Hospital of Boston and Children's Hospital of Nashville were among other pioneers. Throughout the 1970s, the prototypical pediatric intensivist was essentially a cardiologist, pulmonologist, or anesthesiologist by training. In 1977, four PICU programs were started that facilitated training in pediatric critical care. The program at the U.S. case study setting was one of these four. Currently, there are around fifty such programs in the U.S., and half of them accept international applicants for their specialty training in pediatric intensive care.

As pediatric critical care matured, so did its infrastructure. The first U.S. pediatric critical care textbook was published in 1972. During the 1980s, the Pediatric Section of the Society of Critical Care Medicine was established, followed by the first pediatric critical care board examinations in 1987, and the first pediatric critical care fellowship in 1990.

Pediatric critical care improved extensively during 1970-1980. The explosion of knowledge regarding life threatening processes, and the technological advancements in monitoring and treating pediatric patients enabled enormous growth. A related development was the advent of the PICU; pediatric critical care was recognized as a new subspecialty. Thus pediatric critical care training programs were accredited and the existing guidelines for PICUs were revised, including organization and administrative structure, physical design and facilities, personnel, hospital facilities and services, drugs and equipment, pre-hospital care, quality assessment and training and continuing education (Committee on Hospital Care and Pediatric Section of the Society of Critical Care Medicine, 1993).

The American Academy of Pediatrics Committee, on the other hand, defined the guidelines for the pediatric population in 1993, focusing on details rather than a conceptual improvement of PICUs. They emphasized programmatic notions such as providing a separate room for family counseling to enable private discussions with staff members; a storage area for families' personal belongings; a lounge, locker space, and conference room for staff; and the importance of providing accessibility to patient's bed (The American Academy of Pediatrics Committee, 1993).

1.2.2 The Psychology of Pediatric Intensive Care Unit

During the last twenty to thirty years healthcare authorities recognized that the concept of total care of a critically ill child in the pediatric intensive care unit not only included the fulfillment of the needs of the child, but also those of the parents. Recently this notion has been expanded to include the needs of caregivers. The needs of parents of critically ill children in pediatric intensive care have been well documented in the literature (Kasper & Nyamathi, 1988; Kirshbaum, 1990; Warren, 1993; Shepley, 2000), and even more extensively than the studies regarding the needs of critically ill children. However, studies focusing on the needs of caregivers taking care of critically ill children are extremely scarce. Therefore this study calls for the recognition of staff needs to improve the care environment.

The meaning of the concept of "need" should be understood before exploring the "needs" in pediatric intensive care as portrayed in the literature. Two interpretations are offered: Woodhead (1990) describes "need" as an "intrinsic, natural inner drive" (Price, 1994). Maslow's (1972) "hierarchy of needs" supports this notion, but places it within the context of a hierarchical scale. Within this hierarchy, the lower level needs such as the need for oxygen or water must be fulfilled before the higher level needs, such as socialization or self-actualization (or reproduction). That is, lower level needs are more immediate. A second interpretation of "need" by Woodhead (1990) implies that achieving the stated outcome is desirable in itself. This interpretation suggests a negative outcome if the need is not satisfied and therefore "requirements that have to be met in order to avoid harm to the person" (Price, 1994).

Endacott (1998), on the other hand, suggests five attributes of the concept of need, which are an undesirable state of affairs, a deficit, a necessity, conferring responsibility to make good the deficit, and requiring a value judgment. The ability to assess need is emphasized by UKKCC as the main attribute of the nurse of the future (Endacott, 1998).

The Needs of Critically Ill Children

Various aspects of the needs of children are offered in the literature (Pringle, 1974; Doyal & Gough, 1991; Purcell, 1993; Price, 1994)-- critically ill or not. Doyal and Gough (1991) focus on two basic human needs of children, which are “physical health” and “autonomy.” However, their definition seems too simple and not holistic enough, since it does not include children’s need for love and connectedness. They argue that while physical health is easily accepted for both adults and children, the need for autonomy is harder to fulfill for children. They list the intermediate needs required to achieve autonomy as security in childhood, significant primary relationships, physical security, economic security, and appropriate education. Pringle (1974), on the other hand, claims that the physical needs of children are often adequately met, and therefore their “psychosocial” needs are more important, which are love and security, new experiences, praise and recognition, and responsibility. Purcell (1993) defines the most important need of a hospitalized child as being with the family and receiving consistent care from the family, which may relate to the child’s need for reassurance of the bond, unconditional love and care of the family.

Price (1994) reviews the literature on the needs of children, but does not provide a comprehensive list of the needs of critically ill children. In general, she argues that children’s needs are “special” and “developmental” since they are different from the needs of adults, and since the ability of children to understand and cope with the different aspects of hospital admission is affected by their age and developmental stage. In other words, children are dynamic beings in a state of constant physical and psychosocial development, which makes their needs “special.” Their hospitalization experience is also very different than the adult experience, which requires different knowledge skills and attitudes to ensure that this experience is not harmful to their development. Price (1994) also suggests exploring the hierarchy of children’s needs due to the continuous reduction in the amount of hospitalization time, especially when they are admitted frequently. Recognizing the increasing emphasis on involving the child and family in care when they are admitted to hospital, she claims that the full implementation of child and family-centered care requires having agreement on how the specific needs of children will be met.

A limited number of studies explore ICU patient’s perspectives regarding their treatment environment, and studies that focus on the reflections of child patients are fewer. Baier and Schomaker (1995) focus on the impressions of the ICU as perceived from the patient’s bed, while Russell (1999) explores patients’ perceptions, memories, and experiences of an ICU. Her study shows that 1) the close surveillance by technology and health care practitioners results in a sense of safety for patients and their

families, 2) power relations are inherent in the ICU⁶, 3) better communication between staff and patients can prevent some psychological problems experienced by ICU patients after discharge, 4) providing feedback to the nurses is very important, 5) while patients find the presence of good communication in ICU therapeutic and reassuring, they find the lack of good communication distressing, and 6) the provision of information from nurses not only diminish feelings of anxiety but also empower patients to become involved in decisions about their care. Therefore the most important need of ICU patients appears to be the provision of good communication between staff and patients.

Fleitas (1997) and Yeaple (1999) identify children's thoughts and feelings regarding their hospital care and environment. Fleitas found that "children enter hospitals as novices and leave them as social critics." Their perception of the hospital environment and their reaction to care they received are outcome measures, which are often neglected in fast-paced health care arena. Her article focused on the evaluations of young patients addressed to health professionals and practitioners, which called for thoughtful prescriptions for reform, as captured by Daniella:

A white lined paper... holes and date on the top.
 Vital signs and temperature, blood pressure...
 Is my name there? Do you know who I am?
 Am I more to you than a diagnosis, a number,
 a list of medications?
 Can you look at me, think of me, as a person?
 A human being?
 More than a file three inches thick?
 Who am I to you? What am I to you?
 Do you remember me tonight after you have hung your white coat and signed
 out on your time sheet?
 Do you ever think of me when you are home,
 when my parents are pacing the hall,
 when my breathing is labored and
 my temperature is rising?
 Your pager sounds at 3 a.m.
 Does it ever occur to you that it might be me?
 But then again, who am I to you?

Fleitas (1997)

Focusing on the stress-points and coping in a pediatric hematology and oncology clinic, Yeaple (1999) found that good communication and social interaction could be the most important need for hospitalized children.

In summary, the needs of critically ill children should be recognized and integrated into the social practice of caring, as well as the physical environment. Particularly, older children's and adolescents' basic human need for autonomy during hospitalization needs to be recognized, by giving them more opportunities to control their environment and participate at their treatment.

⁶ Michel Foucault's central idea that "power is everywhere: it runs in and through all relationships and interactions" relates to the relationship between social interaction and power relations in the ICU.

The Needs of Parents

The vast majority of data on “needs” in pediatric intensive care focuses on parental needs and preferences due to the transition toward a family-centered care. Kirshbaum (1990) notes that a child’s critical illness represents an acute stress for parents due to the threatened loss posed by the illness, and the environment of the PICU. The situation is crisis provoking. He argues that early discharge from the PICU can increase this threat. However, parents can draw on their own resources to positively adapt to this stressful situation.

Kasper and Nyamathi (1988) document the parental needs in the PICU as identified directly by parents as the need to receive information, trust in the child’s caregivers, continue the parental role, and receive support from other individuals. More specifically, the parents of critically ill children need to believe that there is hope, know that hospital personnel care about the patient, receive as much information about the patient as possible, receive information that might help to alleviate their anxiety, and be assured that they will be called at home if the patient’s condition changes. Although Kasper and Nyamathi did not include it in their list, evidence that their child is actually recovering would also be very beneficial to the families of healing children. Finally, “even bad news is better than no news” (Shepley, 2004).

Kasper and Nyamathi (1988) categorize parental needs as physical, psychological, or sociological in origin, although most of their needs are psychological. The most frequently identified needs are “visit or stay with the child” and “frequent, accurate, and truthful information about the child’s condition.” The primary need is to maintain the parental role function and alleviate stress.

Warren (1993) evaluates the needs of family members in the ICU waiting room, and describes their needs during the first 18-24 hours after ICU admission, and 36-48 hours later. He found an inverse relationship between education and comfort/support statement. Similarly, Shepley (2000) argues that families are disturbed due to poor proximity to patients and limited access to information despite the social support provided by staff. Shepley notes that these needs can be addressed by the physical environment; e.g., by locating the waiting room closer to the unit and providing a library.

The Needs of the Caregivers

While the major reference in this study implied by “caregiver” or “care provider” is to nurses and physicians, other professionals like respiratory therapists, social workers, and chaplains are also included. Caring for the needs of caregivers is extremely important because their needs and job stressors have often been ignored in the context of caring, and in research that focuses on “needs” during critical care. However, providing for healthcare professionals is critical. There is a severe staffing shortage, especially in nursing, which is a universal condition resulting from inadequate work conditions and work environments. Finally, if the needs of caregivers are recognized and satisfied, they would not only stay in their jobs but also perform more efficiently, creating a positive impact on patient care. In other words, reducing staff stress would affect healing.

The negative outcomes of unrecognized staff stress are identified by Vachon and Pakes (1985), who note that the treatment of critically ill and dying children can result in anxiety, frustration, and guilt for caregivers, and that the resulting stress responses may affect patient care and staff relations, as well as the caregivers' mental and physical health and family relationships. The stress of the caregivers is usually unacknowledged because of the concern about the dying child and his or her family (Vachon & Pakes, 1985). However, if staff stress is not reduced, it may parallel or even supplant the stress experienced by patients and their families, thereby causing the caregivers no longer to be able to care effectively. This in turn deteriorates and even dehumanizes patient/family care.

The major PICU caregiver stressors are as follows: 1) a "fish bowl environment," in which everyone can see and hear what you do and say (therefore private space for caregivers is essential, especially when a caregiver is directly involved in a death experience), 2) transport arrival when the unit is already full, 3) heavy workload, 4) a sense of responsibility for the patient's ultimate outcome, 5) a maldistribution of nurses among shifts, and a sense of discrepancy in the nurse's personal evaluation of her responsibility versus her competence, 6) learning to deal with equipment, 7) death events, especially sudden events, since there is no time to prepare the family; or the death of the patients who have been around for a long time, 8) conflict over the mode of death, especially with regard to parental presence, i.e., whether the parents should be allowed at the bedside when a child dies, sometimes disconnecting a child from machines to allow him to die in his parent's arms, 9) multiple deaths; sometimes there are just too many sick kids and too many deaths following one another, 10) conflicting role expectations, 11) maintaining smooth working relationships and effective communications with many different members of the health team and visitors through a relatively small physical space, 12) expectations from caregivers to function at a high level of professional competence, and 13) distinguishing between role boundaries; problems with role overlap and over-stepping (Vachon & Pakes, 1985).

In summary, the ICU involves constant exposure to critically ill children and their distraught parents in an atmosphere of continuous technological change, which requires constant learning. In addition, staff conflicts increase the pressures inherent in the ICU as role boundaries blur and role conflict ensues. Finally, there are mediating factors of stress for caregivers, which may be personal (age, social class, marital status, previous stressors), intrapersonal (motivation, coping style), interpersonal (social support, concurrent stressors), and societal expectations (Vachon & Pakes, 1985).

1.2.3 Contribution of Phenomenology to the Care of Critically Ill Children

Philosophical approaches to nursing studies have recently addressed current practices in nursing, the experiences of critically ill children and their families, the importance of "relationships" in pediatric critical care, and the experience of death, dying and grieving. The concept of holism has been influential within philosophical care models. For instance, in children's nursing, humanism has been offered for a transition from excluding parents from participation in their child's care to a family-centered care philosophy. The nursing literature regarding the critical care of children explored various models of

practice derived particularly from the philosophical traditions of humanism,⁷ existentialism⁸, and phenomenology⁹.

Kolcaba (1997) focuses on the role of holism in nursing, arguing there is a strong relationship between nursing and humanism, which informs that nursing care should be patient-centered, and be guided by a holistic philosophy. That is, the patient needs to be viewed holistically to achieve self-actualization. She notes that early nurse theorists accepted humanism uncritically as opposed to the reductionist Cartesian dualistic medicine, which was not holistic and therefore failed to provide a theory of interpersonal relations. According to Kolcaba, the concepts of interaction, relationships, and counseling are central to nursing.

Pollack and colleagues (1994) explore the impact of quality-of-care factors on PICU mortality. Curtis and Rubenfeld (2001) identify the mechanisms for managing death in the ICU for a transition from cure to comfort. Haggman-Laitilla (1997) focuses on “health” as an individual’s way of existence, and suggests that the goal of nursing is to support health experiences regardless of medically determined health problems.

Holyoake (1998) describes the history and development of humanism and existentialism in health care, and explores their effects in guiding current practices in nursing critically ill children. Recognizing that the nature of the relationship and interaction between the caregiver and the child can change a lot, she argues that humanism and existentialism are essential to the nurse-patient interaction. In humanist and existentialist traditions, individualism, holism, autonomy, and existence are central to man’s relationship to the world. Uncritical acceptance of these concepts result in genuineness, warmth, active listening, non-judgementalness and empathy, which offers nurses a “dependent” relationship, and the ability to move away from a biomedical to a more holistic model.

⁷ Humanism is a classical western philosophy, which challenged the medieval church by placing man at the center of the universe instead of god. Existentialism, on the other hand, belongs to the twentieth century. Although it is similar to humanism in that man is its major concern (*existence precedes essence*), it rather focuses on the dark side of existence such as “responsibility, freedom and nothingness after death in comparison to the more hopeful humanism” (Holyoake, 1998). Humanism contributed to nursing interventions such as patient rights, person centered care and psychology, whereas existentialism gave way to cultural care, community care, and de-institutionalism.

⁸ Sartre’s (1989; 1990) ideas on existentialism and humanism have been major references in nursing profession. His philosophy has two central themes: First, “man must be his own salvation,” and second, “man can only become authentic to himself if he accepts the burden and responsibility of freedom,” (Holyoake, 1998) i.e. the freedom of his will. Sartre (1990) explains that it is the very inherent nothingness of man that is his greatest asset. The “becoming” within the overwhelming nothingness is something each person has to do individually. Therefore it seems to be similar to the need for “self-actualization” documented by Maslow (1972).

⁹ Phenomenology is an “approach” to philosophy that focuses on the analysis of the phenomena, which flood human awareness (Reese, 1996). Solomon (1980) centers on the relation between phenomenology and existentialism, and suggests that phenomenology begins with the study of human consciousness; it is an attempt to define the “structures” that are essential to any and every possible experience. Husserl (1962) claimed that phenomenology is “presuppositionless” and without bias, and that the results of phenomenology, if properly attained, are “absolutely” true (Solomon, 1980). Therefore phenomenology is based on the thesis that human consciousness is intentional, and always requires an object towards which consciousness is directed.

The contribution of existential phenomenology to the nursing profession is well documented in the nursing literature, and is usually credited to the existential-humanist philosopher Martin Heidegger. Walters (1995a) conducted a Heideggerian hermeneutic study of the practice of critical care nurses. Rashotte and colleagues (1997) conducted a phenomenological study on pediatric intensive care nurses and their grief experiences using a Heideggerian phenomenological approach.

Orbanic (1999) presents Heidegger's view of person, and its conceptualization of the individual, as a conducive and complimentary perspective for psychotherapy. Heideggerian hermeneutic phenomenology is based on meaningful appreciation of one's "being-in-world." Therefore, this view supports patients' self-transcendence, self-love, and well-being. Heidegger's humanist-existentialist view of person, which is nurturing for therapeutic relationships, may be extended to the development of such relationships between caregivers and patients/families in the PICU.

Carnevale (1996) used a phenomenological approach to describe the experiences of critically ill children and their families. Focusing on children who underwent a process of "unmaking" and "remaking," which involved a transformation of the child from total (or near-total) amnesia to survival, Carnevale argues that the child's relationships with significant others, along with the cultivation of a socially rich milieu, has an important impact on that process of reconstitution, especially if the relationship is nurturant, comforting, valuing, and gives the child a sense of identity. He also recognizes the importance of the role of not only loving members from the family that participate in the child's care, but also the relationship of staff with the child in that process. Therefore he suggests caregivers to evaluate the child's "relational world" within the critical care context. Sadala (1999) also suggests taking care as a "relationship."

Little (1999) employs a hermeneutic study on the meaning of learning in critical care nursing. All these studies suggest that the critically ill child's relationships with significant others is the most fundamental aspect in the healing process.

To conclude, Heidegger's humanist-existentialist approach to the "person" has been widely utilized in the nursing profession to provide alternative care models. His phenomenological insights and analyses, particularly his fundamental concepts of "home" and "dwelling," relate to the notion of healing. Heidegger also focused on the nature of technology and its impact on social relations and social life, which particularly relates to the role of technology in an ICU. Finally his focus on man's relationship to the spatiality of the practical world, and how he relates to other entities (human and nonhuman) in his built and natural environment may inform an ontological approach to healing design.

1.2.4 The Role of the Physical Environment in Healing

A majority of studies in healthcare design literature have focused on adult critical care environments. Much remains to be studied to improve the physical environment of pediatric critical care.

Fournier (1999) focuses on the relation between the family-centered-care approach and the physical environment of the neonatal intensive care unit, and develops four environmental themes, which are 1) privacy and intimacy, 2) interaction and social support, 3) comfort and image, 4) functionality,

flexibility, and accessibility. The theme of privacy and intimacy is related to providing private space as a way to increase a family's opportunity to get involved and feel comfortable with their baby's situation. The theme of social support and interaction is related with providing supportive and interactive space to facilitate social support through collaboration and exchange between families and staff. Education will also contribute to increasing parents' level of confidence and competence as well as sense of control over the situation. The theme of comfort and image is related to improving the quality of the environment by offering an adequate level of comfort, appropriate image and services. That includes giving the unit an image and atmosphere that conveys the willingness of the hospital to welcome and fully integrate parents. Finally, the theme of functionality, flexibility, and accessibility is related with providing the caregivers a functional and accessible working environment, flexibility of the unit to follow and adapt to the rapid evolution of technology, procedures and equipment in the NICU, and also flexibility of the unit to adapt to and respect family's individuality.

The examples from the literature review regarding the potential of the physical environment to fulfill occupant needs and enhance the healing process of patients and their families can be categorized into four categories: 1) ambient and atmospheric, 2) functional and technological, 3) psychological and humanistic, and 4) social support intervention.

Ambient Intervention

Atmospheric intervention, or ambience, may play the most crucial role in the healing process. Acoustical and lighting conditions are especially important. The ICU tends to be a noisy and brightly illuminated place due to continuous procedures and the large number of care providers. Since the ICU is full of strange sounds from respirators and continuous beeping of monitors, it results in an "unreal Twilight Zone" atmosphere. However, noise is one of the most serious deterrents to healing and a major cause of stress. Additionally, it is common observation that bright illumination (rather than a dark environment) increases the activities and the noise levels of people in it, creating more disturbances for patients.

Another important tool for achieving quality ambience is the careful selection of interior finishes and details. Their selection must not only be function-driven but also help humanize the environment and meet the physical and emotional needs of the patients and care providers.

Carey (1984) suggests making inpatient facilities more homelike by promoting community, privacy, flexibility, and by using a variety of furniture. However, Madden (1991) argues that residential and hospitality design solutions are not applicable to critical care interiors. Instead she offers guidelines to create a new design language sympathetic to the ambience of space and the psychological aspects of healing, while acknowledging function, particularly, regarding the selection of flooring materials and wall finishes considering traffic conditions of people and carts, acoustics, infection control, easy maintenance, durability, stain resistance, flame resistance, non-toxicity, light fastness, aesthetics, and finance.

Color may be the single strongest component of an environment, and the most important design tool to humanize ICU interiors. However, there is little, or no audible, research on color in healthcare

design literature. Additionally, the décor of the ICU tends to lack color. Therefore, a study that examines the role of color in PICUs would be very beneficial in the future. Although some people associate white with purity and cleanliness, the absence of color is perceived generally frightening, unfamiliar, unnatural, emotionless, and institutional. Therefore the use of softly colored walls, carpet, texture, or a border of color near the ceiling can make a big difference (Malkin, 1992). Color schemes in ICU interiors should be meaningful and purposeful, but not overpowering since strongly stimulating colors may cause disorientation for patients. In general, warm tones stimulate activity and create a sense of space by affecting the perception of its size, while cool tones relax and soothe (Madden, 1991).

Quality ambience typically describes the healing, nurturing and relaxing atmospheric and environmental qualities of an interior space, although it can also refer to outside spaces: It is also one of the key features to create a healing environment for a healthcare facility. While it may relate to sustainable design characteristics such as energy conservation, landscaping, the use of non-toxic building materials, recycling, waste management, and healing landscapes, healing ambience in design can be achieved through: 1) The use of nature, daylight and views, which has proven to be very therapeutic in providing a healing environment (e.g., skylights, balconies with doors that open; the use of natural finishes and furniture such as wood; and beautiful, relaxing views of nature), 2) natural ventilation (open windows), 3) carefully designed landscaping and outside gardens with special areas for patients, families and staff to go to relax and enhance the healing process; and well placed greenery, such as shade trees and evergreens, to minimize heat and block strong winds, and 4) wall finishes, flooring products, and the selection of other building materials to optimize occupant comfort and residential feel, as well as indoor air quality and environmental responsibility. Finally, form, shape, proportion, materials, light, furnishing, and unity of design of all parts are other elements for a healing, nurturing and ambient design.

The New Novato Community Hospital in Novato, California (Figure 1.6 and Figure 1.7) provided most of these design interventions. The facility incorporates advanced planning and design concepts to promote physical, emotional and spiritual healing. A participative planning approach was used with all departments and various employees, medical staff, volunteer auxiliary and board members. The following planning concepts were also used to assure quality patient care, staffing efficiency, and cost containment through ease and convenience of operation: 1) classical design to comply with community character and zoning, 2) satisfy space needs and requirements, 3) enhance operations efficiency, 4) establish a healing healthcare environment to balance with the requirements of technology, 5) structure facility for adaptability to future state of the art technology, 6) acquire state of the art technology, 7) improve patient room amenities to foster patient dignity, privacy and family support, 8) structure comfortable environment for patient care, 9) enhance the environment for support of healing, and 10) simplify circulation and clarify way finding.



Figure 1.6: Patient Zone of the New Novato Community Hospital (Source: Novato Community Hospital, 2000)



Figure 1.7: Lounge Area of the New Novato Community Hospital (Source: Novato Community Hospital, 2000)

In a healthcare setting, healing ambience may be achieved through ecological and social factors such as fresh air, daylight, healthy diet, hydrotherapy, aromatherapy, massage and exercise; as well as more architectural features like atriums, leafy planters, and fine arts. Weber (1996) suggests the integration of function and efficiency with ambience.

The best example of achieving healing ambience in healthcare architecture may be the Vidarkliniken, a holistic healing center opened in 1985 in Järna, Sweden (Figure 1.8). Designed by Erik Asmussen, the design and organization of this clinic were based on the ideas of Rudolf Steiner, an anthroposophist from Twenties, who held holistic concepts of healthcare. Anthroposophy views illness as a gift, an opportunity for conscious spiritual development. Air, light, color and warmth, rhythmic massage, mineral baths, guided nutrition, and art therapies such as painting, sculpting, and eurhythmy are key factors in this clinic in the transformation of the person to a higher consciousness of Health. Seven healing design principles used at Vidarkliniken are: 1) unity of form and function, 2) polarity, 3) metamorphosis, 4)

harmony with nature and site, 5) the living wall, 6) color luminosity and color perspective, and 7) the dynamic equilibrium of spatial experiences (Coates & Siepl-Coates, 1998).

Wall treatments and finishes are a significant design element of the healing environment in Vidarkliniken (Weber, 1996): An anthroposophical manufacturer specially formulated all interior paints from vegetable and mineral dyes in a casein and beeswax medium. The paints are applied in thin layers to impart the living glow found in nature (to reveal the nature of the material), unlike the opaque and unnatural colors of conventional paints that mask the surfaces they cover. Moreover, each room is painted according to its own atmosphere. Patients are assigned to rooms of specific colors according to the nature of their illness. For instance, warm pink-rose is prescribed for cool diseases like cancer, whereas rooms with blue tones are given to patients with inflammations or fever (Figure 1.9).



Figure 1.8: Exterior View, Vidarkliniken (Source: Vidarkliniken, 2004)



Figure 1.9: Interior Atmosphere, Vidarkliniken (Source: Vidarkliniken, 2004)

Functional and Technological Intervention

Functional intervention refers to the possibilities of design to find rational, technological, and mechanistic solutions to satisfy the practical occupant needs. However, it is also closely linked with psychological and humanistic interventions such as provision of windows, natural light, circadian rhythms, privacy and visibility for the patient simultaneously.

Functional intervention also relates to the provision of the most current technology for equipment, space, and their interaction. For instance, Malkin (1992) describes the impact of the development of a specific artificial heart transplant model on the spatial organization of the operating room and the critical care unit for open-heart surgery.

The spatial organization of the patient rooms of the cardiac ICU (CICU) at the observed U.S. hospital emphasizes functional intervention, where they facilitated one of the most successful functional objectives by applying zoning principles: The design team separated each rectangular room and its associated equipment into three functional zones for families, patients, and caregivers. The first zone in front of the exterior window is designed as the family area for parents and visitors. This area has healing qualities due to the exterior views and copious amounts of natural light (Figure 1.10). Additionally, families in this zone are provided with adjustable fluorescent lighting, a desktop phone only for their use, a dataport for laptop computer connectivity, a wall-mounted television with VCR capability, and comfortable seating. One foldout sleeper chair is provided in each room to accommodate overnight sleeping or visitation by one parent (Vincent, Tasia & Stromberg, 2002).

The second, or middle, zone is designed as the patient area. It includes the patient, her or his bed, and all the necessary medical equipment. Due to the need to have immediate access to a child's head in the event of an emergency, traditional headwalls, which restrict such access, are replaced with moveable, ceiling-mounted pendant-type booms. These dual arms, placed to either side of the bed, contain all medical gas and electrical outlets, as well as shelves and poles for ventilator equipment and IV infusion pumps (Vincent, Tasia & Stromberg, 2002).



Figure 1.10: Functional Design of the Patient Rooms of the Cardiac ICU (CICU), U.S. Hospital

The third zone, which is closest to the interior hallway, is the caregiver area with access to the patient, ventilation and monitoring systems, medications and IV infusion pumps, and all other equipment necessary for patient care. This zone includes a wall-mounted, flat-screen computer with retractable, flip-down keyboard for charting and note/laboratory data acquisition, as well as a cart for disposable supplies. A sink with an electronic motion sensor (to avoid touching of bacterially colonized surfaces after hands are cleaned) and associated soap dispensers are strategically located at the entry/exit to encourage proper visitor/caretaker hand-washing (Vincent, Tasian & Stromberg, 2002).

Other functional needs such as patient and family privacy and their shading needs are also addressed in the cardiac ICU (to provide privacy), despite the use of large surfaces of glass doors to the interior hallway and of exterior windows. Adjustable integral blinds between layers of glass are designed specifically to provide full blocking of light or interior views. Not only does this approach obviate the need for interior curtains, but it also has infection control advantage of the blinds not being susceptible to dust build-up (Vincent, Tasian & Stromberg, 2002).

Psychological or Humanistic Intervention

A humanistic environment is the result of fulfilling the psychological (i.e., higher) and practical (i.e., lower) needs of patients, families, and caregivers. Gregory (1993) explores the opportunities for providing physical and psychological comfort in the ICU without sacrificing function and technology. Provision of windows; circadian rhythms; lighting; familiarity; balancing privacy and visibility; consideration of patients' range of vision; odors; diversion; furnishings; color; alarms; families; heating, ventilation, and air conditioning; unit organization; and staff well-being are some of the environmental tools to humanize the ICU by fulfilling the needs of occupants.

The most important psychological, or humanistic, concern regarding the physical environment of an ICU is that each patient has a window and direct access to natural light. Federal law in the U.S. has required this since 1977. Otherwise, distinguishing between day and night is difficult, and the body's circadian rhythm is disturbed. Additionally, if the patient can see out of the window, she is able to visualize both sky and ground for better orientation (Gregory, 1993). Also, the opportunity to change focal lengths by focusing on something far away is comforting to the eye. The need to have access to natural light and a view of the sky is equally important for caregivers.

The positive effects of providing an outside window in patient rooms have been the subject of quantitative studies: Wilson (1972) noted twice as many episodes of organic delirium in postoperative adult patients residing in rooms without a window. Ulrich (1984) indicated the positive impact of a window with a view to nature on the health outcomes of postoperative adult patients.

Another way to create circadian rhythms in the unit is using corridor illumination on timers that lowers in the evening and comes back up in the morning. This type of illumination has important health benefits (e.g., by improving patients' sleep patterns); saves energy; reduces noise levels; and is therefore humanistic. In general, illumination should be incandescent (i.e., not fluorescent), with the cooler lighting

range used for procedures (Gregory, 1993). Further, general lighting fixtures should be located away from the patient's range of vision. Control of illumination should be accessible to patients and their families to give them a sense of control. Lowering light levels when task illumination is not needed is a quick way to decrease personnel conversation sound levels in the ICU (Gregory, 1993).

Familiarity of the patient to the physical setting is another humanistic concern. Everything in the ICU (such as lighting, furnishings, equipment, technology, noises, and odors) is foreign to the patient and families, thereby increasing their stress, while staff members are familiar with the physical environment and understand its components. Hence familiar furniture and artwork should be selected to normalize the ICU environment (Gregory, 1993).

The most important function in ICU unit spatial organization is the need for visibility between patients and the caregivers. Nurses should be able to observe both their patients and monitors at all times. Patients feel reassured if they can see the staff station and know that they are seen, which provides a sense of security. However visibility should be balanced with patient's need for privacy.

Another issue relates to the consideration of objects as viewed from the patient's bed. Patients' range of vision should be kept free of technology and equipment whenever possible. However, many ICUs have fluorescent fixtures mounted precisely over each patient bed, imposing an uncomfortable amount of light and glare on the patient (Malkin, 1992).

Gregory (1993) suggests studying the impact of hospital odors on behavior. Specific odors are powerful enough to create a sense of place and experience. However, normally pleasurable scents may have reverse effects during illness.

Finally, the impact of the physical environment and sensory overload, especially noise, on staff well-being should be evaluated. Many concepts applicable to patient ambience such as access to natural light and provision of circadian rhythms would also impact staff well-being. Activities which require little time, such as seeing out a window, standing under a skylight while charting, taking a short break (outside or in the staff lounge), or waiting for an elevator, may be very beneficial to their well-being if they have access to daylight. Finally, it is reported that night staff would also like to see the moon (Baker, 1984.)

Family and Social Support Intervention

Family support and social support may be two most vital psychological needs to inform design interventions for the ICU since contact with loved ones is extremely important in the healing process. There are many opportunities to better address the needs of families in the family lounge area of the ICU. Malkin (1992) discusses the importance of size, particularly the waiting room should be large enough to allow for private groupings of individual families; the provision of important functions such as a small kitchen or a coffee bar, comfortable recliner chairs for people to nap or sleep, or a storage area for pillows and blankets; and careful functional planning of the lounge area to enable people to be shielded from

passersby traffic¹⁰, and to pray or grieve in private, while at the same time they are surrounded with qualities of serenity and peace. However, an appropriate ICU waiting room design must provide opportunities both for privacy and social interaction (Fournier, 1999; Shepley, 2000).

The design of ICU waiting room can provide support for families particularly through social rather than physical design interventions that can change families' experience. Simple interventions can be effective, such as providing a handout about visiting hours and functions of staff, and allowing flexibility in visitation policies; informing families about how they can play a role in the healing process; informing them about the nearby places outside the hospital to get away from the ICU when they need; providing them with a pager for emergency situations; offering spiritual support and music; providing herbal teas as an alternative to coffee; and providing quiet areas in the waiting room.

Design Interventions Specific to Children

Children's hospitals usually provide psychological support and a child-friendly environment for their patients. However, potential design interventions that relate to the special cognitive processes of children are not fully explored. Therefore, addressing developmental differences of children may be an excellent source of information for designing children's healthcare settings, which may empower their hospital experiences in the future.

Children's healthcare settings usually respond to the need for a familiar environment by providing "theme-ing" content, which is defined as "the application of graphics involving artificial constructs such as transportation vehicles, sports equipment, and cartoon characters to provide a child-appropriate setting" (Shepley, unpublished paper). Currently, arbitrary and superficial selections of "theme-ing" images occupy many children's hospitals all over the world, yet they may not address age differences between children. However, nature might provide an alternative theme-ing content, although nature images are very different from normal theme-ing images due to their implied organic content. Therefore, exposure to regular theme-ing content may not have optimal benefits on health outcomes of critically ill children, while exposure or access to nature images may have a dramatic impact on medical outcomes (Shepley, unpublished paper).

Cotton and Geraty (1984) focus on the therapeutic potential of the physical space design, and describe a method for translating clinical concepts into architectural concepts and plans that embody certain physical characteristics that contribute to healing. The final design of a twelve-bed psychiatric service for latency-age children is described. Specific treatment goals are given with the design details, which enhance, support and articulate their aims.

In addition to patient behavior, staff response to the physical environment has been explored. Tyson, Lambert and Beattie (2002) examined the impact of ward design on the behavior, occupational satisfaction and well-being of nurses and found that modifications to the physical environment of psychiatric institutions are associated with positive changes in patients' behavior, attitudes and perceptions.

¹⁰ The mere presence of strangers may be very offensive to a hurting person, as emphasized during an interview with a clinical manager at the observed U.S. hospital.

However, little attention has been paid to the impact of environmental modifications on nursing staff. The building of two brand new wards at a rural hospital provided an opportunity to examine this issue. Nurses' observed behavior and self-ratings of burnout and job satisfaction were measured in the old and new wards. The results showed that 1) the new wards were associated with positive changes in behavior and increased burnout, yet no change in job satisfaction, and 2) a vital component in the success of any environmental intervention is appropriate, corresponding change in organizational climate.

The Idea of Nature and its Usefulness for Healing

Debate concerning the ideal relationship of humans to nature is very old. While some philosophers considered nature to be all-powerful, all-knowing, and all-good, others understood it as a complex system subject to human influence. Out of this debate, Arts and Crafts provided a leading movement and interpretation of nature. Ralph Waldo Emerson, whose writings influenced many Arts and Crafts personalities, including Charles Greene and Frank Lloyd Wright, wrote in his book *Nature* (1836): "Not the sun or the summer alone but every hour and season yields its tribute of delight; for every hour and change corresponds to and authorizes a different state of mind from breathless moon to grimmest midnight" (Darke, 2000). According to Tabb (2003, personal communication), on the other hand, the idea of nature cannot be limited to its goodness because, for instance, a cobra snake or viruses also belong to nature. Therefore, nature, as referred in architecture for health, must be defined as "beneficial, safe, and beautiful."

There is only a handful of research explaining why and how nature contributes to healing. According to Darke (2000), healing takes place due to "the positive influence of the beautiful." He recalls various Arts and Crafts thinkers from William Morris to Frank Lloyd Wright, who believed that natural beauty incorporated into daily surroundings promote healthy, moral living and provide an antidote to the social ills associated with the industrial age." The idea of the goodness and usefulness of nature transcended the individual's garden, with nature and nature themes used extensively by hospitals, educational and other public buildings.

Despite this common belief in the goodness and usefulness of nature, the role of nature in hospitals has been almost exclusively limited to adult studies. Shepley and colleagues (unpublished paper) are exploring the behavioral impact of the involvement of nature through a two-part study that addressed the effects of the exposure to nature images and sounds upon the ICU course of infants and children, particularly in their sleep behavior. A preliminary study examined the preferences of hospitalized children in inpatient departments of the observed U.S. hospital regarding nature versus theme-ing content, and identified the content for the primary study on the impact of visual and auditory access to nature on patient outcomes in the PICU.

Unlike the study of Shepley and colleagues, the majority of studies on the health outcomes of exposure to nature focused on the adults. Wilson (1972) evaluated postoperative adult patients, and noted twice as many episodes of organic delirium in patients residing in rooms without a window. Ulrich (1984) also studied postoperative adult patients, who were admitted to a unit with a view of a garden or an

adjacent brick wall. He found that those patients with the garden view had shorter postoperative stays, fewer negative nursing comments, and took fewer and weaker analgesics. Therefore, he demonstrated that differing window views impact the patient's experience in a room.

In a more recent study, Segal (1999) found that guided images of nature as opposed to non-nature images resulted in greater relaxation as measured by heart rate and self-rating. The impact of nature on critically ill children has been investigated by Oksala and Merenmies in 1989, who found that PICU nurses perceived that children had a significant need for "rest and relaxation" during the entire stay. However, their need for "beauty and aesthetic experiences" was more important only during the latter portion of the stay. Shepley (unpublished paper) argues nature images may contribute to either of these phases.

Finally, the importance of therapeutic gardens have been stressed by Cooper-Marcus and Barnes (1995, 1999), who made behavioral observations and surveys in hospital healing gardens, and found therapeutic gardens should be radically different from the hospital environment itself. "The implicit assumption is that these architectural environments are so deadening and lacking in soul that if you don't make the gardens different, you've made no contribution to the healing process" (Coates & Siepl-Coates, 1998). Similarly, Francis & Hester (1990) focused on the meaning of gardens and their role in healing.

The Impact of the Physical Environment on Health Outcomes of Critical Care Patients

Eventually scientific findings will go beyond subjective responses... The doctor will then know how to write a prescription for environment even as he now does for drugs, and technology will modify and maintain it to his prescription, applying all beneficial variables, including...temperature; air content of solids, liquids, and gases; air pressure and movement; light in all its aspects, including movement and color; other forms of radiation; ionization; size and shape of enclosure; physical movement of the enclosure; pattern and texture of materials; sound, both generated and absorbed; and the physical form. (Wheeler, 1971; Weber, 1996)

Although the known positive effects of the use of ambient design issues in a health facility setting date back as far as the ancient Greeks (for instance, Ottomans during the same era extensively used ambient features like hydrotherapy and music in their hospitals), it is still important to gain authorities through rigorous scientific research.

Most of the health facilities design literature provides qualitative design guidelines for the physical environment to meet the physical and psychological needs of patients, families, and care providers. However, quantitative studies that contain valid data about the effect of the physical environment on health outcomes are extremely scarce. The relationship between health outcomes of patients (as well as families and caregivers) and environmental factors can be studied under a number of subcategories including room size; privacy; control of the environment by the patient or family; interactivity of the room (i.e., the degree to which it permits or promotes interactions with staff and others); lighting; presence of windows; type of window view; colors; textures; finishes; patterns of walls and artwork; air and ventilation; aromas; noise level; music; temperature; type of furnishings; horticulture; and equipment design (Weber, 1996).

Weber examines in his article *Life-Enhancing Design* how a change in the health facility environment can improve important health outcomes. He argues that the state of the scientific knowledge about the impact of the physical environment on health outcomes has not been evaluated. Even the validity of the most outstanding research studies, like Ulrich's 1984 research about the positive impacts of the view through patient's window to nature, was questionable due to small sample, use of a single hospital, and unmeasured potential differences between the patients (Weber, 1996).

Felver (1995) examines patient-environment interactions in critical care from the perspective of chronobiology. Critically ill patients have reduced control over an environment that they cannot leave voluntarily. These patients have endogenous biologic rhythms that were synchronized to their pre-hospitalization environment. They exhibit transient physiologic responses to environmental stimuli, and their biologic rhythms may be re-entrained by patterns of stimuli that are different from their customary environment. Felver (1995) suggests that nursing interventions based on principles of chronobiology might optimize patient-environment interactions in critical care settings.

Rubin and Owens (1996) provide a comprehensive analysis of the research studies before 1996 to suggest an agenda on the effects of healthcare settings on patient outcomes. Acknowledging the importance of improving therapeutic results through the most efficient allocation of finite resources in an era of rising medical costs (more than \$16 billion was spent in hospital construction in the U. S. in 1996), they suggest determining the layout, ambience, and appurtenances of medical facilities through evidence-based design.

Evaluating the state of knowledge on the effects of the healthcare environment on patient outcomes, Rubin & Owens (1996) derive the following conclusions: 1) Because most of the published studies having better research designs found an environmental variable is related to health outcome, improvements in outcomes may be available through design interventions guided by sound scientific inquiry. 2) Studies that contain data about the effect of the environment on health outcomes are very scarce. The need for a broadened research is vital. Many aspects of the healthcare setting and many patient populations have never been investigated. 3) Many published studies have significant methodological weaknesses that render their conclusions suspect on the generalizability of their findings. Therefore, future studies need to be more carefully designed and performed with greater methodological rigor.

1.2.5 Cross-Cultural Literature

Diverse sources of cross-cultural information may inform the universal evaluation of the physical environment and social atmosphere of the PICU. First, the East-West dichotomy is inherent in this discussion. The cultural care model, which means recognizing the importance of responding to cultural diversity and different cultural needs during hospitalization, also relates to the cross-cultural direction. Additionally, the cross-national comparison presents a systematic evaluation of healthcare systems in different countries. More recently, research studies compared international outcomes of pediatric ICUs, with a growing interest in the evaluation of pediatric critical care outcomes in developing countries.

Need for Advancing Cross-cultural Research

Several reasons exist for comparing health systems, policies, and practices of different cultures. First, learning about the health systems of other countries will give us perspective to understand our own. It can be reassuring that certain vexing health system problems have been encountered elsewhere and led to solutions. Even if the solutions are not transferable, the commonality of experience can give confidence that health system problems are to be expected and are manageable (Roemer, 1991). Finally, there can be a transfer of beneficial healthcare ideas, technologies, and practices, as well as healing environments.

A cross-cultural comparison of multiple PICU environments is supported by the qualitative and “naturalistic” inquiry, which claims that the study of “other” settings and other samples of an observed phenomenon are potentially relevant. Similarly, from an ethnographic viewpoint, people have traditionally evolved ways of life and stores of knowledge at different times and places. In recent years, a global scientific understanding of the world is emerging. However local and global sets of knowledge are poorly integrated, and they are not combined to generate alternate design solutions, theories, and policies.

Therefore this study argues that we can gain valuable lessons from studying PICUs internationally, although it examines only two PICUs. Insights provided by comparisons are useful at local, national, and international levels. More specifically, we can identify common problems and challenges in response to the PICUs in Turkey and the United States. The intention to study the Turkish and North American ways of organizing and delivering pediatric critical care, along with its physical environment, is a deserving challenge since the selected sites have enough features in common to be compared meaningfully, while displaying at the same time enough differences.

The intention in comparing two different contexts is not to pass judgment as to which one is superior, or suggest a linear translation of one to the other. Rather the aim is to establish universal standards of care –along with sociological issues like patient and family needs and their relationships with the hospital staff-, and call for a synthesis for the critical care environments of critically ill children, despite differences in patient and family populations and their cultural specificity. Additionally, it aims to enable a better understanding of the context observed and propose context-bound design solutions.

Reason for Choosing the United States and Turkey

The qualitative research paradigm suggests that the ties of an observer to a certain culture do impose on what she or he observes (Lincoln, 1999; personal communication). Therefore there can be no objective, dispassionate, and value-neutral account of a culture and its ways (Smith & Deemer, 1999). Heideggerian phenomenology, on the other hand, claims that the best works of art result from connectedness to one’s own nation. The researcher was Turkish, and she spent five years in the U.S. for this study. Therefore she chose these two countries as her case studies.

Additionally, it seemed purposeful to make a comparison between the U.S. and Turkey: Although ICUs and PICUs exist in Turkey like in many other developing countries, the standards of critical care seem to be significantly lower than in the West. Therefore the selection of Turkey and the U.S. for this

cross-cultural comparison may be more beneficial due to the transfer of ideas, technologies, practices, and environments of pediatric critical care between Dallas and Ankara model.

Turkish PICUs differ significantly from the PICUs in the U.S. First, pediatric intensive care is just emerging as a new medical subspecialty in Turkey unlike neonatal ICUs, which are more progressed. Therefore the few existing PICUs are busy, crowded, and in need of improvement with regard to the specialty training of caregivers, and the psychological, practical, and environmental needs of their participants. While it is commonly held that private hospitals and private PICUs provide a better quality of care, this belief is untested. Additionally, private healthcare facilities represent a small group of the Turkish population. The majority is represented through public healthcare programs, which suffer from limitations in the availability of appropriate technologies, access to credit, and enabling policies. Finally, during this literature review, no research was found about the evaluation of the physical environment of Turkish PICUs, or ICUs. There is little or no audible information on the design and planning issues of Turkish healthcare facilities, while a body of work is developing in the U.S. on the same topic.

Therefore, the physical environment does not support the psychological and practical needs of patients, families, and caregivers in Turkish public hospitals, particularly in PICUs. There are no opportunities to feel comfortable in the built environment of the hospital. Particularly, rural families cannot relate to nature in a harsh, institutional, and “modernist” setting that dates back from the 1950s, although this connection might be their most important psychological need. Similar problems are also valid for urban families. Finally, the psychological and practical needs of care providers with regard to the physical environment are ignored. Therefore, this research aims to improve the physical environment of Turkish PICUs, emphasizing occupants’ practical and psychological needs.

Cultural Care Model

The impact of cultural factors on the nursing care of critically ill children is a holistic model, which views the patient as part of a cultural unit. Cultural care elevates the role of cultural factors and differences in care. This model is critical because of the increasing number of different ethnic groups and their children living in the U.S. seeking critical care: If the cultural differences of the patient and her or his family are not considered carefully in the delivery of care, the health-related interaction, especially the PICU experience, of these groups with the Western health care system can be frustrating to them and the health care providers. These in turn can jeopardize the desired health outcomes. Therefore the needs of patients and families from different ethnicities should be recognized during pediatric critical care.

One such example in the literature is portrayed by Zahr and Hattar-Pollara (1998) on the nursing care of Arab-American children. They argue that Arab norms differ from Western norms in 1) the structural and functional roles within the family with an emphasis on the dominant role of the male as the head of the family and the ultimate decision maker, including the decisions related to the child’s care and hospitalization, 2) a predestined belief system, in which health and illness are accepted as God’s will, 3) the

“Hot and Cold” theory for explaining and treating illness (for instance, sweating the fever), and 4) superstitious beliefs to protect the child from “evil eye.”

Reactions to hospitalization and illness in the Arab culture include the assumption of the sick role for the patient (resulting in withdrawal from self-care); visitation and social obligations (the sick child is being visited by a large number of people, who may bring gifts, flowers, food, and sweets); treatment choices and decision-making (the male is usually in charge); terminal illness and concealment of information (they don’t wish to hear the bad news so that they can have hope); western bioethics versus God’s will (illness and health are both from God); dying and grief (loud expression of grief is common); issues of modesty (feminine qualities are made less visible or invisible); and expression of symptoms (exaggeration of symptoms is common).

In summary, culturally specific behaviors and behavioral expectations from parents may be misunderstood if interpreted within the Western frame of reference. Therefore, Zahr and Hattar-Pollara suggest that caregivers should understand these culturally patterned behaviors in their own cultural context.

The importance of understanding cultural differences of patients and families during pediatric critical care was offered in the previous section as a holistic model, with reference to the study of Zahr and Hattar-Pollara (1998). This study is important because of the similarities regarding the health beliefs, attitudes, and practices between the Arab and Turkish cultures, which may be due to their common roots in a predominantly Moslem culture. Although the Turkish identity is different from the Arab identity, and the Moslem identity is not equal to the Arab identity, the Islamic religion left an important mark on the Arabic, Turkish¹¹, and other Islamic cultures, influencing their health beliefs and practices.

Cross-national Literature on Health Systems

Roemer (1991) presents a comprehensive account of the cross-national literature on health systems: many attempts have been made to analyze and compare health systems of different nations. *The Russian Revolution-- Red Medicine: Socialized Health in Soviet Russia*, published in 1933, was one of the first comprehensive overviews of a national health system. In 1934, Henry Sigerist wrote a historical overview of *American Medicine*. However, few comparative analyses of several countries were made before World War II. The first in English was an analysis of Western European countries by Arthur Newsholme (1931), who focused on “the relation between the private and official practice of medicine” to inform Americans about European health insurance programs. A similar multinational study was done by I. S. Falk, *Security Against Sickness* (1936).

After World War II, cross-national studies of health systems mushroomed. Europeans and Americans came in touch with other continents, and an enormous interest was formed in the diverse cultures and social orders of the world. The postwar national liberation movements, followed by

¹¹ The lower socioeconomic stratum of Turkey is often linked with the Moslem identity, and may carry more similarities with the Arab culture.

emancipation of colonies, gave rise to worldwide economic and technical exchanges. The United Nations, founded in 1946, fostered countless relationships among countries (Roemer, 1991).

Health leaders looked to other countries for “lessons.” *The Advance to Social Medicine* by Rene Sand in 1952 examined worldwide historical developments of health systems. The WHO published in 1959 its *First Report on the World Health Situation*, presenting the national health systems of 157 countries (Roemer, 1991). These studies produced during the Fifties were descriptive rather than analytical or comparative. Beginning from the 1960s, more selective and analytical studies of certain countries and subjects appeared, like Brian Abel-Smith’s *International Study of Health Expenditures* (1967); Karl Evang’s *Health Services, Society, and Medicine* (1960); John Fry’s *Medicine in Three Societies* (1969); E. Richard Weinerman’s *Social Medicine in Eastern Europe* (1969); John Bryant’s *Health and the Developing World* (1969); Maurice King’s *Medical Care in Developing Countries* (1966); and William Glaser’s analytical accounts of special aspects of European health insurance programs (1978).

The 1970s produced extensive multi-authored reviews with writers from many different countries, due to the recognition of the complexity of studying and comparing health systems, such as *International Medical Care* edited by Fry and Farndale (1972); *Health Service Prospects: An International Survey* by Douglas-Wilson and Mc-Lachlan (1973); *The Impact of Health Services on Medical Education: A Global View* by Bowers and Purcell (1978); *Health Care: An International Study* by Kohn and White (1976).

Victor and Ruth Sidel’s (1977) *A Healthy State* examined health policies in Sweden, Great Britain, the Soviet Union, China, and the U.S., with an emphasis on political determinants of health systems. Odin Anderson (1972) stressed the problems of three different national health systems in *Health Care: Can there be Equity?* Ray Elling stressed political determinism in *Cross-National Study of Health Systems* (1980). Robert Maxwell focused on economic factors in *Health and Wealth: An International Study of Health Care Spending* (1981).

The 1980s brought multi-authored reviews of national health systems: Marshall Raffel (1984) explored 14 countries in *Comparative Health Systems*. Richard Saltman (1988) looked at 21 countries in *The International Handbook of Health Care Systems. National Strategies for Health Care Organization* (1985) assembled essays on health systems of 12 countries and 13 health care issues (Roemer, 1991).

During the 1990s, Roemer provided two volumes of the *National Health Systems of the World* (Roemer, 1991): Volume I analyzed the national health systems of countries of three economic levels based on their gross national product (GNP) per capita. Volume II examined issues or components of health systems *across* countries, based on five major components: 1) production of resources, 2) organization of programs, 3) economic support, 4) system management, and 5) delivery of services.

Based on this literature, the goal of this study, to select and examine a certain subject (i.e., PICUs) in two selected countries (i.e., the U.S. and Turkey), seems to be an appropriate task, supporting the established literature regarding cross-national and historical studies of different healthcare systems.

International Comparisons of Pediatric Intensive Care Units

Fourteen million children die each year worldwide, and 95 percent of them live in developing countries (Earle and colleagues, 1997). Although pediatric ICUs are an important means of reducing childhood mortality, pediatric intensive care has rarely been evaluated in developing countries. However, a body of work is developing on this topic in the U.S. and in Europe (Beaufils and colleagues, 1987; Davis and colleagues, 1989; Pollack and colleagues, 1993).

Another reason to study pediatric ICUs internationally is that the approach to pediatric intensive care has evolved differently in different countries, due to differences in the underlying philosophies of their medical communities, national planning initiatives, resource and technology availability, access to credits, and economic support to enable technological innovations. Usually these approaches are based on untested beliefs about the clinical utility of certain care philosophies (Davis and colleagues, 1989). Therefore, comparing pediatric ICUs internationally can provide important feedback to evaluate the usefulness of these approaches, and to help pediatric intensive care further progress in all countries.

The cultural care model, which qualitatively described a culture specific (i.e., specific to the Arab culture) model of healthcare, was presented previously in this literature review. This section deals with a number of quantitative and comparative outcome studies regarding pediatric critical care, which constitute a large part of the cross-cultural and international literature about PICUs.

Few studies compare and evaluate PICUs internationally. These studies evaluate the practices and outcomes of pediatric intensive care in different countries rather than the physical care environment. Most of these studies focus on the pediatric ICUs in the U.S. and in Europe. For instance, Beaufils and colleagues (1987) evaluate the pediatric intensive care in Europe, while Davis and colleagues (1989) offer an outcome comparison of patients in the pediatric ICUs in France and the U.S. Therefore a cross-cultural comparison and evaluation of pediatric critical care environments with specific reference to developing countries is extremely important at this point, and it is a missing area in the healthcare literature.

Earle and colleagues (1997) evaluate the outcome of pediatric intensive care in six Latin American pediatric ICUs (four PICUs from Mexico and two PICUs from Ecuador), and conclude that outcome differences in pediatric critical care are not the result of a major population difference such as malnutrition. Rather, the poorer outcomes are associated with differences in care practices, or the quality of care.

Slonim and Pollack (1997), on the other hand, explore the merit of making international comparisons of pediatric critical care, and suggest that valuable lessons can be learned from analyzing the outcomes of care in different environments. They observe that in the U.S., there is diversity in the organization and structure of pediatric intensive care units, which has an impact on the delivery of critical care. This diversity may also affect the variations in the application of technologies (resource utilization) and in the skill, experience, and availability of practitioners. Therefore, differences will affect care practice patterns. Slonim and Pollack predict that as critical care emerges as a new specialty in other countries, the organization, structure, and practice of critical care may be very different from those of the U.S.

National evaluations of ICUs are another direction. Groeger and colleagues (1992) provide a quantitative description and assessment of ICUs in the United States, and conclude that there is a need to establish standards for well-managed, high-quality ICUs. Focusing on the PICUs in the U.S., Pollack and colleagues (1993) conclude that substantial diversity exists in pediatric ICU structure and organization¹². Therefore determining factors associated with quality of care is important for improving outcomes.

Generally, these studies use quantitative methods (such as severity-adjusted scoring systems to reconcile the patient population differences) to investigate the differences in PICU effectiveness in different countries. The clinical risk factors of mortality and morbidity are usually predicted by the use of “Pediatric Risk of Mortality” (PRISM) in order to evaluate the efficiency of a particular ICU. Then excesses in observed mortality are related to a number of factors, which may impact patient outcomes. Although the PRISM score was developed and validated in the U.S., and subsequently validated in Europe, it has usually not been evaluated in less affluent societies.

Earle and colleagues (1997) found that technology availability (mechanical ventilation, central venous pressure monitoring, intra-arterial pressure monitoring, and intensive nursing care) in six observed PICUs in Mexico and Ecuador was similar to that in the U.S. Therefore they argued that staff skills and availability could impact patient outcomes more than technology. However, staffing of physicians was also found similar to the U.S. standards, with the exception of staff-to-patient ratio. Earle and colleagues suggest that increased training of personnel may be a valuable intervention.

The comparison of the differences in the use of technology and invasive procedures in different countries is another cross-cultural research criteria. Earle and colleagues (1997) found that in low risk patients, observed death is four times higher than the predicted death rates, and death of the low-risk patients is significantly associated with the excessive use of invasive procedures such as tracheal intubation, and central venous cannulation. Thus, they claim that reducing the use of invasive procedures such as central catheters and endotracheal intubation for lower-risk patients, along with measures to control (nosocomial) infection, may lower mortality rates in these Latin American countries studied, and in other regions of the world with increased rates of morbidity and mortality among critically ill children.

DiCarlo and colleagues (1996) assessed the efficiency of a Russian PICU, and found excess mortality below standards, as compared with a Western reference population. Similar to the findings of Earle and colleagues (1997), excess mortality was concentrated in low and middle risk strata in the Russian unit. However, the effect of specific treatment protocols in excess mortality was not evaluated.

¹² Survey results of this study indicates the largest proportion (40.0%) of the North American PICUs had four to six beds per unit, while only 6.0% had > 18 beds per unit. The admissions per year averaged 528 +/- 24, and the mortality rates averaged 5.5 +/- 0.2%. Only 79.6% of the pediatric ICUs had full-time medical directors. A pediatric intensivist was available to 73.2% of the units. Physician coverage for 24 hrs/day dedicated only to the pediatric ICU was present in 48.5% of hospitals. As ICU size increased, the estimated mortality rates increased, as did the percentages with full-time directors, pediatric intensivists, and 24 hrs/day dedicated coverage. Medical school affiliation existed for 79.6% of pediatric ICU hospitals, and 81.1% of these hospitals were the primary teaching program sites for pediatrics. Other ICUs caring for children were present in 30.2% of the hospitals (Pollack and colleagues, 1993).

Unlike the findings of Earle and colleagues (1997), who found extreme differences between observed and predicted mortality rates in Latin American units, Davis and colleagues (1989) found that the mortality rates in two PICUs in France and the U.S. are similar and accurately predicted by admission-day severity of illness scores. They conclude that despite differential resource utilization (the U.S. unit had more invasive monitoring procedures such as arterial catheters, central venous catheters, and pulmonary artery catheters, while the French unit had more labor-intensive monitoring procedures like blood studies), which may arise from different care philosophies, the resulting care is equivalent in both units. This is an important difference compared to the outcomes in developing countries, which is not predicted accurately.

1.3 Conclusion

This study focuses on the meaning of health and healing in its broadest sense as it seeks to apply holism to the full range of human experience. In holistic philosophy, health is more than an individual response stemming from social and environmental conditions that contribute to health and disease.

Another reason to call for a holistic and pluralistic approach to inform the in-depth evaluation of healing environments is to borrow from interrelatedness of all phenomena, particularly the disciplines of psychology, sociology, philosophy and architecture. The literature review revealed the potential of the physical environment to facilitate healing through stress reduction. A holistic healing process, which emphasizes stress reduction, social interaction, personal empowerment and spiritual transformation, may be the only way to prepare humans to the living challenges of the 21st century and cooperating with the cultural and societal evolution of the future.

Regarding the value of doing cross-cultural research, we need to identify the significance of comparing the Dallas model to the Turkish PICU, and what the two chosen case studies represent in respect to the argument for holism. First, they represent a diverse base for a global and universal comparison of PICUs, and the importance of local and cultural differences and the practices adopted by a particular group on health and healing, which relate to the main argument for holism presented in this study. Particularly cultural identity and the physical self created in a particular cultural context are major elements of the health of an individual as viewed by the holistic philosophy. The call for a holistic approach relates to occupants' physical, social, psychological, spiritual and cultural needs. That is, through social and environmental influences, emotions, thoughts, spiritual beliefs and interconnectedness with community, the individual's health connects to the larger health of the ecosystem.

Regarding the first objective, which is to broaden the meaning of health and healing, this study aims to focus on the importance of cultural factors and differences, and if they relate to a particular type of healing process resulting from connectedness to one's own culture. This research direction is critical since contemporary architecture, religion and other expressions of human existence tend to destroy the local and cultural meaning of healing in the process of creating international and totalizing landscapes, orders and belief systems, which ignore differences.

The call for embracing local differences and understanding their relation to a particular healing process may set a nationalistic tendency in this study. Yet the feeling for connectedness to a particular place influences above all the researcher's criticisms of her own culture, "the Turkish model," which are highly critical and provocative. Criticisms of national culture result from good intentions, and do not aim to destroy any of the involved countries or introduce societal wounds.

The main objective of this study is to call for a conscious politics of culture to inform a cultural, spiritual, organizational and environmental transformation of current hospitals and PICUs through philosophical insights (e.g., the meaning of ICU experience) and rational scientific research (e.g., the use of non-toxic building materials). Particularly, the study aims to support a fundamental change in the way pediatric critical care is delivered in Turkey, and strives to produce a national model for pediatric critical care (both architectural and operational). It also aims to explore the forms for the most therapeutic PICU design to support health and healing. Last but not least, the study aims to analyze the most important cultural differences between the two countries, and how they impact healing.

CHAPTER II

CONCEPTUAL FRAMEWORK OF RESEARCH AND INTRODUCTION OF CASE STUDIES

The literature review presented in the previous chapter elaborated on various interdisciplinary (psychological, sociological, philosophical, architectural, and cross-cultural) approaches to health and healing in general, and the evaluation of PICUs in specific, emphasizing a holistic paradigm and the essential interrelatedness between these different approaches. The present chapter addresses the conceptual framework of research, focusing on the selected research paradigm, the specific research problem, research intentions, and selected research methods. Resulting from a holistic and phenomenological worldview, a qualitative research paradigm is proposed that emphasizes the intricate relationship between the nature of the knowledge sought and the methods used to reveal that knowledge. More specifically, “naturalistic inquiry,” which originated in the work of Lincoln and Guba (1985), is selected as the methodology of choice.

2.1 Nature Of Methodology And Research Paradigm

2.1.1 Theoretical Stance Beyond Qualitative Paradigm

Patton (1978) views paradigm as a worldview, a general perspective, or a way of breaking down the complexity of the real world (Lincoln & Guba, 1985, p. 15). Although the conventional approach to research has been dominated by the quantitative paradigm as a result of the positivist worldview, a new paradigm of thought is emerging, along with its inquiry, which is called the “naturalistic inquiry” (Lincoln & Guba, 1985). Naturalistic inquiry is a very effective strategy of information gathering as it can draw very strong conclusions in a setting without using sophisticated and expensive technology (Shepley, 2000).

The qualitative research paradigm is supported by an existential-constructivist worldview. In the existentialist view, the source of knowledge is subjective experience. That is, knowledge, reality, or truth is deeply hidden in one’s own consciousness, and it is the same and invariant. Therefore, an absolutely certain knowledge of the world is possible, and it is entirely within the subjective mind, although it is independent of the mind’s subjectivity. Husserl claims (1962, 1982) that preconceptions and intentionality towards the objects of our perceptions obscure truth. Instead, when you get rid of them, “you know the world for what it really is” (Gelernter, 1995). Husserl calls this method “phenomenological reduction,” i.e., emptying consciousness from prejudices of the material world to reveal the truth. The elimination of initial

prejudices and hypotheses in naturalistic inquiry (and “grounded” theory) parallels the method of phenomenological reduction.

Morgan and Smircich argue (1980) that in the purely constructivist view, reality is a projection of individual consciousness. Reality in this sense is not necessarily accessible to understanding in the course of everyday affairs. On the contrary, it is obscured by those human processes, which judge and interpret the phenomenon in consciousness prior to a full understanding of it.

The existential-constructivist view suggests a subjectivist position to obtain a phenomenological insight and a deeper understanding of human consciousness to discover the true and invariant or absolute phenomenological essences. The main objective in this stance is to “understand meaning.” Further objectives are to explore what is “knowledge,” to identify the essentials of existence, the essential nature of the “thing” and of the context in which the “thing” finds itself, and to maintain ties of meaning between the researcher and the observed phenomena.

The Case for Qualitative Research

The choice and adequacy of the selected research methods embodies a variety of assumptions regarding the nature of knowledge, and the methods through which that knowledge can be obtained (Morgan & Smircich, 1980, p. 491). In other words, what one finds or learns is an inextricable product of the research method one employs (Emerson et al., 1995).

Describing and evaluating the PICU is a difficult task due to the large number of variables—people, objects, sounds, smells, and setting that comprise the environment. The selected methodology should encompass all the different aspects of the interrelationships between these elements of the PICU. Various theories and methodologies have been proposed in the literature to specifically describe the interactions between children and their environments (Barker and Wright, 1954).

The nature and complexity of the knowledge sought within the framework of the PICU requires a holistic approach, which can analyze the complex interrelations between the individual (physical, psychological, social) and her or his environment (physical, sociological, cultural, political, economic, ecological, etc.), without reducing them into causal, one-dimensional relationships. Quantitative methodology is not appropriate for this task by its very nature, and especially if it is not combined with a qualitative inquiry.

The quantitative research paradigm is an outcome of the positivist era, which involves judging, interpreting, measuring, controlling, or predicting the phenomena. It focuses on the collection of numerical data, and frames the development of the study to reach the predicted outcomes, or prove the hypothesis. Therefore, in contrast to existentialist phenomenological view and naturalistic inquiry, quantitative paradigm is “intentional” towards the knowledge sought. It follows that the validity of the knowledge achieved through quantitative methods may be argued to be relative rather than absolute. Particularly numerical and statistical conclusions may indicate the tendency of the observed phenomenon rather than the certainty of the proposed number.

The qualitative and “naturalistic” research paradigm, on the other hand, is the outcome of a holistic and ecological worldview, which emphasizes the essential interrelatedness and interdependence of all phenomena. In this view, “contexts evolve, and an adequate understanding of the process includes grasping the ecological nature of the context as a whole.” Therefore relationships cannot be reduced to a set of determinist laws and propositions, as positivist epistemology claims (Morgan & Smircich, 1980). The qualitative research paradigm is also supported by the existential-constructivist position, which views reality as contextual. That is, in existential-constructivist view, reality is not concerned with causality, which underlies the positivist view, but emphasizes the importance of understanding contexts in a holistic and ecological fashion.

The naturalistic and qualitative paradigm values the importance of understanding the interplay of contextual factors. However, contradicting the claim of existential-constructivist view for the possibility of obtaining absolute knowledge, naturalistic paradigm recognizes the presence of multiple realities or phenomena rather than a single objective reality (Fournier, 1999, p. 47). Finally it does not aim at generalizations. Instead, “the only generalization is that there is no generalization” (Lincoln & Guba, 1985, p. 110).

The qualitative approach relies on the human being as the primary instrument for data gathering (Lincoln & Guba, 1985). Additionally, there is an important relationship between the knowledge sought, and personal or lived experiences. Emerson et al. (1995) argue that what one observes necessarily differs from others’. Consequently, the ties of the observer to a particular culture have important implications for the “observed.” Lincoln (1999; personal communication) argues, “field notes are not neutral; instead they are themselves a social construction.” Finally “there can be no objective, dispassionate, value-neutral account of a culture and its ways” (Smith & Deemer, 1999).

Finally, ethnography is a qualitative strategy for studying the common sense features of everyday situations--the common, ordinary happenings in a particular setting of interest. In these studies, social interaction as an ongoing process is scrutinized and recorded in descriptive detail (Stanford, Oates & Flores; 1994). In this particular study, the personal interview method is combined with content analysis.

Description of Specific Qualitative Techniques

In this inquiry, the knowledge was gathered through descriptive, critical, and qualitative methods. Descriptive, critical, and qualitative methods are distinguished from quantitative methods through the use of innumerable skills and strategies such as focusing on scenes, observed actions, dialogues, and paralinguistic cues; going back to the scene after the fieldwork to recall the maps of memory; recognizing the influence of the use of different techniques and media on the fieldwork notes, etc.

Descriptive methods were used in the participant observations of the selected PICU environments and the behaviors in these settings, resulting in “in-depth descriptions.” The critical method was used in “bracketing” presuppositions about PICUs by “suspending an immediate judgment” of them, as supported by the method of “phenomenological reduction.”

Qualitative methods were used in in-depth interviews conducted with staff members (nurses, physicians, and administrators) who were willing to share their perceptions and experiences of pediatric critical care. The qualitative analysis of medical records and floor plans of selected units was another technique. All data was content-analyzed¹³. An immediate content analysis of fieldwork notes was significant to maintain the vividness of recollections. The objective in content analysis was to produce a “grounded theory.” A description of what grounded theory means is explained in this chapter under the section “Data Analysis Procedures: Grounded Theory.”

2.2 Statement Of The Problem And Research Objectives

2.2.1 Problem Statement

This research aims to investigate the relations between the physical environment and the psychological, social, philosophical/existential, cultural, operational, and economic characteristics of PICUs, emphasizing the influence of these factors on the healing function of critically ill children, on the well-being of their families through participation in care, and on the performance of caregivers. The aim is to determine the social, cultural, psychological (especially existential), practical, and environmental needs of children, families, and staff members in the U.S. and Turkey. Integrating a comparison of Turkish and North American cultures, with an emphasis on the cultural characteristics that relate to health care, health beliefs, and health practices, is another research intention. The knowledge is gathered through two case studies. The target group consisted of hospitalized children from 1-19 years of age, their families, and the staff members. Children and families were completely excluded from the interview portion of the study to eliminate any risk of harm, however, their behavior was recorded continuously during observations. There was also flexibility to allow for spontaneous dialogues when family members approached the researcher naturally, which might have stemmed from a missing “special friend” role. Especially in the Turkish model, the lack of social workers or volunteers to help families with the PICU crisis may have supported the assignment of this role to the researcher, whose participation in the unit without being a member of the health care team was interesting and encouraging for families to initiate a dialogue.

The research paradigm is based on a qualitative and naturalistic methodology, which supports a “no-initial-hypothesis” approach. That is, the researcher approached the fields as open-minded and with as few preconceptions as possible to let the hypothesis emerge naturally at a later time. However, she also recognizes there can be no “value-free” ethnography (Smith & Deemer, 1999), and that one’s ties to a specific culture do impose on what she observes (Emerson et al., 1995). Within this struggle, the aim has been to develop a grounded theory, i.e. a theory that is grounded in the evidence collected in the field, and that avoids using data according to preconceived categories. As Glaser and Strauss recommend (1967), existing preconceptions about the object of study are treated as preliminary, to be overcome as research produces new incongruent information. Thus, the selected environmental and behavioral themes that will

¹³ Content analysis means to “read through and code field-notes line-by-line to identify all ideas, themes, issues or hidden assumptions that appear” (Lincoln & Guba, 1985).

be presented in the next chapter are flexible to evolve as data analysis and the writing process proceed. The procedure is based on observing the pediatric intensive care unit in its naturally occurring setting in two different cultures, and letting hypotheses and theory to emerge naturally from these observations.

2.2.2 Research Objectives

As a result of the selection of naturalistic inquiry, which discourages establishing preconceptions and specific research intentions, initial research objectives were defined very broadly. To begin with, the most general intention in this study is to sustain life and enhance the survival of critically ill children (by minimizing the mortality rate), to improve the experiences of families so they can cope with the PICU crisis, and to increase the quality of the child's care through environmental considerations. Other initial general objectives were: 1) to explore the relation between the physical environment and social practice of pediatric intensive care, and examine the influence of the "total" environment and quality of life on the healing process (through satisfaction, better understanding of illness, reduction of stress), 2) to describe and evaluate current design and planning trends in PICUs, and make design recommendations for improving the physical environment and societal design issues, 3) to compare the physical environment and social practice (cultural, political, organizational) of caring in the U.S. and Turkey, 4) to investigate ontological and epistemological assumptions embedded within the PICU, and 5) to provide directional guidance/architectural guidelines (strategic planning) for the spatial organization of future PICUs.

Specific research intentions, on the other hand, are multi-directional, and defined according to a number of criteria that stem from the qualitative, naturalistic, and cross-cultural nature of the study. First, a significant category of objectives resulted from the qualitative research paradigm, which requires the application of procedures in the most careful manner. These include: 1) to directly observe the naturally occurring setting of the PICU, and gain a deep understanding of the lived experiences of hospitalized children, their families, and the caregivers, 2) to identify the most important environmental needs of users, 3) to observe the PICU in a descriptive (i.e., "thick description"), exploratory, and yet the most unobtrusive manner, 4) to examine environmental and behavioral sources of stimulation, 5) to evaluate the impact of contextual factors like culture, religion, politics, and economy on health and the healing process, and 6) to search for meaning, value, and human experience rather than scientific measurements. Another operational objective was related with letting hypotheses and theory to emerge naturally from observations.

The selected research paradigm was flexible to include emerging, or new objectives. One such objective was to articulate clearly identifiable cultural and political issues, especially injustices based on the structures and meanings of class, (education, ethnicity, religion, etc.), and articulate a "politics of hope."

Another fundamental research intention was identifying the problems of pediatric intensive care in the United States and Turkey. The cross-cultural nature of the study presented further objectives for Turkey: 1) to evaluate current approaches to pediatric critical care, and improve the societal and physical design issues of future PICUs and children's hospitals, 2) to reduce the morbidity and mortality rates among critically ill children, 3) to contribute to PICU research from the direction of architecture through a

“knowledge-based” design approach, which is crucial to the development of future PICUs, and 4) to support the establishment of PICUs as a new medical subspecialty in Turkey.

The contribution of this study to the U.S. model is to inform a potential psycho-social and programmatic improvement of PICUs by providing universal healing design interventions. Particularly, exploring an anti-Western PICU model may provide important insights regarding the evolution of ICUs in the West, and their validity. The curing and healing tradition of Turkey dates back to ancient and Hellenistic times (e.g., ways were found to heal before modern Western medicine came), which still impact current healthcare practices (e.g., herbal medicine prescriptions as a supplement to modern drug therapy), and may support holistic and “natural” tendencies for healing. This research also highlights the importance of the “cultural care” concept for patients and families from different ethnicities living in the U.S. Finally, there are ecological benefits: the potential for a healthy world does not lie in the techno-scientific progress of a few privileged countries, but in the cooperation of all, as emphasized by holism.

More refined research objectives emerged naturally during the course of the study, which is consistent with naturalistic inquiry. These are: 1) identifying the highest priority unmet space needs and spatial quality (provisional intervention), 2) improving the intellectual and physical/pragmatic adjacencies by providing the most beneficial proximity and propinquity relations between spaces (relational or locational intervention), 3) investigating the impact of the symbolic, ambient or atmospheric factors on healing (symbolic or atmospheric intervention), and 4) incorporating social issues into the physical design and the social practice of caring (social intervention). The “social” objective also relates to identifying the differences in the practical, psychological, spiritual and cultural needs of patients, families, and the caregivers. This emphasis on identifying the rights and human needs of the individuals of a pluralistic society rather than an abstract group of people can be considered as a postmodern and socially sustainable approach to design.

The ultimate research objective is to call for a synthesis of the Turkish and U.S. PICU design and social model of caring by combining the strengths of both. The concept of “synergy¹⁴” signifies the potential of the addition of two distinct pieces in creating some effect exceeding the individual contributions of both (“the whole is greater than the sum of its parts”). This study aimed to be synergetic in a number of ways. Particularly, the premise for achieving a PICU model that is greater than the sum of both stems from a deep belief in the concept of synergy, or holism, as more broadly used in the profession of architecture.

2.3 Description Of Selected Procedures

The PICU environment contains two major elements, which are a) the physical environment (i.e., the setting) and b) the people (i.e., the sample). The former includes visual, audio, tactile, and odor

¹⁴ The Synergy Model, as offered in the nursing profession, states that the needs and characteristics of patients and families drive the characteristics and competencies of nurses, thus creating a synergy and, ultimately, optimal patient outcomes.

characteristics of the interior space such as the equipment attached to the patient, furnishing, room size, shape and style, general environmental appearance, temperature, sounds, and smells. It also includes architectural characteristics such as the form, shape, size and scale, geometry, materiality, texture, color, tectonics, proportions, volume, and fenestrations of this space. The sample, on the other hand, includes the presence and activities of critically ill children, their families, and caregivers with various job titles.

2.3.1 Data Collection Procedures (Naturalistic Inquiry)

Data collection procedures are based on naturalistic inquiry. Seven data gathering methods were used, including 1) participant observations (and in-depth descriptions), 2) behavioral maps, 3) in-depth interviews, 4) measurements of the physical environment, 5) floor plan analysis, 6) analysis of medical records, and 7) supplemental hospital tours.

Two cross-regional settings are chosen from Turkey and the U.S. Prior to the final case studies, three pilot studies were conducted in three different hospitals in Turkey. These studies were descriptive, in-depth, and qualitative, and each of which lasted a little less than two weeks. These initial studies aided the decision-making process regarding determining the most representative and comparable setting for the final study. This selection was based on eliminating those PICUs that were the least similar to the U.S. model, thereby proposing less chances of a meaningful comparison. The Turkish hospital was also chosen because of its superiority in pediatric critical care in comparison to other Turkish hospitals explored. Additionally, it is a teaching hospital, with its education system parallel to the U.S. model.

The U.S. hospital was chosen because of its location and existing research ties with Texas A&M University¹⁵, and due to its role as a successful children's hospital model¹⁶ in the U.S. Additionally, it deals exclusively with a variety of diseases and disorders among children from birth to age 18. Physicians on its medical staff and employees are widely recognized for their accomplishments.

The room or unit size differs extensively: the U.S. unit is composed of four units, accommodating a total of approximately 50 patients, while the Turkish unit is a single room that has a capacity for 10 patients. Additionally, the former unit is divided into individual patient rooms whereas the latter is a single room with nine beds and an isolation room. Further differences in unit space configurations of both PICUs are included in detail in the comparison chapter (e.g., Chapter 7).

Finally, the Turkish observed experience in the PICU lasted from June 7, 2001 to July 17, 2001, approximately for one and a half months. The U.S. observed experience lasted from November 16, 2001 to May 15, 2002, approximately for six months. Although these two study periods seem to be very different, the actual total amount of time spent in both sites was fairly similar, i.e., around five or six weeks.

¹⁵ The researcher also participated in a PICU nature/sleep study during 2001-2003 at this hospital in collaboration with Texas A&M University.

¹⁶ The U.S. hospital was ranked as one of the best pediatric hospitals in the U.S. in February 2001 by *Child Magazine*.

Consent for Participation

This study meets the Institutional Review Board (IRB) requirements of Texas A&M University. A copy of the IRB form and proposed consent samples are included in the Appendix. Written consent to conduct the investigation was obtained from both hospitals, but it was not required to obtain written consent from the staff members who participated in interviews. The permission letter from Children's Medical Center in Dallas was obtained after their own IRB examination of the research proposal. The permission letter from Turkish hospital was obtained in September 2000.

Participant Observations

Participant observation is the most common method for qualitative data collection, which is established in anthropology and ethnography, and adopted by other disciplines. In this method, outsiders immerse themselves in a particular context and observe the activities in it. This method requires that the researcher becomes a *participant* in the context that she or he observes. It involves intense social interaction with people in their own setting. It may require months of intensive fieldwork for the researcher to become accepted as a natural part of the culture or context she or he is in, and to assure that her/his observations are of natural phenomenon.

Participant observation is based on the assumption that one derives from a community's values, dynamics, internal relationships, structures and conflicts best from their observed actions, rather than from their statements of what "is." The participant observer attempts immersion, to the extent permitted, in local life in order to understand how things work (Rennie & Singh, 1995).

One of the most important objectives in using this method was to observe the setting in the most unobtrusive manner by selecting the observation locations carefully so that not to interfere with the delivery of care (and have a negative impact in the unit). In addition, the researcher aimed to describe the important aspects of the physical environment and identify the care behaviors and care context in this environment. Other objectives were to gather, store, understand, analyze, and validate the field data.

The observation of, and involvement with, patients, families, and staff members as a whole provided the most fundamental information for this research. This was critical to the understanding of their emotional, practical, and environmental needs. Observation notes were standardized and coded through controlled intervals and a semi-structured protocol for the specific categories to be observed. More specifically, a new observation started every quarter hour to record the behavioral and environmental categories. Behavioral categories included patient's state, comfort, and well-being, her visual and vocal behavior, the things and places at which she looks, the type of caregiver attention, proximity of a caregiver to the patient, the identity of the caregiver, the caregiver's tactile, visual, and vocal stimulation of the patient, the family members' state, comfort, well-being, and their caregiver function. Environmental categories included the equipment attached to the patient, general environmental appearance, temperature, foreground/background sounds and acoustics, illumination levels and sources, and smells. These observations were recorded on a pre-designed sheet that was inclusive of the floor plan. This technique is

known as “continuous-interval recording,” which is used to record the occurrence of a variety of caregiver and patient behaviors and background variables during intensive care (Linn et al., 1985, p. 87).

A dynamic rather than a stabile mode of observation was preferred, shifting the points of observation frequently by picking up different staff stations, or different zones in the same staff station. Specific to the Turkish unit, the bedsides of patients were also accessible for the researcher to observe from and write down notes. These observations lasted usually for 4-6 daytime hours between 9 AM and 5 PM over a period of five weeks in each PICU. At the end of this technique, the researcher spent at least a few hours in the unit during the nighttime (between 11 PM and 7 AM) to test the validity of the generalizations that emerged from daytime observations.

Another objective was to record extended description and sketches to a reflexive journal to provide an overall sense of the place and people (in addition to systematic observations), yet there was not enough time to realize this goal.

The expected number of recorded observations was approximately 32 daily and 160 weekly, with a total of 800-960 observations from each field for the duration of the case study (i.e., about five to six weeks). Ultimately, only two hundred participant observations were conducted in Turkey, and two hundred and twenty participant observations were conducted in the U.S., with a total of 420 observations. The most important reason for this dramatic reduction in the actual number of observations was the (unplanned) shift to behavioral mapping technique as a complement of participant observations, and the preference of informal dialogues (that took place on-site) over participant observations since they were found more useful to reveal data. Therefore the researcher was flexible to be interrupted when the intention for a spontaneous dialogue was evident.

Some of the observed categories included caregiver activities, medical and non-medical procedures, the proximities between patients and caregivers, family-staff interactions, family-patient interactions, observations of families’ and family members’ interactions among themselves in the waiting room, patient room, hallway, and their general presence in the PICU.

Participant observations resulted in in-depth descriptions of the PICU built (design of specialty spaces, access to nature, natural light levels, level of enclosure/privacy, size/shape of spaces, colors, materials, textures, equipment, furniture, etc.) and social environment.

To have a complete description of the physical environment, a comprehensive 339-item list of all the PICU equipment and furniture was obtained from the U.S. hospital. Digital pictures taken from each unit provided visual cues as a supplement to behavioral observations. Finally, the archive of approximately 900 digital pictures from the PICUs at the U.S. hospital was accessible.

Behavioral Mapping

In this technique, behavior is “mapped” to space. Environmental psychologists use this technique to determine how humans interact with their space, and how the environment influences their behavior. Particularly, in place-centered behavioral mapping, the observer maps an area of interest, and records what

individuals do in different areas of the map or floor plan. Using this technique, for example, researchers can determine where to put environmental objects and how to organize place functions and activities by looking at where people spend time standing and chatting with one another or noting where the staff members spend most of their resting time in the PICU.

In a neonatal ICU study conducted by Shepley (2001), behavioral mapping was used extensively¹⁷. She compared two units, one existing and the other one a new unit, which differed in size and spatial configuration (open versus bay design), but had the same staff. The objective was to determine if the new floor plan would reduce the amount of walking, enabling staff to spend more time with patients. Behavioral mapping data was collected (by identifying subjects and following them for three-hours recording activity, path, and time) for approximately 120 hours resulting in 6,000 to 7,000 data entries.

In this study, behavioral maps followed the same criteria as participant observations, by recording people and events from different nursing stations in the PICU on the floor plan of the unit every quarter of an hour. Behavioral maps not only included the movement and behavior of patients, families, and caregivers that are present in different areas of the unit, and the movement of equipment and furniture, but also conversations. One hundred and fifty two behavioral maps were conducted at the Turkish hospital, and one hundred and eleven behavioral maps were conducted at the U.S. hospital.

Note-taking

Emerson and colleagues (1995) suggest taking notes as events occur to preserve freshness and texture, and create an evolutionary or historical record. They also encourage recording events in great detail, and recording details one is likely to forget (1995, p. 34). Writing notes enables the researcher to observe details, identify clues at the field, and create mental maps and categories to return to the scene later. Despite the advantages of safe recording, note-taking on site is often not as intense as “observing in an anticipation of writing,” in which the observer attains highest levels of concentration to remember dialogue, movement, colors, shapes, textures, spatial relations, moods, rhythms, and tones of voice.

Contrasting writing notes from memory to writing while at the same time participating or observing, Emerson et al. discuss “participating-to-write” and “how, where, and when to make jottings in field settings” (1995, p. 19). “Jottings” are notes one writes while observing; they are abbreviated sketches of interactions. They are words, phrases, sentences, and descriptions and are the raw materials of ethnographies. Fieldwork is about collecting information—colors and sounds and smells, words and phrases and conversations, gestures and postures, and settings. According to Emerson (1995, p. 28), evaluating and interpreting what is observed requires “not just describing interactions, but constantly

¹⁷ This study involved diverse techniques like behavioral mapping, questionnaires, interviews, and light and sound measurements.

attending to ‘when, where, and according to whom’ in shaping all field-note descriptions.” Including jottings of one’s own psychological states helps develop comparative perspectives¹⁸.

Since the maxim is that one hour of note-taking equals one hour of written documentation, Emerson et al. (1995) recommend limiting observation to three or four hours daily to retain fresh memories and allow time for writing-up.

Individual In-depth Interviews

Interviews were conducted individually, audio-taped in full, and analyzed using the method of thematic content analysis. Respondents were given freedom to accept or reject the presence of a tape recorder. Only one interviewee refused the presence of a tape recorder; consequently note-taking was preferred for this interview. In audio-taped interviews, note taking was still part of the process to record non-spoken cues and notes about the respondent. The combination of handwritten notes and audio-taped transcripts enabled a more complete information.

The researcher noticed that in an audio-taped interview she may tend to rely on the tape recorder and be less aware about the particular mental atmosphere of the dialogue. However, she had more chances to attend to detail, dialogue, and characterization. Interview notes were written in the left side of the page while the observer’s notes about the respondent were identified in the right side.

Emerson et al. (1995, p. 68-74) recommend recording sights, sounds, smells and details of the setting provides material for vivid writing. However, reporting dialogue requires accuracy and quotation of speech that is heard directly. Characterization of the respondent, on the other hand, uses personal traits such as dress, speech patterns, and gestures, and contributes to full characters.

The purpose of an in-depth interview is to attain knowledge that is hard to extract through regular interview techniques. In-depth interviews may open up new fields of information for the investigator, as a consequence of the non-probable and less structured nature of the interview. The critical method was used in “suspending immediate judgments,” which is based on “phenomenological reduction,” because interviews carry a risk of making immediate judgments about people and place.

Interviews usually lasted from 1 to 1 ½ hours, depending on the respondent’s willingness to continue. The interview protocol was based on thirty open-ended questions, but there was flexibility to move the conversation in other directions relevant to the research topic.

Erlandson and colleagues (1993) suggest focusing on six main guiding questions in the interview (Fournier, 1999, p. 161). The six main categories emphasized in this study were: 1) personal questions focusing on caregivers’ backgrounds and emotional reasons to choose their job and their satisfaction with

¹⁸ In addition to systematic on-site observations, note-taking technique might also include the recording of extended description such as sketches, episodes and tales to a reflexive journal. Sketches are used “for providing an overall *sense of places* and people” (Emerson et al., 1995, p. 87). Episodes highlight action, process, and time in a paragraph or two. Tales combine related episodes and sketches. Tales may lead to a conclusion but they should not “overly determine” results. The goal is writing descriptions and not “polished stories” (Emerson et al., 1995, p. 90). However, the researcher could not include these techniques due to time limitations and the comprehensiveness of other methods employed.

the current situation in the PICU, 2) psychological and practical needs of patients and families as perceived by staff members, as well as their own emotional and practical needs, 3) evaluation of the resulting social practices, 4) evaluation of the PICU built environment and how it responds to perceived needs of patients, families, and caregivers, 5) the social and professional atmosphere (i.e., relationships between family-caregiver, patient-family, patient-caregiver, and caregiver-caregiver), and 6) cultural evaluation questions (coping with death and dying, “cultural” role of the family in the care of their children).

Interviews were driven by the dialogue, and not by a structured protocol. Common questions in both fields guaranteed a meaningful comparison. The ability to enter a listening mode was more important than applying specific interview techniques. The semi-structured nature of the interview enabled the researcher to explore the topic broadly without creating difficulties in its analysis due to a lack of structure.

The tape-recorded material was typed verbatim. An immediate reassessment of the interview transcript was important to evaluate the relevancy of questions, eliminate confusing questions, and record additional notes, comments, and memos. Only the job titles of participants were identified, thereby maintaining subject confidentiality.

Fifteen interviews were conducted in Turkey, and fifteen in the U.S. This number was based on the number of interviews (16) conducted in a previous study by Fournier (1999). Another qualitative research study at the College of Architecture at Texas A&M University by Eric Connell limited the number of interviews to 10, which were conducted with five men and five women participants. Regarding the time order, interviews followed participant observations. These interviews focused on identifying PICU problems and needs as perceived by staff members, their evaluation of and satisfaction with the built environment of the PICU, and the level of cooperation and social interaction among them. The following themes were stressed: 1) The construction of the Turkish PICU and the constraints on its future expansion/renovation, and 2) the spatial evolution of the PICUs at the U.S. hospital, including the New East Tower Expansion Project and master planning of the future of the main campus.

In the following data analysis chapters (e.g., chapters 3 through 7), the numbers inscribed between parentheses at the end of sentences indicate the units of data that help the reader to recognize the direct sources of information that derived from the interviews, observation notes, behavioral maps, and journal notes. The capital letters indicate the job titles of participants.

Measurements of the Physical Environment

Quantitative measurements of daylight levels and walking distances between spaces were taken at the U.S. hospital. A special device was used to systematically record daylight levels in different units for one week. The impact of daylight levels on staff behavior was also observed qualitatively. Noise level measurements were intended but not realized due to lack of equipment. Neither light nor sound level measurements could not be done while collecting data in Turkey due to lack of equipment.

Analysis of Medical Records

Medical records were gathered from the U.S. hospital for the study period, which was from November 2001 to May 2002. The aim was to identify behavioral outcomes of patients, families, and caregivers, and relate these outcomes to environmental variables. First, medical records about patient outcomes included patient demographics (age, gender, ethnicity), length-of-stay (LOS) days, and mortality rates. Average LOS days and mortality rates for specific units and specific diagnoses were requested but could not be obtained since releasing this data required an additional IRB approval, and there was insufficient time to process this approval. Second, information about families' needs was obtained from their 2000-Strategic-Plan and the final report of Patient Family Focus Groups, which is a total of six focus group interviews. Finally, records showing caregivers' performance included staff demographics (quantity, age, gender, ethnicity), nurse quitting rates, and nursing errors. Other variables regarding staff behavior, such as the degree of cooperation, social interaction, and the frequency and amount of lounge use could not be measured due to the IRB requirement. No post-occupancy-evaluation of the facility by staff members was available. The current study may generate this type of evaluation.

Unlike the U.S. hospital, where excellent data was available regarding admission to the PICU, no similar medical records could be obtained from the Turkish hospital, since they were either unavailable or there was only a handful of data, which has been recently charted yet not systematized¹⁹. Additionally, there was no data regarding families' overall experiences with the hospital, including their evaluation of and satisfaction with the care their child received, and their perception of the hospital built environment. These differences in the availability of data in different countries -especially at different economic levels- may be an important barrier in making quantitative cross-national comparisons in future studies.

For future research studies in pediatric critical care architecture, the analysis of a specific component of the PICU built environment will be recommended, such as the psychological and social effects of the provision of a staff interaction space on the health and well-being of patients, families, and staff members, including the effects of the proximity/proximity of this space to the unit, as well as its size and its general environmental quality.

Floor Plan Analysis

Evaluation of architectural floor plans can take a variety of forms. A quantitative evaluation of plans can measure and compare quantitative facts such as room dimensions and distances between them (Fournier, 1999, p. 88; Zeisel, 1984) while a social evaluation of plans can propose to assess and interpret the social links that exist among the different areas of the facility (Fournier, 1999, p. 88; Hillier & Hanson, 1984). This study aims a social and qualitative plan analysis because "buildings transmit social information through their interior structure" (Fournier, 1999, p. 90; Hillier & Hanson, 1984). The evaluation of floor plans enabled the researcher to identify 1) the socio-spatial needs in PICUs, 2) the socio-political meanings

¹⁹ They started to record these statistics in 2002 after the case study period.

embedded within PICUs, 3) the links between the spatial environment and social practice in PICUs, and 4) the possibilities for the improvement of the plan of PICUs.

Floor plan analysis included the floor plan of the Turkish PICU, the existing four PICUs on the second, third, and fifth floors of the U.S. hospital, and the eleventh and twelfth floors of their New East Tower Expansion Project, which were under construction during the case study period. Floor plan analysis revealed seven themes, with an emphasis on social interaction spaces: 1) spatial configuration/organization of the unit, 2) the location and adjacency of spaces, 3) acoustic/physical separation between spaces, 4) visual control between spaces, 5) spatial organization and location of equipment and furniture, 6) the numbers and size of spaces, walking distances and proximities between spaces, and 7) the identification of materials. Unlike the five core categories (i.e., provisional, locational/relational, functional, symbolic and atmospheric/ambient, and social support) emphasized throughout all data analysis methods, these seven specific categories emerged from the characteristics of floor plan analysis.

Literature Search Methods

An extensive literature search was conducted, which was based on the various aspects emphasized in this study, and the elements that constitute the physical setting of the health facility environment (such as lighting, odor, sound, temperature, music, interior design and furnishing, color, view, hospital design, and equipment design). The selected keywords were organized under six main categories, which included: 1) the physical setting of the intensive care unit, 2) the psychological and social factors in ICUs, 3) the concept of care and caregivers' behavior, function, efficiency and performance, 4) holistic care practices, 5) cross-cultural studies of intensive care units, and 6) phenomenology and existentialism in health literature.

2.3.2 Data Analysis Procedures: Grounded Theory

Data analysis procedures are based on "grounded theory," which is a naturalistic research approach referring to the data grounded in the field. Glaser and Strauss (1967) from the field of clinical sociology founded this movement in the sixties.

Grounded theory technique proceeds systematically from empirical data collection to generation of theory. The basic methods of grounded theory are content analysis, coding, "memoing," and theoretical sampling. The aim in this method is the generation of a theory grounded in the evidence collected in the field and during evaluations. Grounded theory avoids traditional survey methods and structured interviews since they use data according to preconceived categories. The basic attitude in grounded theory is to approach the field as open-minded and with as few preconceptions and hypotheses as possible.

In this method, data collection, coding, and generation of theory are all done systematically: Therefore grounded theory can be described as the systematic generation of theory from data. The main assumption behind this theory is that people should trust the patterns they observe because patterns occur over and over again, thereby indicating everything is integrated: Actions are integrated with other actions

and categories. In other words, in discovering the categories, one finds nothing is mono-variable: It is always multi-variable. It is based on the integration of that factor within other factors, or within the patterns of integration. Therefore it is a naturally occurring and systematic methodology. Glaser suggests little kids do it very easily: they hypothesize on observed behavior, and never force on what they see. In summary, in grounded theory, theory is based on emergence rather than forcing.

Grounded theory came out of quantitative work, based on the fact that variables independently relates whether you force relevance on the subject or not. Glaser suggests that grounded theory is both a qualitative or quantitative method: It is a general methodology, yet its tendency is towards qualitative data because there is so much meaning in it and it is cheap to do. Yet he also recalls the rigors of statistical analysis. It generated theories: it is an experiment.

Content Analysis

Content analysis was the main grounded theory technique used in this research. Content analysis means to read through and code field-notes and other documents obtained from the field line-by-line to identify all ideas, themes, issues or hidden assumptions that appear (Lincoln & Guba, 1985). Field notes and interview transcripts were content analyzed to identify emerging themes and categories. After each fieldwork, field notes were reviewed and analyzed immediately to preserve the freshness of memories and add memos. Interview transcriptions were analyzed simultaneously with the transcription process.

Coding and Memoing

Grounded theory suggests the development of theoretical concepts from data through coding, which means taking a sentence at a time and examining it. It makes initial themes and categories explicit. It proceeds line-by-line to avoid missing out important aspects, which might escape in a quick reading. It is based on constant comparison of collected data to each other (codes) or to emerging theory. A further source for comparison can be the reviewed literature. Constant comparison between different codes makes it possible to integrate substantive codes under more general conceptual codes. While substantive codes relate to objects and events, conceptual codes integrate these on a higher level of abstraction and let the researcher move beyond the empirical level (Glaser, 1978).

A category is a theme, which makes sense of what the informant has said. During the process of coding, one category emerged very often, and was connected to other emerging categories. This was the core category. If more than one core category emerged, the researcher focused on one category at one time, and recoded other categories later. When interviews could not add anything further to a category and its relationship to the core category, coding was ceased for that category, as recommended by Glaser (1978).

“Memoing” is a parallel method to coding. A memo is a note, a hypothesis about a category, and about relationships between categories. “Memos are the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding” (Glaser, 1978, p. 83). As Glaser recommended, the researcher paused in what she was doing to write a memo to herself as an idea occurred.

“Memoing” reflects the process of constant comparison across codes. It saturates dimensions of the main categories that have emerged in coding and generates questions for further coding and data collection. It develops the core category around which other categories integrate. The core category integrates the theory according to the emergent perspective of investigation and defines its cut-off points. However, the core category has earned its relevance through the grounding of the theory in the domain. “It must be central, i.e., related to as many other categories and their properties as possible...and account for a large portion of the variation in a pattern of behavior” (Glaser B., 1978, p. 95). The core category and other categories saturate in time. When this happens the researcher will have a large number of memos. Between them they will capture the different aspects of the theory, which has emerged from data.

Grounded theory assumes that the theory is hidden in the data for the researcher to discover. Coding makes the categories of the theory visible while “memoing” strengthens the relationships that link the categories to each other.

Sampling, Sorting, and Writing

There is a need to link the gathering process of qualitative information and interventions to the analysis and coding of this information, which begins as soon as the first piece of information becomes available. Analysis suggests other samples of data as potentially relevant, for example, other informants or settings, other collection methods, other times of collection, etc. The purpose is to strengthen the emerging theory by defining the properties of the categories, and how those mediate the relationship of category to category. Glaser and Strauss (1967) refer to this as theoretical sampling. The sample is emergent, as is the theory and the method generally.

The sorting of memos progresses towards resolving the memo management problem. Grounded theory is not written according to a pre-conceived outline; instead, the outline emerges during the sorting process. Sorting presents the theory by differentiating and segmenting it. It thereby forces comparison and clarification of codes both substantially and on the level of terminology as similar memos are brought close together in one section. Sorting sparks new memos on interrelationships between codes, which are sorted into the emerging outline.

Writing turns the sort into a text. Sorting has created the outline of the theory, which determines the order of chapters and sections within chapters. An important aspect of writing is that it presents conceptual difficulties and overlaps in full scope. This can generate further memos and change the outline.

2.4 Background Information On Case Studies

The methodology presented in the previous section identified the techniques used in this research for gathering and evaluating information to reveal spatial troubles and identify major design interventions that may contribute to healing. These methods emphasized a qualitative research paradigm. The present section provides factual information regarding the selected case study sites and an initial comparative evaluation of both sites. Case studies revealed initial themes grounded in both sites, which emerged

naturally during the pilot and case studies. While some of the emerging themes have already been recognized in current health design literature, the totality of these themes may improve our understanding of healing design interventions for pediatric intensive care units. Factual data about the case studies is also incorporated to signify the site and social context.

2.4.1 Turkey and Turkish Health Care System

Located in the southeastern edge of Europe, and connecting it to Asia with its land known as “Anatolia” or “Asia Minor,” Turkey is a country with unique transitional qualities between the East and West. First, although the formal religion is Islam, the language and culture are Turkish, not Arabic, unlike other Muslim populations in the Middle East. Turkey changed from an empire into a republic in 1923, under the leadership of Ataturk, and encountered great social and economic development since then. From the beginning of the Republic, the socio-economic development has been weakest in the east, growing stronger toward the west. The capital, Ankara, marks the border between the more developed west and less developed east. The urban population has usually achieved a good standard of living, while most rural people are still quite poor (Roemer, 1991).

According to UNESCO World Education Report (2000), Turkish population was 67.5 million as of 2000, and the literacy rate for age 6 and over was 85 percent, which remains significantly lower in the eastern provinces, and in women: 76 % as opposed to 93 % in men.

Turkey has a large land mass, which is densely populated in its major cities. Its population of over 60 million inhabitants is served by 1009 inpatient institutions (State Institute of Statistics, 1997; University of Turkish hospital Institution of Population Research and Macro International, 1999; Yildiz, 2001). Approximately one-third of Turkey’s population is under the age of 15 (Table 2.1), and the mortality rate of young children is relatively high (Table 2.2), with nearly half of all infant deaths occurring during the neonatal period (Yildiz, 2001). A significant number of infant deaths may be attributed to serious shortcomings in PICU provision, such as an insufficient number of units, inadequate conditions, and insufficiently skilled teams (Table 2.3) (Ugur, 1996; Tuncer, 2000; Yildiz, 2001).

Turkish healthcare system is welfare-oriented and pluralistic, as in many other countries at a transitional economic level. The various healthcare programs can be identified under four headings: 1) the Ministry of Health (MOHSA), 2) Social Security, 3) other organized public programs, and 4) the private enterprise. MOHSA is the major governmental health agency, responsible for primary healthcare, and maintaining a large network of hospitals. The second most comprehensive program is health insurance or social security system²⁰, which is composed of three different major organizations, namely, 1) SSK (Social Insurance Organization), 2) the Pension Fund for Civil Servants, and 3) BAG-KUR (Social Insurance Agency of Merchants, Artisans, and Self-Employed), covering industrial and agricultural workers, government employees, and the self-employed through separate programs. SSK is similar to the HMO of

²⁰ The history of social insurance protection for medical care goes back to the 19th century in Turkey, but various programs were integrated into a national scheme in 1945.

the U.S., in that both provide affordable treatment for many people. However, for those under the threshold of poverty, different social security programs are available, including the national “green-card” implementation: Green card means that people who are poor and not subject to health insurance of any social security organizations can benefit from health services free of charge, which cover upon medical examination, diagnosis, treatment, and hospitalization at health institutions. MOHSA is authorized to issue green cards for the poor (Turkish Republic Office of the Labor and Social Security Counselor, 2004).

Among other programs in Turkey, the Ministry of Defense has extensive health functions, with more than 15 thousand hospital beds, and 13 million insured people (Roemer, 1991). Finally, the private market, usually preferred by middle to high-income families, permeates the Turkish healthcare system extensively, where the preference for a private hospital is a strong indication of social class. Hence, almost half of physicians are in full-time private practice, and over half of the time of the remaining government physicians is also devoted to private practice²¹. This is especially true for those physicians trained as specialists. Although private hospitals in Turkey may offer better services, they represent a small group nationwide, whereas the majority are represented through public programs that are limited in access to credit, enabling policies, and appropriate technologies. Therefore, the generalizations about Turkish hospitals in this study focus often on public programs rather than the private enterprise.

As in many European countries, Turkey boosted the number of its medical students in the past decade and generated a surplus of doctors who need to find work. In addition, most medical schools have begun to allow full professors to do part-time work, thereby distracting them from devoting enough time to teaching. Yet this problem is not unique to Turkey: medical schools in the U.S. are also looking for ways to make education a priority for faculty members who are busy seeing patients and conducting research (Humphries, 2003).

If we compare the distribution of nurses and physicians in Turkey to the global situation, “70% of the distribution of nurses globally can be explained by the distribution of physicians, and the influence of GNP (gross national product) per capita on the global distribution of physicians and nurses appears to be substantial. In only a minority of the world’s very poorest countries is there evidence to suggest that higher numbers of nurses substitute for low numbers of physicians. Standardization of the distributions by GNP demonstrates that many countries (but not the poorest) regress to within one standard deviation of the mean expected distribution. This suggests countries could set optimum levels of physicians and nurses within the limits of their GNP.” Therefore recommendations for modifying the structure of countries’ health labor forces as a component of healthcare reform is a difficult goal to achieve (Wharrad & Robinson; 1999).

Finally, there are people in rural areas of Turkey who consult with traditional healers and birth attendants. Although mystics and other traditional healers are too often corrupt and ineffective, the role of birth attendants, who deliver about one fourth of the babies in rural Turkey (Roemer, 1991), is significant.

²¹ Roemer (1991, p. 391) identifies this number as 41.6 percent in 1984. The remaining 58.4 percent works for MOHSA and other public programs.

TABLE 2.1
Turkish Population Statistics by Age Group
(Source: Yildiz, 2001)

Age	Population (millions)	Population (%)
0-14 years	21.2	34.4
15-64 years	37.6	61.1
65 years and over	2.8	4.5

TABLE 2.2
Infant and Child Birth and Death Rates in Turkey
(Source: University of Hacettepe Institute of Population Research and Macro International, 1999)

Birth and Death Rate		Per Thousand Live Births/Children
Overall birth rate	1993-1998	28.0
Infant mortality rate	1980	126
	1990	67
	1993-1998	42.7
Child mortality rate	1980	47
	1990	16
	1993-1998	52.1

TABLE 2.3
Shortcomings in PICUs in Turkey
(Source: Yildiz, 2001; adapted from Yazici et al., 1994)

Shortcomings	Percentage (%)
Inadequate supply of materials and equipment	62.5
Insufficient number of nurses	57.8
Inadequate physical conditions on the ICU	56.7
Poorly determined duties, responsibilities and accountability	52.2
Lack of information	50.0
Lack of standardization of care	48.9
Poor relationships between staff members	38.9
Inadequate number of personnel in support services	3.3

2.4.2 Development of Pediatric Intensive Care Units in Turkey

Intensive care units were first established in Turkey, around the same period as that in European countries. The first ICU was in Haydarpasa Numune Hospital, Istanbul, in 1959, and was followed by many others in the next 45 years. Recently, there has been significant improvement and reorganization of ICU facilities (Akpır, 1992). However, a Turkish study, undertaken in 1994 in 57 hospitals found that the nurse-to-patient ratio in ICU was 1:1-2 in 44% of units, 1:3-4 in 28% of units, and 1:5-10 in 28% of units. Additionally, only 43% of the hospitals had established orientation programs, 48% held in-service education programs, and only 30% had an education department. Only 28% of the hospitals had nursing job descriptions (Yazıcı et al., 1994). The same study also identified a number of other shortcomings (Table 2.3) (Yıldız, 2001).

In Turkey, NICU has been more effectively developed than PICU. The role of the NICU nurse has expanded and become more advanced, making it a specialty that nurses are keenly interested in. It attracts dynamic and energetic nurses and has good nurse leadership. There are also financial resources available to support the developing role of the nurse administrator (Kenner et al., 1998; Yıldız, 2001).

Considerable progress has been made in NICU and there is now one NICU in almost every hospital, regardless of whether or not it is a university hospital. In contrast, pediatric intensive care has not yet achieved this status, and children are commonly cared for within adult ICUs (Yıldız, 2001).

Care of Children in Adult ICUs

Pediatric intensive care has not been well organized in Turkey. The situation has partly arisen from disagreement between anesthetists and pediatric intensivists. Most children who should receive care in dedicated PICUs are treated in adult ICUs, where they are cared for by physicians and nurses trained in the management of adult patients. Many critically ill children undergo intubation in pediatric emergency units with the help of an anesthetist before being transported, with some difficulty, to adult ICUs with appropriate bed capacity and respiratory equipment. However, the allocation of resources and the capacity to provide intervention for children in these settings are limited. For example, there are few ventilators available for small children. Caregivers working in these units have limited or no experience in pediatrics (Ugur, 1996). However, the situation is better in pediatric surgical ICUs, where pediatric surgeons and nurses provide the care (Yıldız, 2001).

2.4.3 The Turkish Children's Hospital

The observed Turkish children's hospital is a university based academic non-profit 350-bed pediatric hospital (Figure 2.1). The PICU is a 10-bed service with nine beds in a single room that is the main unit and another bed in the isolation room. The acuity is significantly high, with a variety of disease entities. The unit specializes in trauma and cardiac cases. The PICU team is developing new models of pediatric critical care, with a focus on clinical leadership, clinical expertise, education, staff consultation/collaboration and research, and a team-focused and multi-disciplinary approach to care.



Figure 2.1: View through the Window from the PICU Isolation Room (Source: Author)

2.4.4 U.S. Health Care System

Unlike most other Western countries, where healthcare is more socially oriented despite high-income economies, the U.S. healthcare system is entrepreneurial. The most important difference between the U.S. and Turkey is that the former, as an affluent industrialized country, has abundant resources and spends a great deal of money on its health system, thereby improving continuously the operational aspects and the physical environment of its healthcare facilities. However, income distribution in the U.S. has been very uneven²², affecting the operation of the national health system, which consists of five major programs: 1) a central government health authority (Department of Health and Human Services) that is responsible for the health protection of the nation, 2) other governmental agencies with decentralized health functions, 3) voluntary health agencies, 4) enterprises with health functions, and 5) the private enterprise. Until recently, the U.S. government's equivalent to a ministry of health was the Department of Health, Education, and Welfare. Responsibility for education was later withdrawn, and the Department of Health and Human Services became responsible for the nation's social security, public assistance, and most aspects of primary health (Roemer, 1991).

Tables 2.4 and 2.5 provide comparative information representing the birth and death rates for the U.S. population and children. In 2000, infant mortality rate in the U.S. dropped from 7.1 to 6.9 deaths per 1,000 live births. In 2001 it reached a record low of 6.8 per 1,000 live births (Table 2.5). Overall, about 27,500 infants died in the first year of life in 2001, compared to 27,960 in 2000. The three leading causes of infant death were congenital malformations, low birth weight, and sudden infant death syndrome, which together accounted for 44 percent of all infant deaths (National Center for Health Statistics & the Centers for Disease Control and Prevention (2001)).

²² In 2000, the U.S. population was about 280 million, and its gross national income per capita was \$34,100, placing the U.S. on one of the first ranks, following Luxemburg, Liechtenstein, Switzerland, and Japan (World Development Indicators database, World Bank, April 2002).

TABLE 2.4
U.S. Population Statistics by Age Group in 2004
(Source: CIA World Fact Book)

Age	Population (millions)	Population (%)
0-14 years	60.83 (31.12 male and 29.71 female)	20.8
15-64 years	195.94 (97.76 male and 98.18 female)	66.9
65 years and over	36.25 (15.08 male and 21.17 female)	12.4

TABLE 2.5
Birth and Death Rates for 2001 in the U. S.
(Source: National Center for Health Statistics & the Centers for Disease Control and
Prevention, 2001)

Birth and Death Rate	Per Thousand People or Live Births
Overall birth rate	4,025,933 babies born (1 percent fewer than 2000; decline from 14.7 to 14.5 births per 1,000 from 2000 to 2001)
Infant death rate	6.8
Death rate before 5 years	38.3
Death rate 5 to 14 years	22
Death rate 15 to 24 years	90.3
25 to 44 years	177.8
45 to 64 years	708
Over 65 years	5,071.4

2.4.5 The U.S. Children's Hospital

The U.S. hospital (Figure 2.2), which is referred to as "Children's" in this study to maintain confidentiality, is a private, not-for-profit institution that was established in 1948, ten years before the Turkish hospital. The 348-bed medical center (with 278 beds dedicated to general pediatric medicine and general surgery) parallels the patient population at the Turkish hospital (350), yet it has a much larger PICU (54 beds as of 2002) for critical care, cardiac intensive care and trauma intensive care. It also has an 18-bed psychiatric unit, more than 50 outpatient clinics, and a state-of-the-art emergency center (Source: hospital website).²³

²³ The hospital website address is concealed as a human subjects protection effort.



Figure 2.2: General View of the Hospital Entrance (Source: Author)

Children's traces its origins to 1913 when a group of nurses organized an open-air clinic for infants suffering from dysentery. The clinic eventually grew and merged with two existing children's hospitals in the region in 1948 to form the current hospital.

Children's provides about fifty specialty care programs and a wide range of pediatric services, including specialized care areas for heart disease, hematology/oncology, cystic fibrosis, kidney disease, diabetes, sleep disorders, gastroenterological/digestive diseases, physical medicine and rehabilitation, neurological disorders, craniofacial deformities, epilepsy, asthma, weight management, Down Syndrome, kidney, liver, heart, and bone marrow transplant. The hospital is an extensive research center.

The physical design of the hospital is an important part of their patient care philosophy, with a child-friendly décor and atmosphere in interior spaces, red wagons scattered all over the corridors for patient transportation, playrooms, the use of bright colors, many windows, and many colorful planes and a glider theme in the atrium of an additional building to the hospital. They also used high ceilings, oversized doors, child-like shapes over the walls, friezes and color wall guards to make the interior atmosphere of the hospital less intimidating and more interesting. Another humanistic intervention results from in-room accommodations for parents.

The Pediatric Intensive Care Unit

As of 2000, the 54-bed PICU admits more than 2000 patients annually from all socio-economic classes. The average length of stay in the PICU is 4.7 days, and PICU mortality rates rank among the lowest in the U.S. The physical environment of the four PICUs at Children's is designed with a focus on FCC. They recently built an 11-bed cardiac ICU, which was improved further in the newest trauma ICU, and will become the basis of future PICU patient room design. There are four different ICUs: 1) the cardiac ICU, 2) the PICU, 3) the step down or level two ICU, and 4) the trauma ICU (Figure 2.3). They expect to have 75 ICU rooms by 2003.



Figure 2.3: The 8-Bed Trauma ICU on the Fifth Floor, Children's (Source: Author)

2.4.6 Preliminary Pilot Studies and Hospital Tours

Initial exploratory visits to the selected case study sites and preliminary pilot studies in other children's hospitals in the U.S. and Turkey preceded the actual case studies. The purpose of pilot studies was to select nationally the most representative PICU; identify emerging themes to inform the research protocol, particularly the interview questions; test the chosen methodology to identify potential problems; and explore alternate settings, which relate to the study design. This is known as "sampling" technique in "grounded theory" (Glaser & Strauss, 1967). Following her case studies, the researcher visited other Turkish and U.S. children's hospitals and PICUs to have further cross-cultural insights.

The U.S. hospital was the first setting to be explored: two visits were realized to its PICU during Fall 1999; the first one to become familiar with the setting, and the second one to conduct an individual interview with a physician, who held an administrative position. During the second visit, a Turkish fellow practicing in the PICU provided the researcher with comparative information about the physical, political, and socio-economic aspects of the PICUs in Turkey and the U.S.

In addition to regular hospital visits in the U.S., the researcher was able to visit the following children's hospitals: 1) Shriners' Hospital in Boston, Massachusetts (2000), which is a 30-bed pediatric burn hospital providing comprehensive acute care and reconstructive and rehabilitative care to children who have been burned, 2) Cooks Children's Hospital in Fort Worth, Texas (2002), which is a private, small-scale children's hospital, 3) Texas Scottish Rite Hospital for Children in Dallas, Texas (2004), and 4) Texas Children's Hospital in Houston, Texas (2004).

During Summer 2000, the researcher visited three children's hospitals in Turkey: 1) Sami Ulus Children's Hospital in Ankara, 2) Behcet Uz Children's Hospital in Izmir, and 3) Sisli Etfal Hospital in Istanbul. This selection represents the nation's three largest cities, i.e., Istanbul, the largest and economically the most developed city located in the northwestern part of Turkey; Ankara, the capital and the nation's geographic center; and Izmir, the third largest city, also located in the west. These three cities

have 18 percent of the national population and more than 60 percent of the national supply of health professionals (Roemer, 1991).

Sami Ulus Children's Hospital was the first Turkish pediatric hospital visited: it is a public hospital without teaching and research resources, which is located in one of the least developed areas of Ankara, thereby serving only low-income families. Consequently, it suffers from lack of finances and is the poorest children's hospital observed. No support facilities were provided, particularly for families, who accommodate in the garden outside the hospital. This drama was broadcasted on the television during the researcher's presence in Turkey. Interview technique was used extensively in this study, which resulted in eight audio-taped in-depth interviews with staff members, particularly nurse managers and administrators.

The second pilot study was conducted at Turkish hospital. The aim of this first exploratory visit was to inform them about this research and obtain their permission to include them, become familiar with the people and institution and gain their trust, and investigate the physical environment. The visit included a general tour in the hospital guided by the head assistant of the PICU, and a one-hour participant observation at the nurse station of the PICU. It also enabled the researcher to talk with the staff, especially nurses and assistant physicians, and conduct an in-depth interview with the head assistant.

This was followed by a trip to Behcet Uz Children's Hospital in Izmir, located downtown in the central garden of the city (Figure 2.4). This visit lasted for a week, enabling the researcher to conduct participant observations in various areas of the hospital, including the PICU; and interviews and informal dialogues with caregivers.



Figure 2.4: Site Characteristics of Behcet Uz Children's Hospital, Izmir, Turkey (Source: Author)

The last visit to a Turkish children's hospital in 2000 was conducted at Sisli Etfal Hospital in Istanbul, which lasted for one day. This hospital was founded in 1899 as the first children's hospital of the nation (e.g., Ottoman Empire) and the Balkan region. However, it was later transformed to a general hospital due to growing needs for health care. This decision seems to have been inappropriate in a country desperate for children's hospitals.

In Summer 2001, the researcher visited two more children's hospitals in Ankara. These were Baskent Children's Hospital and Children's Pavilion of Ankara Hospital. Being a private hospital, Baskent had the most developed spatial organization: unlike the single room arrangement of the observed Turkish PICU, it incorporated a larger and friendlier unit composed of several different ICU rooms for different populations, such as neonatal, pediatric, and step-down patients (Figure 2.5).



Figure 2.5: PICU and Isolation Room, Baskent Children's Hospital, Ankara, Turkey

These extended trips were beneficial for the evolution of this research in transcending the limitations for generalizations of results, due to the form and limited number (e.g., two) of the final case studies. Preliminary hospital tours showed that the children's hospital and PICU concept present different worldviews at each different place and local culture, even though they are located in the same country. They also allowed the researcher to begin to question the assumptions she made about the particular case studies, and to test the accuracy of her findings against local evidence and interpretations. Finally she observed that the differences among the North American hospitals were not as strong as those in Turkish hospitals, which may be due to the provision of a standardized quality of care and caring environments.

2.4.7 Comparison of Selected Sites and Their Health Care Systems

The comparison of the U.S. and Turkish healthcare systems with an emphasis on the social context and cultural characteristics indicates more differences than similarities: Turkey is a traditional collectivistic culture, whereas the U.S. culture is more universal and individualistic. Turkey is a more homogenous culture whereas the latter is extremely heterogeneous and pluralistic. Despite the universal requirement of group discipline in medical care, the Turkish healthcare system operates relatively more authoritatively, whereas the U.S. hospitals emphasize participation and teamwork. These differences influence *staff roles* significantly: First, Turkish physicians may tend to be more independent and autonomous in their thinking and behavior, even in university hospitals, where the quality of care is controlled strictly. In the U.S., however, physicians are challenged more and more to work as members of networks and group practices.

They have to be part of a healthcare team, which includes nurses, nurse practitioners, physician assistants, psychologists, counselors, community health workers, and family members.

Second, the traditional role of the nurse has been maintained in Turkey, emphasizing the immediate caregiving function, and without any participation in the long-term care plan of the patient, or in administrative decisions. In the U.S. system, on the contrary, the RN serves in an administrative, case-management capacity, heading up the care team. Especially, the role of the nurse administrator has expanded dramatically.

Another difference relates to the role of families and the implementation of the “family-centered-care” (FCC) approach, which is based on the understanding that families and caregivers are equals. FCC recognizes the vital role of the family in a patient’s ability to overcome an illness, acknowledging that each patient is part of a family unit that needs to be supported through interaction with the healthcare team. Therefore, the family’s role in care has changed dramatically over the past 20-30 years in the U.S. Where previously families were expected to hand the responsibility over to the healthcare team, they now may be extensively involved in the care of their loved ones, which is supportive of their well-being. Unfortunately, this vision is not embraced in Turkish hospitals, and families are not always treated respectfully and considerately²⁴. Therefore, despite the shift to a more humanistic era in healthcare in the U.S., the “modernist” institutional culture persisted in Turkey. However, the societal and architectural trends to humanize healthcare stem from a capitalistic society.

Staffing issues between the two countries also differ significantly, despite the common problem of nursing shortage. Particularly, the specialty training of physicians is limited in Turkey, as well as supporting healthcare workers, such as respiratory therapists, while less credentialed workers are rarely present. In the U.S., however, there is a high specialization and clear division of labor, and new areas of work are introduced continuously, specializing the general tasks of the traditional nurse.

The physical environment also reflects the differences in both healthcare systems: Turkish hospitals are crowded and lack space, ignoring the psychological and practical needs of their occupants. Particularly, the lack of individual patient rooms sabotage environmental control and privacy, result in over-stimulation, rejection of families’ presence in care, and psychological risks due to exposure to clinical death. Second, families cannot relate to this harsh, institutional setting. Facilities like a waiting room or family resource center are usually absent, while there are hardly any social services such as food service, sleeping arrangements, private meetings with doctors, and educational meetings to support and empower them. The environmental needs of staff are also neglected, especially regarding a resource center. Additionally, the lack of means for physical separation between patients creates an uncomfortable consultation environment for the caregivers.

²⁴ However, staff members try to replace family by behaving like family members, providing frequent tactile and vocal stimulation for patients, especially for children.

Therefore, the lack of space along with staffing shortage, the limited education level of families, and the lack of enabling operational policies, which are often due to administrators' unwillingness to share their authority with families and nurses, prevents the implementation of FCC in Turkey.

The physical environment in U.S. hospitals, on the other hand, is more residential-like, comfortable, and less institutional, contributing to an environment that is more sensitive to the needs of patients, families, and caregivers. Access to nature or outside world and daylight, provision of color and different materials, and enclosure and privacy are some of the evidence-based healing design features.

Finally, *social interaction* may be the most meaningful difference observed. Social relationships, interaction, communication, and cooperation among caregivers are strong, and occur naturally (e.g., without scheduling) in Turkey, while they are often established and maintained more formally by an organizational culture in the U.S. In the Turkish model, 1) due to low nurse-to-patient ratios, and the lack of physical separation between patients,²⁵ collaboration among staff members is critical to enable the delivery of pediatric critical care. 2) Although families' psychological needs to understand their patient's illness and treatment, to interact with the healthcare team, to be able to see their patient the whole time, and to get support for grieving²⁶ remain unrecognized, social relationships and interactions between families –especially during periods of grief– are very supportive. 3) Although parental presence is minimized, family members usually break the visitation rules to see their child, creating social interaction within the family unit and contributing to healing.

Caregivers, on the other hand, behave like family members, kissing, touching, hugging, and talking to patients as often as possible. Therefore the social interaction function to meet the emotional needs of critically ill children occurs naturally in the Turkish ICU through frequent tactile and vocal stimulation by the caregivers. However, this stimulation may be random, insufficient, or absent when a patient needs them the most. The observations at Turkish hospital also suggest that caregivers' love and affection could support the needs of the short-term patient, yet become inefficient if the hospitalization exceeds several days, as usual in the Turkish ICU. Separation anxiety from family members, particularly the mother, was revealed naturally: during a 30 to 45-day hospitalization, one of the patients changed from being a happy child, who was the center of attention of all caregivers, to a very sad person: he could see his mom only three times a day for breakfast, lunch and dinner, each limited to half an hour.

U.S. hospitals are usually more attentive to the needs of patients and families, by letting them participate in care; informing them about the illness, treatment, and prospects for recovery; treating them respectfully no matter what race, sex, religion, cultural, economic, or educational background; and letting them stay with the patient. Consequently, they provide a positive experience for families, addressing their

²⁵ The lack of personal space may reflect both the low level of individualization and the lack of privacy in people's lives as opposed to the dominant "community" in the Turkish society.

²⁶ Unlike the U.S. model, where family members can stay as much as they would like in their child's room both during hospitalization and grieving, Turkish families need to leave the unit due to overcrowding, infection control and noise levels, particularly during the grieving period due to the crying and mourning of some parents (moms), which negatively influences the unit atmosphere.

first need, which is the comfort of knowing that the patient is receiving the best possible care. However, human interactions between staff and patients/families are less natural or spontaneous. Additionally, contemporary U.S. culture is more uncomfortable with death and dying, which influences the legal aspects of healthcare, particularly shifting the focus from “caring” to “documenting.”

In summary, the Turkish healthcare system is based on the strengths of social interaction function among caregivers and their cooperative relationships rather than economic, operational, or technological interventions. Within this system, dedicated caregivers make the hospital work, no matter what. Hence, the strengths of people in contrast to the weaknesses of the healthcare system are the hopeful part. The U.S. healthcare system, on the contrary, has introduced a clear division of labor and a systemic organization in general, reducing the importance of informal social interactions among caregivers. However, through the recognition of the importance of patient and family-centered care philosophies, the role of social interaction in healing has been embraced.

To conclude, Turkish health programs have spontaneous support systems, which are accessible for everybody; however, they suffer from limitations in access to credit, enabling policies, and appropriate technologies. The U.S. healthcare system has excelled in terms of economic, operational, technological, and manpower interventions; however, they increased healthcare expenses dramatically, thereby limiting the chances for equal access to healthcare for many people.

The observation of both case studies showed that the most qualitative design interventions support the most qualitative research finding regarding the social interaction function, thereby reducing stress and increasing the potential for healing.

2.5 Conclusion

Supported by a holistic and phenomenological research approach, this research proposes a qualitative and naturalistic inquiry to evaluate the relation of the built environment of the PICU to healing functions. The qualitative paradigm was selected as the methodology of choice because it can provide a deep understanding of the many interrelations (physical, social, psychological, etc.) that take place in the PICU. The research is undertaken within a cross-cultural context and examined one PICU in the U.S. and another one in Turkey. Initial field trips to the selected sites proposed chances for meaningful comparison while presenting enough differences. There were no preconceptions or initial hypotheses to guide the research framework in the beginning of on-site investigations. On the contrary, the main objective was to observe the knowledge sought in its naturally occurring setting, and then seek for hypotheses and theory to emerge naturally. While doing this, the researcher minimized commitment to received or preconceived theories in order to “discover” original theories grounded in her own data.

CHAPTER III

ANALYSIS OF THE INTERVIEWS WITH THE U.S. CAREGIVERS

The previous chapter described the research methodology and the selected case study sites. The present chapter provides qualitative information regarding the relationship between physical environment and healing through audio-taped, verbatim transcribed (i.e., the whole interview was transcribed), and content analyzed data based on the statements of the caregivers, who provided concrete observations and tremendous insights regarding the physical environment and its relation to the social practice at Children's.

This chapter brings together the ideas of 14 caregivers, including nurses, physicians, clinical managers and administrators, a social worker, a research coordinator, and last but not least the people that *care* for the physical environment (i.e., facilities coordinator, facilities manager, and architect). The interviews were conducted from November 2001 through May 2002, which were scattered over six months. These ideas are summarized as a final list of guidelines and recommendations to present this in-depth information as the multidisciplinary design and planning issues of healing environments at the end of this chapter. Through this chapter, caregivers may be able to look at each other's ideas and insights that can help them create better environments, both physical and social, and improve patient outcomes and experiences of well-being based on a conscious awareness of the healing process.

The interviews evaluated five major components of the critical care environment, which are 1) the functional and technological environment, 2) the caring and psychological environment, 3) the psychological and practical (or functional) environment in response to the needs of patients, families, and the caregivers, 4) the physical environment, which includes design modifications for the future, and 5) the cultural and sociological environment, which identifies the unique properties of the U.S. critical care environments. Although three of these components (i.e., the needs, the physical environment, and cross-cultural issues) were already informed by reading the literature, the paradoxical relationship between technology and caring emerged directly from the interview method. Although the impact of technology has been discussed at length in the ICU literature, the researcher felt most of these theories were unearthed, which means they did not involve real case studies.

3.1 The Interview Method

The interview method based on a purely qualitative and naturalistic inquiry included the observation and analysis of the interview settings and the backgrounds of interview participants.

3.1.1 Interview Settings

According to Naturalistic Inquiry method, the interview setting will impact the interview process, influencing the mood of the dialogue and the relationship between the interviewer and the participant. The setting may also reflect potential information about the explored phenomenon, if the observer looks at it carefully. Additionally, the participant is part of this environment, and the observation of her or his behavioral, verbal, and body language can reveal ideas about the reliability and validity of the information she or he provides, when evaluated against the background.

The physical setting where the interview takes place is particularly important in a hospital, which is occupied with spaces that are busy and active all the time. It is also very difficult to find the conditions in which a caregiver will commit to staying for a certain amount of time in a constant setting.

The interview settings in this study varied extensively including physicians' or administrators' rooms, public hallways of the hospital, the nurses' station, ICU patient rooms, the family counseling room, and the conference room of an architectural firm. The physical environment was critical in allowing, or sabotaging, the needed privacy, silence and concentration.

During one of the interviews with a bedside nurse in the trauma ICU, the researcher spent several hours conducting the interview in the patient room, during which the nurse attended to his caring tasks while answering the questions simultaneously. This setting provided a good opportunity to observe the patient room for three hours, which would not be allowed otherwise. Another interview was conducted in a patient room in the 2B unit, but this time the mother of the patient was also present in the room, answering some of the questions addressed to the nurse (the nurse encouraged the mom to answer some of the questions, since she thought she would have a much better answer than her). This mother and her son were Muslims of Arab origin, providing a unique perspective on their specific needs, and the recognition of these needs by the staff members.

3.1.2 Interview Participants

The participants in the study comprised three male and eleven female interviewees, who were selected to reflect all disciplines, including administrators, clinical managers, physicians, bedside nurses, and other caregivers. All staff members that work in or for the hospital are considered as a caregiver. The first group comprised administrators, and involved the ICU director and two clinical managers (CM); the second group included two attending physicians (AP) and a younger resident (RP); the third group included one male and two female nurses (RN); the fourth group included the project architect (PA), the facilities coordinator (FC), and the facilities manager (FM). Additionally, one of the social workers (SW) and research coordinators (RC) participated in the interview method. Despite scheduling an interview with one

of the respiratory care therapists (RCT), it could not be realized since the RCT had an unexpected shift she had to take over, which overlapped with the scheduled interview time. Similar problems occurred with some of the nurses; one of them had been at Children's for many years and promised to compare the current ICU environment with the past conditions when they only had the 3J open bay ICU, however, the researcher was informed of her presence very late in the interview process, and there was not enough time for the nurse to commit to an in-depth interview during the researcher's last few days on-site. Another time, the interview with a nurse, who communicated exceptionally well and could provide wonderful information, had to be postponed shortly after the interview started in the ideal physical atmosphere of the silent family counseling room because the tape recorder was not functioning.

Participants ages' ranged between 26 and 45 years; two of the managers/directors were in their forties, one clinical manager was in her thirties, both attending physicians were in their late thirties, the female nurses in their twenties, and the male nurse in his forties. Their length of experience in critical care units varied between 6 and 21 years.

Following a verbal explanation of the purpose of the study, the interview started. A duration of an hour was agreed as a reasonable interview period although the need to retain some flexibility was recognized. The interview length varied in each case depending on the schedule of the participant: Some of them took almost two hours to answer the questions, while others had to limit their answers to half an hour.

3.1.3 Why They Chose Their Jobs and Best Features of Their Jobs

Initial exploratory questions addressed the professional background of the interviewees, why they chose a job and lifestyle based on caring, and the best or least liked features of their current job and position. Supported by the qualitative methodology, these personal questions aimed to know them better.

The nurses chose Children's because it is a teaching hospital, which flourishes as a learning environment. They have a lot of input in delivering care and contributing to the medical plan of care. Physicians are very open to their feedback since they observe the patients all the time, and could recognize if something is not right. However, the worst feature of their job is having very sick patients and a very heavy workload.

The AP finished medical school twelve years ago. He chose pediatric cardiology because he had very good role models and mentors, and he had a very good experience in pediatric ICU when he finished his residency (i.ap.1).²⁷ The best part of their job for both APs is the satisfaction of seeing the kids doing better and working with the family. The worst thing is the workload (since it requires tremendous time and energy) and the time taken from patient care (i.ap.2).

The best thing for the CM about her job is to implement change, and to have a voice in how things are run. The worst thing is to be dependent on someone else, and to have to wait for change (i.cm.1).

²⁷ In this chapter, the numbers inscribed between parentheses at the end of the sentences represent the units of data that help the reader to recognize the direct sources of information that derived from the interviews.

The director of critical care services manages five units: 1) the 2A cardiac ICU, 2) the 2B PICU, 3) the 3J step down ICU, 4) the 4G progressive cardiac care unit, and 5) the 5A trauma ICU. She worked as a bedside nurse in three adult ICUs prior to coming to Children's sixteen years ago, and became a director in 1996. She also held some education and research positions (i.ud.1). The best thing about being the ICU director is the opportunity to make changes; to plan for the future; and to help people, the ICU, and the hospital grow. Her role is all-encompassing from clinical to administrative and executive. She works closely with the CMs, the team leaders, and the educators, who design protocols and standards. They hire many graduate level staff members, who come with very little experience and have to grow. The decisions she makes in reference to program development impact the quality of care administered by the staff at the bedside. They train a variety of people within the department, but focus mostly on nurses (i.ud.2).

3.1.4 The Meaning of Leadership and Management

From a cross-cultural window, the best aspect regarding the job of the U.S. administrators, who have backgrounds in bedside nursing, seems to be the transformation of their function to an administrative role, through which they can implement change based on their close and personal experiences with caring.

Another cultural observation relates to the pattern of selecting those individuals that function in key positions to transform their hospital, and their perception of the meaning of their roles for the hospital. First, the ICU director summarized the qualities of a leader: The first thing is credibility within the organization, and trust; people believe in honest people. She revealed she had an advantage at Children's, having started as a bedside nurse, and gained a lot of credibility in her clinical expertise and knowledge in patient care. Second, she validated that credibility through education. She has a bachelor's and a master's degree in nursing, and is currently working on her doctorate. Third, it was a personal drive for her, not a personal gain: "I am in this position not because I want this position, the power part. I am in this position because I think in this position I can make a difference in the care given to the patient, and the families." Becoming a director and getting a Ph.D., she gained personal satisfaction, yet it is more important to use her drive to take the ICUs to a different level and help sustain the future, because she won't be around when the future comes. She doesn't consider herself a leader, but a manager, because "anybody can manage, which is the operational side; it takes a different kind of person to be a leader, because people follow their leaders" (i.ud.31).

The CM was another influential role model as an administrator, who focused on her mission and the meaning of her task as it relates to the concept of leadership:

There is a lot of work to do here, so you can't see and move. I never worked in an institution very long like at CHOP. When I was there, I was growing and having things put into me. Now I am giving all these things away because I will not live forever. I am here for a season and when I'm gone I'm gone. I hope what I give will last and grow. There is a time that things are poured in you. Then there is a time you pour things into others. Each generation is supposed to be better. I want my little piece to be well-done. Then I am moving on (i.cm.28).

3.1.5 Interview Questions

Table 3.1 indicates seven questions from the interview protocol, which comprised approximately thirty questions. Additionally, the table shows the commonality of the questions addressed to the caregivers in the pediatric ICUs at Children’s in this research to a previous study on the role of family centered care in the NICU environment, which was conducted by Fournier (1999) at Texas A&M University.

TABLE 3.1
Protocol of Questions

Fournier’s (1999) Study on Family-Centered Care: Questions Addressed to Caregivers in a NICU	Present Research: Questions Addressed to Caregivers in the Pediatric ICUs at Children’s	The Theme Addressed and its Commonality to Fournier’s Study (1999)
N/A	What is not going well, or as good as you wish, in the PICU environment?	Introductory contextual question
What do you think is mostly needed for parents (for example, with regard to sleep, rest, and food) in the hospital?	What are the most important needs of the caregivers in terms of the physical environment? What are the most critical places to increase their comfort and efficiency and reduce their stress?	Evaluation of the physical setting of caring based on the needs (of the parents or the caregivers) and the comfort issue
What sort of physical modifications would you like to see done in the environment of the neonatal intensive care unit to fit the Planetree mission?	What sort of physical changes would you suggest in this ICU to facilitate staff interaction and families’ presence in care, and to allow you spend more time with your patients?	Evaluation of the physical setting of caring with a focus on design modifications
How has your experience been with the family-centered-care approach so far?	How do you maintain your ability to be caring for so many (12) hours?	Evaluation of the social practice of caring
N/A	Is it difficult for staff to have a nurturing social interaction with families coming from different socio-economic, educational, religious, cultural, or ethnic groups? If yes, how do they overcome these barriers?	Cross-cultural evaluation with a focus on social interactions and relationships
N/A	How useful do you find the invasive medical & nursing procedures, or the “heroic measures”? Do you feel the ICU environment prevents the right of a patient to die “at home,” in a familiar place in peace?	Focus on the issue of control, the meaning of technology, the issues of family and familiarity, the relation between technology and caring

3.2 Evaluation Of The Meaning Of Technology In The PICU

The first essential component of the pediatric critical care environment is technology (Figure 3.1). The fact that a highly technological environment is one of the unique properties of critical care, and the behavioral consequences of functioning in a high technology environment, especially as it relates to caring and nursing functions of staff members, was revealed across all transcripts as a major category, which was emphasized over and over by the caregivers. This suggested that the meaning of the ontological experience of being-in-the-world becomes “being-with-the-technology” for a critical care provider.

To begin with, the role of technology in critical care environment is obvious: it treats the patients at a much higher level and results in better patient outcomes. Many people survive the ICU due to the sophisticated technological equipment and machines provided, more than anything else. Additionally, technology is often associated with feelings of security and comfort for the families; especially the presentation of the need for extensive technology in the patient room to care for a child has a very positive psychological impact on parental well-being since they have more confidence in technology than anything else (i.dt.11). Therefore the provision of technology does not only relate to the functional environment but also to the symbolic, psychological, and atmospheric features of the ICU.



Figure 3.1: Two Patient Rooms Dominated by Technological Equipment, Children’s

Caregivers argued Children’s is well ahead in its adaptation of technology. They do celebrate the presence of available technology to help them in caring for the children, and they rely on it extensively. Therefore, they want to have everything state-of-the-art, and they do spend a lot of money (most of the donations) for updating their technology all the time. Additionally, the definition of technology in critical care includes not only the life saving machines but also the provision of advanced computing systems, which are an important part of the technological environment at Children’s, which was selected as one of the 100 most wired U.S. hospitals (Hospitals and Health Networks, 2003). Yet there are some negative aspects of an ecstasy with technology, since it may contradict the basics of caring. Especially, caregivers criticized that the computerized charting system takes too much time, a fact that is also observed by the

researcher. Therefore, in critical care environment, technology does not only have a functional, practical, and symbolic meaning, but also it has an important social role and responsibility, by directly influencing the time the caregivers spend with their patients.

3.2.1 Passion with Technology

Caregivers argued Children's is very contemporary in the treatment of disease and the technology used. New trends in the pediatric ICU world are available at Children's, but not common in other hospitals. Additionally, their physicians and the medical team conduct a lot of research studies. They are very open to trying new technologies and new treatments, which makes them cutting edge (i.ud.1).

"Children's is a state-of-the-art facility, which always prefers the most advanced technological option," argued the CM. They provide cutting edge technology in their hospital, and they are always ready to spend more money for providing state-of-the-art technology. However, some administrators argued they depend on technology rather than FCC to solve their problems. One of them compared it to the model of one of the best ranking Children's hospitals in the U.S. for many years, which is known as being very family-focused, whereas Children's is technology-driven (i.cm.39).

The PA agrees with administrators' views on their technological focus, and their ignorance of the social part and social services. Yet she perceives Children's as a leading edge care provider, and an excellent training facility, which provides a standard of quality they build upon, and which serves them in good state: "They are doing it their own way. It's interesting to see how individuals can so much affect the decisions that institutions make," she concludes (i.pa.14).²⁸

The Need for Hard versus Soft Technology and the Perception of Technology

Their emphasis on embracing the highest, latest and best technology evolved into a hard versus soft technology discussion at Children's. The physician most involved with improving the physical environment of the ICUs supports the notion of soft and "non-clinical" technology, which can present itself as the physical environment. For instance, several years ago, they wanted to make a roof garden outside the cardiac ICU, and compare the behavioral outcomes of two groups of patients located in an ICU with or without the roof garden. However, this idea could not be implemented since they recognized that the second floor would be turned into an operating room eventually. They still want to put the roof garden where it will be more permanent (i.pa.11; i.ap.14).

The physical setting can also embrace harder technology, such as the ceiling mounted equipment: At Children's, the impact of technology on the physical setting is an ongoing discussion, for instance,

²⁸ The focus on technology might also have been influential on the room discussion related with the preference for ceiling-mounted booms, which will be discussed later in this chapter.

caregivers cannot see the monitors because of the ceiling mounted booms that are in the way.²⁹ They are searching for ways to work out with the booms. The family, on the other hand, *feels* that the technology (in this case, the booms) in the room is *there* to make their child better (i.pa.11).

Two architects collaborated with a physician from Children's to publish an article published by the Academy of Architecture for Health, which referred to the anxieties of families when they move from the ICU to acute care floors, where children do not need the technological support anymore: "Oh my God! How do they know that my baby is okay?" is a parent's usual reaction (i.pa.11). Therefore, in the lack of hard technology, it may be necessary to adapt a new clinical approach to comfort the families.

Documentation Process and the Computerized Charting System

Children's has an advanced online documentation system, and keeps all the patient's information in the computer. However, administrators suggested they do not document the care very well as a team, which they should improve. They also presented conflicting views on the benefits of the online system, the importance of computerized charting, the time spent for it, and if it is a timesaver or not. In this system, caregivers can pick and quit their notes on the computer. However, over the time, patients get so much more acute and sicker that they do not have the time to document all the care they do. "They do it but they don't always write it down that they do it," argues the ICU director (i.ud.5).

The strongest criticism against online charting came from one of the clinical managers, who would prefer paper charting and doing only on-line orders,³⁰ in which nurses could fill out their paperwork. But at Children's nurses are required to document the care every hour at the computer, which is extremely time consuming (i.cm.18). Although the CM admits she may be against computerized charting because she is not comfortable with computing systems, the time spent at the computer appeared to the researcher extreme as well. The bedside nurses revealed the same problem, complaining about the computers, and the difficulty of documenting the care every hour (i.bn.9). The CM claimed meaningfully:

Everything is so legalistic where you're always trying to cover yourself. We've added even more things to check than our documenting. We're more fixated, saying that we are checking something every hour than actually checking something every hour. We are more concerned getting on paper than what does that mean. Why do you think you need to check the IV every hour? That's really what's more important than saying that you actually do it. But that's the way of the world; *we've become so fearful of getting sued we feel like, "if you didn't write it, you didn't do it* (i.cm.18).

²⁹ Children's decided not to use the booms in the expansion project, which may be because of the savings. However, having the two different ways in the East Link, and the mock-up allowed them to have a meaningful discussion on that.

³⁰ On-line orders means if a nurse calls a physician anywhere in the hospital, he could type into a computer, and the nurse could print out his orders. The order is written, so she can understand it, and can see clearly who the doctor is because there is no handwriting involved.

Administrators also suggested they need to spend more time on the education of documentation. Ten years ago, nurses wrote everything down. Today they chart by exception, i.e., they only chart the abnormal. They need to find “some happy medium in-between” to capture the essence of documentation. Administrators expect to end up with a format that will allow them to track the care more efficiently in the future. For instance, it doesn’t matter where the nurse, the doctor, or the respiratory therapist charts in record, but somewhere there should be a comment that allows this whole information to wrap into one sheet as the multidisciplinary plan of care. They should be able to look at each other’s documentation that can help them create a clearer care plan, and measure the outcomes from that (i.ud.5).

Finally, the ICU director suggested that they should improve operationalizing their clinical protocols, policies, guidelines, and standards. They need to examine top priorities and top (five) diagnoses in the PICU and establish clinical standards of care so they can measure the success or the necessary improvements to get to a higher level of standard (i.ud.6).

Other Challenges with Technology

Technological competence, and the stressful effects of functioning in a highly technological environment on older and experienced versus younger nurses were revealed as another major consequence of technology. The increased importance of gaining technological skills in acquiring competence in critical care practice was especially emphasized by the unit director as a major stressor:

The AcuScan, the handheld nursing tool for medication administration is part of the technology, and part of the environment. One part of me says any technology that can be put on the computer is good, and makes it more efficient, more easily reproducible. On the other hand, technology challenges the more senior worker, not the young 21-22 year olds, because they grow up in a technology world. For the older persons like myself, forty years and plus, we are technologically challenged every day because we did not grow up in a technology world. So part of me says, “this is great, this is the future,” but the other part of me says, “how do you recruit all the workers because this technology requires a different level of understanding” (i.ud.17).

3.3 Evaluation Of The Caring And Healing Environment

In addition to technology, the other major aspect of an ICU is humane care, which is the basic human quality according to existentialist view. The pediatric ICU is a place where children and families are “thrown” since they do not have any control over this experience. Lack of control and the feeling of powerlessness may call for a spiritual transformation, if one acknowledges the presence of a higher will, puts trust and submits to it. Another critical condition relates to humans’ care and concern for one another: there is always a great potential for healing in a person’s caring and nurturing for another spirit. Finally, providing a familiar, comfortable and home-like environment, which supports the needs of patients, families and caregivers, is considered beneficial to healing.

Compared to the concept of resignation and humane care, contemporary healing design trends may not influence healing readily³¹. In the U.S. setting, there is a lot of emphasis on providing patients and their families with chances for increased control – environmental, clinical or otherwise. Although it is helpful to empower people in their weak situation, “control” is a Western concept, which may not contribute to healing: Healing is an inner job, which relates to resignation and care rather than control. These essential features may enable patients, families and caregivers to feel the joy of Love in an ICU.

3.3.1 The Relationship between Technology and Caregiving

The interviews with the caregivers revealed the importance of caring, the paradoxical relationship between technology and caring, and the importance of integrating the two. This encouraged a further review of nursing literature, which revealed both a traditional and an alternative view of the relationship between technology and nursing.

The traditional view of the relationship between technology and nursing has been one of incompatibility, which is supported by the interviews in this study. Gadow (1984) argues technology can violate human dignity by reducing persons to the status of objects. Similarly, Sandelowski (1988) describes technology as minimizing the nurse’s role as “empathic toucher,” while Allan & Hall (1988) claim technology can be dehumanizing. However, Little (1999) argued that the criticisms that rely upon a perceived incompatibility between technology and caring are presented as a critique of the medical model

³¹ Healing architecture can intervene focusing on how it can contribute to resignation, care, concern and love rather than giving occupants more space, privacy, control and visual stimulation in single patient rooms; i.e., the core values that contributed to the individuality of Western society. As a first step, positive social interaction towards establishing a greater context of caring and love seems to be a feasible goal to integrate into Western facilities through increased use of shared or common spaces. The idea of resignation, on the other hand, can be symbolized through natural and architectural elements, particularly water features, which may indicate the ease of letting oneself submit to what is already drawn. An exploration into Islamic/religious architecture can provide examples of architectural tools that stimulate a spiritual transformation to accept God’s will to enable healing, which is beyond the scope of this study.

Phenomenology is a further strategy to explore the relationship between caring, healing, and how they may relate to positive social interaction, a lower yet feasible function. As a sacred process that is not in human hands, one should seek healing with a high level of desire and ambition, and maybe using all beneficial worldly functions, including social interaction, caregiving and technology. Resignation is the next step following an active exploration of healing with all the senses and the tools of the sensible world, including architecture. Architectural connotations of silence and solitude can indicate this transformation of one’s will to find healing through God’s will.

The phenomenological method can also analyze the relationship between caring and technology, which seem to indicate two opposite ends of the human condition. The environmental and behavioral consequences of technology have been a major sociological and philosophical area. For instance, Heidegger was concerned that technology presents a power that challenges human beings, and in the face of which they are no longer free. For him, technology dominates and uproots human beings, destroying their relationship to human essence. Yet the intention to question the level of technology in an ICU may seem irrelevant: Not only is technology irreplaceable, but also it can provide the best possible care for a critically ill patient. However, the techno-scientific domination of the ICU may result in an ignorance of the need for social interaction and caring. Particularly caregivers are subject to the challenges of technology, which shapes all aspects of their practice, occupies their entire time, and prevents them from their natural abilities to care for a patient. The nursing literature supports this finding regarding the paradoxical relationship between technology and the caring function.

and as an endorsement of an alternative “caring” model. In her view, such critiques isolate the objective and technological aspects of care from the empathic and person-centered aspects of care, demonstrating a continued reliance upon Cartesian epistemology rather than reconciling the relationship between nursing and technology.

More recently, other authors responded to the problem of the contradicting relationship between technology and caring, and suggested to value technology as an integral part of the caring process rather than as competing with it (Ray, 1987; Cooper, 1993; Walters, 1995b). These authors believe that caring is not only possible within the technological world of critical care nursing but that it can also be positively enhanced by the practitioner’s mastery of the technological environment (Little, 1999).

The praxis philosopher Martin Heidegger provided an analysis of the role and meaning of technology, which carries many implications for the meaning of technology in critical care context, as it relates to caring. Heidegger was concerned with the knowledge that can be derived from everyday activity, and which he related to a technological way of understanding the world. He argued that our fundamental relationship to our everyday world is primarily practical, rather than conceptual, and that scientific knowledge is therefore derived from practice (Ihde, 1979; Little, 1999).

Heideggerian phenomenological philosophy may offer an alternative perspective on the technological environment of critical care and its relationship to nursing practice. In this view, giving prior significance to the everyday practical activities of being-in-the-world may allow the fundamental characteristics of critical care nursing to be both recognized and valued. In allowing the phenomenon to show up for itself, things of significance can be seen in the context of critical care nursing, thereby allowing the relationship between nursing and technology to be viewed as something that is not necessarily paradoxical (Little, 1999).

In his general analysis of man’s relationship to the environment, Heidegger argued that the things that are used for practical ends (i.e., equipment)³² embody highest significance in our ability to “know” theoretically (Walters, 1995a). In his view, technology is in the service of practice rather than a “neutral instrument of science” (Walters, 1995b). Further, the embodiment of common practices and skills, which relate to our being-in-the-world, result in a quality of being taken for granted, which Heidegger calls *ready-to-hand*. Therefore, for the caregivers in the critical care environment, technology may show itself conspicuously, which is a mode described by Heidegger as *present-to-hand* in which equipment is viewed in a decontextualized or theoretical way. Then, for the caregivers, technology may be transformed from

³² Heidegger believed in the power of poetry, and in the relation of poetry with technology due to the common roots of the words “techne” and “poiesis.” *Poiesis* means to make. *Techne*, on the other hand, never means practical performance, nor does it signify the action of making. It rather denotes a mode of knowing. Heidegger argues that the relation between techne and poiesis is forgotten today. Heidegger also identified the difference of a technological equipment or instrument from a work of art. For him, an instrument is a reserved *Bestand* that is made to be safe and useful. It exists as long as it guarantees a specific goal, and after it is used for that goal it is exhausted. Therefore to use something as a device means to exhaust it. A work of art is not a device, nor does it use things as devices. Words are no tools of poetry for a poet; earth is not a tool for a sculptor (Ozcan, 1997).

present-to-hand to ready-to-hand through a process of familiarization and, thereby becoming situated in the context of the delivery of nursing care (Little, 1999; p. 702).

The interviews suggested an intense relationship between the caregivers and the high-tech ICU environment, reflecting the everyday practical involvement of the caregivers with technology in a context of shared practice, and implying the behavioral effects of being with this technology.

3.3.2 The Need to Refocus on Caring

Humanizing the PICU: The CM believes they can humanize the PICU by teaching the nurses *how to care* for patients rather than the technical issues. Caregivers have to be called to be proficient at what they do. They need to get back to the basics of caring. The most important thing is to help a patient, who is at the mercy of the “other.” The caregiver can break that situation by touching or talking to her, or explaining something when she is very nervous. A calming voice saying, “Everything is going to be all right. I will tell you everything we will do before we do it. I will be right here with you,” means so much. They need to have more of this caring function and “less of the hussle and bussle where caregivers are punching in numbers on the computer” (i.cm.19).

Changing the culture towards caring: The CM suggests it will take a culture-shift to focus back on caring at Children’s. She argues that technological orientation may not necessarily be the best skill for a nurse. Caregivers should be proficient at what they do but it is much more important talking to the patient, giving her a bath, or washing her hair. Especially, touch is much more effective than anything else in healing somebody. Therefore the main concern of a caregiver should be the patient (i.cm.27).

Preparation for the PICU: Patients do not receive psychological preparation and extra comforting before important procedures, or a special admission procedure to minimize their anxiety. When a patient is admitted from the ER to the ICU, there is no time for preparation. But also on a routine basis, they are not prepared. The CM suggests during procedures, there can be more nurses explaining, comforting, or *being there* just to hold hands. That doesn’t happen very often because nurses are very busy with their tasks and technology, forgetting just being present is much more important for their patient. They don’t need to be doing anything. They got lost in the fine lines of “what does the institution mean, what do caregivers need, and what the patient needs” (i.cm.20).

3.3.3 Care Models and Philosophies

The Meaning of Caring and Nursing for the Caregivers

Caregivers revealed different aspects of the meaning of caring and their special care philosophies. The ICU director emphasized a team-based approach to care, in which they always work for the patient and family together as a group. The nurse is the care coordinator of this healing group. She works with a variety of people to establish the care plan for the patient. The nurse, the therapist, the social worker, the doctor, the child life person, the pastoral care person, everybody works together to create a more optimal environment for the patient and family in which to heal and get better. Focus on the patient is their core

philosophy (i.ud.3). The CM, on the other hand, suggested that her individual caring approach is to help the patient no matter what, whether she lives or dies, because dying is not necessarily a bad thing (i.cm.2).

The AP's care philosophy is to provide the highest level of expertise and the highest quality of care at all times, which in the cardiac ICU means that the attending staff must have specialty training in this field. Sometimes physicians do not understand pediatric cardiology, particularly at tertiary centers (i.ap.3).

The special patient care philosophy of the RN is to treat each child like his own. The ICU is task-driven to provide a safe environment and make sure the patients get what they need. Most patients are so sick that the caregivers do not see their personalities many times. He tries to satisfy their emotional needs: if it is something that he cannot take care of, he gets someone that can take care of it. Usually he is very busy with all the technical tasks, and mostly there is no time for caring for the emotional needs. But the social workers and volunteers are present for those needs (i.bn.6). During the interview in the patient room, he tried to have an emotional connection with his patient by talking to him when he woke up, however, the child did not respond. Therefore, eventually he turned the TV on to make the patient more comfortable.

Family-Centered-Care

Family-centered-care is the most influential care model in the pediatric world today. However, it is a relatively new concept for Children's since they adapted this model only a few years ago. Compared to older U.S. hospitals, where FCC balances the domination of technological innovations, it is not as well advanced at Children's (i.cm.4). In order to improve their FCC model, they need 1) to get the parents more involved in decision-making, and 2) to allow them to be at the bedside as much as they want. Currently, if they perform a medical procedure, or if a patient is undergoing cardiac resuscitation, they require the parents to leave, whereas in hospitals pioneering FCC, caregivers are comfortable with having the parents in the room. The CM points out that the separation anxiety is enormous for a mother, especially when she feels powerless. Additionally, many moms revealed naturally their feeling that nobody could get them away from the room if someone was working with their children (i.cm.10; i.ud.22; Shepley, personal communication). Therefore, parents need to stay in the room, see what is happening, and maintain physical or eye contact with their child (i.cm.10). Finally, family presence is not only beneficial for parental well-being but also for patient outcomes:

The sooner the parents get involved in care, the more optimal the patient will proceed from illness to wellness. The more knowledge you give to parents, it is only beneficial to their involvement, their caregiving abilities, and the child's transition outside the ICU and home. The impact of parental presence and involvement in care is even greater if the patient has a long-term, chronic illness like the cardiac patient that might have multiple surgeries, or the patient who has to go under dialysis. Parents have to care for their child, and need to stay just as involved as the child gets older... Especially through teenager years compliance becomes a big issue (i.ud.4).

Parental presence in the patient room: Although parental presence and interaction with the child is usually beneficial for the whole family unit, it may not always be beneficial for a patient, especially when parents have a discussion. Therefore, caregivers have to coach the parents, who are sometimes very

young, immature, and not aware what they do or say may affect their child. Especially if one's child is in the ICU, people are not aware of many things. Parents need guidance from the caregivers to be reminded of simple things (i.cm.11; i.rc.19).

Plans to increase family presence in the patient room, especially during resuscitation: They plan to conduct a research study on family presence in the ICU, which they recently finished in the emergency (ER) department. They will start inviting families to stay in with their child no matter what, if it is starting an intravenous (IV) or doing cardiopulmonary resuscitation (CPR). Although they do this informally, it is not a standard. They would like to make it a policy in which the AP allows family presence, and gives nurses permission to do that. They will provide interventions in which the family, mostly the parents are allowed to be present during invasive procedures and CPR. As far as visitation, they believe nothing should prevent the family from being with their child, except for surgery. That is the culture they want to adapt (i.ud.22).

The importance of parents' vocal and tactile stimulation: Parents may be afraid to touch or talk to their child when she is sedated or comatose. However, it is widely believed that children can hear (because hearing is the last sense lost when comatose) so caregivers need to encourage the parents to talk to their children even if they do not respond, and to let them know they are *there*. Children know their parents' touch: "Most of the time when I am in a patient room, I will always touch a patient in some way, because it's important to let that person know that not only are you there with them, but you recognize them as an individual, and that you care," argued the CM (i.cm.12).

Best children's hospitals in FCC: The question as to which hospitals offer the most progressive visitation policies for families is an ongoing discussion. Although smaller PICUs may have better visitation, all hospitals have some restrictions whether it be "out for report," "out for rounds," or "out for CPR." Everybody has a hybrid model. Children's offers 24/7 visitation, allowing parents to visit any time. Unlike the adult world, they do not have set up visitation hours in the pediatric world anymore (i.ud.24).

3.3.4 The Meaning in Death and Dying

The meaning of death and dying in the ICU may escape scientific interpretations because it seems to be impossible to isolate this issue from its spiritual aspects. The CM, who revealed her feelings, interpreted death and dying in her own spiritual (Christian) framework.

In dealing with death, many caregivers informed they get psychological support from their faith, which are usually based on fundamental Christian ideas such as 1) that God is leading the way,³³ and 2) the notion of the resurrection of life. Therefore, caregivers may have a positive experience if they feel they helped the patient: "Helping somebody die is just as rewarding as helping somebody live," argued the CM (i.cm.3), although for other caregivers who are not Christians, this view may not be beneficial.

³³ This is also a fundamental idea in Islam. The concept of one's transition into acceptance to death may be compared to the Turkish ICU.

Good death: It is very difficult for parents to see the invasive procedures done on their children. Therefore caregivers need to provide proper coaching by talking and explaining to them what they are observing. The CM brings forward the story of a particular mother, whose daughter had toxic shock and went very suddenly into cardiac arrest; she had just had breakfast with her in the morning. She couldn't understand how her daughter could be dying. She was in the room, and saw the condition of her child, and saw everybody was working very hard to save her. She knew nothing else could be done. The CM who was the nurse at the time talked to her continuously to convince her to give the child permission to die. Her daughter was fighting not for herself, but for the mom. This was a wonderful experience because by allowing her child to die peacefully, she did not have any guilt. She didn't have to worry about what happened because she was there. That's the most important thing (i.e., to have a peaceful death and not to have guilt afterwards). That is what one will have for the rest of her life (i.cm.13). This story supports the notion that healing (of the parent) is sometimes more important than curing.

The role of invasive or heroic procedures: Caregivers sound as if they can facilitate death: "There is a sense of peace, we may walk in a room, and say, this child is going to die, calm down. Other times we see a fight, oh my God, this child is going to live," argued the CM (i.cm.14). She reveals the story of a trauma patient, who was hit by a car and had massive head injury. Her mother had extremely strong faith in God. This example shows that healing is not a worldly but a sacred function:

When they took him to the ER, they took part of his skull. He had parts coming out of his eye, and infection in his head. He walked away from that. *It takes experience to understand it is not in our hands to control who will live or die.* That kid and his mother have not given up. This mother was very particular. She did not want any visitors in the room when she was absent. She only wanted the nurses, who believed in God. When she was in the room, she prayed, and she didn't want any visitors, because they would look at him, and she didn't want that negativity. She didn't want him to hear how bad he looked. Because she was not dealing with what she saw; she was dealing with God's word (i.cm.14).

Therefore, despite the intensity of care provided for extremely critical patients, who approach the threshold of death, healing in some way is independent of these procedures. Second, there is a lot of discussion if the invasive procedures do prevent the right of a patient to die peacefully. In general, heroic measures are used in critical care even if there is only a slight hope for survival. The CM revealed they do a lot of heroic measures because:

These are the children of God. If He takes them, I ask Him to prepare me so I can talk to the family. If He wants them here as a testimony of the parents' belief in God, I want to be part of that, too. It's His will. He gives you strength to do heroic measures no matter what you see in front of you... For heroic measures, there is a time and place. Once you know they are just instruments God gave us, then you will wait for His call. I could be as heroic going down the hall, and I have as well done nothing except hold the baby when he was leaving (i.cm.14).

God's will: This is another theme revealing the idea that healing is a "sacred" function that is not in human hands. Based on her innumerable experiences, the CM argued the bottom line in healing is God's will. When the researcher asked her how she could identify God's will so clearly, she revealed a story about a patient whom she took to his prom just before he died, through which she experienced God's will

very clearly. This patient was not critically ill; he had only fractured his back, but within two weeks he was dead. He has a desire to go to his prom, and also to die *at home*. He did both, which she thinks is the most important thing. When they came back from the prom, and walked down the hall through the hospital, there was not one nurse, not a doctor, not a housekeeper, not a patient, none from the front door to the fifth floor. In walking, she felt she had no feet but was flowing. Later she had a revelation that he would die, so she prepared his mother even before the physicians told the mom her son was going to die because of liver failure. She felt very comfortable in that experience and in her relationship to God because it allowed her to prepare the mother and the child so they could transition into acceptance to death and he could have the kind of death he desired: “God never surprises us. He always prepares us,” she concludes (i.cm.15).

Sensitivity to death and dying: Having provided a lot of feedback about the psychological and spiritual aspects of death and dying, the CM argued further on the institutional aspects of this process. She believes that they should improve their sensitivity to death and dying. Especially, parents may find the loud noises or laughter of the staff extremely disrespectful when they go through that process. She reminds parents can be given surveys to comment on the death experience, and what things to change. In the hospital where she previously worked, when a child was dying, they put a teardrop on the door of her room as a *signification* of her dying. So people would know there should be no loud laughter, because whether it is reality or not, it is very offensive to the perception of the family (i.cm.23).

Meaning in sickness and survival. Finally, the CM argued it is not only death and dying but also going through sickness and survival that creates a meaningful experience:

If you go through a childhood illness and survive, you are supposed to come out with something. Otherwise why to go through it? So you always have to look at what you will get through that experience of sickness. To live but why, if you do not tell anybody about your experience, if it doesn't make you different, if it doesn't make you want to change something, that wasn't maybe a good experience for you (i.cm.31).

3.3.5 The Role of the Physical Environment in Healing

The role of the physical environment in grieving: The physical environment of an ICU should be conducive to a grieving parent, and to the caregivers. It may be meaningful to explore the role of a more appropriate design that can facilitate death and dying, and hopefully reduce the level of pain and suffering. The ICU director believes the physical environment is not as important as the cultural, spiritual, or emotional environment in which they allow the families to deal with death. They need to support families so they can begin the grieving process, and let go of their child. However, one positive impact of the physical setting in death may be to provide more space in the patient's room, so they can at least invite the whole family in, or they can bring a big bed where parents can lay down with their child in those last few minutes. However, families' mere presence and the acceptance of their presence by the caregivers are much more important to their well-being (i.ud.21).

The role of the mortality room: Almost all caregivers argued that the parents should not be taken into a formal mortality room because once they move the patient to another room it becomes the *symbol* of death, which is no longer natural, because it is interrupted by moving the patient. That environment should

be created naturally in the current location of the patient. When a patient is dying, that environment is already created. Caregivers need to keep going so that the parents can move on. In this “room of tear,” parents should be allowed to do anything they need to do to feel better: they may want to hold their child, wash the body, play music, have prayer, or have all the family members to come in (i.cm.22).

In other words, a mortality room breaks the naturally occurring setting of death, and becomes obsessive. People will already have changed themselves just walking into this room, knowing this is where they put the patients that are dead, or where they invite the parents whose children die. Rather, they should bring the parents to the patient’s room and let them be a part of the dying process so they may feel good by having closure *there*. They need to make this room conducive to their needs. Parents have to be comforted what had happened. They need to have both time and space (i.cm.22).

The role of positive social interactions and experiences in healing: The function of an ICU is not only to facilitate recovery through curing but also to increase the chances for healing by creating positive experiences, even in death. Caregivers confirmed parents might still have a positive experience with their stay in the hospital despite all the problems associated with the physical environment, and the lack of accommodations, if they have an open relationship with the caregivers. For instance, when they had a very awful and a very old ICU, they still had positive experiences. Similarly, before the ICU was renovated, the staff lounge in the Turkish ICU had provided a spatial context for positive social interactions among the staff members, and their relationship with the families. Therefore the physical environment is not as important as the human factor and the open relationships that enable a positive experience. However, people today are much more in touch with their environment than ever: they want to have nice, open, user-friendly and clean environments. If people walk in an environment, where the floor is dirty, they will think their child is not taken care of very well. Therefore the outward look is extremely important in the hospital business (i.ud.30).

Supporting the feedback of the ICU director, the AP argues that communication and the positive attitude of physicians and nurses towards families may be the most healing behavior. She has been in an ICU that was very old, and only had curtains, and no room for the families, but the people still communicated well, and it functioned well. The second most needed issue is privacy: In terms of the physical environment, they have to provide families with a private space, quietness, and an ability to be isolated from other families when they wish. They need to have at least shutters, curtains, or something in-between the rooms so they do not have to watch when another baby is getting CPR, or other people don’t see when their child is having a surgical procedure. Third, the provision of sleeping quarters for families, conference rooms, and a family waiting area is very important (i.ap2.13).

3.4 Evaluation Of The Needs

As a result of the emergence of social interaction as a major healing function, the provision and careful design of social interaction spaces becomes critical, especially: 1) the patient room, which enables the emotional interaction between patient and the family, 2) the waiting room that may facilitate supportive

interactions between families, and 3) the staff lounge that impacts both the frequency and quality of staff interactions. Currently there is no space beyond the patient room, the public hallways, and the counseling room to facilitate the interactions and communication between staff members and families.

In addition to social interaction function, which informs the healing design interventions for patient, family, and staff areas, the recognition of the specific needs of each group can facilitate the particular aspects of their healing process, such as the need for stimulation for patients; the need for rest and relaxation for families and caregivers; and the need to work in specialized and separated ICUs for staff.

3.4.1 The Needs of Patients

Before exploring the needs of critically ill children, recognizing the distinguished features of children may be helpful. First, they are able to *wonder at the simple*, the everyday and *familiar*. Caregivers who deal with children recognize easily their differences than adults. Having worked with many children from different countries, the CM describes the qualities of childhood as follows (i.cm.21):

Whether they understand your language, all children are the same. They haven't taken on the *prejudices*, or the negativity. They are just there. They trust, they care, they love, they want to be loved, they are unique and they are the same. They are different from adults. This is the way God made them, and they haven't been contaminated yet. If you look into a child's eyes, it's almost like they can see your soul. They know absolutely whom they can trust, and they know who cares.

The need for emotional interaction with the family: The architect views the patient room as the primary space to facilitate social interaction, suggesting the provision of an adequate family space in the patient room would make it even more primary. She reminds us that the amount of space required by the staff as they enter the room can be minimal since it is basically for hand-washing and gowning (i.pa.29).

Comfort of patient space: With the hospital's emphasis on patient centered care (PCC), they want to bring all services to the patient in the future, making the patient room the patient's home (i.pa.29). Designed for one patient, each of the new "universal" rooms can be switched back and forth between an acute care and ICU room. Each provides a homelike atmosphere to minimize the potential fear of the medical equipment around the child. Although the trend is towards creating a patient-focused setting, the PA is concerned that PCC may be a fractured concept in its application due to the staffing constraints, and the need for a lot of money to keep the staff and the special teams in the hospital (i.pa.30).

In the 7-12 vertical expansion project, the patient room's spacing has been modified to increase the size of the family area and provides patients with DVD players and video games. The rooms on the exterior of the floors (both the fifth floor and the latest eleventh and twelfth floors) are equipped with floor-to-ceiling windows, affording the patient a spectacular view of the downtown skyline (Figure 3.2) or airplanes taking off and landing at nearby Love Field.

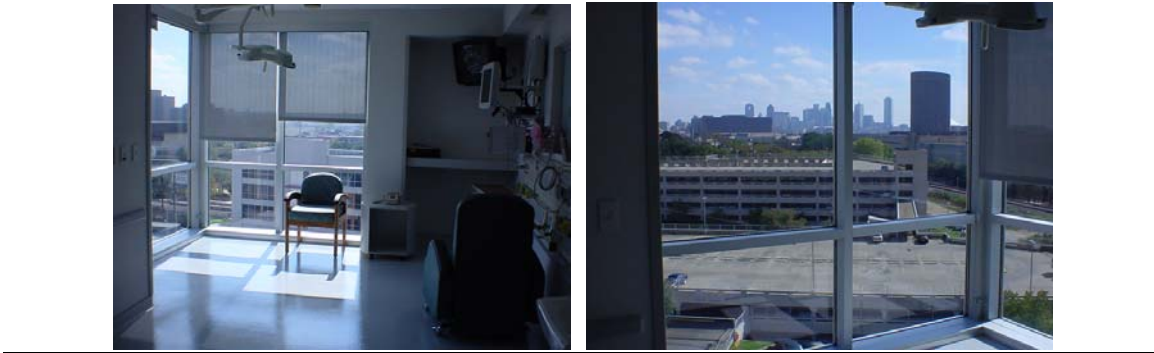


Figure 3.2: Floor-to-ceiling Windows, Patient Room, Fifth Floor Trauma ICU, Children's

The Need for Stimulation

In addition to the social and emotional interactions between the patient and her family and the caregivers, and providing a comfortable atmosphere for the patients, the various forms and levels of stimulation in a PICU may also impact healing, by replacing the perceptual monotony with exposure to beneficial objects, such as carefully selected scenes or sounds from nature. Currently, social interaction with the Child Life staff is recognized as the most beneficial form of stimulation by the U.S. caregivers.³⁴

Child life: Child life specialists (CLS) are the people who interact with patients that are not sedated and are in fairly good condition. The function of a CLS can be seen as the core caring function of the traditional nursing profession, which has changed towards the domination of technical skills in the current era. They explain procedures, or they are just present in the patient room to talk or read a book to the patient. In the U.S., some people prefer to read Bible verses to their patients as they believe that has more impact on their healing process, and is more comforting for their psychological well-being (i.cm.16). If the mom or dad is not present in the patient room, the role of the CLS or a volunteer person that spends time with the patient becomes especially important.

Tactile stimulation (The healing touch): The importance of touching patients, their parents, or one another is emphasized in both the U.S. and Turkish settings, particularly by older and more mature female physicians and administrators. They argued that touching is a sign, or a symbol that shows care and concern for another person. The CM argued it is the way God made human beings: "to touch and to respond to touch." However, she reminds us that many people are not comfortable with touching or being touched, which creates a barrier in the relationship. She argued most of staff members are not used to having tactile stimulation at Children's, which prevents the establishment of emotional bonds and connectedness among staff members, and in their relation to their patients or the families (i.cm.25.1).

³⁴ Unfortunately, Child Life Specialists are not readily and consistently available in the Turkish PICU. Although parental presence is extremely dominant, eliminating a substantial need for the role of the CLS, the educational barriers of families and the low cost of providing CLS staff would justify the need for incorporating them into the healing team of the Turkish PICU that may increase the chances for healing.

The presence of the TV: TV is a negative form of stimulation used extensively in both the U.S. and Turkish settings: although the presence of a TV may address the needs of parents for distraction in the U.S., and of the caregivers in Turkey, it may be harmful to the patients, especially in the open bay arrangement of the Turkish ICU, where the two centrally located TVs (for allowing visibility from each patient bed) caused high and uncontrolled noise levels due to the personal preferences of staff, such as for the pop music channel. In both settings, the presence of a TV may significantly reduce staff performance, by negatively affecting the level of care and attention.³⁵ Many caregivers suggested the ICU patients do not need the stimulation from a TV, which is not conducive to their struggle for healing. Once they feel better, TV may be more beneficial as an opportunity for distraction, but in an ICU by the time patients feel good, they are transferred to regular inpatient departments. Therefore TV is not necessary in an ICU.

Dark room impact: Although the advantages of the provision of daylight in a patient room are well appreciated in health design, the potential benefits of keeping a very sick patient in a dark room as an alternative approach to healing has not been explored: “When a patient is very sick, you put her in the dark. Then you gradually allow light into the room. They seemed to get better faster. It seems as you introduce the light, they are responding and getting better. They may feel, that’s the outside; that’s where I want to go,” argued the CM, based on her experience for many years practicing like this (i.cm.37). This healing technique identifies the theme of the *will-to-live*, which may be stimulated by the awareness of daylight. When sickest, a dark room may enable a patient to rest, relax, and feel comfortable, rather than irritated by the light and noise. Additionally, the researcher observed many times that increased light levels increase the activity and noise levels in a room.

Children’s reactions to the physical environment of the PICU: The AP suggested that a large percentage of the PICU patients are babies, who are mostly sedated.³⁶ Therefore they may not remember much of their ICU experience. For the older kids, however, it is much harder because it is a very noisy environment, preventing their need to get good sleep. Therefore, they try to provide good pain control, to be very attentive to them, to do clustering of care, to care during the wake hours, and to let them have periods of sleep. But it is difficult to completely estimate the reaction of older children to their hospitalization in an ICU (i.ap2.14).

The RN, on the other hand, observed that the children find the trainscape in the entrance lobby of the hospital very exciting, the staff members friendly, yet there is still a lot of pain and anxiety involved with being in the hospital (i.bn.9). He argues there is usually no interaction in the ICU with their environment because they are severely sedated or go through altered levels of consciousness. Nurses try to recognize the needs of each child by providing distraction, comfort, and happiness (i.bn.10).

³⁵ During the late night interval the researcher spent in the Turkish unit, the main activity of the caregivers was watching a movie, which seemed to have prevented them from attending to the patients regularly.

³⁶ Although most of the critically ill newborns and babies are treated in a NICU, some of them may be transferred back to the PICU. The PICU serves the critical care needs of the babies, infants, children, and adolescents from 1 year of age or less to 18 years of age.

Special Architectural and Technological Needs of Specific Populations

While comparing the physical setting of different ICUs, the severity of a specific ICU population and their spatial and equipment needs should be recognized. First, all ICU patients at Children's use a fundamental set of supplies such as physiologic monitoring systems, room ventilation, patient ventilation, oxygen supply, and the warming lights. They do post-surgery tests and invasive procedures, which require them to have surgical and warming lights in all patient rooms in each ICU (i.fc.7). But in a cardiac or trauma ICU, as opposed to a medical or surgical ICU, a certain percentage of patients also require hemodialysis or video EEG monitoring. Caregivers cannot predict what patients will require these services when they are admitted or on the way to the hospital. If they have a patient already admitted, they cannot always move him to another room to accommodate his special needs (i.fc.9).

Cardiac patients need more pumps, equipment, and medication (i.pa.15), thereby needing more space for additional equipment for the patients on a bypass machine, or for those who will have surgery (Figure 3.3). The need for more equipment in the cardiac ICU also justifies the use of more expensive ceiling mounted booms. Additionally, ICUs are moving towards a more open policy, allowing families to stay in the room, so they need extra space in the room for a separate family zone with a bed. The biggest difference in a cardiac ICU is that they do more surgery and have more kids on bypass machine (i.ap.2.10). The architect reminds that the effort to do a universal ICU room that works for all may not work really well because of the differing needs of the cardiac population (Figure 3.4). But it may still be possible to find a way to get all the needed equipment in the room (i.pa.12).

While the special needs of the cardiac population may have encouraged the idea of improving some aspects of the physical setting of their ICUs, the hospital was very progressive in general, and very supportive of this notion, such as providing bigger windows, natural light, and accommodation for parents to allow them stay with their child, and the opportunity to try new equipment (i.ap.7).

There are also differences between critical care and acute care patients. The latter are not as clinically brittle, and do not need as much equipment or staff. *The relationship between the nurse station and the patient bed* is the highest priority in critical care. The central core on critical care floors has different requirements for the nurse station due to the need for direct visualization from the nurse station to patient beds (i.pa.22).

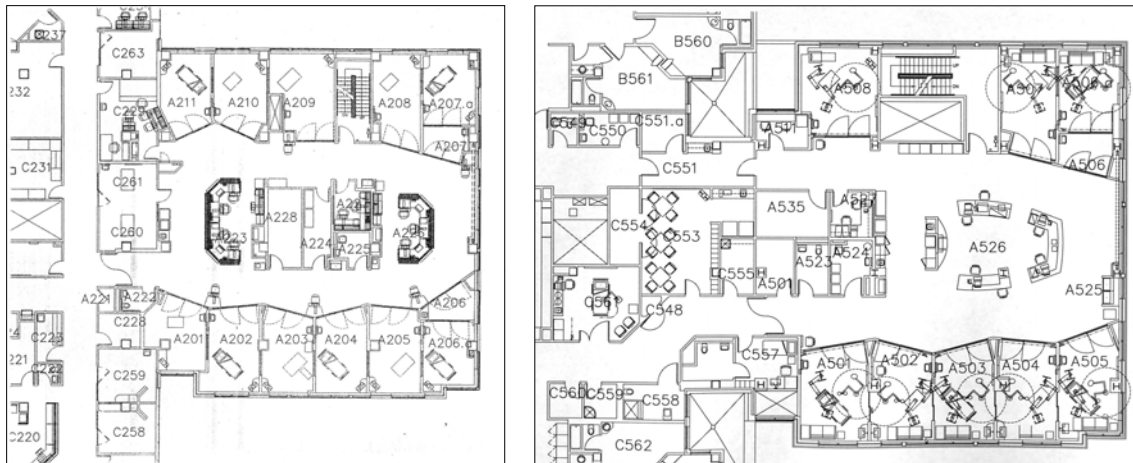


Figure 3.3: Special Needs of a Cardiovascular ICU (left) and Trauma ICU (right), Children's

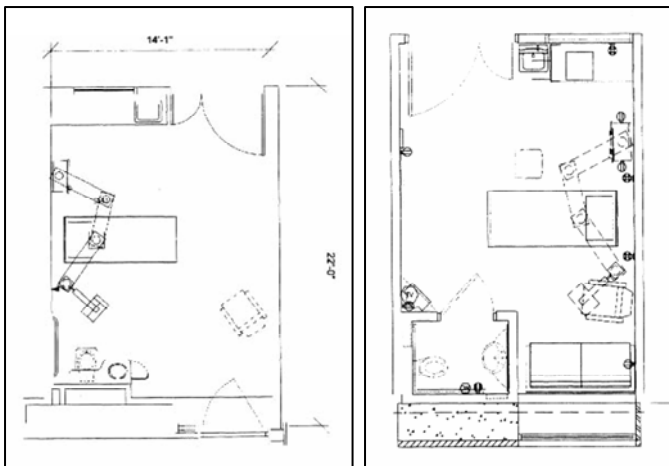


Figure 3.4: Comparison of the Floor Plan of the Cardiovascular ICU (left) to the Universal ICU and Acute Care Room (right), Little Company of Mary Hospital, Torrance, California

3.4.2 The Needs of Families

The Need for a Comfortable Physical Environment

The facilities coordinator (FC) stressed the importance of the “comfort of the family space.” Before his son was hospitalized, he did not care what kind of chair the family had to sit on because he thought they would stay for a short time and leave. But in a children’s hospital, parents stay in the hospital the entire time. At night, they should have a comfortable surface to sleep on: it should be something more comfortable than a recliner. Being able to have a TV, and to control the channels is also important. TV is there not for the child, but for the parents, who need some form of distraction (i.fc.15).

Families need a comfortable and functional space that is well-lit, or has adjustable lighting. They shouldn't be given a cubbyhole, or "we'll find you a corner" type of behavior (i.fc.19). Once a child leaves the ICU and goes to the floor, the parents cannot leave the hospital, because if their child needs something they want to address that immediately. Since the family stays in the room all the time, they should have a space conducive to their staying. The family is as much a part of the experience of the hospital as the patient (i.fc.15). They need to be able to go outside, and to have access to nature if possible as a mental distraction (i.rc.4).

The FC emphasizes the need for visitor or family spaces, more access to showers for the families, and sleeping rooms, which can be designed in clusters like a small hotel within the hospital. Although they provided a room for this function a few years ago, it was not a private space (i.fc.16).

The need for home-like³⁷ design: The architect suggests there has been a huge trend in making hospitals more home-like and less clinical in *feeling*, which became very apparent with women centers, where they had labor and delivery rooms (LDRs) and LDRPs in a patient bed setting so when the patient is finished with her labor she stays in the same room with her child.³⁸ Other things that help to make people more at ease about being in the hospital and feel as if they are in a more natural setting are gardens, lighting, art, and to bring the "natural" in as much as possible, and still maintain the ability of the staff to function efficiently, without raising construction costs too much.

In the 7-12 expansion of the East Link, they designed a hotel/hospitality look, rather than a white porcelain interior that the infection-control people love because everything is sterile, still, and echoes forever. They provided sound attenuation, softer texture, and resilient flooring, which *make it an easier place to work*, and a more pleasant place for the patients and families to be. It is very stressful to come into the hospital. The home-like design trend is also supported by the increasing staffing shortages, so providing a home-like atmosphere may also help staff (i.pa.9).

Family waiting areas: Remembering her experience of walking through the emergency department, which was full and packed, the PA argues it is dismal to design such a waiting room even in emergency department, where people hope to hear good news about their child. She suggests that the stresses on the pediatric critical care floors, where everything is behind the patient doors, may be a similar experience. She worked on two different ICU waiting room schemes: 1) one had half-height walls dividing the area, because families camp out in the waiting room: they are territorial, and they want their little space. 2) The new waiting area is larger, and does not have as much furniture. They expect fewer people in the new waiting area because of the increased amount of family space in the patient room. "When an infant is

³⁷ The notion of home-like design seems to relate to the philosophical discussion about the meaning of the house and the "dwelling" experience, which can take place at "home," as argued by Heidegger and other phenomenologists (such as Juhani Pallasmaa). The home-like design trend can be viewed as an attempt to recreate the meaning of the house and the dwelling experience in the hospital.

³⁸ In these rooms, they have closed up the medical gas, which is much more like home. The room is also finished in a home-like way. The corridors and lobbies are like hotel/hospitality design. The LDRP concept in a "homey" environment has moved out of the women's labor and delivery area across the hospital.

critically ill, you see the aunts, and uncles, and grandparents, too. You don't just see mom and dad. Even as high rate as divorce is in our culture, everybody comes that is tied to that child," she reminds us. She believes they may purchase smaller furniture for a larger area, or create a fully open waiting room (i.pa.31). Figure 3.5 shows the existing atmosphere of both waiting rooms located on the third floor. Figure 3.6 shows the location of the fifth floor waiting room in relation to the PICU (and the bathroom for families).



Figure 3.5: Third Floor ICU Family Waiting Rooms, Children's

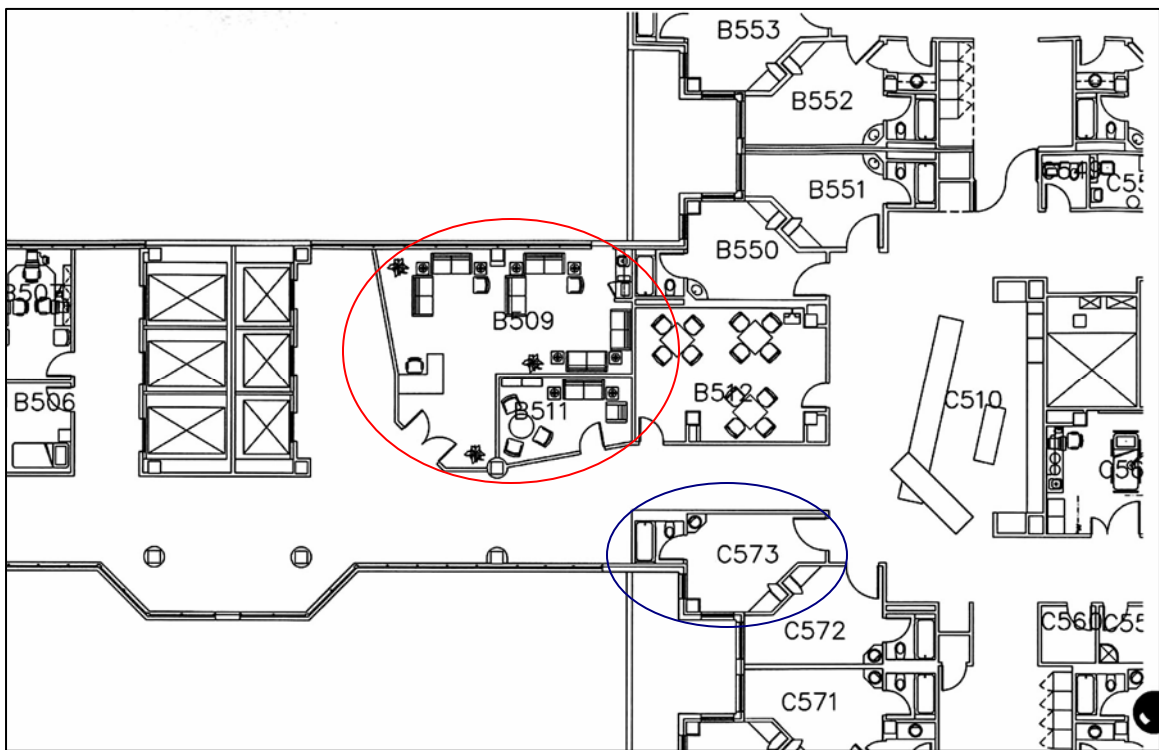


Figure 3.6: Fifth Floor ICU Family Waiting Room (B509) and Bathroom (C573), Children's

Bathrooms for families: Families have access to showers: all waiting rooms have a bathroom with a shower, and a regular restroom. On the second floor, they had two bathrooms (B273 and B274) inside the waiting room (B270) both provided with showers, yet they had to eliminate one of the showers because people were using both for a long time (30-40 minutes), preventing their use for other purposes (i.fc.17). The bathrooms are arranged in other ways on the other floors: The bathroom on the third floor is located in the hallway outside the waiting room; and it opens to the public hallway, without providing any transitory space in-between. The fifth floor bathroom (C573) has a shower, and is located outside the ICU, although there is another bathroom without a shower inside the unit (A523). There is no additional bathroom in the waiting room. However, bathing on-site may be a beneficial activity for the parents, and therefore it should provide an optimum level of privacy for the families' relaxation function.

The Need for Opportunities for Rest and Relaxation

Getting short breaks: For periods of times during the day, parents need a break and a place to go. They may need to have computer access to investigate their child's illness so they can feel as parents they have made the best decision for their child, or a place where they can socialize within the facility. They need to go out and eat, or go to a movie. It would be nice to provide some of those amenities in the hospital for parents so they can go away but not be away. Another humanistic concern is to provide them with pagers, so they can be paged if needed, or if their child wakes up. They would still feel connected to the hospital. Time away from the unit is important to get a different perspective (i.cm.40).

The Need for Social Interaction and Communication with the Caregivers

Providing information for families: Providing information is key to family satisfaction and overall sense of well-being, which would support a healing environment, and result in less law-suits (i.e., if they receive information, they question the hospital less). The challenge is the hospital's role in a university system, which results in various levels of medical interactions from the resident up to the attending physician. Therefore the family gets mixed messages from the medical side. Also, because the nurses are very young and do not have enough experience they are not comfortable in providing information to the families. Children's tries to improve this problem through education, coaching, and supporting the staff, both the doctors and nurses (i.ud.25).

Providing communication with families: The more mature and more experienced RN notes that factors that they cannot change in their relationship to families, such as major communication and control problems with very large families, or having problems with families who prefer to eat in the patient room (although it is forbidden). He tries to be very knowledgeable and confident in the information he provides to families, by explaining everything he can and being very open to them. He also encourages them to go home at night. The superiority of the trauma ICU is the big and well-lit rooms. They allow families to sleep in the room in this ICU, which is an important difference as compared to the older units (i.bn.8).

Providing education for families: They can improve parental education; i.e., teaching the parents in the hospital, preparing them for transfer to home, and keeping them up with that education since most patients have long term problems, requiring a lifetime of care (i.ud.11). They also offer family services like child life, pastoral care and social work.

3.4.3 The Needs of the Caregivers

The need to recognize caregivers' needs emerged as the most important finding of this study. All the caregivers and administrators stressed the need to take care of staff, and to consider the potential of the physical environment to care for the staff members. Based on this case study, it is expected that the success of hospitals in the future will depend on caring for the needs of staff members by improving both the physical and social environment for them. Staff needs have to be recognized and fulfilled to attract them back to a career in healthcare, and in order for them to better respond to the needs of their patients and the families.

Problems with the Current Landscape: Nursing Shortage Constraints

Low salaries, a poor physical environment, and lack of a daycare center are universal problems in contemporary healthcare settings. Caregivers argued these may be the main reasons for the global nursing shortage. In the U.S., on the other hand, the baby boomers are aging, resulting in a greater need for more hospitals and more beds, while the time spent in the hospital is decreasing significantly. Therefore the notion of being in the hospital has changed enormously in recent years, adding more stress to the work of caregivers (i.pa.10).

The lack of shifts conducive to family life: The nursing shortage crisis is also closely related to the long shifts. At Children's, caregivers work for three 12-hour-shifts a week, staying away from their home for 13-16 hours a day (from 6 am to 9 pm), which includes the time spent for transportation. In general, there are not too many ICUs in the U.S. that offer 8-hour shifts anymore. However, the 12-hour shifts are not conducive to family life. Especially there are a lot of young female nurses, and when they have their own children, it becomes a major problem to be able to work for 12 hour shifts, if their husbands do not have flexible work hours, or if they do not have any support from their families, friends, or neighbors to take care of their children, thereby significantly reducing retention. However, many nurses still prefer to have three 12-hour shifts a week to free up the other days for other activities, such as education (many nurses attended to graduate school to get their masters degrees) (i.cm.6; i.rc.13; i.bn.7).

Caregivers expect this crisis to be more severe as they expand in the future, needing more nurses to take care of the increased number of patients admitted. In other words, not having enough nurses will be the most important restricting factor against their growth. Additionally, the expansion may cause other risks associated with the human resources: The nursing administration is actively recruiting new staff all the time, however, the number of experienced caregivers as a percentage of the total staff is growing smaller, reducing the skill rate of the staff. While they may be able to take care of more children in the

future, they will need to maintain the quality of this care (i.pa.22) and to provide enough qualified people to take care of the patients (i.bn.7). It takes one to two years for a nurse to get experienced and gain specialty skills in a PICU, the RN adds.

An important outcome of the nursing shortage is the need for family support. *Because hospitals do not have the staff support they need, they should allow the family to be there for the patient as a gift.*³⁹ Consequently, they need to incorporate space for the family. The architect suggests those kinds of cultural anxieties were addressed in the design of the 7-12 expansion of the East Link Tower with the softer finishes, and by providing better support spaces for the family, such as nicer waiting rooms, or a place to do their laundry (i.pa.10).

Their strategies to deal with the nursing shortage: Children's has incorporated many strategies to deal with nursing shortage. Administrators argued they are a couple of steps ahead in that, especially in critical care areas. First, they provide education for their staff, physicians, administrators, and the community. Second, they rely heavily on their care partners, like the respiratory care therapist (RCT), to manage medical admissions and to support patient care, unlike the other units, which are mostly nursing driven. Additionally, several years ago they started to search for alternative methods to take care of patients, because there is a chance they may not get young people interested in a career in healthcare and nursing in the future. The nurse will remain the care coordinator of the healing team, yet they have found new ways to address the lack of nurses. Finally they have improved their recruitment and retention strategies (i.ud.15).

Recruitment and retention strategies: Administrators suggested they are doing better on both, although they can improve. They hire brand new graduates with no experience, yet they do not stay. They leave as soon as they get their education. Their disadvantage is that it is a university system based on a medical center approach; they have a lot of medical doctors, residents, and medical students, and it is primarily a teaching and research facility. Although a big environment associated with a medical school brings a lot of opportunities for education and research, many people do not like this type of high technology and research environment. They prefer the low-pace, less intense work environment (such as a private facility, or a community environment owned and operated by physicians). Most of the new graduates are 21-22 years old, and do not have the life experience necessary to sustain a career in this kind of environment. However, other big health care centers have similar problems (i.ud.16).

To provide more retention, they provide alternate ways of education, especially for young staff. They have separated the ICUs by diagnosis, and created work teams in four distinct areas, each having its own subgroup of staff, which are the cardiac unit, the trauma unit, the PICU, and the step down unit. They also try to create a family type environment, in which people feel better about their work environment, and gain expertise more quickly (i.ud.16).

³⁹ Most probably, the family's presence and caregiving function would also be a gift for the caregivers.

The Need for Providing a Pleasant Physical Environment

A good physical setting may positively impact nurse recruitment and retention as much as adequate pay. Every effort should be made to make their lives nicer, and to let them have breaks, drinks, privacy, and sunlight, so they can enjoy their work, and also enjoy coming to work (i.rc.14). A daycare center and relaxing environments such as a workout center, a gym, and a nice staff lounge will increase staff retention.

They try to make the physical environment more pleasing for the caregivers, and ultimately for families and patients. Staff members appreciate the large number of windows provided and the resulting brightness and openness in the 5-A trauma ICU; windows are the first features recognized by people who come to visit, or for an interview. Administrators are aware of the fact *if people feel better about working in an environment that is bright and sunny, it lends itself to a different healing atmosphere*. That is, caregivers will have an increased sense of happiness, well-being and enthusiasm in their job compared to those people who have to function in a room without windows or daylight, not even being able to distinguish if it is day or night. These insights are not only intuitional but also supported by research studies that show people feel better about their work as the physical environment improves. In general, people like to have clean environments and bigger spaces to work in (i.ud.17).⁴⁰

The AP argued that although the physical environment of the ICU may not directly affect the quality of her work, it changes her spirit; i.e., it makes her happier to come to work, and easier to interact with families in a nice environment even when bad things happen. It impacts her mood. People are generally happier to come to work in a nice ICU environment (i.ap2.20).

Another ambient feature may be the introduction of healing music or healing sounds of nature to the ICU, which would improve the quality of care that the nurses provide. The patient room is a noisy place due to continuous background noise from all the monitors and equipment beeping, alarms sounds, etc., to which the caregivers are exposed for as long as 12 ore more hours, which may even introduce side effects like increased sensitivity to noise in their regular lives outside the ICU (although most of the caregivers were not aware of such differences, except for having frequent headaches).

Providing a Physical Setting Conducive to Rest and Relaxation Functions

The importance of getting short breaks: In addition to working in a nice atmosphere with healing qualities such as extant natural light and exterior views, caregivers need to be able to have short breaks, to relax, and to go away from their work environment intermittently during the day in order to stay healthy. They could walk down for a cup of coffee, and notice that it makes the difference in their day. Five or ten minutes may be enough. When they come back they will feel refreshed (i.cm.40).

⁴⁰ These observations (having clean work environments, enjoying coming to work, etc.) are universal, since they first emerged in the Turkish setting, where the limited number of windows and the insufficient amount of daylight were perceived by staff as a barrier to their sense of well-being and happiness.

Access to beverages: Staff members need to have access to beverages, like water, coffee, or coke within the ICU. Hospital policy requires that all beverages in the unit must be covered. There may be areas like semi-open partitions separated with blocked or colored glass, where staff can go and get a drink. Currently, they have to walk completely out of the ICU into the break room to have a drink. However, sometimes they have very ill children, and they do not always have the luxury to ask another caregiver to watch for their patient. Many people get angry if they don't get a drink or a meal (i.rc.9). Similarly, in the Turkish ICU, caregivers work for the whole day without getting a meal, or even snacks, although the need for having soft drinks intermittently during the day is not as common or as important in the Turkish society, except for the basic need for water.

The need for privacy and enclosure: Currently, there is no private or quiet room for caregivers to be alone, which may be particularly needed after a patient dies. Additionally, the patient room is highly stimulating with all the monitors and machines, so although they have some privacy in the patient room, it is not relaxing. Nurses expressed they have to go to the bathroom to have a private moment and enclosure. When they have a headache, they need a room where they can go, shut the door, and relax for a few minutes. It is upsetting not to have some private space for extended periods of time (i.rc.11).

One of the new design elements in the expansion project is a staff lactation room for breast-feeding, which is a private place for the caregivers to be with the baby. There is not even another chair in this room in consideration of the “introvert,” who needs to have a place to decompress (i.pa).

Rest and relaxation opportunities in the staff lounge: The real function of a staff lounge is to get caregivers away from the patient's bedside for short periods of times to provide them with different opportunities for rest and relaxation. Administrators suggested that the main reason that prevents them from taking good care of their caregivers as they work in their rooms or workstations is the lack of space. Currently, they have a staff lounge area that has tables, chairs, a refrigerator, microwave, and a TV but that environment is not appropriate for relaxation (i.ud.18). Bathrooms inside this lounge are facing the tables. Figure 3.7 shows two different views of the second floor staff lounge.



Figure 3.7: Second Floor ICU Staff Lounge, Children's

Instead, caregivers should have a room where they can go and sit in a comfortable chair, listen to music, or take a nap. *They need to have an opportunity to leave the work environment for periods of times to rejuvenate.* Recognizing the different needs of people to rest and relax, administrators suggested the importance of providing them with a workout facility, a gym, or a club where they can go anytime during the day.⁴¹ The provision of different release mechanisms is essential since these people deal with death and life every day. Especially after a patient dies, caregivers do not have any space or time to think, or not to think about this experience (i.ud.18).

Space limitations play the most against retention. The hospital is a business so they want to use every square inch for patient amenities. The ICU director recalls the healthcare conditions of the late 1970s, and early 80s, when they had a big staff lounge area in the hospital with couches, TV, music, a little break room with the kitchen, the girl side and the guy side, shower, and even a make-up bar. In this place they could socialize with their coworkers, or just do what they wanted to do, such as reading, listening to music, or watching TV. Today, they have gotten away from these standards (i.ud.18).

Administrators argued that many big corporations in the U.S. today provide rest and relaxation areas, workout facilities, staff lounges with kitchens, little break rooms, coffee bars, and snack bars for their staff members in striking contrast to the healthcare industry: Children's and most other hospitals have limited activities for staff (i.ud.18). Figure 3.8 shows their existing staff lounge atmosphere.

Another problem is that the donors do not recognize the benefits of improving the conditions in the hospital for the staff members. They prefer to buy brand new equipment that will save lives. However, they do not see the benefits associated with the operational side. Therefore the hospital works on different programs to show the community the importance of taking care of the caregivers (i.ud.18).



Figure 3.8: Third Floor ICU Staff Lounge, Children's

⁴¹ The provision of different release mechanisms may take various forms: The ICU director suggested that some people feel better after they listen to music, or take a nap, others feel better if they go on the treadmill for fifteen minutes, lift some weights, do some yoga, go to the steam room, or take a lap in the pool.

The Importance of Social Interactions Among Staff

Following rest and relaxation, social interaction is another major healing function essential to staff well-being. The ICU director argued *people will stay in a less optimal work environment if they work with a team with whom they are comfortable*. By dividing the ICUs into four subgroups, they expect to establish a healing environment in which people feel better and work together better, and to have more cohesiveness because staff would need to know less people. Finally, a smaller environment may improve and honor the relationships. Caregivers will feel they have a friend in their work environment (i.ud.28).

The architect revealed that the staff would get exceptional support in the future as part of the (operational) master plans of the hospital: they will bring in specialized blood draw teams to free the nurse from doing that. *There will be all kinds of staff supporting the nursing so they have the time for interacting with the patient in a meaningful way*. Currently, nurses do not have enough time to spend with their patients. Support spaces would facilitate the mobile team members to have a place to park and catch their breath before they go to the next patient because it is very time-intensive to go from one place to another. If the only staff running around were these special teams, *the nurse could stay in her area and focus on giving care*. Currently, their staff support spaces are off to the side; they are not in the middle in the core (i.pa.29). Similarly, in the Turkish ICU, caregivers argued that the painful procedures such as drawing blood destroy their relationships with their patients, who associate them with pain.

Finally, they designed a staff lactation room for breast-feeding to be included in the expanded building, which they expect to be one of the most popular rooms on eleventh and twelfth floors because it allows a place for the caregivers to spend meaningful time with the baby. Only one chair is provided in this room in consideration of the “introvert,” who may need to have a place to just go and decompress (i.pa.29).

Staff lounge: The shared space of the staff lounge has the most potential to increase the frequency and quality of staff interactions, which may extend to their professional relationships in an environment of shared social practice and knowledge of caring. Additionally, having a place to gather that allows decompression from the stresses of the job is a critical place to design. The staff lounges at Children’s, including those designed for the expansion project, are not big enough since they are built on a limited space. But one could argue: “if the objective of the nursing staff is to interact with the patient, while should they spend time in the staff lounge?” Whether the staff lounge should be designed as a regular break room, or a conference type of area to facilitate staff activities in a structured way remains to be explored (i.pa.30).

In current healthcare literature, there are not enough studies that focus on the psychological, sociological, or economic benefits that may result from an improved physical environment, especially the impact of an improved staff lounge on comfort and productivity. Many American companies not only improved the physical environment for their employees but also introduced many healthcare, wellness, health-prevention, and health promotion programs, especially for their executive people enrolled in routine physical exercise and nutrition programs. They get time to exercise, to eat a real meal; they have many benefits associated with their employment that the staff members at Children’s, or any other hospital, do not have. Therefore administrators suggest that the healthcare industry should learn from the business

world, which does an excellent job of *taking care of their workers* (i.ud.19). The importance of the provision of a pleasant physical environment, the integration of employees with their physical environment, and the resulting employee satisfaction is well documented in corporate America (Smith, 1996).⁴²

Drawing special attention to assessing employee interaction, Smith (1996) argues that exploring how employees interact in the workplace is a very important planning issue: Whether they are part of large cross-functional teams, a smaller specialized group or an individual entity, the type of work being done—and the reason it is being done—will affect where it will be done and how much space it will require.

Smith (1996) recalls that employee interaction was a key issue when Hewlett-Packard launched a redesign at its corporate offices in 1994. During this process, twenty-four employee groups were given the chance not only to redesign the furniture in their individual areas, but also to rethink completely their work processes. The objectives of the overhaul included updating the look, improving the efficiencies of the facility and incorporating a more integrated workplace. The last strategy, in particular, tied directly to their corporate business plan.

Hewlett-Packard (HP) employees considered such things as how they communicated with each other and with other groups, how team-oriented they were or wanted to be, what technological needs they had, how to handle informal meetings and how to deal with visitors. All the discussions and, ultimately, the final retrofit decisions had to fit in the framework of an overall corporate culture that encouraged team thinking and commitment to continual innovation (Smith, 1996).

The HP case, i.e., their focus on team dynamics and interactions, and their awareness of the role of the physical environment in stimulating employee interactions provides a good example for the healthcare industry to review, where centering on the meaningful interactions among staff may provide an alternative model of care in addition to patient focused and family centered care practices.

Provisional and Functional Design Interventions

Functionality of the caregiver zone in the patient room: “If you divide the room into three zones, one for the caregivers to do their daily tasks, one for the patient, and one for the family, the patient zone should be as user-friendly as possible. The caregiver zone must have ample space for daily activities: a nice chair, a nice area to chart, it shouldn’t be cramped. A sink that is accessible and immediately visible. It’s the first and the last thing you come in contact with. Everything should be arranged so that people can get to it. You have to see what you need without looking for it,” argued the FC (i.fc.18).

The need for an on-site daycare facility: Currently, they have no daycare facility on-site, although the employees of Children’s work for very long hours (i.e., 50 hour plus a week). It would be ideal for staff

⁴² Smith (1996) argues that in the 90s, business strategies are linked with workplace strategies, changing both the physical structure of the workplace and how we approach work. Additionally, she claims that the architecture of a corporate organization no longer refers to just the structure of the physical setting, but also to the structure of the organization itself in an environment where the management philosophy, hierarchy, amount of personal interaction among employees, and the corporate culture that occur within the office space evolve consciously. She also recalls that the expenditures for the physical environment increased from 10% of a corporation’s assets in 1965 to 25% of the total during the 90ies.

to have their children nearby, and have lunch with them. Caregivers stated that the provision of a daycare center would be especially useful during night shifts, if their children could stay over for as long as 24 hours. In particular, it is a problem for the nurses who get married and have children, if they don't have other means of support from family or friends (i.rc.12; i.cm.7; i.ud.29). In an environment that has so many young women that have babies, the lack of a daycare center is a big negative (i.ud.29). Therefore, support for childcare is necessary, which is a functional provision for staff, which also relates to the social interaction function between caregiver and her family. If the daycare facility is not possible, nurses at least want to be able to pick up their own hours, and not to get penalized for absence.

The need for adequate office spaces: Although shared spaces are critical to social interaction, another important issue relates to improving support spaces. Particularly, office spaces can contribute to healing by reducing staff stress. Currently most of the office and research units at Children's do not have windows, preventing employees from having daylight, although they work for very long hours (Figure 3.9). Another problem is the size of office space: they are very small although they are shared with coworkers.⁴³ "I got a new office last year and it's very loud. I work in this room with two other people: One of those people is very loud, and very distracting," complained one of the caregivers. A CM also revealed the lack of comfort of the office space, who had a small, cramped, and dark office located centrally in the unit. However, the other CM, who was higher in the hierarchy, had a nice room, which had windows, exterior views, and plants, although she had to share it with a colleague.



Figure 3.9: Left: Shared and Windowless Office Space, ICU, Children's. Right: Shared M.D. Chief Assistant Office, Turkish ICU (Source: Author)

⁴³ Even in Turkey, where there is much less money for physical facilities, the office environment is usually more humane since they are larger spaces with daylight. The differences in the meaning of space between the U.S. and Turkey can also be observed in education function: during the researcher's graduate education in the U.S., she only had a cubicle in a crowded room without windows. In first level Turkish universities, on the other hand, a few graduate students and assistants share a relatively large office space with access to daylight and individual tables.

The Need for Specialization and Separation

Specialization means to focus on one population such as cardiac or trauma patients. The CM suggests that the hospital has tried to accommodate this new concept since September 2001, by developing each ICU into its own separate entity. However, they do not propose a complete split, but unification in which all ICUs are to remain connected under one umbrella, as opposed to other models, which started total ICU unit separation. The advantages of total separation and specialization are: 1) the focus on specialty, and more efficient response to the differences between patient populations, 2) nurses' specialty training, especially when they come out of school, and 3) the resulting benefits for nursing retention (i.cm.5). She argues going to different units is only beneficial after nurses specialize in a specific unit, and gain specialty skills (i.cm.8).⁴⁴

Total separation versus unification of different ICUs: Three potential ICU scenarios emerged: 1) integrating all ICUs (by diagnosis and location), 2) totally separating ICUs by diagnosis and physical location, 3) separating ICUs by diagnosis but making them physically adjacent. Two of these views were particularly dominant (uniting all units under one roof). The AP for the CICU prefers unification rather than separation, and having the ICUs not completely separate but adjacent or in close physical proximity to each other because there are many administrative and medical functions that go together. Although it is possible to have them physically separated if appropriate communication equipment is provided, they would need to duplicate certain functions such as storage or pharmacy (i.ap.12).

The second AP is in a unique position since she worked both in the general and cardiac ICU. She also worked in institutions where different ICUs were united, or totally separated.⁴⁵ She believes uniting the ICUs under one roof works much better in general because having people that work in multiple ICUs forms better ties between the units. Sometimes people in one unit can help the people in another unit. However each ICU has special needs. They need at least 25% nurses and 25% of physicians dedicated to one unit, so the nurses can immediately respond to certain children that have more problems. They also need to have specialized units where at least the nursing staff will be specialized. The cardiac ICU needs physicians that have extra training. But she likes it better that everyone is more interactive and more helping than situations in which people are fighting. If a unit gets full, the other ICUs can always admit its patients: for instance, their cardiac ICU draws from the ICU and cardiology together (i.ap.2.28).

The impact of specialization on staff behavior and nursing shortage: Specialization may ease nursing shortage because separation of different patient populations makes it more comfortable for the caregivers to function, thereby retaining them. Children's formed smaller subgroups of ICUs so that caregivers become more proficient in a specific patient population. Additionally, people feel more like a

⁴⁴ Turkish nurses had mentioned their need to work in a rotational capacity to be able to go away from the stressful PICU environment to general inpatient departments. Another major stressor for the ICU staff was admitting the patients sent from other departments, although they did not need intensive care. Especially when the ICU beds were fully occupied, this created anger and stress among staff.

⁴⁵ In Michigan, Boston, Philadelphia, i.e. in the Northeast America, they have a tendency to separate their ICUs totally. And there is a lot of animosity.

team in a smaller group. People stay in a work environment because of the people they work with. They want to be compatible with one another (i.ud.27). *People stay in a less optimal work environment if they work with a team they are comfortable with.*

Changes to the nursing profession in the future: Regarding the changes in the ICU to enable the caregivers to spend more time with their patients, the CM suggests they need more nurses. They also need to better utilize their support systems and support staff to free the nurse up from the computer, from everything technical, and let her deal with her patient. She doesn't like what nursing has become: computers, pumps, and all these other things. But she wants to get attuned with the patient because that is what they will remember, and what will help them get better (i.cm.17). The nursing profession may get less technical in the future, as new professions emerge to take the various tasks of the nurse.

Staff needs after death: Administrators suggest they do not take good care of their staff after a patient dies, or some traumatic incident. They should put more effort into providing debriefing and emotional support to satisfy the different types of staff needs to deal with death and dying (i.ud.20.2). Table 3.2 summarizes all staff needs in the PICU.

TABLE 3.2
Summary of the Needs of Caregivers

Problems Raised by Caregivers Recommendations	Environmental Themes & Design
Caregivers need to be able to have short breaks, to relax, and to go away from their work environment intermittently during the day in order to stay healthy.	REST AND RELAXATION: 1) Providing a gathering place that allows decompression from stress, located in close proximity to the ICU, supported with appropriate functions and ambient design features. 2) The provision of relaxing environments such as a workout center, a gym, and a nice staff lounge.
Staff members need to have access to beverages, like water, coffee, or coke within the ICU.	COMFORT: Areas for having drinks within the unit separated with partitions.
Currently, there is no private or quiet room for caregivers associated with their need to stay alone for a while, especially after a patient dies.	PRIVACY: The provision of a private room for caregivers associated with their need to stay alone for a while.
The most important outcome of the ignorance of staff needs is the nursing shortage. Caregivers expect this crisis to be more severe as they expand in the future, needing more nurses to take care of the increased number of patients.	COOPERATION: Because hospitals don't have the staff support they need, they should allow the family to be there for the patient and for the caregiver as a gift, by providing family space.
The 12-hour shifts are not conducive to family life. Especially it reduces the retention of the young female nurses with children, who do not have support from family or friends to take care of their children.	CONTROL: The provision of an on-site daycare center, which operates 24 hours.
Most offices do not have windows, isolating the staff from daylight for the whole day, although they work for very long hours, and more than eight hours every day.	AMBIENCE: Each office should have windows and have access to daylight.

3.5 Evaluation Of Design

Most of the design evaluations focused on the 7-12 vertical expansion because it is the latest expansion project following other such projects at the facility. The original facility was built in the 1960s, and has undergone major additions or expansion projects in 1985, 1996, 1999, 2000, 2002 and 2003.

3.5.1 Evaluation of the Current Physical Environment of the PICU

The Best Liked Design Features

Comparing the new patient rooms to the older rooms, staff like the new units with private rooms, especially: 1) The large size of the rooms, where they can walk, unlike the old rooms, where it was hard to walk around the bedside, or even to do procedures (i.ap2.5; i.fc.10). The bigger rooms also enable families to spread out a little bit, and not cram themselves into the corner. 2) The openness, the large window surface, and the resulting lightness (i.ap2.5). 3) Functionality of the general unit spatial organization, especially the open design of the trauma ICU, where staff can see across the unit, and have a safer care environment (i.bn.12). If they need help, they can call for help. If they see a patient in trouble they can go take care of that patient. 4) The zoning principles that divide up the patient room into three areas: the front area where the nurse can work, the patient area, and a family area. There is a lot of separation (i.ap2.5). 5) In the cardiac ICU, families can log in with their laptop computer, there is a data port so they can sit and stay with their child and still get away from their child (i.fc.10). 6) They have no mechanical systems such as HVAC or the mixing boxes in these rooms since they are on the hallways feeding to the rooms. Maintenance happens in the hallway outside the room, not affecting patient care (i.fc.10).

In general, the current design of the ICU environment is evaluated by all caregivers as very progressive: 1) the large amount of window and glass door surfaces provided, which enable them to see anywhere through the unit (i.rc.2; i.cm.38). From an environmental standpoint, it's open, airy, and bright. The windows and the resulting openness and lightness are especially beneficial for the patients (i.fc.10). 2) The big monitors enable caregivers to see from far off what is going on in the room (i.cm.38). 3) Having single patient rooms is another progressive feature,⁴⁶ especially when compared to the PICUs in other facilities, such as Children's Hospital in Montreal, UCLA Medical Center, Massachusetts General Hospital in Boston, Methodist Hospital in Dallas, and local hospitals, which have open bay ICUs. 4) Staff members argued they might be twenty years ahead of most PICUs in terms of their technology. 5) Family waiting areas are found nice and open: caregivers argued few hospitals offer this quality of the waiting rooms at Children's.⁴⁷ Especially the waiting room (3A) on the third floor is very nice: compared to most waiting

⁴⁶ The CM argued the single room concept is much more progressive than the old ICUs, where they had all patients in one room separated with curtains between two beds, i.e., the "ward" (i.cm.38). In the Turkish unit, even the purchase of small items like the curtains between beds may require negotiations.

⁴⁷ The FC compared their waiting rooms to that of Methodist Hospital, where the waiting room for a fourteen-bed ICU is only 110-120 square feet, with hard plastic chairs around the perimeter. The whole room is a recaptured space from two corridors that are split off; therefore it's a very badly shaped space.

rooms it is huge and has a lot of natural light (i.fc.12). 6) The dust preventing design of the mini blinds: they have been using the blinds for privacy of patient rooms, yet they collected dust. Therefore they came up with a new design that keeps the mini blinds and the resulting dust inside two layers of glass (i.rc.3). Figure 3.10 shows their latest ICU design for the trauma unit (in 2002).

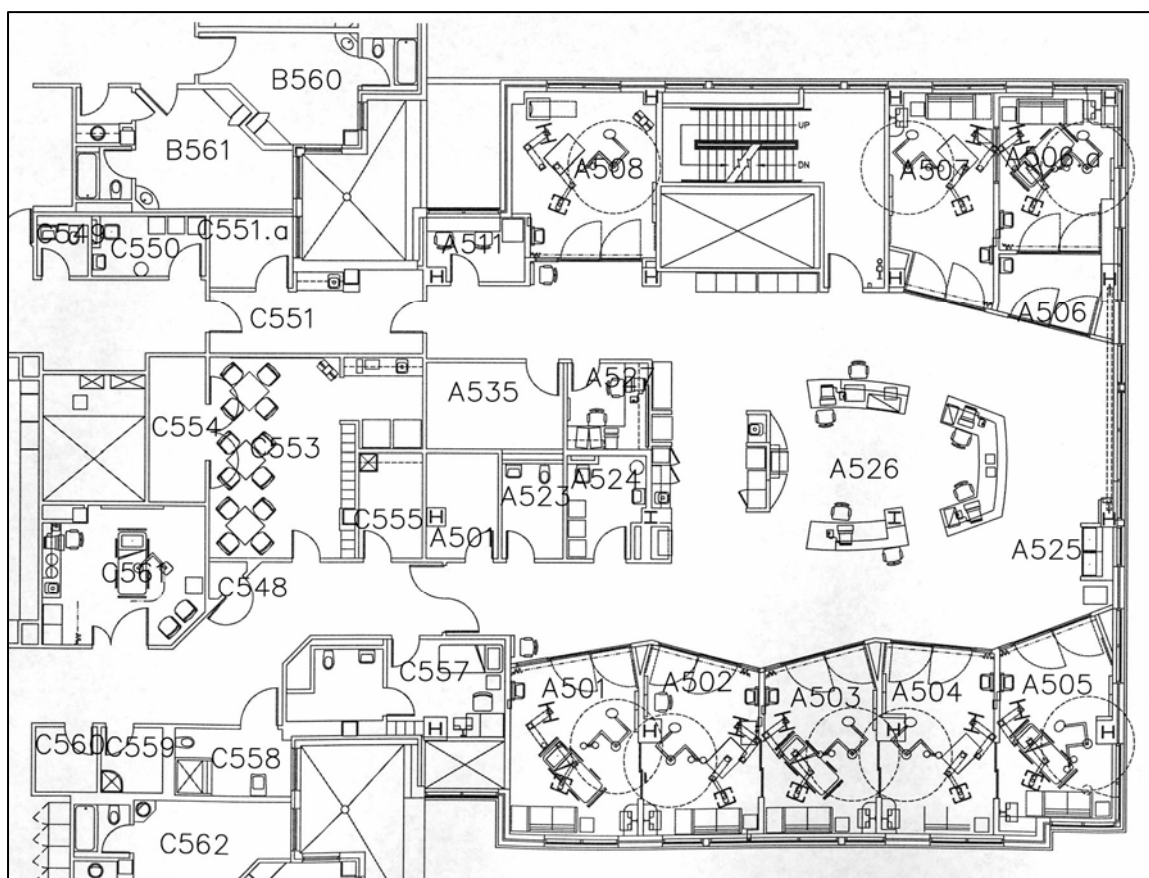


Figure 3.10: Floor Plan, Fifth Floor Trauma ICU, Children's (Source: Facility Planning Department)

Problems with the Current Design

The problem of isolation: Children's experimented a lot with the physical environment. Each ICU has its own look and its own feeling of working in that area. In the cardiac ICU, the rooms are big and if the doors are shut, caregivers feel isolated from the rest of the unit, even from the room next to them. What they thought to be a good thing in allowing privacy for the families ended up being not necessarily a good thing for the staff because of the feeling of isolation. The 2B unit, which is the older part of the PICU, is not a very good unit geographically to deliver care (Figure 3.11). There are some rooms that are very

remote from other parts of the unit, especially Room 250, in which caregivers never know what is going on in the other side of the unit. So the 2B unit is not effective in keeping people together as a team (i.ud.7). Also, Room 503 of the trauma ICU feels less safe, since a nurse would have to yell very loudly so people could hear him (i.bn.12).

In response to the problem of isolation, the 5A trauma ICU, where they have a smaller number of beds, provided them with the most optimal physical environment since caregivers can visualize from one side of the unit to the other. From the patient care management side, it is important to know what is going on in other parts of the unit to be able to coordinate the care across all the beds. Another option may be providing more beds in a smaller unit⁴⁸ by setting them up in smaller sections. The private room concept, however, is necessary because nobody likes the open bay environment, but caregivers simultaneously want the opportunity to be present with all the other rooms in the same unit for staff collaboration (i.ud.7). As a more general environmental finding, although people usually prefer not to have roommates, and to have some enclosure and privacy in their own space, they also need to be present with others, and to be connected to the world around themselves.

The inability of the nurses to see what is going on in the next room: Nurses need to see what is going on in the room next to them. Even if it compromises family privacy, nurses feel, once they are in a room, they cannot be heard unless they step out. A pass-through door between two rooms, like a sliding door, may allow them to communicate with each other, to feel connected to the rest of the unit, and to go between two adjacent rooms more efficiently so the nurses sharing patients can move (i.ap.10; i.ud.8; i.ap.2.5). Even windows that open between two rooms may reduce the problem of isolation from others. It is not always necessary for caregivers to move physically between the rooms but being able to listen for an alarm, or to have the visual presence of a caregiver with the window open, or to communicate with a coworker could make a difference (i.ud.8). However, that is very expensive and may not be incurred as they move to a different unit (i.ud.7).

Room differences in size and shape: Some of the rooms were not designed to be patient rooms. They do not conform to one shape because there is a lot of variety. The AP prefers that all the rooms be identical in size and shape. Sometimes they need one or two bigger rooms but in general the room size is not variable (i.ap.2.4).

Not having standardized room shapes and sizes also prevents setting up the rooms the same way, which affects the services provided. It is not necessarily the shape of the room, but they cannot offer the same services in all the rooms such as neuro-physiology monitoring, video electroencephalogram (EEG), and dialysis (they only have two rooms in each unit that can do video EEG and dialysis). They have water connections only in certain rooms, yet hemodialysis requires domestic water supply in the drain for their machines (i.fc.8).

⁴⁸ The advantages of the smaller unit and even of an open bay arrangement in keeping all patients visibly together and in providing a safer care environment were also emphasized by the Turkish caregivers, who preferred the smaller ICU environment.

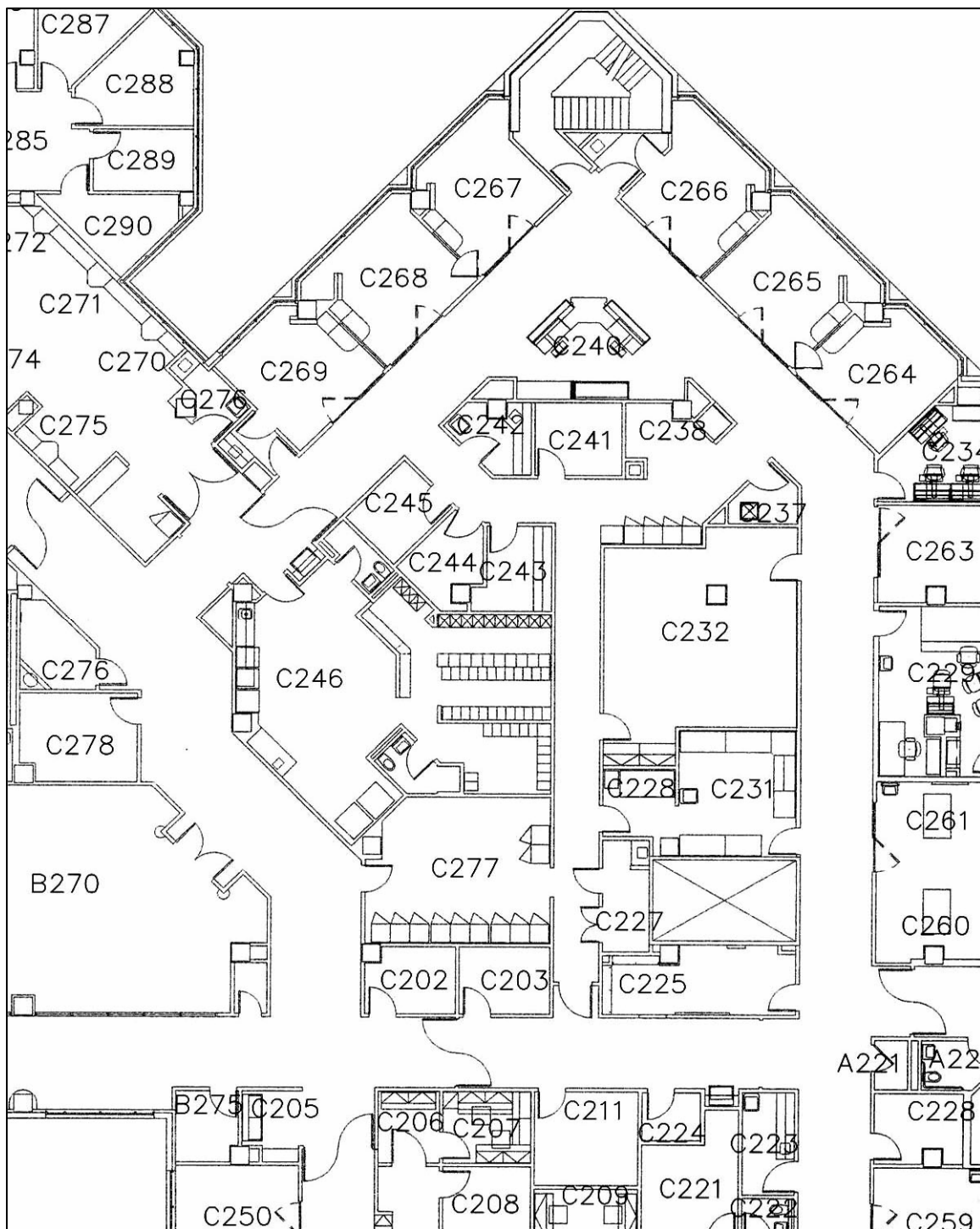


Figure 3.11: Floor Plan, Second Floor PICU, Children's (Source: Facility Planning Department)

The problems with instrument mounting systems: First, they have some problems with the folding computer tables in the new units (Figure 3.12): although there is plenty of computer space, it is not solid and well balanced. Caregivers are able to fold them up out of the way, yet they use it all the time so they actually do not need to fold them up and be out of the way (i.ap2.9; i.fc.1). Second, the location of the monitors is critical to provide a safe care environment; caregivers have to be able to see it from every direction around the bedside. For instance, when they treat the patient, if the heart pulse is dead, they need to be able to recognize this immediately, and to respond (i.bn.11). However, when they mounted the TV and the monitors in the cardiac ICU, the monitor ended up on the wrong side of the room, so instead of the monitor they see the TV (i.ap2.4). Third, the power columns in the cardiac ICU are not as functional as in the trauma ICU, where they mounted the high-tech equipment on the right wall (i.bn.11).

The problems with ceiling mounted booms: Caregivers also complained about the ceiling mounted booms in the CICU due to their bad location in certain rooms. The PA admits some rooms were more problematic than others because the second floor was planned initially as a support space. This gave way to inadequate rooms, such as a small L-shaped room with a column in the middle (Figure 3.13). The booms, and even a full-size bed, do not work in specific rooms. She suggests looking at their identical and rectangular rooms before they transfer to eleventh and twelfth floors (i.pa.17).

The inability to absorb noise: Another common problem is the lack of soundproofing in patient rooms. The material of all surfaces, such as walls and the ceiling, has to be porous material in order to absorb the noise, which is bad for infectious reasons. If blood is spread on the wall or the ceiling, they need to be able to clean it, although they cannot clean or sterilize (disinfect) porous surfaces (i.bn.11).



Figure 3.12: Folding Computer Table Design, Fifth Floor Trauma ICU, Children's

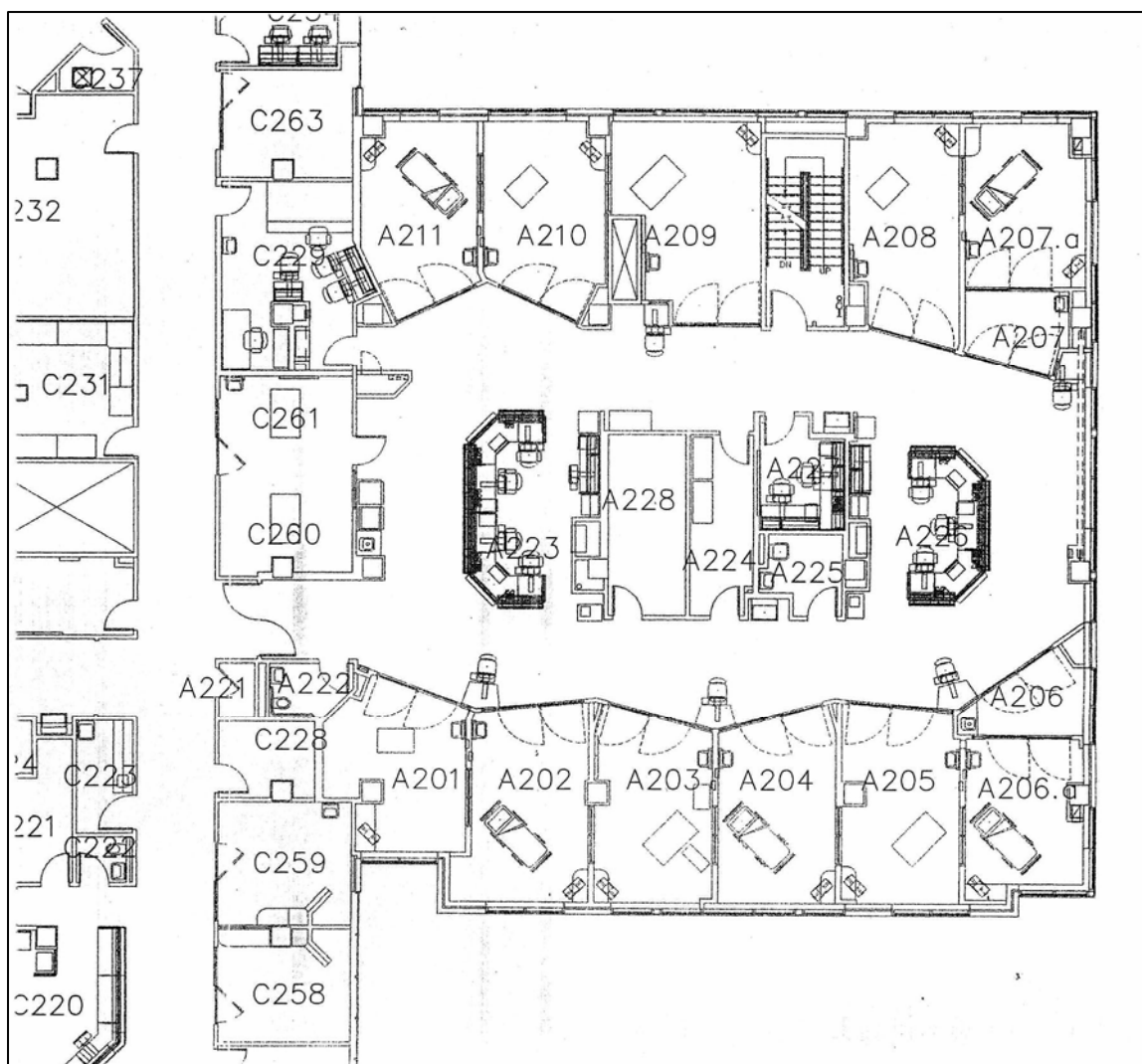


Figure 3.13: Floor Plan, Second Floor CICU, Children's (Source: Facility Planning Department)

Problems with the Ceiling Mounted Equipment

The ceiling mounted equipment (the booms) keep all the equipment and technology above the floor and out of the way so families, patients, and staff do not trip on things. Additionally, in an ICU, caregivers need to be able to reach to the patient. Especially in a crisis situation, they need to get all the way around the patient because there are many people at the bedside. The booms are tremendously beneficial in critical situations because they can have the bed in the middle of the room. Yet other hospitals have been managing their ICUs with typical headwalls for years (i.pa.15).⁴⁹

⁴⁹ The PA mentioned the risks with the traditional headwalls: first, they have provisions for monitor brackets, introducing a risk to get stuck hanging off the wall. The horizontal arm allows them to have the equipment at either side of the patient so it is easy for the staff members to reach; the vertical arm keeps the equipment all in one place. Additionally, there is a breaking point when the horizontal headwall against the wall does not carry the equipment.

Many caregivers mentioned that the booms in the CICU are poorly located, and that they will keep on investing in the booms, yet locate them more carefully on the new floors in the expansion project so caregivers can see the monitor when they stand in the middle of two adjacent rooms (i.pa.12).

The ceiling mounted booms do not function well enough in the cardiac ICU due to their location. That is, the way the arms are placed in the rooms is contrary to the manufacturer's recommendations: they are placed in the right and left direction of the room instead of front and back. Therefore they hit the wall or window in most of the rooms, and they don't have a full 360-degree operational range. There are only two rooms, where the arms pass clearly all the way around (i.fc.6).

This problem also stemmed from the fact that the room sizes are not exact because they used an existing footprint with structural columns and utility systems. On floors 11 and 12, on the other hand, they have four different floor plans, which allow more uniform room sizes. Consequently, they located the booms as recommended by the manufacturer (i.fc.6).

According to the PA, the pendant arms overwhelm the patient room, although they are useful in an operating room, in a procedure room, in cardiology, or in the cat-lab. The patient room is only 600 square feet to accommodate all this equipment. One of the arguments against the booms is that they do not have the full range of motion. Yet they don't need the full range of motion. They only need to position things a little bit so they can do it off the wall (i.pa.13).

For an acute care ICU, the FC prefers the flexible arms, if the room is designed appropriately around them. The patient bed can be anywhere in the room, like in an operating room. The patient is in the middle of the room, so people can access 360 degrees around him, and also they can position him anywhere in the room. They can access the patient easily if she has surgery, or if they need more help around her. For a low acuity level, a medical/surgical ICU without many procedures, and for routine medical treatments, traditional headwall is adequate. But in a procedure-intensive area, they need flexibility (i.fc.7).

The impact of having booms or too much technology in an ICU room on patient care can be further investigated. A comparative study can explore the impact of two different systems on the same patient population. Since Children's used the headwalls for one type of clinical group, and the booms for another group, they cannot compare and test the results. *Typically people are very adapted to their environment, and will make things work.* No matter if they choose the booms or the horizontal headwalls, they will develop a process that works with either situation (i.pa.16).

3.5.2 Evaluation of the Design Process

The second and fifth floors are in the East Link Tower, which has been there since the early 1990s. However, their master plan calls for another tower including areas like diagnosis, cardiology, and a new central plant. There will be a future phase beyond that, which includes Tower 4. There is also discussion about building a facility in Plano (i.pa.3).

The core design team for the cardiac ICU was composed of the chief physician for this ICU, the ICU director, a clinical manager, a respiratory therapist, and a nurse, which was a representation from all

clinical disciplines that would use the space. The FC was the technical expert on the medical side such as medical gases. They also had a construction project manager. Anytime they addressed a key element, like the waiting room or the central nursing station, they had input from other people, like the managers from inpatient services, the architect, or somebody from the EMP firm (i.fc.13).

The preliminary design of the patient rooms for acute and critical care, and the exterior design were done by the senior healthcare planner, who began the nucleus of the design. The PA became involved with the design development phase of the second-floor-ICU. She worked on the design development construction documents, the fifth floor,⁵⁰ and the fourth and sixth floor interior finish (i.pa.2).

The FC states that the first meetings were brainstorming and rudimentary sketching of concepts. Then, they worked into more finite details. They were building on an existing structure; they had the basic program to work with. “It was not a matter of putting a wall, it was if the architect put a wall here, what would that do to us?” Having senior leadership from the hospital, they would meet as needed, and update the design. With people having experiences in other hospitals, they had different ideas of what should be in an ICU. When they first started designing, they would have traditional fixed headwalls because they didn’t know there was anything else (i.fc.14).

Finally, a lot of the knowledge for their design of the cardiac ICU came from the book *Healthcare Environments for Children* (Shepley, Fournier & McDougal, 1998). Because of the state of the field, there was not a lot of pediatric evidence to support this data, yet these theories seemed to be intuitively appealing and “studyable” (i.ap.14).

Equipment and Furniture

Selection of equipment and furniture: When they select equipment and furniture, they look at durability and functionality. They usually try products before they purchase anything, like they did recently on the computer charting systems. They install several of the other companies’ products, and get the nurses’ feedback on them (i.fc.2).

Mock-ups: The FC reminds that mock-ups are usually not full-scale, which is only sub-optimal. The best way to understand if a product will work for them is to build it in an area where it will be used on a daily basis, and not just looked at. It is the same process for patient beds, ventilators, monitors, charting computer desks, and chairs. They have evaluation criteria to get the impact of the same product in the same way, by putting it into use in interiors. For instance, in the waiting room they put the carpet down and dropped food on it to test the ways it is used in reality. So they do not build their mock-ups in remote locations, but test their function realistically beyond their aesthetical appearance (i.fc.3).

⁵⁰ There was no schematic design for the fifth floor since they were building on what was already built.

3.5.3 Evaluation of Design Issues and Design Modifications for the Future

Challenging Aspects of Design of the Vertical Expansion Project

One challenge was to determine the amount of equipment and technology they would provide in the patient room, and if it is appropriate; particularly the provision of ceiling mounted booms as opposed to the horizontal headwalls. On the design drawings for eleventh and twelfth floors, they put the booms for the medical gas and the monitors like in the second floor cardiac ICU. But having chosen not to do the booms for the surgical ICU on the East Link, there are two equally valid camps as to which is the most appropriate solution for the typical ICU room. They may take the booms out of 11 and 12, and put the typical medical gas headwalls. They still want that technology to be fully accessible and not concealed from the family (i.pa.8).

There were additional challenges involved in designing and opening the first cardiac ICU in the region they serve. However, they eliminated most of them by having strong administrative support. The AP of the cardiac ICU suggests the first challenge was to identify the unique needs of the cardiac population, which were: 1) The need for larger rooms, 2) The need to make better use of the equipment in the room and to have better access to the patient. They used booms to get to the patient in emergency, and to have flexibility in the arrangement of the equipment. 3) The need to get natural light by making the window size as large as possible. 4) The need to allow the parents to stay with their child overnight. It was not allowed in the main unit but since they had 24-hour visitation, some parents wanted to stay more with their child. All the evidence collected on the subject showed the kids and the parents are much happier and do much better when they have more interaction. So they divided the room into three zones, where the outer zone with the windows is the family zone, the middle zone is the patient's zone, and the interior zone is where doctors and nurses circulate (i.ap.6). The other AP referred to some details in design decisions, such as how much space to have, how to arrange things, and how much window surface to provide in the ICU (i.ap2.11).

Fundamental design issues: The architect suggests there were two major design constraints: 1) the required number of beds, and 2) the floor plate constraints generated from building on an existing floor plate designed before the latest guidelines, and before the latest elevator, thereby not meeting the basic space requirements. First, the architectural team came up with a design for twenty patient rooms per floor, yet they had a mandate from the Board to increase the number of rooms to twenty two beds per floor to make it cost efficient. Additionally, because they designed on a fixed floor plate, they did not have enough space in the middle, and the resulting amount of office space was not adequate for the staff. The existing floor plate and column base placement further constrained what is in the room, the room size, and the room depth since they needed to have support space in the middle of the unit in close proximity to the rooms. So they met the code requirements, but provided minimum office and support space, identifying the hospital's need to start the next building right away because of these constraints (i.pa.18).

Constructional concerns: The existing structure was designed initially to take four more floors. However, they reached out another floor by changing from concrete to steel structure, and from pre-cast

concrete panels on the exterior to GFRC (glass fiber reinforced concrete) panels for the expansion with reduced weight, enabling the existing structure to withstand an additional six floors. In other words, they went from four future floors to six future floors, solving space constraints by getting more structure out of the building (i.pa.19).

The PA reminds they needed to introduce a bracing system for additional strength. Similarly, “Once we went up those six floors, the existing structure needed to be braced for the additional wind loads,” said a project manager. “So we had to go back down through the existing facility and install a K-bracing system between the columns before we could get the steel topped out.”

Elevating concerns: Another chronic problem related to the floor plate constraints was the elevating; i.e., the size and location of the elevators for patient movement. In the original part of the addition, there was an existing elevator path, which did not meet the current code requirements for the elevator size: it was smaller. Instead of three patient elevators, they needed to create two patient elevators to meet the size requirements of bringing the patients up and down with all the attendants and equipment rolling with the patient bed (i.pa.20). In the East Link, there will be an elevator core in the middle, and two oversized patient elevators for emergency overrides in the back of it. “Currently, surgeries are in this part of the facility, which is convenient to the second floor ICU. The patient elevators are currently here. So it is not that far to go up and down... However this is the direction of development, and there will be a substantial amount of operating occurring in the new tower. This becomes the middle point, so it works for that part of the master plan” (i.pa.5).

Conversion concerns: The conversion of the existing floor plate was another design constraint: Children’s wanted the new critical care floors to be convertible to acute care (with the most ability to convert this space) so they can move the critical care patients to the “highest, latest, and best technology” when they build Tower 3. The PA struggled to maintain the same patient room wall in acute care, which would separate the acute care bedroom from its toilet on the 11th and 12th floors. The mechanical and electrical engineers provided the medical gas risers, the exhaust air, and the plumbing risers for the toilets to be added. Everything that needs the basic parts of the service core was installed to make it less expensive to convert that space, and as flexible as possible. There is only a little zone, where the walls between the patient rooms will change to accommodate the requirements for the acute care toilets.⁵¹ They will only need to take out the sliding doors, and put in the headwalls and the toilets (i.pa.21).

Relation of different ICUs on different floors: The chief physician for the cardiac ICU mentioned, due to the proximate location to cardiology and the operating rooms, they will build another cardiac ICU on the third floor. The fact that the ICUs on the 11th and 12th floors will be away from the operating rooms dictates the fact that the cardiac ICU and the regular ICU will not be close to each other (i.ap.11).

What they learned from the expansion project: The PA learned: 1) from the variation between the canted doors in 2A, which was a delightful surprise to her when she walked down through the corridor (as

⁵¹ Since they need six-inch-stud between the rooms for the headwalls on acute care, they also put six-inch-stud between the critical care rooms.

indicated in Figure 5.10). 2) She learned about the boom versus headwall discussion. 3) She learned about the caregivers' dedication: Every time she comes to a new hospital, she sees that the clinical staff care about what they do. They are devoted to their patients. They work very hard with the architects to see that the next thing they do is the best for their patients. She finds herself fortunate to have ended up in healthcare, knowing she makes places that help people fundamentally (i.pa.24).

The AP, on the other hand, learned the importance of having different people from multiple disciplines (such as nurses, physicians, and secretarial staff) to be involved in the design process to consider their specific area and make sure they have the area they need. She recalls that when the architect first showed them the layout, the staff stations faced the wrong way, and they were not functioning in terms of patient care (i.ap.2.12). The importance of establishing multidisciplinary and interdisciplinary teams in designing the ICU environment also emerged among other transcripts.

Design Modifications for the Future

First, they need to redesign the cardiac ICU: the current CICU will become the operating room, since it is not big enough. Currently they have 11 beds in the CICU but they need more bed space. They plan to have a 20-bed CICU, with a total of 25 beds, and with 5 beds utilized as step-down unit (i.ap.8).

Second, as part of the design discussions of the 12th floor East Link, they may build a skylight that channels natural light into the interior spaces of the ICU wing, using mirrors. Although it may be an expensive design element, it could be very beneficial based on the concept that the provision of natural light is important for healing (i.ap.13).

Third, accommodation arrangements for families are most needed. Currently, families stay on the floors: they have shower and laundry facilities in waiting rooms, but not in individual patient rooms. The ICU director suggests making each patient room as big as possible in the future to accommodate not only the needs of patients and the staff members, but also of the family. She argues the ideal patient room should have an area for the family that has sleeping arrangements, a day bed, and a bathroom so they can stay and live with their child. This requires a room a few feet bigger than their biggest room in the CV unit. Adding a bathroom to the family zone would be the most optimal solution (i.ud.9).

Another option would be to build an associated hotel tower attached to the hospital or the ICU wing, where families could live and have little rooms, so they could come in and out and stay with their child. The Baylor Hospital has a hotel associated with their medical center, where the families go for only \$20-30 a night. As part of the vision of keeping families in the hospital, a couple of years ago, there was a realistic discussion about that. However, they do not have any physical space to build a new building (i.ud.9). They need to go up since they don't have the land, and their most important spatial need is to maximize space for patient beds, and the support space to manage those beds. They have a lot of contacts with the hotels in the area for providing cheaper hotel rooms for families, which is arranged by the social worker. However, parents do not want to leave the hospital to go to another place for accommodation. The

hotel attached to the hospital would be the most optimal situation. Ronald McDonald House is currently available but it is very small and needs additions (i.ud.10).

Finally, once completed, the exterior of the expansion will feature GFRC and tempered glass curtain wall to blend in with the existing facility. At the top of the expansion, there will also be a series of lights illuminating the building in blue along with the Children's logo.

3.5.4 Master Planning Issues

Children's started with a \$43.2 million vertical expansion project in January 2002, which adds six more patient floors on top of the existing six-floor East Link, and more than 158,000 sq. ft. Administrators informed that this expansion is vital to their growth because it will provide an additional 132 patient beds for both acute care and ICU patients to the existing facility.

Space Constraints

Space is the most important restrictor to the growth of Children's. They turn patients away because they don't have enough rooms. They contacted architectural firms and space consultants to best optimize their land, since they cannot grow out due to their lack of land. The best solution offered is to go up by building multiple towers that connect in a modular fashion and support one another. In the East Link Tower (Figure 3.14), the ICUs will go to the very top 11th and 12th floors, and the support space for patient care will be across the tower to the link tower on the 11th and 12th floors, where the cardiac ICU will also be located. Therefore it will be continuous care across all the towers. Once they build the link tower, they will move all the hard spaces, such as the cardiac ICU, into one section to have continuous care for the heart patients (i.ud.12).



Figure 3.14: East Link Tower, Children's Expansion Project

From the space perspective, they focus on two issues: 1) They try to make it more wayfinding-friendly so that all the spaces support each other's functions and are relatively close by (i.e., locational intervention). 2) They gather different services together in a modular fashion to make the hospital more efficient in terms of structure and function. To support this design notion, they take older buildings, like the "Remote Building," which is an old and small building on-site, where HRS is located currently. In the short term, it will be transitioned to office space, but within the next ten years, they plan to demolish it to build a brand new research tower in that spot. They will replace old structures with new buildings since the land is more important in this area than the building. A lot of space issues will be contingent upon how much money they will get, and the Grand Scheme (i.ud.12).⁵²

In the East Link, they designed a temporary space including the second floor CICU,⁵³ the fifth floor surgical ICU, and the fourth floor. The difficulty for Children's was to make these temporary units economically feasible, yet they needed desperately an ICU while they were under construction for 7-12 expansion. They used the fifth floor ICU as a mock-up, yet made it a fully functioning unit (i.pa.4).

Another spatial constraint is the lack of support space, especially that of office space: although they have more than four hundred ICU staff members, resulting in a lot of office needs, they do not have enough office space, and the existing office spaces are very small, inconvenient, located inappropriately, and lack windows and a healing atmosphere. Another concern for the current vertical expansion project is that the acute care patient floors will not have waiting rooms, and the families will need to stay in the patient rooms. They need to accommodate waiting for the acute care floor in the same square footage as a critical care floor has. Finally, they have to accommodate additional storage for ventilators, pumps, and other equipment. So there is disparity in space allocation, and they have to be aware of the fact that different areas will need different ancillary spaces for their operations (i.fc.21).

Another issue related with the 7-12 vertical expansion is updating the second, third, fourth, fifth, and sixth floors in the East Link, which will start after the expansion is complete. There is a desire to maintain at least the second floor cardiac ICU⁵⁴, and perhaps the third floor ICU since it will support the

⁵² Since the campus is growing up and out (because they've moved), the Men's Mart will be the new day surgery and some ambulatory departments. Everything will be connected through sky bridges and roads. There is a whole scheme involved: with all these buildings introduced, traffic control will come into play. It will be set up like an airport, coming one way and going out the other. It will be arranged in a circular fashion. They will have drop off and pick up. The building or part of the campus you're going to will be clearly labeled. All of the roads around the hospital will either need to be widened, or the city will construct something friendlier, like a double deck, or road, or some kind of structure to support the expansion (i.ud.12).

⁵³ The second floor cardiac ICU had a 17-foot area floor-to-floor, so it wasn't difficult for the architects. However, the fifth floor surgical ICU, and the fourth floor were difficult because they were built on 12-foot floor-to-floor. Also, the code requires having a ducted return air. It was a significant achievement for mechanical, electrical, and plumbing engineers to get all in this space.

⁵⁴ Before they opened the fifth floor ICU, they knew it would be a throw-out-unit. The same temporal concept may have been utilized before they opened the second floor cardiac ICU. The physician in charge of that area likes it so well that he is trying to change the original master plan.

second floor when the expansion is complete. However, the State Department of Health Code requires that once they add the new tower, they will need to use it as a connector and develop a circulation route, which goes right through the second floor cardiac ICU. Since the code requires they cannot go through an ICU to get to another part of the hospital, they will either have to remove the ICU, or go around it (i.pa.4).

Vision for the Future: The Grand Scheme

The current structure of Children's will remain as the acute care structure, offering all the critical care services. All of the more important basic studies, and more advanced research and lab testing will be done in this building. They will build another hospital in a suburban area to function (like a community hospital) as an acute care hospital, designed for patients admitted for short stays, like 24 hours or 48 hours, and small procedures. If they need complex surgery they will be transferred to this facility (i.fc.21).

The design of the Towers 3 and 4 is not finalized: Children's has been bouncing with the architect all the time in the design process because what they signed as design development or from schematic design phase to design development phase that goes into construction document. They expect by the time they are ready to build, they will already have redesigned (i.fc.21).

The design process for the current vertical expansion project and the future Grand Scheme is very flexible, which is an advantage for Children's, as permitted by their senior leadership. Then can request design updates and enhancements from the architect in the future to a negotiable extent. They gave them conceptual information on the new towers and credibility to their design concepts. It will be interesting to see the final construction and the final operations within the facility (i.fc.21).

Psychological effects of the high-tech and all-flowing tower concept: The new towers may provide a positive image reflecting their ability to use high technology, yet some people may feel uncomfortable working in a high-rise building, and losing their connections to the ground for extended periods of time during their 12-hour shifts. Shepley identified the potential negative psychological effects of tall buildings (2004, in review). However, administrators do not consider high-rise design as a problem, arguing they will adapt the physical environment to their workers, yet they need to stay on top of the high-tech competition, and make sure that the needs are being met. They believe if they give people proper education, and make minor modifications for their needs, people will feel more comfortable in the given environment. Additionally, the work groups for the design of new towers included the feedback from staff members at all levels (i.ud.26).

Regarding the impact of the two new towers in a land-locked area on the resulting exterior views, the PA suggests only a limited number of rooms would have their view blocked by the adjacent tower, and the rest would be well above anything that is already constructed, so they would get natural views. The same would be true until they build Tower 4, which will restrict only a limited internal zone (i.pa.7).

The master plan: Regarding the elevating of the patient, one of the drives in their decision-making process is to have the outpatient closer to the bottom where the traffic is highest. The ICU, on the contrary, will be located at the top of the East Link Tower, with the most ability to be convertible to acute

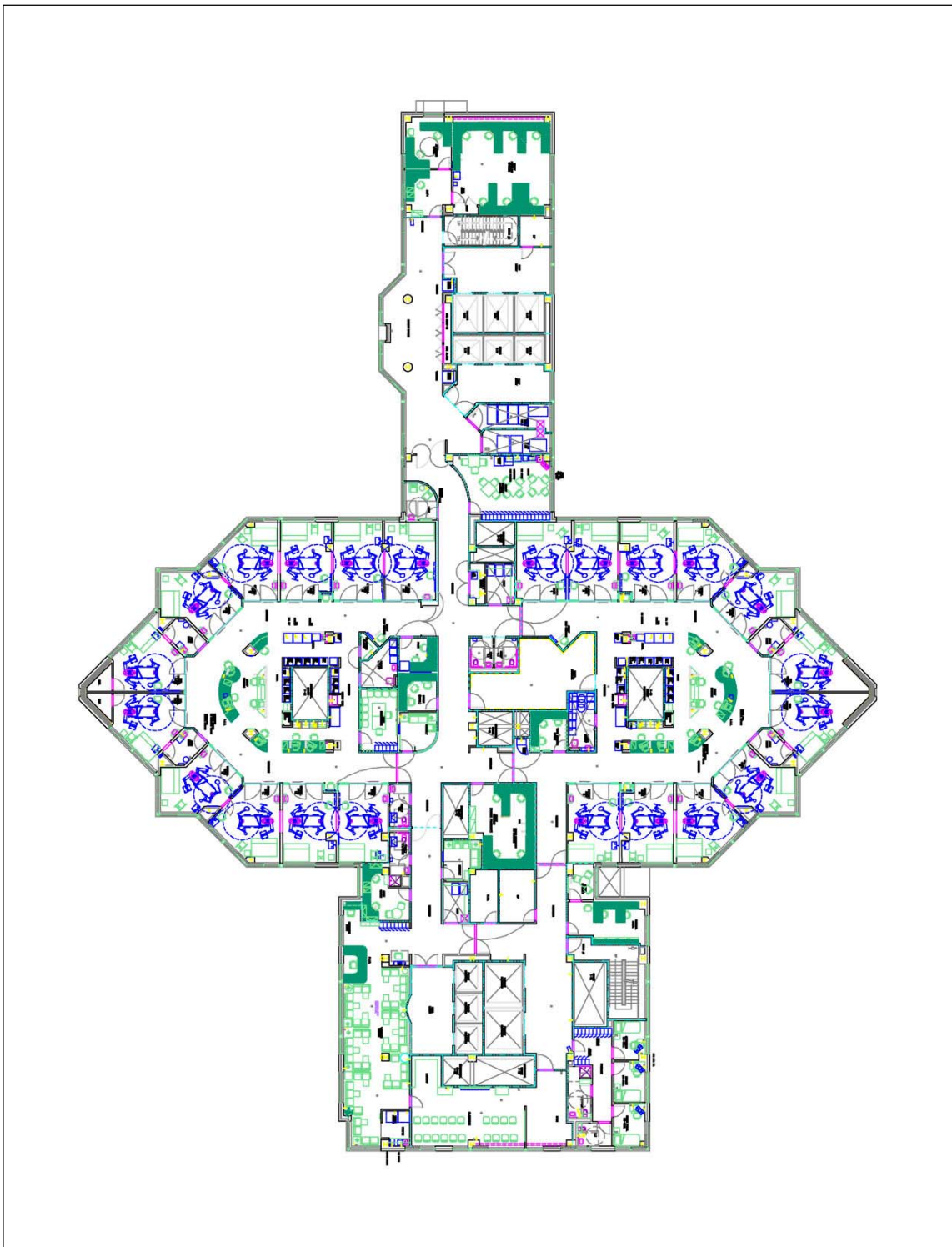


Figure 3.16: Alternative Floor Plan of the Eleventh and Twelfth Floor of East Link Tower, Children's Expansion Project (Source: HKS Architects)

3.5.5 Continued Hospital Expansion After the Case Study Period

The expansion work at Children's continued after the case study period, which lasted from November 2001 to May 2002. The ongoing work has been part of the "Children's 2010" expansion plan and beyond. The main reason for expanding the hospital relates to the fact that the pediatric population in the region they serve is increasing at one and a half times the rate of the rest of the state and three times the national average. In order to meet the needs of this population, they are expanding at the main campus (Figure 3.15 and 3.16), where they are currently located, and another site. They also opened a new Pavilion Surgery Center in March 2003, which is located in close proximity to the existing hospital.

The population of children they serve will increase by 30 percent by 2010. Therefore, by 2010, Children's aims to double its number of beds, increase the general floor space by almost a million square feet, provide more than 100 pediatric ICU beds and add at least 12 new operating rooms, while increasing support services for all these areas. When the 2010 project is complete, they will have the capacity to meet current needs and support continuing growth of hospital programs. They will also have the facilities to organize increasing specialization in care delivery. The expansion includes new conference rooms and teaching spaces, new facilities for sub-specialties, supplemental space for personnel and added employee and visitor parking. Figure 3.17 shows the phases indicating the changes of the hospital expansion to be completed by 2010.

Phase One

7-12 vertical expansion: The final floor of the six-floor expansion to the main campus opened in January 2004, finalizing the first phase of the expansion project. Floors eight through twelve opened even before. The needs of each patient care area were closely examined. All patient care rooms follow a systematic design inclusive of the utilities (the medical gasses and the wiring for the computers and medical monitors). Regardless of the floor, there is little difference from one room to another. The design also allows for easy conversion of rooms from one type of room to another.

Children's Pavilion Surgery Center: The 34,100-square-foot state-of-the-art facility includes the Pavilion Surgery Center on floor one, office space on the second and third floors, and a nine-story parking garage offering 2,425 parking spaces for employees and visitors. It offers pediatric ambulatory surgical services for patients having outpatient, elective surgery. The center boasts eight operating rooms, skilled staff and ample waiting areas. With the opening of the new facility and movement of many of the outpatient surgical cases to the surgery center, the hospital's existing operating rooms at the main campus accommodate mostly inpatient surgical and trauma cases. By moving the outpatient surgical patients to the Pavilion, the more predictable caseload allows for more flexibility in scheduling. Children's also opened an elevated pedestrian walkway connecting the Purple Park garage at the Pavilion to the main campus. The third floor moves bring the total number of employees working on the second and third floors close to 500. More than a dozen hospital departments relocated to the Pavilion, which allows the vacated space in the hospital and the Bright Building to be converted to patient care areas.



Figure 3.17: Phase Drawings Indicating the Changes of Expansion (Source: Hospital Website)

Phase Two

Tower III: Work began in June 2003 on the first part of this phase, known as Tower III-A, or the core diagnostic addition, including a new central sterile department to support surgery, space for the pharmacy to be located in the future, a new pathology lab, 12 new operating rooms and room for future radiology expansion. Tower III-A also includes a major elevator bank addition that will increase the number and size of elevators. Work will begin later on Tower III-B, when floors will be built up as high as the two existing towers.

With the completion of Tower III, the universal stacking scheme will evolve. Services will be arrayed across tower floors to promote efficiency and flexibility within and across the towers. It also will enable the hospital to more easily interchange spaces and simultaneously expand services as needed, including academics. Tower III will provide more office space for clinicians who are seeing patients at Children's, in addition to more convenient parking, more convenient patient access to services and more space to decompress clinical services. Design development and completing construction documents will take place in early 2003 and construction is scheduled to be complete in 2005. A floor-by-floor look at what Tower III Phase A will support: 1) Lobby level, including the central sterile supply, and shell space for new pharmacy. 2) First floor: New pathology lab. 3) Second floor, including 12 new operating rooms, four renovated operating rooms, renovations to existing lab, and shell space for heart center.

Phase Three

Tower IV: Phase Three centers on a fourth tower, similar to Tower III, again using universal stacking of inpatient rooms, clinics, offices and support. Throughout the construction, vehicular traffic will be rerouted through a new arrival plaza and anew, below-ground parking facility will be built for visitors. The renovation may include widening the street serving the hospital to six lanes. The new configuration will allow different entry points assigned for inpatient guests and clinic visitors.

Research tower: One part of the vision for Children's 2010 is a collaborative project with a university to construct a tower for research. A major research facility will promote synergy and help with translation of findings in basic science to care for patients.

To summarize the expansion phases: 1) The Children's Pavilion includes the Surgery Center on floor one and office space on floors two and three. 2) Purple Park, a nine-story garage with 2,425 parking spaces, is provided for patients, employees and medical staff. 3) The Green Park garage provided additional visitor parking as of February. 4) All six floors of the Tower II expansion are open. 5) Tower III-A expansion includes the addition of a core diagnostics wing. 6) Tower III will house expanded diagnostic areas, ambulatory clinics, physician offices and inpatient beds with a below-ground parking structure and new arrival plaza. 7) Tower IV will house services similar to Tower III, including an expansion of the below-ground parking and the addition of a pedestrian bridge from the staff parking garage (Source: Hospital website).

3.6 Conclusion

The insights provided by the in-depth interviews with the caregivers and administrators from Children's focused on six main guiding themes, which are 1) the evaluation of the caregivers' backgrounds and motivation to choose a career based on caring, and their general evaluation of the current atmosphere of the PICU, 2) the evaluation of the role and meaning of technology, 3) the evaluation of the social practice of care and caring, 4) the evaluation of the psychological and practical needs of the patients, families, and the caregivers, 5) the evaluation of the current physical environment and design modifications for the future, including the master planning, and 6) cross-cultural evaluation (which is summarized in the eight chapter). While most of these categories confirmed the importance of enabling a social context for meaningful relationships and interactions between families, caregivers, and patients, they also informed the importance of recognizing and satisfying the needs of staff, and improving their interactions. This might have resulted from methodological preferences, which limited the interviewees to the caregivers, and focused mostly on the caregiver behavior during behavioral observations, due to confidentiality and privacy needs of the patients and their families, thereby discouraging the researcher from closely observing the more private patient rooms. Another reason for the focus on the caregivers' needs stems from the current landscape of healthcare, which suffers from a severe nursing shortage crisis. Hence both the chosen methodology and the current healthcare era support this focus, and can inform the physical environment.

This chapter clarified the theme that social interaction and family ties may be the engines of healing. It elaborates the function and meaning of caring and technology, as they relate to social interaction: it was revealed that technology, especially in the caring context of the ICU, does not explicitly have any inherent meaning. However, it is through social interaction and social relationships that meaning can be embodied within technology. Therefore, *technology needs to be socialized in a way honoring the relationships in the caring context*. Heidegger's understanding of technology as a concept, which in the final analysis negatively conditions every human product, supports the superiority of the social interaction function to technology within the caring context of the ICU.

One example from Children's that supports this argument regarding the relation of technology to the caring function was revealed by the CM: she reported that the high-tech machines that dominate the ICU, and the computerized charting system, take the caregivers' attention away from caring, which must remain their main concern. This internal criticism of social practice regarding their extreme focus on technology, and the emergence of the critical relationship between technology and caring is important. It emerged naturally (i.e., without a prior intention) out of the ICU context where it was grounded, and in the evidence collected in the field. (Similar naturally occurring findings derived from the Turkish setting.)

The interviews opened up further insights and ideas, and identified current problems of their physical environment and social practice: First, they need to improve their FCC notion and other social services, which should at least parallel their efforts to continuously improve their technology and the physical environment. Especially the computerized documentation process was criticized to overwhelm the caring aspects of the practice by stealing extensively from the time of the care providers.

In conclusion, the interviews conducted at the U.S. setting revealed six environmental (provisional, functional, symbolic, ambient, psychological and social) and three behavioral (patient outcomes, family well-being, staff performance) themes informing healing design interventions (Table 3.3). These themes indicate the potential of the social interaction function to contribute to healing through positive interactions and staff collaboration. The statements of the caregivers presented in this chapter provide strong qualitative evidence regarding the relation of positive social interaction to healing.

Table 3.3
Multidisciplinary Design and Planning Issues at Children's

Reported Problem	Environmental Theme
Space constraints	Provisional
Conversion and construction concerns	Programmatic and functional
Problems linked with the grand scale of the expansion project	Scale and symbolic
Problems with room differences (size and shape of rooms)	Scale and symbolic (geometry)
Noise levels (the inability to absorb noise)	Ambient and environmental
Isolation of nurses in the patient room (The inability to see other rooms and caregivers)	Functional and psychological
Lack of needed facilities and amenities (daycare)	Provisional
Problems with office space (lack of daylight, inhumane)	Ambient
Lack of staff need for privacy and enclosure	Provisional and psychological
Functionality of the caregiver zone in the patient room	Functionality
Comfort of family spaces (accommodation and support)	Ambient (comfort)
Documentation process (computerized charting)	Social and ontological
Problems to be competent with newest technology	Social and ontological
The existing PICU and hospital culture (strained)	Social and organizational
Problems related with ignoring staff needs	Social and provisional
Problems with experiencing and expressing grief (Meaningful sharing of death and dying)	Cultural and ontological
Problems with staffing & nursing shortage	Social and organizational
Very long work hours, lack of staff rest opportunities	Social, functional, organizational
Debates over managing ICUs (separation or unification)	Social and organizational
Limits to FCC (family presence during critical events)	Social and organizational
The need for changing the culture towards caring	Cultural and ontological
Focus on caring and social interactions	Cultural and ontological
Perceived conflict between technology and humane care	Symbolic, functional, ontological

CHAPTER IV

**ANALYSIS OF PARTICIPANT OBSERVATIONS
AND BEHAVIORAL MAPS
CONDUCTED AT THE U.S. HOSPITAL**

The previous chapter summarized insights and ideas, which arose from the in-depth interview technique. This chapter covers a method of data collection, which was conducted simultaneously. This method was the recording of observations including: 1) in-depth field notes recorded on structured or semi-structured observation sheets, 2) behavioral maps recorded on the floor plans, and 3) the feelings and ideas of the researcher recorded in a reflexive journal.

The interview method was limited to the caregivers' reflections on the functional, technological, humanistic, psychological, physical, and sociological environment of the PICU, resulting in a caregiver-centered account of the most needed environmental and social modifications. The participant observations, in-depth field notes, and behavioral maps of the unit, however, included everyone involved in the setting, thereby covering all observable aspects of the pediatric intensive care unit atmosphere, and increasing the chances to provide a more neutral account of the place.

4.1 The Observation Method

The observation of patients, families and staff members as a whole provided a major source of information for this research, which was critical to understanding the practical, physical and emotional environment of the ICU. It allowed the researcher to recognize behavioral cues that could not be expressed in words during an interview. Continuous-interval recording was used to identify a variety of caregiver, family, and patient behaviors, their interactions, and background variables: A new observation or behavioral map was recorded every fifteen minutes on a different observation sheet or the floor plan of the unit. Observation notes were standardized by controlling the observation intervals and locations, and by using a semi-structured protocol to guide the categories to be observed. The observed categories included the medical and non-medical procedures, the caregiver's stimulation of and interaction with the patient, the parents' caregiving function and interaction with the patient, the interactions between family and caregiver, family members' interactions and supportive relationships among themselves in the waiting room, patient room, hallway, and their general presence in the PICU, as well as the equipment attached to the patient, the level of technology, general environmental appearance, the sounds and acoustics, illumination levels and sources, and smells.

4.1.1 Observation Strategies

Observation Locations

A dynamic mode of observation was used, shifting the observation locations systematically among different units, different staff stations in a unit, and different zones at the same staff station. Observations were conducted in each ICU (including the pretest period in the 3J step-down unit), while the behavioral maps were limited to three out of the four ICUs. Despite this division, each unit was still too large to observe at once since each accommodated 8 to 18 patient rooms and were divided into several staff stations. Therefore, based on the size, spatial organization, and visibility of each unit, one to three observation locations were selected, which equaled the number of staff stations in each ICU. This resulted in a total of six locations to record observations and behavioral maps during the official data collection phase (Figure 4.1). Furthermore, the observation point where the researcher was sitting or standing at each staff station was also shifted to allow a closer observation of different patient rooms, and the observation of the differences within the social atmosphere of the staff station. Observing the unit by standing up at the exterior surface of the station allowed for more careful observation with a larger perspective extending the visibility of the unit to both ends of the surrounding hallway, thereby allowing the recording of a wider variety of activities happening in the PICU. However, due to extended hours of observation and behavioral mapping, the researcher had to balance her preference for physical position by observing the unit more passively sitting down in the interior area of the staff station at certain intervals, which usually allowed more interaction with the world of the caregivers using the resources at the staff station.

Observing the unit from within the nurse stations, which are the most central and active portions of each unit, allowed the simultaneous observation of three zones: Zone 1 was the caregiver zone that occupied the inside and outside of the staff station. Zone 2 was the public hallway, which not only allowed the movement of the caregivers and equipment, but also the ongoing traffic of external people such as families walking to their patient's room, administrators showing their unit to their guests or visitors, the research staff in need of communication with the ICU staff, the maintenance people, or the transportation team of paramedics that bring a patient in or out. Almost all circulation patterns in the unit had to pass through the hallway around the staff stations at some point. Finally, Zone 3 was the private patient room, which provided visual feedback on the patient-family and caregiver-family interaction.

Although in the Turkish ICU, the bedsides of patients were accessible to the researcher, in the U.S. model, there were more restrictions on her presence in patient rooms due to privacy and infection control concerns. However, the researcher observed the working atmosphere of the patient room during an interview with a bedside nurse in the 5A trauma ICU. This interview enabled a unique opportunity to observe the afternoon atmosphere of a trauma patient's room for three hours, which would not be allowed otherwise for such a long time. During this interview, the nurse attended simultaneously to his practical tasks, thereby allowing the researcher to observe the room and its activities. Finally, short term and less systematic observations were conducted in other shared spaces, including waiting rooms and break rooms.

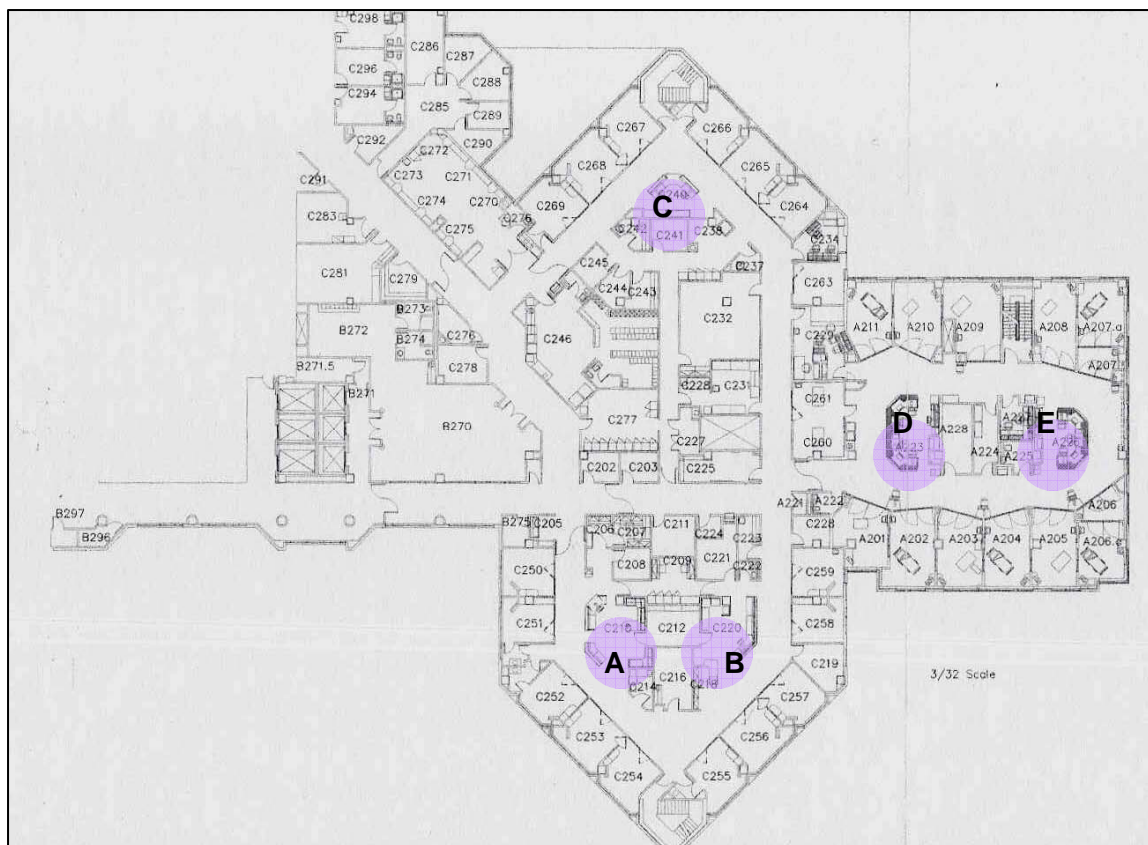


Figure 4.1: Observation Locations, Cardiac and Medical PICU, Children's

Behavioral Mapping

Behavioral maps followed the same criteria as participant observations, recording the presence and behavior of people and events from different nursing stations in the PICU on the floor plan of the unit every fifteen minutes. Behavioral maps included the movement and behavior of patients, families, and caregivers in different areas of the unit, the movement of equipment and furniture, and conversations. Although it was not a familiar data gathering technique in the beginning, it was found easier to analyze.

Behavioral maps were recorded at each staff station in each unit, excluding the 3J step-down ICU, which is the oldest ward type unit, and was under renovation during this study. Due to unexpected factors that impacted the researcher's length of stay in the city, there was an uneven distribution in the number of behavioral maps drawn in the old and new ICUs. That is, 10 maps were drawn from the first staff station (A), 36 maps from the second or intermediate station (B), and 30 maps from the third station (C) in the 2B PICU in November and December 2001, for a total of eight days (four days each month). The 2A cardiac ICU was recorded for three days in December 2001 and February 2002, resulting in 21 maps. Finally the 5A trauma ICU was recorded for two days in February 2002, resulting in 12 maps, thereby leading to a total of 33 maps from the new cardiac and trauma ICUs, as opposed to 76 maps from the main 2B PICU.

Observation Times

The researcher originally aimed to conduct observations and behavioral maps for 4 to 6 daytime hours during regular work hours between 9 AM and 5 PM. However, having recognized the value of observing the units during the hours when the change of shift takes place (which is the peak time of each ICU due to the doubled population size of the staff members present in the unit, and the excessive amount of shared information by the caregivers) she shifted the observation times to 7 AM and 8 PM for a total of 23 days. This resulted in an overall official data collection period of six months (November 16, 2001 through May 14, 2002). Unlike her experience in the Turkish ICU, where she spent one night from 11 PM to 7 AM to test the validity of the emerging generalizations from the daytime observations, she could not observe the night interval in the U.S. model because of the time and accommodation limitations in Dallas.

In the beginning of the study, the researcher ambitiously expected to record a total of 800-960 observations; i.e., about 400 observations in the U.S. However, ultimately, 220 participant observations and 111 behavioral maps were conducted in the U.S. The reason for the reduction in the number of recorded observations was 1) the shift to behavioral mapping as an alternative technique, 2) the flexibility to allow and encourage the occurrence of informal dialogues whenever a caregiver wanted to ask something or provide feedback to the researcher (since informal data gathering could have been more beneficial to reveal important information), and 3) participation at other events in the hospital (lectures, presentations). Tables 4.1 and 4.2 illustrate the final schedule and location of observations.

TABLE 4.1
Distribution of Observation Sessions
Blocks of Observation Times

Selected Points (6) of Observation	Morning (M) (7 or 8 o'clock to 11 or 12 o'clock)	Afternoon (A) (12 or 1 o'clock to 4 or 5 o'clock)	Evening (E) (5 or 6 o'clock to 7 or 8 o'clock)
Staff Station 1 2B PICU			
Staff Station 2 2B PICU			
Staff Station 3 2B PICU			
Staff Station 4 2A Cardiac ICU			
Staff Station 5 2A Cardiac ICU			
Staff Station 6 5A Trauma ICU			

Note: Every block of time lasted approximately for three hours at a specific point of observation, and was divided into twelve fifteen-minute intervals, with a different observation sheet or floor plan every interval.

TABLE 4.2
The Total U.S. Observed Experience

November 16, 2001 through May 14, 2002 (23 days)

Month	Session	Period	Duration (hours)	# Observations	# Behavioral Maps	Total
Nov	M, A	7 am to 6 pm	39	93	46	139
Dec	M, A, E	7 am to 8 pm	29.75	55	40	95
Feb	M, A, E	9:30am to 7:45pm	24.75	70	17	87
May	A, E			2	8	10
Total (23 days)	M, A, E	7 am to 8 pm	93.5	220	111	331

Note: The letter “M” identifies morning; the letter “A” identifies afternoon; and the letter ‘E’ identifies evening sessions. Children’s was also visited on March 8, and from March 13 to March 15. No observations or behavioral maps were conducted during this visit due to time limitations. On April 12, Children’s was visited only for an hour. Children’s was visited for the last time on May 13, 14: eight more behavioral maps and two more observations were conducted.

Observation Categories

At the beginning of each block of 2-3 hours of observation, general information was noted on the starting sheet. In addition to noting the date, time and observation number, the researcher recorded the number of people present on the unit, their job titles as much as she could identify, the nature and severity of the patients’ status (a maximum of five patients could be observed at a single interval), the family members’ presence in the patient room, their behavior and activities, and the general atmosphere reigning in the unit at the specific interval.

On each 15-minute recording sheet, the observer also indicated the date, time, number of participants, and general atmosphere, i.e., if it is a critical or emergency situation, stressful, chaotic, social, happy, quiet, or emotionally moving atmosphere in the ICU. Additionally, she recorded the presence, behaviors, and activities of family members, nurses, physicians, healthcare specialists such as respiratory care therapists, echocardiogram specialists, transportation team of paramedics, and other caregivers, such as social workers and chaplains. The conversations that took place between staff, family members, and patients were also recorded. Finally, the feelings and immediate insights of the researcher were also noted to provide an overall sense of the place.

Finally, the observer paid special attention to the sights and sounds (sudden noises and alarms) in the unit, the use of the bedside space, the impact of the presence of monitors, computers, and other high-tech equipment, accommodation arrangements for families, the functionality of the spatial organization, the variety, quality and use of hospital support services (child life specialists, social workers, volunteers, chaplains), and the behaviors and interactions specific to the U.S. culture.

Observation Protocol

The observer relied on three predesigned instruments to systematically record information: 1) Predesigned observation sheets to guide the information to be looked at, 2) the floor plan of the unit, and 3) behavioral coding charts. The observation sheets included all the categories mentioned in the preceding paragraph, resulting in the collection of semi-structured information, which may be easier to analyze.

The floor plans, on the other hand, aided in describing events and behaviors by defining their physical location, and showing people's interaction with the place. Benefiting from the visual system of the floor plan has been a very informative strategy, which allowed the recording of every piece of information that could be selected from a complicated background, and representing "the perfect prototype of all behavioral maps" (Ledoux, 1994; Fournier, 1999). Figure 4.2 illustrates a sample behavioral map recorded on a floor plan. The floor plans included all details of the spatial organization, and matched with the real physical situation, increasing the chances for reliable observations.

Finally, the use of behavioral codes helped the observer to easily describe events and activities, thereby increasing the efficiency and rapidity of data recording, especially during hectic observation intervals. The coding charts encoded an extensive protocol of activities, behaviors, and social interactions expected to occur in a PICU. It was based on Fournier's (1999) protocol of codes that she developed to facilitate the recording of the behavior in a NICU environment, although it was modified and detailed to more accurately describe the specific environment of the PICU, and split in accordance with the different types of users. Additionally, the behaviors that emerged in the Turkish ICU were incorporated into the final protocol. Table 4.3 illustrates the resulting coding charts used for both case studies. The letter represents the person who is involved in the behavior, activity, or interaction. (The letter "N" identifies a nurse; the letter "P" identifies a physician; and the letter "C" in general refers to a caregiver. The letter "F" identifies a family member such as the mother, father, grandparents, and siblings. The letters "CH" identify the child patient.) The number refers to the specific behavior or activity. Although the resulting codes guided most of the recording of observations, there was flexibility to include other, i.e., more unique and unusual events and unexpected activities that would not easily lend themselves into behavioral codes.

While producing the behavioral maps, the codes were used in combination with drawing lines on the floor plans, which indicated the movement of people and equipment, with arrows showing direction of movement. Each line also indicated a code that shows the behavior or the function of the movement. Numerous descriptions of the events, people's interactions and dialogues completed the observations recorded on floor plans.

TABLE 4.3
Behavioral Coding Chart

Person	Activity or Behavior
NURSES, PHYSICIANS AND OTHER CAREGIVERS	
N1/P1/C1	Caregiver attending to patient with a simple non-medical task such as changing diapers, pajamas, linens or other utilities; feeding; cleaning his face or body; touching; massaging; kissing; talking to patient (Caregiver-patient interaction 1)
N2/P2/C2	Caregiver attending to patient with a medical task such as taking vital signs, verifying equipment, drawing blood, administering and injecting medications, changing the patient's position or IV, or psychologically preparing the patient for the medical procedure (Caregiver-patient interaction 2)
N3/P3/C3	Caregiver attending to the patient in a very critical or emergency situation with a very complex medical procedure such as intubation, resuscitation, or cut-down, and explaining the procedure to the patient (Caregiver-patient interaction 3)
N4/P4/C4	Caregiver relocating equipment in the hallway, such as the emergency cart, etc. (or gliding chairs, the X-ray machine, or the ventilator in the Turkish ICU)
N5/P5/C5	Caregiver reading or documenting/charting into the patient's record, or doing other computer related tasks (Caregiver-computer interaction)
N6/P6/C6	Caregiver interacting with another caregiver about the patient's care, participating at a consultation at the patient's bedside, or exchanging information with other caregivers at the change of shift (Caregiver-caregiver interaction)
N7/P7/C7	Caregiver interacting with a parent, exchanging information, or training them about the child's care (Caregiver-family interaction)
N8/P8/C8	Caregiver sitting at staff station, resting, relaxing, eating, drinking, watching TV, or socializing with other caregivers (Caregiver-caregiver interaction-- social)
N9/P9/C9	Caregiver interacting with the researcher about her observations, giving her informal information, or engaging in a dialogue with her (Caregiver-observer interaction)
N10/P10/C10	Caregiver giving information on the phone about a patient's status or other PICU matter (Caregiver-external department interaction)
N11/P11/C11	Caregiver watching the ICU atmosphere, watching a medical procedure, looking through the window, organizing the desktop, equipment, or surroundings, mixing medication, washing hands, and N4 (Caregiver-environment interaction)
N12/P12/C12	Caregiver moving through the hallway, or walking into or out of the unit
N13/P13/C13	Caregiver using the staff station as a shortcut to go to another area (team room)

TABLE 4.3 (Continued)

Person	Activity or Behavior
FAMILY MEMBERS AND CHILDREN	
F1	Family member/parent attending actively to their child's non-medical needs such as changing diapers, underwear, pajamas, linens or other utilities; helping child do toilet; feeding; touching; kissing; talking; massaging; or helping the nurse (Family-child interaction)
F2	Family member/parent interacting with wife, husband or other family member; providing tactile or vocal stimulation to each other (Parental interaction)
F3	Family member/parent watching their child that is asleep or comatose
F4	Family member/parent standing in the doorway, looking at the child or waiving from there to the child
F5	Family member/parent waiting outside the unit or in the waiting room (sitting on the steps of the staircase, or going to another place in the hospital in Turkey)
F6	Family member/parent interacting with the caregivers about the child's situation (Family-caregiver interaction)
F7	Family member interacting with another parent (Parent-parent interaction)
F8	Family member/parent resting, relaxing, watching TV, or sleeping in the chair
F9	Family member interacting with the observer about their child's situation, giving or asking for information, requesting something for her to do inside, assigning a "special friend" role to the observer (Family-observer interaction in Turkey)
CH1	Child being treated, having medical or non-medical procedures, or crying because of the pain involved with these procedures
CH2	Child being sedated, intubated, and connected to the ventilator
CH3	Child being conscious but sleeping
CH4	Child being conscious and resting and relaxing in the bed
CH5	Child spending time by himself, watching TV, drawing, or reading
CH6	Child interacting with the parents, eating, kissing, or talking to them
CH7	Child crying because of leave or absence of parent or other family member
CH8	Child interacting with the caregivers (Patient-caregiver interaction)
CH9	Child being happy, laughing, smiling, socializing, or interacting with the researcher
CH10	Child walking in the unit by herself, or being taken from bed in the arms of a caregiver, and brought to other areas in the unit for fun

In summary, approximately 8 to 12 observation sheets and 8 to 12 behavioral maps resulted daily (when either both or only one of the two observation techniques was used), equaling an active data collection period of four to six hours each day. The observer employed the following strategies to record her observations: 1) regular presence on-site that covers different sections of the day and week (i.e., weekends), 2) observing people's presence, behaviors, activities, social interactions, and their use of the physical environment that identified spatial problems, and 3) recording the unit through detailed handwritten notes and behavioral codes to fill out the observation sheets, and through a combination of behavioral codes, lines with arrows, and descriptions of the place and people to fill out the behavioral maps. In addition to the on-site records of the setting, she wrote additional field notes into a reflexive journal either at the end of a day, after sufficient time has passed after leaving the site (typically a few hours), or during the weekends. This process allowed the researcher to recall the day's events in detail, and explore the meaning embedded in them.

4.1.2 Analysis of Observations, Field Notes and Behavioral Maps

Twenty-three days of intense data collection⁵⁵ (about 12 hours per day) produced an extensive amount of field notes, behavioral maps, and journal notes, introducing the psychological problem of managing this information and its analysis. The researcher waited one year before analyzing this vast quantity of information. She developed a process similar to the transcription and analysis of the interview method, transcribing verbatim all field notes, behavioral maps, and journal notes, and dissecting the transcribed documents into discrete units of analysis. The units of analysis were then placed on index cards and classified into relevant categories. As salient categories started to emerge from the data, connections were established between emerging themes, some of which appearing more often than others, thereby informing the five or six main categories resulting from the participant observation and behavioral mapping method, and the relation of this information to that derived from the interviews.

Analysis of Behavioral Maps

The behavioral maps can be read both qualitatively and quantitatively. Qualitatively, they indicate the behavioral patterns in an ICU, particularly during special events that were witnessed only once (such as cut-down procedure, cardiac resuscitation, CPR, death, parents' and staff members' grieving process after death). Quantitatively, they indicate the place and frequency of an event, and the main functions of particular places in the ICU. The total amount of time spent in each ICU for the behavioral mapping technique varied from a minimum of four hours (resulting in 12 maps in the 5A unit) to a maximum of nine hours (equaling 36 maps at Zone 2).

⁵⁵ Many days during the data collection period, the researcher arrived in the hospital around 7 AM, and returned home around 9 or 10 PM. A typical day included the active recording of observations, behavioral maps, and interviews, as well as preparations for the data collection methods, rest and relaxation periods, attendance to supportive hospital events, presentations, and lectures, and informal interactions and dialogues with the hospital staff.

The quantitative analysis of behavioral maps indicates the most frequently occurring activities and functions in the staff station, hallway, and patient room. However, since observations were recorded from the staff station, the observer could observe the activities at the staff station or in the hallway much better than those inside the patient rooms. In future studies that use behavioral mapping in an ICU, the presence of multiple researchers may prevent the unequal distribution of observations, if they simultaneously observe and record the activities in the patient room, hallway, and at the staff station. Additionally, due to the intensity and hectic activity level of certain intervals, such as change of shifts, it was impossible for one observer to record everything. However, the researcher estimates she was able to observe and record as much as 75% of major events happening at the station and in the hallway at such intervals.

The staff and family activity analysis charts scattered from Figures 4.6 through 4.23 show the observed and recorded time of a coded activity by a specific person. Although these numbers indicate the minimum amount of time when such activity occurred (obviously the observer could not attend to and record everything), they still show us the proportion between observed activities, thereby suggesting a hierarchy of the frequency of an activity. Another problem was identifying who was who; when the researcher could not identify the exact job title of a staff member, she recorded the activity was done by a general caregiver. The different types of caregivers included physicians, nurses, respiratory therapists, environment and equipment technicians, health unit coordinators, and external staff.

4.2 Results Of Observations And Behavioral Maps

4.2.1 Step down ICU

The behavioral observation in 3J step-down ICU, the oldest and the only ward type ICU at Children's, was limited to one hour on November 16, 2001, which was the first day of on-site observations. No structured observations or behavioral maps were conducted in this unit afterwards because it was closed for renovation during most of the case study period. It reopened in the spring of 2002.

To begin with, the location of the step-down ICU is physically separated from the other three ICUs located in the East Link. The general atmosphere reigning in the unit is more crowded and chaotic than the other units. The floor design with geometric shapes, the use of soft colors, and the provision of the same ICU equipment result in a similar spatial feeling in terms of décor and form language, which was further emphasized after the renovation or "facelift," which brought medical gasses into code compliance.

Caregivers were very upset with the physical environment in this ICU. Even in a single hour of observation, many caregivers complained (a female physician, and a few nurses) about the fact that having to work in this type of ward environment was very annoying. While small and shared spaces are difficult to handle everywhere, it may be even more uncomfortable to adjust to such spaces in the U.S. where spatial standards regarding the size are very progressive. Figure 4.3 shows a view of the staff station and hallway from the step-down ICU.



Figure 4.3: Staff Station and Hallway, Step-down ICU, Children's (Source: Author)

4.2.2 Second Floor Main PICU: Zone 1 (Staff Station 1)

Description of the General Physical Environment, Décor, and Atmosphere

Staff station: The main distinguishing physical and atmospheric feature of staff station 1 from other stations is determined by the presence of the team room just behind the station, creating a lot of traffic, activity, and noise in this area because the team room can only be entered through staff stations 1 and 2. The second feature may be its location in close visual and physical proximity to the entry of the unit, making the many people walking through the hallway, and especially the families walking to the patient rooms, an integral part of the visual and sonic environment (bm.11.23.1).

The equipment at the staff station is composed of a central station monitor, computers and gliding chairs for the charting functions of staff, which are mostly used by the physicians, computer workstation for the secretaries (health unit coordinators), a copier with stand, and temporary equipment stored at the station, such as the emergency cart. Figure 4.4 shows a view of Staff Station 1 and patient room.



Figure 4.4: Patient Room and Staff Station (1), 2B/2C PICU, Children's

Patient rooms: The patient rooms are approximately two thirds of the size of the new patient rooms in the 2A cardiac and 5A trauma ICU. In the new rooms, if we assume that the patient room is divided into three equal portions, the family zone gets the same amount of space as the caregiver zone and the patient zone, and is large enough to accommodate parents to stay with their children. However, since there is not enough space for the families in the older patient rooms of the second floor main PICU, the family zone consists of the family member's armchair, which is located diagonal to the room, fitting into the triangular geometry of the very corner space. In other words, the families are thrown into the corner of the room (bm.11.23.1). Based on the floor plan of the unit, the room shapes look to be quite similar (1.25 inch to 1.25 inch square arrangement in 3/32 scale plan).

Compared to the recently built 2A unit, the window size of patient rooms is about one and a half times smaller in this unit, resulting in a dramatic reduction in the amount of total window surface provided, which are often blocked with shading devices. Only half of the height of the exterior wall of the room is utilized as window space, which impacts the atmosphere inside the room (Figure 4.4).

The types of beds change from the mechanically or electrically controllable full-size beds for older children to regular nursing cribs with overhead restraints for babies and young infants. Patient room configuration and bed positioning in general are considered to allow convenient observation and supervision of patients by nursing staff. However, staff members criticized the type of crib they used since it has high restraints, blocking the view to the monitors.

The entrance door to the patient room is sliding, with one part operable. Light blue curtains cover the glass surface of the entrance door completely when privacy is needed inside the room. The floor material is pastel colored vinyl square tiles for easy maintenance, which is the same as used in the hallway.

The walls are smooth white surface. The patient, family, and caregiver zones are not clearly separated from each other, as in the new patient rooms. Only one armchair is provided for the family member (discouraging simultaneous visitation of both parents), which is green leather that can also be used as a recliner. Finally, no area is provided for play, entertainment, education, and other child life activities, which may suggest that Child Life staff and family usually do not visit together.

The patient room is packed with equipment to facilitate the practical and clinical tasks of the caregivers, such as a procedure cart, a desk with diagnostic set, a glove box holder, wall-mounted computer workstation, portable lamp, and a gliding chair for the nurse's charting function, the monitor to trace the vital signs of the patient, ventilator for the assisted mechanical ventilation of the patient, air and oxygen flow meters, infant warmer system, surgical and warming light systems, and infusion pumps with cart. Other furniture and equipment provided in the room for the comfort of the patient and family members include an armchair for the family members, a personal protection cabinet, TV, and an overbed table. Additionally, other equipment that is used temporarily in the patient room adds to the whole crowded atmosphere: For instance, the electrocardiogram (ECG or EKG) machine on the cart may stand in the room longer than needed rather than being directly transferred to the equipment storage. Finally, the waste container is also an invisible part of the view to the patient room at many times.

The back and forth movement of the physicians and residents between a patient room (C253) and the physicians' team room (C212), which is located behind the staff station, creates a constant circulation pattern, overwhelming the staff station and increasing the level of noise in the unit due to people's interactions while moving, and the opening and closing of the team room's door. The soiled utility room (C214) and storage room, which is also used as office space for a staff member (C216), could function better as a team room, allowing the families moving through the hallway to be able to see the doctors' brainstorming and clinical discussions, which may increase their trust in them and in the quality of the care they provide, which may be needed more than privacy for physicians. Additionally, physicians would be able to observe as many as six patient rooms (C252 through C257) from the team room, not needing to leave as often to see the patients. In general, this space offers the best visibility to most patient rooms, which could also be used as a more efficient staff station (bm.11.23.1).

The copiers in this unit are located inappropriately in most staff stations: they are a major source of noise, yet they are located at the intersection of the staff station and hallway, carrying noise into adjacent patient rooms. Noise levels could be reduced by moving them into a semi-open area located more distant from the hallway and separated by partitions from the staff station, or in a completely closed area adjacent to the station. Although in Staff Station 2, the copier is located in a semi-defined area, it is located more randomly in Staff Station 1, blocking the passage to the staff station when the copier is used (bm.11.23.1).

The staircase well for fire escape and egress functions is located at the southern corner of the ICU, which could not be an appropriate patient room due to its strained geometry (i.e., the entrance is very narrow). Although the well will ensure safe egress when needed, and is used by the caregivers practically as a shortcut to the parking lot, this centrally located space, which looks to the south with access to the southern sunlight would provide a good opportunity for the caregivers to get a 5-minute break in the unit, without needing to go to the more distant staff lounge. They could have a drink, while being very close and having visual access to their patients, and enjoying an ambient atmosphere with beneficial stimulation such as nature sights and sounds. Also, visually, this green room would be observed from the patient rooms in this part of the ICU, thereby contributing to the healing atmosphere. The staircase well, on the other hand, could be located in the areas currently used as an anteroom for two patient rooms (C251 and C252), and team leaders' office (C219), which can be located anywhere in the unit (bm.11.23.1).

Another issue that derives from the preceding recommendation would be related to the need of the caregivers to be able to know what is going on with their patients even if they take a break. Currently, they can leave their patients with another caregiver, and go dine or have a drink in the staff lounge area that is quite distant from the patient rooms. If, however, they were able to see the patient room from a place that provides visual access, they could feel more comfortable to take a break when they need it. Consequently, they could immediately respond to the social and clinical situations, during which they would prefer to be present. Once again, the current stairwell would prove to be a very convenient location for this function, with a potential to provide visual access to six patient rooms, if no shading blinds were used between the patient zones of each patient room. Although for privacy reasons, the elimination of the use of shading

blinds might be an issue to debate, as long as the family zone is clearly separated from the patient zone at the exterior surface of the patient rooms, and provided with privacy for the family zone only, this scenario could work out successfully (bm.11.23.1).

Two issues can be raised against the central location of an area to facilitate staff members' resting and relaxation functions in the unit in close proximity and propinquity to the patient rooms: First, administrators might be concerned that such a central location, especially if designed with ambient features, might be very attractive for the caregivers, encouraging them to take more breaks than they need. (However, they may be very open to this concept, having recognized that enabling a context for staff happiness may reduce the current nursing shortage crisis.) Second, caregivers may prefer to have privacy more than knowing what is happening in their room during a break. Especially, they may want not to be seen and disturbed by the family members during a break. However, this space should be considered as a symbolic staff relaxation room rather than a functional staff lounge, which is thereby equipped with green stimulators (nature) and maybe with a massaging chair rather than functional dining tables, microwaves, and a refrigerator, and which aims at the psychological wellness of the caregivers rather than physical such as hunger. This room could be called "Caregiver's Wellness or Rejuvenation Room." The feasibility of implementing this function in the ICU can be explored through questionnaires and surveys addressed to the caregivers and administrators in future studies. Similar studies were conducted at Children's on the impact of nature on asthma patients' sleep and healing process. While nature may be beneficial even for sedated patients, the findings regarding the impact of nature on (sedated) patients versus caregivers may be compared. In either scenario, patient room is to remain the major unit for caregiver activities, thereby contributing to staff wellness (bm.11.23.1).

The functions of the hallway are to provide 1) visual access into the patient room for the caregivers, 2) communication of the doctors and other caregivers with the nurse inside, 3) communication of the caregivers (doctors) with parents. Therefore, the second main function of a hallway following traffic is the provision of a location for sharing information among the caregivers and with the families, with visual access into the patient rooms. The difference between inside and outside, and the transition from the public hallway to the personal and dramatic atmosphere of the patient room is abrupt in this type of spatial configuration. There is no transition to prepare caregivers and families for the experience to take place inside. Therefore the public character of the hallway with its crowd, noises, jokes, laughter, running, and vivid social atmosphere is carried into the patient room. The hallway functions as a promenade, where people satisfy their need to see and be seen by other people. Even in an ICU, people are aware of their observance by community. Therefore the family zone in the patient room may be the only place to facilitate dwelling⁵⁶, from where they can observe the patient's care. From the family zone, they may observe the vivid corridor and its activities rather than to be seen and asked questions at all times (bm.11.23.3).

⁵⁶ "Dwelling" is a common concept in phenomenology, which refers to the harmonious relationship of humans to nature and outside environment.

Another function of the hallway is to provide an anteroom for family members, who stop at the corner of the hallway or in front of the patient room in order to put on their gowns, gloves, and masks (depending on the disease and status of the patient) before they walk into the patient room. These precautions against infection enhance the sterile feeling of the environment (bm.11.23.8).

Regarding the acoustic environment, there are certain times during which it gets very noisy and overly stimulating in an ICU. Such a peak time occurs when most of the sources of noise activate simultaneously. For instance, during one interval, the alarm sounds rang at the same time in the patient room and at the nurse station, the phones kept ringing, the sounds coming from the copier located adjacent to the staff station added to the whole atmosphere. Additionally, medical procedures that are simultaneously going on in two adjacent patient rooms created human sounds, since the nurses work in teams to help one another, and communicate with the families, adding to the usual sounds and sights of people passing through the hallway (bm.11.23.4). (Atmosphere)

Another feature that relates to the auditory environment is the high-level of speaking of the nurses, which seems to be a cultural behavior⁵⁷. In the ICU atmosphere, despite the constant background noise, the observer could easily hear many conversations that occurred in the patient room, as long as they were not private. When a nurse was asking a question to the family member regarding the admission history of the patient, or was expressing appreciation of the family member's presence and help, she talked loudly enough and could easily be heard by the people standing at the public zone outside the room, which starts immediately where the patient room ends. The visual relationship between the staff station and patient room resembles in some terms the relation between the stage and audience: Nurses may be aware that they are watched many times, and may want to prove that they are competent in the care they provide, and in their interaction with the child, family, and other caregivers (bm.11.23.4).

Another physical feature relates to the interaction and cooperation of the nurses working in adjacent rooms. They need to move through the hallway in order to go from one room to the other repeatedly to cooperate. The provision of sliding doors between (at least two) adjacent rooms would make it more efficient for the nurses to cooperate, as it was already stressed during the interviews (bm.11.23.4).

Behavioral Notes. A basic problem in the observations and behavioral maps was the recognition of people: their faces, job titles, and their names. Without knowing who was who in the unit in the beginning, it was difficult to understand and record the events and people's interactions in a reliable way. For instance, it was almost impossible to distinguish a nurse from a therapist, since both groups wore similar scrubs, or the older doctors who came in civil clothes from regular visitors or administrators. As the observer got more familiar with the unit, she started to record events faster and easier (bm.11.23.7).

The most important behavioral category relates to the issue of social interaction. First, the interaction between the family member and nurse usually happens inside the patient room, when the nurse is working actively with the patient rather than doing a more individual task (that requires concentration)

⁵⁷ The researcher observed that North Americans are more vocal and may talk loudly in public places, which is less common in other parts of the world.

such as charting or making a phone call, and when the family member is resting in the family zone, sitting in the chair, and observing the nurse's caregiving activities (bm.11.23.6).

Second, staff interaction in this zone, which is more clinical in nature than social, also happens mostly in the patient room, when a nurse asks another caregiver to help her (with the medical procedure, or by bringing some equipment from another room). The nurse is the busiest staff member, and other caregivers are typically cooperative when they are called for help. Therefore, being the most caring person in this environment, the nurse gains a right to be helped by others. She is the main coordinator of care, as emphasized by the ICU director. She does not have to do all caring herself because she is already doing too much, or significantly more than the other caregivers. The respiratory care therapists (RCT) or healthcare specialists, on the other hand, attend to more patients doing less (i.e., suctioning patients, etc.). The major task of an RCT is to ease the breathing process of a patient, which is a well-defined and well-limited task, although she/he is capable of nursing in other ways. However, some therapists mentioned that the reason they have not chosen nursing is to avoid unpleasant tasks (such as changing diapers) although they may be called for help with such tasks. Nursing is a combination of technical, caring, and housekeeping tasks (i.e., changing towels, linens, and other soiled utility). In the future, specialized staff such as blood-drawing teams will support and free the nurse from the "technical," in order for them to be able to spend more time with their patients. However, the separation of technical skills from nursing may not be preferred by all nurses, who value technological mastery more than caring (bm.11.23.6).

The relationship between nurse and healthcare specialists, such as ECMO therapists, is less frequent: The ECMO specialist worked in a single room with the patient that required ECMO therapy, and left after documenting the care he gave. He rarely communicated with other caregivers during his presence in the room (bm.11.23.1; bm.11.23.9; Room C253).

Regarding the caregiver-patient relationship, a cross-cultural pattern is to use calming sounds and stimulation of a toy while doing the medical and painful procedures (bm.11.23.6).

Sometimes, everybody, i.e., the physician, the family members, the nurses and other staff, gathers in the hallway in front of the staff station, or in front of a patient room, creating a vivid social group, which is usually perceived as a positive and beneficial interaction (bm.11.23.10).

The caregivers interacted occasionally with researcher, 1) to find out what she was recording, 2) to ask her some information, believing she was a staff member. Sometimes, caregivers decided to participate in an interview, and scheduled a meeting time after the explanation of the study (bm.11.23.10).

Another qualitative finding relates to aural environment: as opposed to peak times of noise, there are also peak times of silence. The atmosphere of an ICU can change rapidly from a hectic and frantic place to a calming and peaceful place, when everything gets *quiet*, the phones and the alarms stop ringing and beeping, and people just get involved silently in the activities they are doing. When the machines get silent, people appear to unconsciously respond to that, and experience as a whole a meditative mode in the ICU. In other words, noise brings in more noise, and silence brings in more silence (bm.11.23.6).

The most critical room becomes the noisiest room due to extensive work, which was Room C253 on November 11, 2002 in staff station 1 (bm.11.23.9).

Charting, clinical communication among the caregivers, and communication with parents are the main caregiver activities in this zone (bm.11.23.1).

The physicians usually work at the staff station for charting, whereas nurses use the computers in the patient room (bm.11.23.2). One of the major functions of the staff station desk is to make phone calls from the unit to the exterior. The patient rooms are usually not used for this function, probably to allow privacy for families and patients, and in order not to disturb them more often than necessary (bm.11.23.3).

Another scene from the staff station is the nurse and physician working together at the computer interacting about the care plan of the patient. As a cross-cultural observation, this type of cooperation between the nurse and doctor almost never happens in the Turkish ICU (bm.11.23.8).

Regarding the relation between the nurse in the patient room and the staff station, sometimes the nurse does not leave her room while asking for information or help from the staff station. At an interval when the staff station was occupied by several people, including a physician and two nurses charting, the health unit coordinator (HUC) making a phone call, and other passengers, who stop by shortly, the nurse was comfortable to request something from the staff station. It is not a threatening work atmosphere to ask for help, as it was already hypothesized in the third chapter regarding the behavioral impact of the single room arrangement on the staff station's role and function for the caregivers (bm.11.23.5).

The nurse is the main person walking the unit all the time (bm.11.23.2). Nurses were all over the place at many intervals (bm.11.23.5). 1) The nurse has to go back and forth between two rooms to take care of her patients in two adjacent rooms (C253 and C253) (bm.11.23.1). 2) The nurse of C252 used the staff station as a shortcut to walk into the areas located behind the staff station (equipment rooms, kitchen or Staff Station 2). Similarly, the nurse of C253 (the same nurse) had used the staff station as a shortcut to go to HUC and Facility Services Supervisor Area (C208) (bm.11.23.2).

Family members' movement back and forth in the hallway is a regular part of circulation. They walk into rooms, and leave shortly thereafter (bm.11.23.3). Kids (siblings) are also welcome in the PICU. However, they need to be supervised by their families (bm.11.23.9). Families leave the room and wait outside in the hallway even during simple medical procedures such as drawing blood, which did not seem to be a meaningful rule. Blood drawing is done by the nurse: Usually, two nurses work together while a third one is present to help if needed (bm.11.23.3). They only turn on the lights in a patient room when they work with the patient. Since access to daylight is also limited due to insufficient window surface in this unit (also, blinds were used often), parents usually sit in a dark room for extended hours, without leaving the room, which does not seem to be a healthy environment for families (bm.11.23.9).

Quantitative Analysis: Figure 4.6 indicates the analysis of observed activities occurring at Staff Station 1 and the surrounding zone in the second floor main PICU (bm.11.23.1-10; 2:30-5:30 pm). Usually, staff interaction (clinical) and documenting the care provided in the patient's file (on computer) are the two main activities of the care providers that occur in a staff station (in addition to staff circulation),

while very little interaction between family members and caregivers occurs in this area. In Staff Station 1, nurses used the staff station most often (41 times) among all caregivers, except for charting: more physicians (n=9) than nurses (n=4) occupied the staff station for this function. Few social interactions occurred between staff members beyond regular staff interaction that focus on the patient's care. Respiratory care therapists were not a major population group at this station during the observed period.

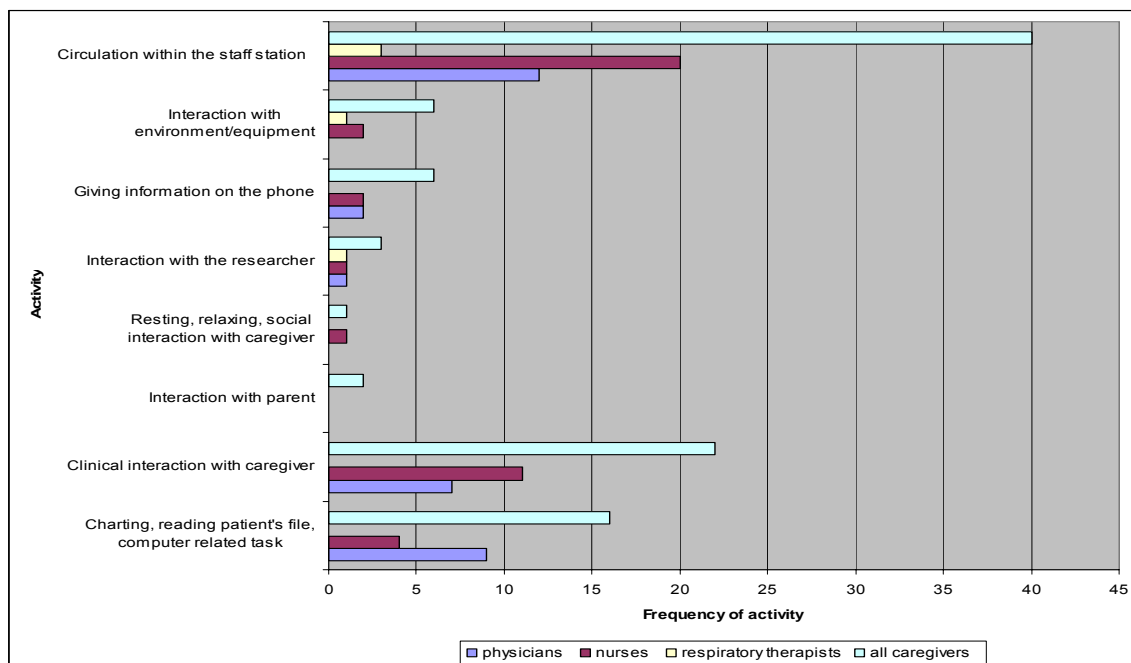


Figure 4.6: Activity Analysis of Staff Station 1, Second Floor Main PICU

Figure 4.7 indicates the analysis of observed activities in the hallway. Since this area includes the entrance to the unit, it is dominated by various circulation patterns that pass through, which may reduce the presence of other activities in the hallway, especially staff interaction, both clinical and social. Family members constitute a large group that pass through the hallway continuously, although their presence in the hallway does not extend to further functions except for being taken (waiting) outside when there is a critical medical procedure in the room (n=2), interaction with the equipment cart (glove box holder) parked in the hallway (i.e., they stop in the corner of the hallway and put on the required gowns, gloves, or masks against infection before they walk into a patient's room) (n=2), and interaction with the caregiver (n=1).

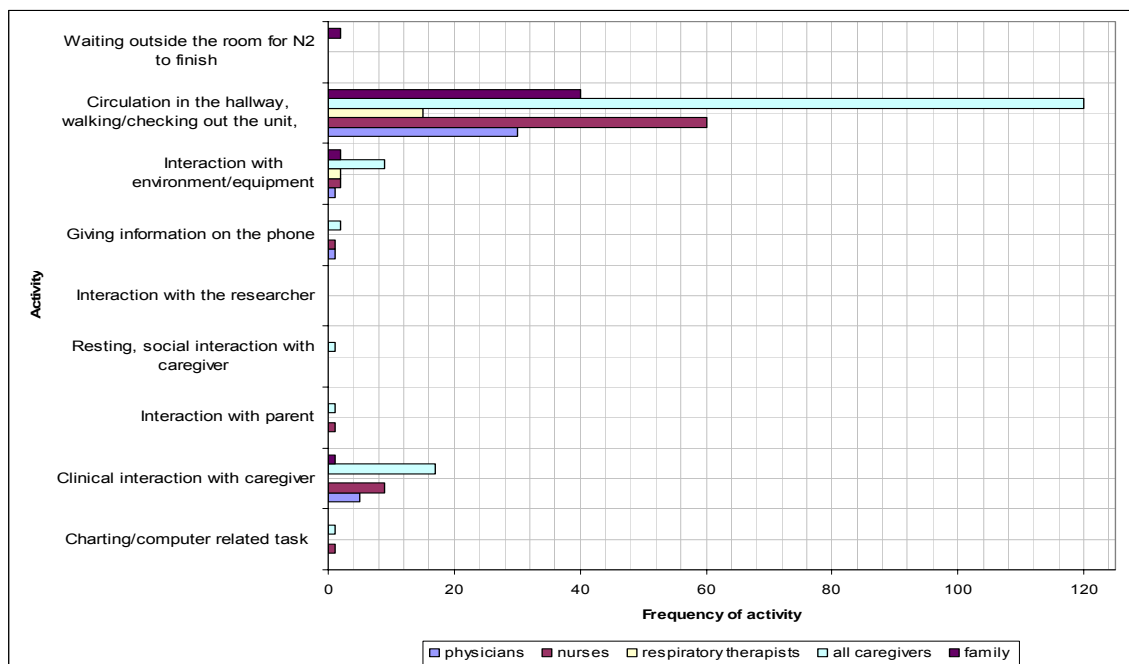


Figure 4.7: Activity Analysis of Hallway 1, Second Floor Main PICU

4.2.3 Second Floor Main PICU: Zone 2 (Staff Station 2)

Description of the General Physical Environment, Décor, and Atmosphere

Hallway/Corridor: The hallway is a continuation of Zone 1, and applies the same soft pastel tones in the most visible spaces. A child-friendly décor and design interventions are applied in the hallway using child-like geometric shapes (triangles, circles) over the walls, friezes and color wall guards, which are one of the first symbolic features recognized in the interior atmosphere of the ICU (Figure 4.8). However, this type of animation, which is known as “theme-ing,”⁵⁸ may not be beneficial to children. The application of interesting visual images for children, such as large-scale posters of sports figures, which do not suggest any organic or natural content, continues in other parts of the hospital throughout the hallways.

Staff station: Staff Station 2 is configured in symmetrical spatial arrangement as Staff Station 1, although the design is slightly different. Similar to staff station 1, a lot of activities occur in the team room located behind the staff station. Therefore, it is a transitional space for physicians and residents.

A common need at the staff station is to provide individual and semi-enclosed workstations for caregivers’ charting and other computer related tasks. The very public character of this common desk may not adequately serve this function. Especially, the front desk adapts automatically a communicative

⁵⁸ “Theme-ing is the application of graphics involving artificial constructs such as transportation vehicles, sports equipment, and cartoon characters to provide a child-appropriate setting” (Shepley, personal information).

function between the caregivers staying behind this zone and those (other caregivers, external staff, and families) who need information or support. Although providing communication, information, and help is the main function of the staff station, this zone also facilitates caregivers' need for working and thinking about the patient in close proximity to patient room and other caregivers if they need to ask something. Therefore, semi-individuated and more comfortable study spaces should be provided and increased in number at the staff station, especially for physicians and residents.



Figure 4.8: Staff Station 2, 2B/2C Main PICU, Children's (Source: Author)

Analysis of Behavioral Maps

Figure 4.9 shows the analysis of the activities recorded at Zone 2 (bm.11.26.1-12 to bm.11.29.1-12), which identifies the presence and behavior of the people at Staff Station 2. It indicates that the major population that occupies the "nurse" station is the physicians rather than the nurses in this zone. Nurses already have their more private workspace and computer in the patient room, so if they need to concentrate on their work (caring) or to document the care they provide (charting), they can do this without leaving the room. Another part of nursing is walking through the ICU to bring needed equipment or clean utility, thereby increasing circulation. Third, the emotional caring for the patient and the family, and the clinical (and social) interactions with physicians and other care providers about the patient's care occur almost always inside the patient room. Finally, the nurse may also go to another patient's room to help a coworker with a task. Therefore, especially in the 2B unit, the nurses use the staff station very few times, for instance, when they need to ask for support, to check out some information from the patient's file that is stored in the cabinet at the staff station (bm.11.23.5), or to exchange information at the change of shift. They are even too busy to participate in social and informal events that occasionally happen at the staff station, or when a group of caregivers gather in the corridor and create a social atmosphere.

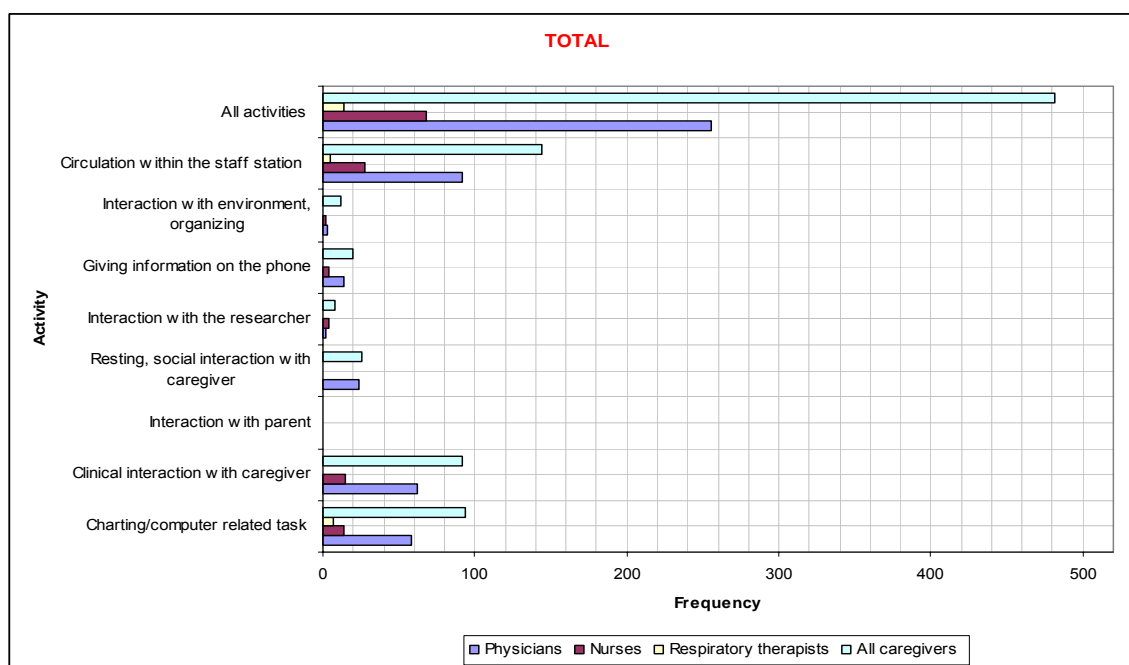


Figure 4.9: Activity Analysis of Staff Station 2 (Second Floor Main PICU)

Another consequence of the extensive use of the staff station by physicians relates to the presence of respiratory therapists: While they are a major group occupying other staff stations, in Zone 2, they were hardly present. During two days of the behavioral mapping, no respiratory therapist used the staff station for three hours (bm.11.26.1-12 & bm.11.27.1-12). This pattern can indicate the territorial behavior of people, since one group discourages or eliminates another group from the place.

The analysis of physician activities at staff station 3 revealed the following hierarchy: 1) Computer related tasks (20 times), 2) Interaction with another caregiver (16 times), 3) Circulation within staff station (13 times), 4) Other/organizational tasks (11 times), 5) Interaction with researcher (8 times). Surprisingly, interaction with the family members happened very few times at the staff station or in the hallway, which suggests that this function occurs mostly in the patient room. Another difference regarding one of the functions of the staff station relates to the use of the phone: Whereas in the Turkish ICU, the lack of individual rooms causes the phone at the staff station to be used and ring continuously, at Children's, the provision of phones in each patient room (which is duplicated in the new patient rooms in 2A and 5A units for the separate use of parents and caregivers), reduces the use of phone at the station significantly. Finally, the presence of a staff lounge in the unit would minimize the function of the staff station as an area to rest and relax for the caregivers, as it happens in the Turkish model. However, social and pleasant interactions and jokes among staff, the extensions of being human, were also present in the U.S. staff station, although it happened much less frequently than in the Turkish ICU. The behavioral maps can indicate the differences of the U.S. unit in terms of social interaction behavior in comparison to the Turkish ICU.

Finally, the analysis of behavioral maps recorded from the hallway (bm.11.26.1 to bm.11.26.12; 1-4 pm) indicates that following the main circulation function (36 times) the most common function is allowing a place for staff interaction (16 times).

4.2.4 Second Floor Main PICU: Zone 3 (Staff Station 3)

Description of the General Physical Environment, Décor, and Atmosphere

Staff station: Staff Station 3 is configured in a different spatial arrangement than staff stations 1 and 2; it uses the triangular geometry of the northern corner of the central support space (Figure 4.10) and is smaller in size (maybe half of the size of staff station 1 and 2). It is not adjacent or accessible to a team room or any other space behind the station, thereby eliminating additional traffic inside the station. (The observer felt more comfortable due to lack of an adjacent team room.)

Despite its small size, it facilitates the computer related work of up to four or five people. A central monitor is provided as standard equipment at the front desk.

Unlike staff stations 1 and 2, which provide one or two more individuated and semi-enclosed work areas in the back of the station, the configuration of this station does not allow semi-private workspace. Also the physical proximity between the people working at each computer is closer here than in the other stations, which might impact staff behavior in this zone. Wall mounted cabinet space is provided to store patient files in the back of the station. The copier is located in a more protected area as compared to its open locations in the previous stations. The emergency cart is parked at an empty space near the copier, which is divided from the hallway through a wall. A defibrillator is put on the top surface of the emergency or resuscitation cart, which is usual for all emergency carts.

Another locational intervention of this station is its close proximity to the staff lounge (Figure 4.10). When the automatically controllable doors of the unit and the door to the lounge are open at the same time, it is possible to hear the sounds of the staff socializing in the lounge. Also, the fact that the proximity between the staff station and the lounge is closest in this zone may naturally encourage the staff members in this zone to use the lounge more frequently.

A functional design element, the wall-mounted pneumatic tube stations are usually provided at the staff station for the recognition and easy accessibility of materials sent to this zone. This feature of the built environment eliminates at least one of the walking functions of the nurses, saving them valuable time.

Patient rooms: Three patient rooms (C260, C261, and C263, which are located in the North part of the 2B unit) are not visible from any staff station the 2B unit.

Hallway/Corridor: The location of the staircase well opposite the staff station creates an interesting visual element in this zone. Staff members and other exterior people use the staircase as a shortcut to leave the unit, thereby introducing a constant behavioral pattern. Framed artwork in the hallway adds visual stimulation to the ICU atmosphere.

Analysis of Behavioral Maps

Floor Plan Evaluation and Design Recommendations. In the back of the station, there is an area divided from the station completely by a wall, which stores equipment such as meds storage, refrigerator, another refrigerator for breast milk only, document destruction machine, a closet space, and the soiled utility room. Additionally, clean equipment room, equipment storage, office space and restroom are located on the central axis created in this area behind the station (Figure 4.10).

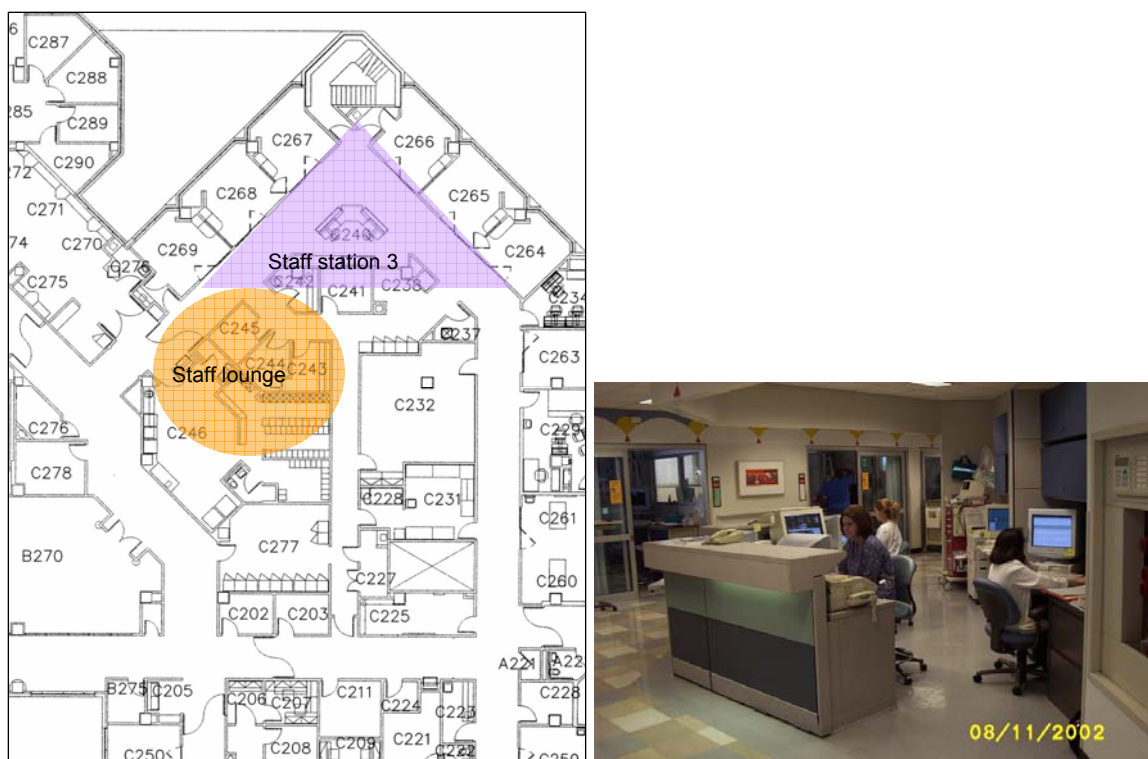


Figure 4.10: Floor Plan (Left) and Staff Station (Right), Zone 3, 2B/2C Main PICU, Children's

The staff station focuses visually on the staircase well due to its geometry (it points directly to the staircase well) although the fire escape or shortcut function is not beneficial or meaningful for the healing process of the caregivers that continuously observe this behavior from the staff station. An ecological design intervention incorporated into all ICU floors in place of the two current staircase wells, which occupy the most valuable locations of the 2B unit visually and in terms of proximity and propinquity, was already suggested during the floor plan evaluation of staff station 1 and 2. The nature of the healing environment could be further explored developing new ideas for its ecology and working patterns of the caregivers in an ICU. Central to creating a green concept in place of the current North and South staircase wells would be reliance on a natural system of lighting that would directly illuminate the three inner staff

station zones in the 2B unit, and the other inner staff stations on 11th and 12th floors of the expansion project. (Most probably, natural ventilation, or accessibility of the staff members to a balcony in this green zone, could not be provided due to strict infection control standards in an ICU). Not only the patient rooms but also all office spaces for the office personnel, and all social interaction spaces such as waiting rooms, family resource centers, and staff lounge areas should be day lit, and the areas that do not require clinical infection control standards, such as staff lounges, waiting rooms, and office spaces, should have operable windows. If the external conditions permit, this would allow occupants to control their environment, and maybe even save energy (compared to energy consumption levels of more conventional hospitals). The most visible feature of the green concept might be to introduce a vertical garden throughout the current staircase shafts at the two ends of the 2B unit (at each level or on the ICU floors only), forming a continuous garden around the vertical expansion project, providing a healing design feature, and representing the locations of the ICU function from the outside. The gardens would also become the visual and social focus for a cluster of patient rooms and staff station(s) from the inside of the ICUs. They would also play an ecological role, bringing daylight, green, and maybe even access to fresh air into the most central area of each ICU around the staff station, which may also act as a natural ventilation chimney up the building for the currently inward-facing and inhumane staff stations.

Behavioral Notes. The general atmosphere during the observations in this part of the main PICU was a happy Christmas spirit, during which Christmas songs filled the unit (bm.12.20.1).

The transfer of a patient and the preparation of the room for the patient were observed: before the bed is called ready, the room is cleaned and disinfected. All surfaces including both sides of the window surface looking to the hallway, the floor, aluminum cart are cleaned. The cleaning person wears a blue scrub to have a more professional look. The scrubs also introduce a feeling of equality among all staff members from the lowest to the highest (bm.12.20.1). In summary, the positive impact of the proximity of the staff station to staff lounge on staff interaction emerged as the main finding from Staff Station 3.

Quantitative Analysis. Figure 4.11 indicates that, contradicting the staff behavior observed in the first two staff stations in the 2B unit, more nurses (87 times) utilize the Staff Station 3 than the physicians (70 times). This may be explained with the lack of a team room located adjacent to the staff station, which would gather physicians in this area (as in Staff Station 1 and 2). Also, staff clinical and social interaction (98 times) rather than charting or other computer related tasks (64 times) dominated the observed intervals from December 20th through December 26th. Therefore the analysis of all observations (i.e., 30 maps) in Zone 3 suggests that the environmental differences peculiar to Staff Station 3 seem to stimulate staff social and clinical interaction. These are: 1) the reduced size of the staff station, resulting in a reduced workspace distance between staff members (and increased density), 2) the variation in the general spatial arrangement, especially in relation to patient rooms, 3) proximity of staff station to the staff lounge, which may extend to the former, stimulating staff interaction.

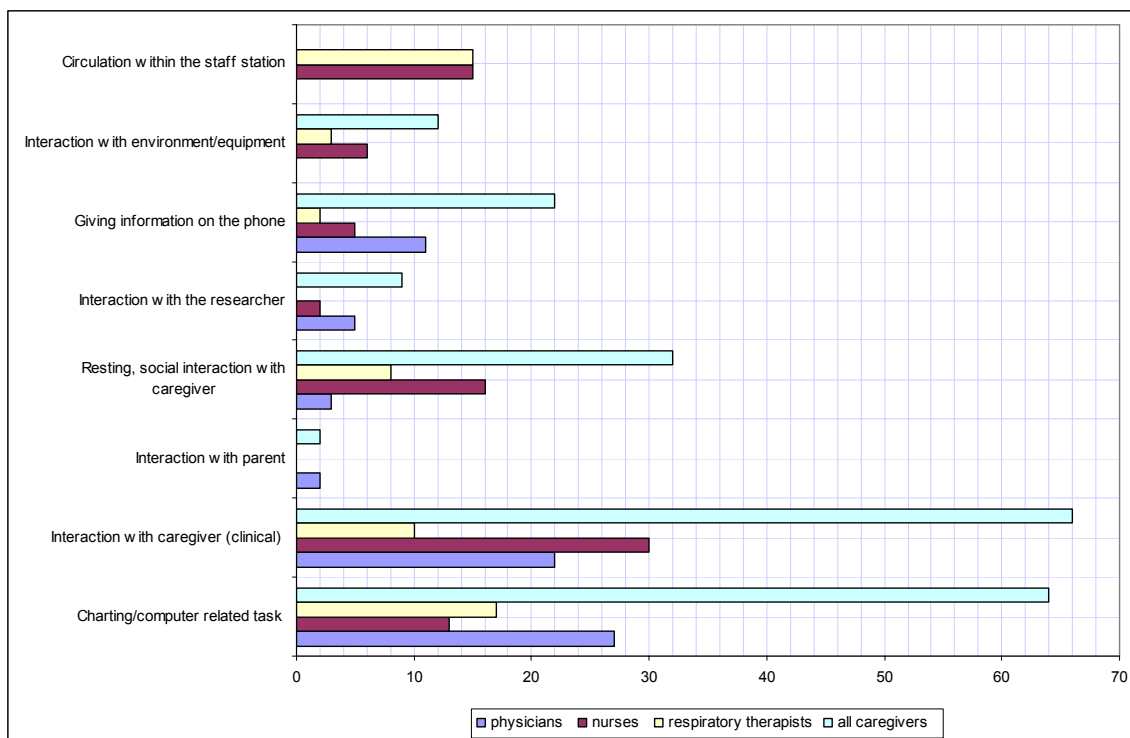


Figure 4.11: Activity Analysis of Staff Station 3, Second Floor Main PICU

An analysis of the behaviors and activities that occur in the hallway (bm.12.20.1 to bm.12.20.8; 1:30-4 pm), on the other hand, indicates the following (Figure 4.12): 1) There is less staff interaction occurring in the hallway (9 times) than at the staff station (18 times), and 2) For an approximately similar amount of time, there was more circulation in the hallway occurring in this zone (54 times) as compared to Zone 2 (34 times), which may be explained by the location of the ICU exit doors, the shortcut staircase exit, and the staff lounge in closest proximity to this zone. As a more qualitative observation, a more social, lively, interactive, and even happier atmosphere was reigning in general in this staff station than the two other stations observed in the same ICU, which may be explained not only due to the significant differences in physical design interventions (such as proximity to staff lounge, smaller size, and increased density or crowdedness of people), but also the time of the year (Christmas was only five days ahead), which could not be controlled. However, the observed numbers of the social interactions are significantly dominant in this zone, thereby suggesting that increased staff interaction occurs more easily in a setting that is in some way “less” designed, or is more informal. In particular, the amount of space provided per person plays a significant (and inverse) role in the social interaction function.

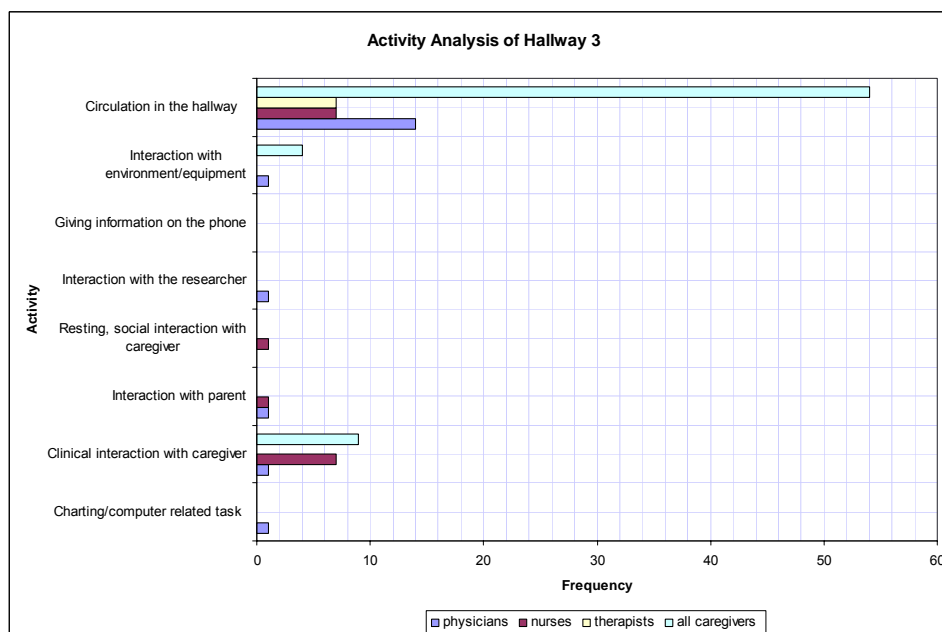


Figure 4.12: Activity Analysis of Hallway 3, Second Floor Main PICU

4.2.5 Second Floor Cardiac ICU: Zone 4 and 5 (Staff Station 4 and 5)

Description of the General Physical Environment, Décor, and Atmosphere

Patient rooms: The 11-bed cardiac ICU (Figure 4.13) functioned as a mock-up unit, piloting a room design that was improved further in the fifth floor trauma ICU (for instance, more window space is provided in 5A), and which became the basis of their future PICU patient rooms on eleventh and twelfth floors. The design and planning process of the ICU patient room prototype as implemented in the 2A cardiac unit is described in detail in previous chapters.

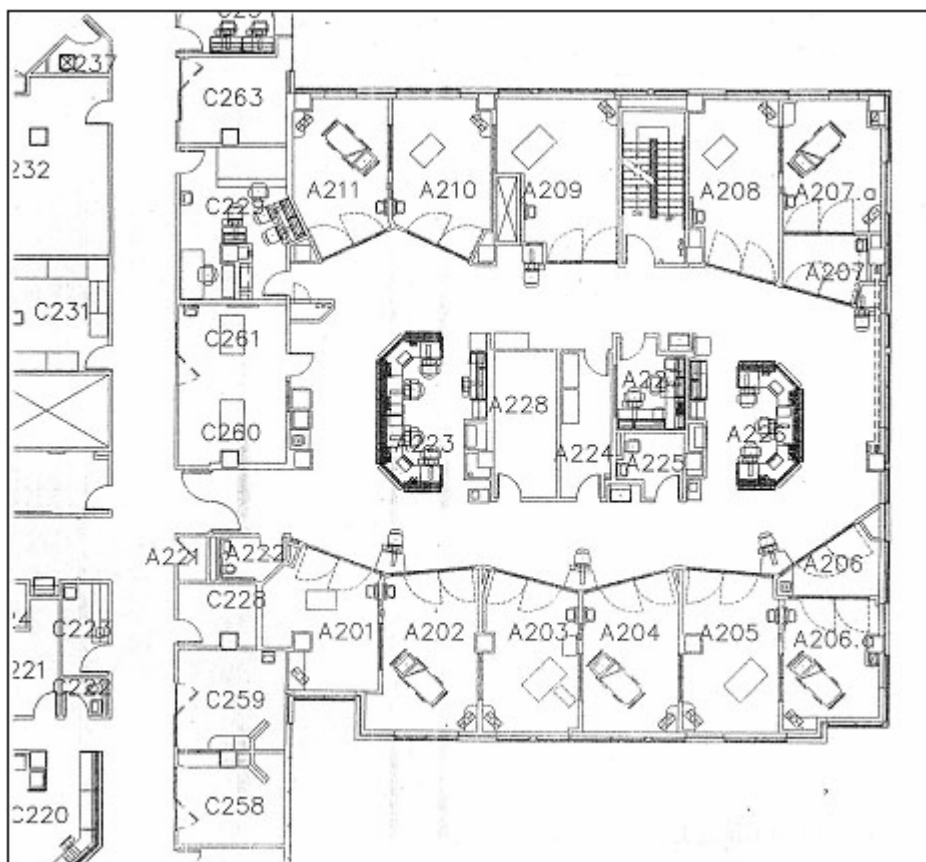


Figure 4.13: Floor Plan of Zone 4 and 5, 2A Cardiac ICU, Children's

Hallway: The project architect recognized an important design element of the cardiac ICU, when she mentioned the undulation of the canted doors⁵⁹ of the patient rooms. She described this as a delightful surprise when she walked down through the corridor: The typical ICU corridor is an unvarying eight feet wide straight line. But in the second floor, the doors for the patient rooms are canted. She didn't visualize this element when she was working on the drawings because of her focus on the functionality of the space. Figure 4.14 shows this design feature of the hallway (i.dt.24).

Analysis of Behavioral Maps

The amount of time spent at the two staff stations in the 2A unit for behavioral mapping equals a total of six hours distributed to three days, including four hours (bm.12.27; 6-8 pm & bm.02.08; 5:30-7:30 pm) of observation at Staff Station 4 and two hours of observation at Staff Station 5 (bm.02.09.1 through bm.02.09.7; 5-7 pm). These intervals were chosen to overlap with the change of shift.

⁵⁹ The function of the canted doors: They needed to make eleven patient rooms. Because of the closeness of the walls, they couldn't have the walls, the breakaway door, and everything else that needs to fit into the unit without making it with an angle in some rooms. So once they had angle one, it kept the pattern going.



Figure 4.14: Hallway and the Canted Doors of Patient Rooms, 2A Cardiac ICU, Children's

A comparison of the activity analysis of the two staff stations in the cardiac and trauma ICUs reveals the following: 1) the open design of staff station 6 attracts more physicians inside, as compared to the enclosed design of SS4. 2) The use of staff station to facilitate resting, relaxation and social interaction is similar in both units, which may result from the provision of a pleasant physical environment, as opposed to the crowded environment of the main PICU. 3) Staff interaction (clinical) and charting activities at the staff station in the trauma ICU is almost twice more often than those in the cardiac ICU. This may suggest that the improvement in physical design affects staff behavior and staff interaction significantly. Figures 4.5 through 4.17 indicate activity patterns in the cardiac ICU.

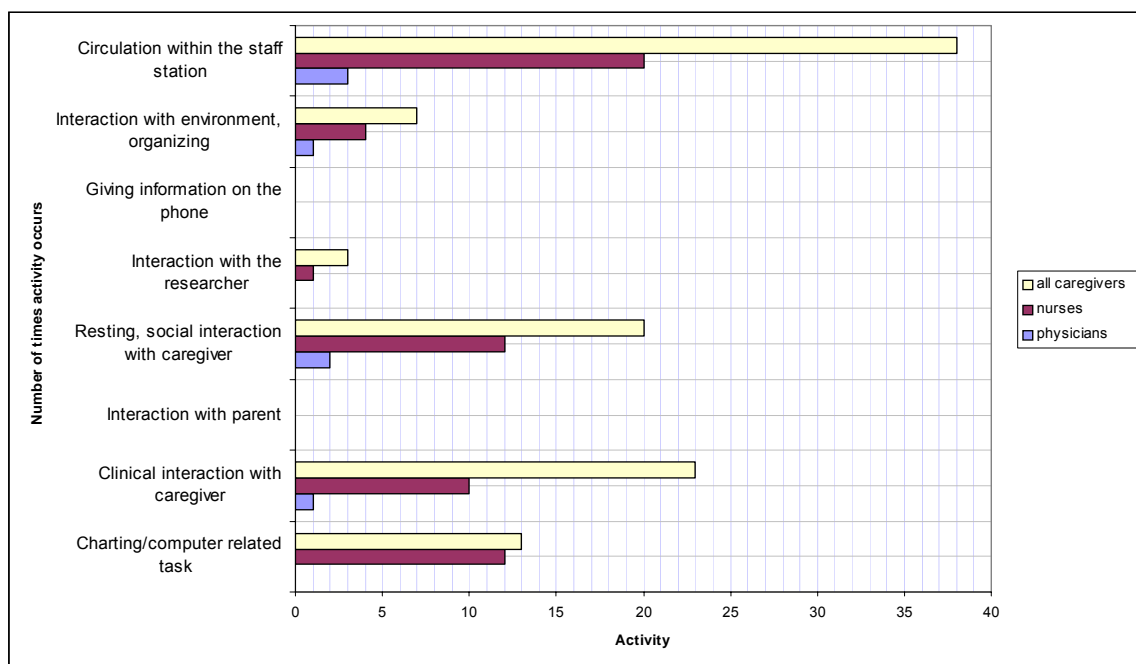


Figure 4.15: Activity Analysis of Staff Station 4, 2A Cardiac ICU

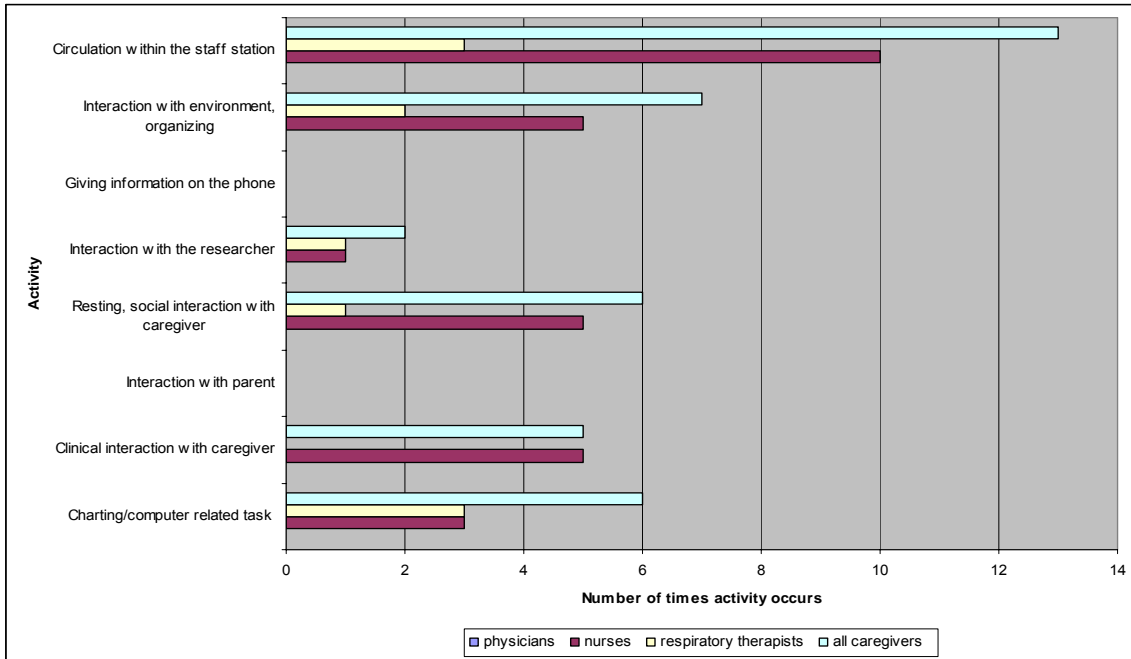


Figure 4.16: Activity Analysis of Staff Station 5, 2A Cardiac ICU, Children's

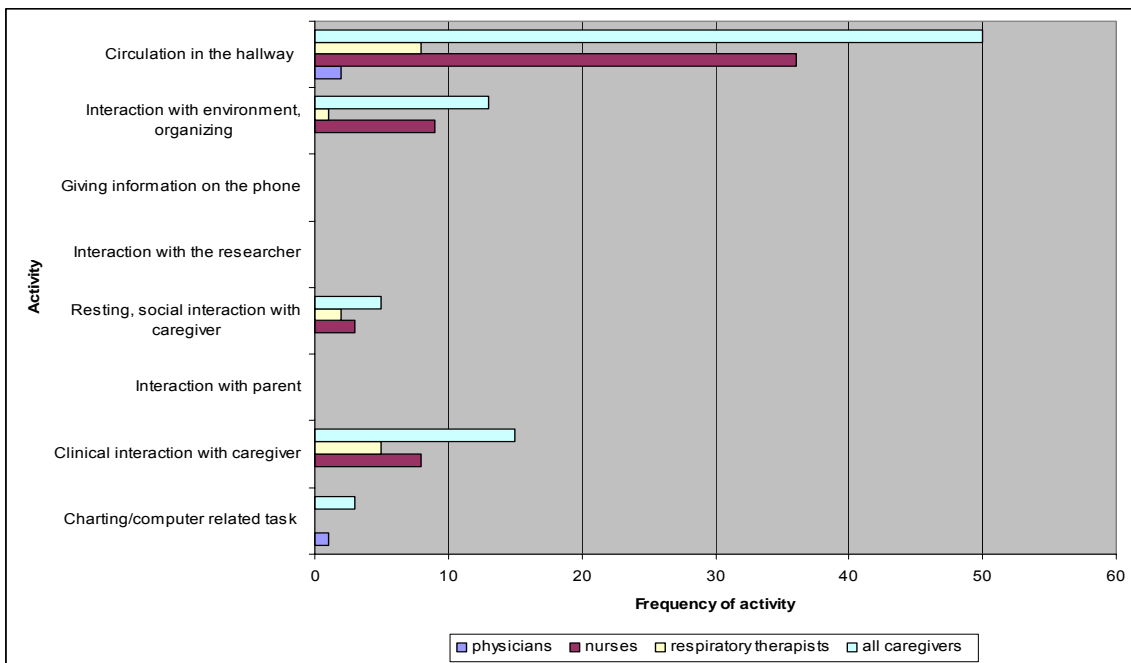


Figure 4.17: Activity Analysis of Hallway 5, 2A Cardiac ICU, Children's

4.2.6 Fifth Floor Trauma ICU: Zone 6 (Staff Station 6)

Description of the General Physical Environment, Décor, and Atmosphere

This is the only ICU with a single staff station to observe the whole unit, which is enabled by the central location and fragmentation of the staff station into four areas, allowing visibility of seven out of the eight patient rooms provided (Figure 4.18). Since there are only eight rooms (rather than eleven rooms provided on a similar floor plate in the 2A ICU), the density of the unit is lower than that in the 2A cardiac ICU. The canted design feature through the hallway is repeated. In general, this unit has the most spacious and brightest environment due to the maximum amount of window space provided in patient rooms and the large floor-to-ceiling window wall across the staff station. The copious amounts of natural light and exterior views (Figures 4.19) contribute to healing better than in the other units.



Figure 4.18: Patient Room and Hallway, Trauma ICU, Children's



Figure 4.19: Window Wall Opposite Staff Station and Exterior View, Trauma ICU, Children's

Analysis of Behavioral Maps

The main function of the behavioral maps recorded in the trauma ICU is exploring the impact of the provision of a different type of spatial organization of staff station on staff behavior, particularly social interaction and relaxation. Rather than dividing the ICU into two staff stations located at the two ends of the unit separated by a central support space (computer room, storage, restrooms) between the two stations, like in the 2A unit, the staff station in this unit is one undivided area which offers not only visibility to most patient rooms (only two rooms are not visible from the staff station), but also visibility of the patient rooms to one another since there is no hard construction in the middle of this space (Figure 4.20). Caregivers can easily walk from one room to another since they have visual control of their room even when they leave it. Therefore more staff interaction was expected to occur in this ICU as compared to the cardiac ICU.

The quantitative analysis of behavioral maps indicates the increased number of staff members using the staff station, thereby increasing staff interaction. The frequency of staff interactions occurring in this ICU is approximately one and a half times more often than individual charting activity. Not only the open layout and increased visibility of staff station but also the pleasant atmosphere of the unit with a lot of daylight and exterior views to the city may have increased staff interaction.

The qualitative analysis highlights particular events and interactions: first, the increased size of the staff station allows more people to occupy it. Same group of caregivers, such as physicians, nurses, respiratory therapists, or health unit coordinators gather in different areas of the staff station to interact (bm.2.13.1; bm.2.13.2), revealing a hierarchical order. That is, the front desk is occupied by physicians, and by nurses only if there are no physicians around. Respiratory care therapists usually occupy the right zone of the intermediate area, while secretarial staff chooses the left part of the intermediate zone, which is closer and looks to the entrance of the unit. One negative impact of the popularity of staff station may be that the patient rooms are left alone more often. Yet caregiver's absence in the room may not make any difference emotionally for sedated patients, and visiting family members may prefer to have more privacy in the room, knowing that the nurse is just a few steps away if they need her or him.

Another difference regarding the use of staff station is the emergence of social or recreational function, such as chatting or eating ice cream (bm.2.13.3; bm.2.13.4). The numbers support this finding, with staff social interaction emerging as a major behavioral category. The increased patient room size in the trauma unit also allows a more positive interaction between the nurse and the attending parent. Gender seems to play a role in this interaction, especially if both the caregiver and family member are females: For instance, they talk or work together (doing suction together; bm.2.13.4). During the same interval, a male parent in another room preferred to watch the evening shows on TV when the nurse was working with the patient inside (bm.2.13.4).

Unlike the 2B unit, where families have direct access to the ICU from the waiting room, in 5A, the waiting room is outside the ICU, and a family member has to wait in front of the entry, till somebody lets her or him in. However, the visibility of the caregivers to the entrance of the unit is very good (or there may be electronic buttons), so they can recognize when a family member is standing outside.

A medical procedure was witnessed in the trauma unit, which can be compared to the atmosphere of the 2B unit (Zone 2) during a similar invasive procedure (cut-down surgery). The staff station was emptied for an hour during this operation since all support was used for the patient (bm.5.14.2 to bm.5.14.6). However, before and after the procedure, the staff station was used extensively (bm.5.14.1; bm.5.14.6). There were still not a lot of people in the hallway and in front of the patient room, yet the patient room was very crowded (7-8 people in two adjacent rooms). After the procedure, there was also a lot of activity in the hallway since the equipment used during the procedure was taken out and parked in the hallway (bm.5.14.5). There was a sharp contrast between the procedure room and other rooms, which get even more silent and darker (both practically, because all staff attention is paid to the procedure, and also symbolically, as if the other rooms respect the critical procedure; bm.5.14.2). Sometimes, two adjacent rooms became active (bm.5.14.3): Before the procedure was finished, preparations started to move a new patient to the adjacent room, bringing in a lot of people to the unit (paramedics team).

One design recommendation relates to the location of two patient rooms at the end of the ICU (A501 and A508), which are separated visually and physically from the staff station. If, however, the two support rooms (A524 and A527) were designed as the continuation of the staff station with direct views to these rooms, they could be easily relocated a little back (Figure 4.21).

Quantitative Analysis: Four hours were spent in this unit for behavioral mapping (bm.02.13; 6:45-7:45 pm & bm.05.14; 4:30-7:30 pm), which resulted in 12 maps. Unlike the crowded and noisy 2B unit, nurses use this staff station more often than the physicians for charting and other computer related functions (10 times). The area around the staff station is used more often by the nurses, which may be due to the pleasant atmosphere in 5A unit, especially the provision of a large window wall opposite the staff station, providing views to sky and the skyscrapers of Dallas. Additionally, the observer witnessed countless times that the caregivers were looking through the windows either in the patient room or in the corner of the window wall, leaning onto the window surface, and staring outside shortly.



Figure 4.20: Staff Station, Trauma ICU, Children's

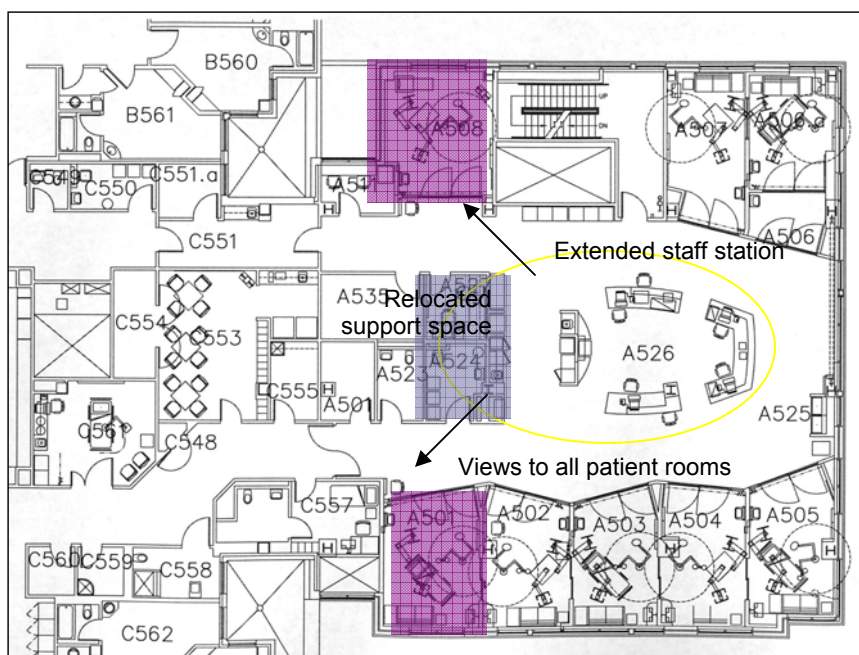


Figure 4.21: Floor Plan of Trauma ICU (with Suggested Design Modification), Children's

Figure 4.22 indicates that not only the nurses' charting and other computer related functions (10 times) but also their clinical (16 times) and social (9 times) interactions take place at the staff station more frequently than all the other ICUs. Unlike the old 2B unit, where staff interaction during the change of shift occurred usually in the patient room, this function is extended to the staff station and hallway in the trauma unit. Again, the reason may be explained with the provision of a pleasant physical atmosphere and ideal environmental conditions (rather than crowdedness and noise) outside the patient room, where they feel more comfortable even though it is a public zone. However, staff interaction with the parents is still limited to the private patient room, and rarely happens at the staff station or in the hallway. Finally, the change of shift is the major source of nurses' circulation at the staff station (12 times). In short, the environmental improvements and the provision of lower density in the public zone of the trauma ICU attracted more caregivers to complete their tasks outside the patient room.

In Figure 4.22, the numbers compiled for all caregivers show that in the 5A unit the staff station is used much more often by RNs, RCTs, and other caregivers such as secretaries than by the physicians, suggesting a more democratic share of a common space. Except for the charting function, the physicians' use of the staff station is more temporary, for instance, for group gathering and discussions, which are brief. Clinically oriented staff interaction is the most frequent and stable activity that takes place at the staff station (43 times). It is almost one and a half times more common than the second most common activity, which is the charting function or the caregiver's interaction with a computer (28 times). Especially, during the change of shift, almost all caregivers prefer to exchange information publicly at the staff station.

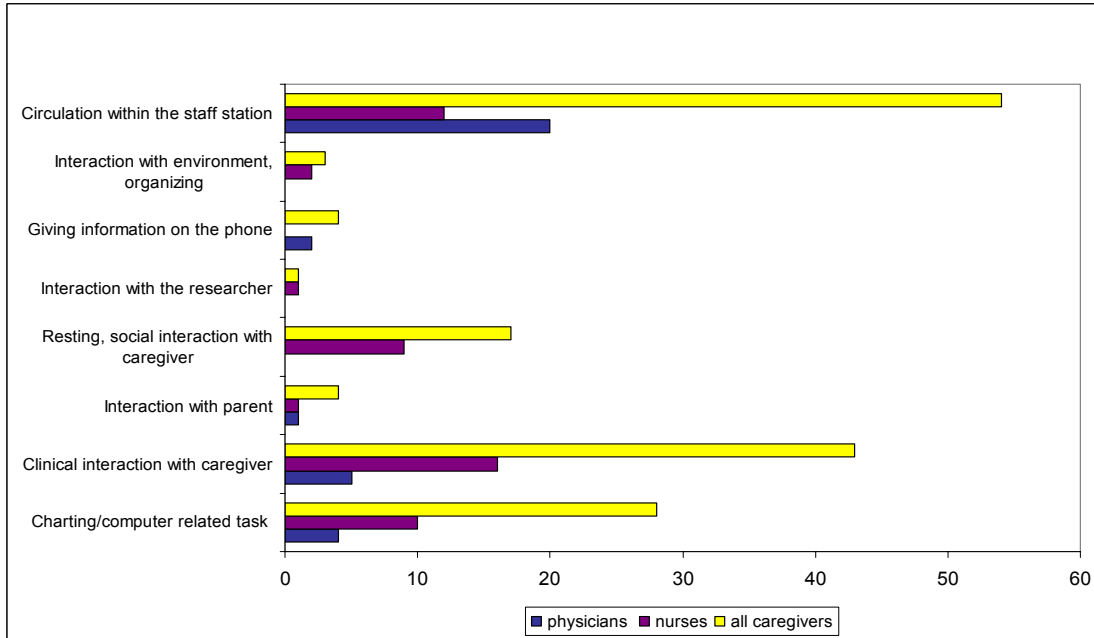


Figure 4.22: Activity Analysis of Staff Station, Trauma ICU, Children's

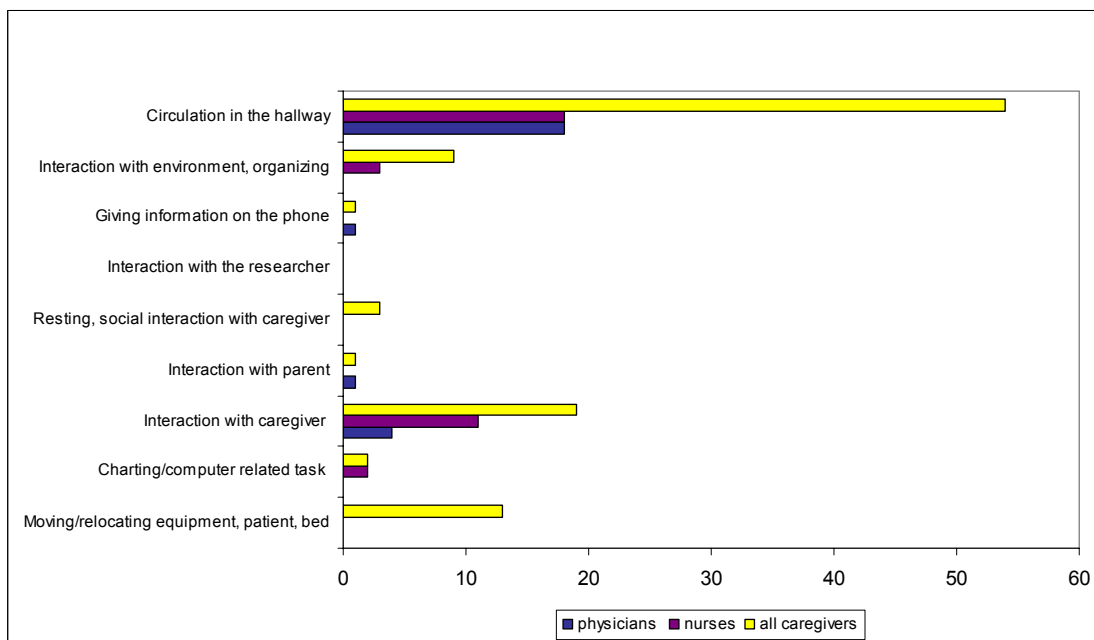


Figure 4.23: Activity Analysis of Hallway, Trauma ICU, Children's

Figure 4.23 indicates that the hallway is used by all groups of caregivers mainly as a circulation zone, especially for walking around and checking out the atmosphere of the ICU, and for staff interaction.

Supporting staff members such as equipment technicians and paramedics use the hallway for carrying or moving equipment. Staff interaction is the second common activity.

Results of Observations

In addition to 12 behavioral maps, 20 participant observations were completed in the 5A unit in February and March 2002. The qualitative notes recorded on observation sheets confirmed the quantitative findings, such as the more frequent use of the staff station by the nurses, and increased staff interaction, resting and relaxation at the staff station, compared to other ICUs. Additionally, qualitative observations added depth and meaning to observed activities. Finally, the interpretation of qualitative notes revealed the everyday practice of critical care nursing.

Staff station: New types of activities, such as research and education related functions (i.e., research on the web or working on PowerPoint presentations), are observed. This was because administrative staff such as clinical managers and educators preferred to work publicly at the staff station rather than in their private office space located in close proximity to the staff station. Based on this observation, we can claim that the quality of both staff interactions and environmental comfort was maximized in this ICU. A silent study atmosphere with occasional interaction with other staff members was the mood during observed intervals. In general, a relaxed social atmosphere was observed, which may be due to the admission of fewer number of patients and the resulting reduction in the workload. Other behaviors observed at the staff station relate to office tasks, such as sending or receiving fax; providing information; social talk (either individual chat or over the phone; for instance, giving a friend advice and reassurance about her or his emotional relationship). Additionally, the response of staff members to each other's need for rest and relaxation was observed when they offered massages to one another. Generally, *staff need for relaxation* is well satisfied in this ICU by social behavior, particularly through cooperative relationships with other caregivers.

The physical environment reflected the need for comfort: 1) during one observation, a comfortable chair was moved into the middle of the staff station, contrasting with the surrounding environment. 2) The provision of thermal comfort, a clean work environment, extant daylight and exterior views contribute to comfort. (The unit director stressed the need for providing staff with releasing mechanisms such as gym, health club, exercise opportunities, and time to rest and rejuvenate.)

The observations from the trauma ICU support the provision of staff comfort in the U.S. model, which includes both environmental control and the ease of working with colleagues one feels comfortable with. This may contribute to staff well-being and a *dwelling* experience. After shared notions such as the meaning of technology, caring, and control, "comfort" seems to be another major construct to be analyzed under phenomenological insights. As a cross-cultural and comparative finding, spatial comfort may be one of the most important differences between Turkish and U.S. society, especially in their public buildings and institutional settings. For instance, the comfort of patient, family or even caregiver space through provision, increased size, and the provision of comfortable furnishings to implement beneficial place

functions and activities are ensured in U.S. hospitals, while they are considered inappropriate or luxurious in Turkish public buildings⁶⁰. Even simple and minimal design interventions to support occupant comfort through the provision of a chair, couch or a microwave oven (i.e., the use of home-like furniture and homey functions) are not utilized, maybe since they seem to contradict the formal, institutional and “serious” public building image of the facility and of the government that provides for it. This may be due to the “modernist” heritage that has shaped and is still influential over many aspects of Turkish institutions dating from 1920ies, the beginning of the Republican era. Therefore the modernist spirit of Turkish public buildings contradicts contemporary or postmodern design trends, which emphasize human comfort, wellness, and control for increased production and performance. However, postmodernism started to be influential, particularly in private facilities (including hospitals and educational facilities) after 1980ies, embodying a more informal, friendlier, and less institutional language.

Patient room: Resulting from the increased design quality around the staff station (including less clutter and more daylight), lower density of the unit, and lower noise levels, which resulted in caregivers’ preference to use the public zone outside the patient room more often, patient rooms in the trauma ICU are quite, less crowded, and more comfortable. Very often, the researcher observed a sedated patient alone in a dark room, where the TV alone added to the background noise of the machines. Therefore, these rooms were characterized by *silence* and *solitude*.

Second, looking outside through the window was more common in the trauma ICU patient rooms, probably due to increased transparency and visual access to outside. This included conscious patients, families, and the caregivers. Windows and visual access to outside seem to embody an important healing function, particularly when dealing with ambiguous situations. Even when the patient is unwilling to communicate with the caregiver, she or he responds to the exterior view through the window, as observed in Room A501. Therefore the provision of nature sounds and sights in an ICU seems to be the most beneficial mechanism to deal with death and dying. The phenomenological meaning of window and nature, and why they contribute to healing, can be further explored in future studies.

Another observation relates to the emotional response of the children to critical care, such as lack of trust: Sometimes they did not communicate with the nurse, and rejected the emotional care. Some patients were angry since they had pain and did not understand what they went through. The meaning of being in an ICU as a child should be studied further. One characteristic of the trauma population is that there are more conscious patients compared to the other units.

Patient-caregiver relationship may be based on a medical, non-medical, social, and emotional interaction. Caring is linked with the non-medical tasks of the nurse to allow physical and psychological comfort for the patient, by providing him with a comfortable posture, hygiene, massage, hair wash, touch, reading, play, or some other kind of stimulation. Social interaction includes explaining the procedures such

⁶⁰ In an educational facility, a small piece of furniture from home such as a couch will enable students to take a nap and rest during hectic hours spent. In the U.S., students are more concerned for familiarizing and personalizing their environment, particularly their studio space. These observations may reveal the increased sense of individuality and sense of comfort in the U.S. society.

as injection and preparing the patient psychologically for the procedure. In the trauma ICU, most patient-caregiver relationship is dominated by medical tasks rather than caring, and there are not many nurses explaining, comforting, or *being there* for the patient.

One concern regarding caring relates to gender: although the presence of male nurses in the U.S. suggests evolution of culture and society, it may also suggest that nursing became a technical specialty, which requires technological mastery and being competent with technology. The potential for building an empathic relationship with the patient using “touch” as facilitator of care may be sabotaged if both the nurse and patient are male. Especially in the U.S., where child abuse is well-recognized, male nurses may feel uncomfortable touching the kids, especially boys, for providing non-medical or emotional care.

The nurse’s constant relationship with the computer in the patient room was observed. The presence of the TV changes the atmosphere of the patient room. The role of caring for the patient is assigned to the TV, which is commonly perceived to be beneficial to create a familiar environment. Yet exploring the function and meaning of TV in the patient room can reveal the tension between watching TV, and meaning and experience.

The relationship between caregivers may often be technology or computer-based. Staff relationships reflected that lower level staff members and respiratory therapists often helped the nurses.

Parental presence in the patient room was less frequent than expected. Although the family space provided in this unit is larger and more comfortable, family members were absent in half of the rooms during many intervals. When they visit, they interact with the child, the caregiver, the environment, or TV.

During the interview with a nurse in the trauma unit, the researcher spent several hours inside the room and observed its activities. A typical hour was as follows: The nurse spends a lot of time charting. Other caregivers such as the RCT often visit the room to document the care they provided on the computer for a few minutes. The RN organizes e-mails regarding the patient’s care, while attending to the equipment, errors and alarms, which may be frustrating. Lab work follows. During these activities, other staff members including the doctors and nurse practitioners (NP) walk in to the room to communicate some information, or receive information from the folders on the chart. The NP was still in the room, chatting with a physician. They asked the RN what color the wound was. He gave a very detailed description of the wound, including its color, smell, and surface, reflecting another cultural difference of highly informative societies. In short, there is little time to spend with the patient for emotional care.

4.3 Conclusion

The analysis of observations and behavioral maps revealed the differences between the different ICUs at Children’s. The most important difference is the increased staff social interaction observed in the trauma ICU, which provides more space, daylight, exterior views, and a more organized spatial configuration. Resting and relaxation were more common in this unit, and caregivers seemed less stressed.

Analysis of observations and behavioral maps also revealed phenomenological insights, particularly the concepts of comfort, control and choice making, and their relation to healing.

CHAPTER V

ANALYSIS OF THE INTERVIEWS WITH TURKISH CAREGIVERS

The analysis of the interview, observation and behavioral mapping data in the preceding two chapters identified five major design interventions of the North American PICU: 1) Provision of space and various place functions and activities, 2) functional response to practical and psychological needs of occupants, 3) locational and configurational accessibility between spaces, 4) ambient and symbolic responses to “healing place,” and 5) evolution of the quality of the social and cultural aspects of the PICU, recognition of diversity, and the relation of social design issues to healing. The contradictory relationship between technology and caring was emphasized as a major techno-scientific ICU characteristic. The researcher also observed a difference between more natural and unscheduled social interactions through carefully scheduled and programmed organizational and social life, implementing professional family-caregiver relationships, holiday celebrating or gift-giving programs. Finally, the researcher found nature might be the next step change transforming the North American PICU beyond technology.

Similar to the number of interviews conducted in the U.S. setting (14), the Turkish study incorporated the ideas of 16 caregivers, which are summarized in a final list of minimum design guidelines, recommendations and multidisciplinary design and planning issues of the Turkish PICU (Table 5.8).

Compared to the U.S. organization, there were major differences in the presence and hierarchy of Turkish health members in 2001: no permanent ICU director, clinical manager, team leader, social/religious worker, volunteer, facilities coordinator and manager, or architect were included in the health team. Therefore, creating new avenues for health workers may be critical in the future.

In addition to the characteristics that describe the U.S. unit, a few new insights emerged from the Turkish ICU, particularly the impact of a multifunctional social room on staff interaction. Caregivers argued staff interaction and collaboration rate was much higher before 1998, when they had this room.

5.1 The Interview Method

The interview method explored the relationship between design, social interaction, and healing. The interviews were conducted during June and July 2001. The interview protocol was similar to that in the U.S., including a prior verbal explanation of the purpose of the study, the duration of the interview (one and a half hours) and approximately thirty questions. Although the interview length varied depending on the participant, most caregivers generously dedicated more than an hour to carefully answer all questions.



Figure 5.1: Social Interaction of Turkish Caregivers, Nurses' Room (Source: Author)

Taking pictures of human subjects, including patients and families, was allowed by the review committee of the Turkish hospital. Additionally, the researcher received the permission of each family regarding the use of such pictures in this dissertation. In general, observations and interviews in the Turkish ICU were conducted in a significantly more open and transparent atmosphere. Due to the open bay arrangement, the researcher could observe all patients very closely, witnessing emergency situations, intubations, resuscitations, death and its aftermath. She could also participate at nurses' and doctors' consultations at patients' bedsides.

5.1.1 Interview Settings

Various settings inside and outside the hospital were occupied in search of a quiet place, including 1) nurses' room (with the nurses; Figure 5.1), 2) staff station (with residents), 3) chief assistant and MD on-call rooms (with the chief assistant, diet specialist, and interns), 4) doctors' room (with resident), 5) office space of the attending physician and head physician, 6) outside garden (with the chief resident and intern). Informal dialogues extended over *Mehmed Akif House*, an exhibition of the home of the poet, who wrote the Turkish national anthem, located in the hospital campus.

5.1.2 Interview Participants

The participants were comprised of seven male and nine female interviewees, who were selected to reflect the health team of the PICU, including five members of the team with decision-making capacity, three residents, two chief residents, two bedside nurses, the head nurse, a diet specialist, and three interns. Their ages ranged between 24 and 44, indicating a relatively young health team⁶¹.

The length of staff experience in pediatric critical care environment varied between 1 month (e.g., residents) and 5 years (e.g., the experience of the head nurse). Interns had only an experience of a few

⁶¹ To reflect on the age issue, the head physician was 44; the attending physician was 33; the head nurse was 31; and chief assistants were 29. The chief resident (27) and other residents and nurses were in their late twenties (25 to 27); and interns were 24. The diet specialist was 35.

days. Chief assistants were in the fourth through the sixth year of their residency. The limited experience range of the caregivers, which is significantly lower than in the U.S. unit, was understandable in an ICU established only 15 years ago. (The experience of the U.S. team members ranged from 6 to 21 years⁶².)

The first group involved administrators and decision-makers such as the head physician (HP) of the hospital, the head nurse (HN) of the PICU, the PICU consultant or attending physician (AP) (for one month), and two chief assistants (CA) managing the ICU.

The second group involved the residents and interns, who are posted each month in rotation to the PICU and provide a 24-hour on-site cover. They included the chief resident (of the June 2001 team), four residents, and three interns, who were responsible for administering the medical tasks in the PICU. Although Turkish residents' age range was similar to that of their North American colleagues, the responsibilities they took over may have exceeded those of the latter: They actively participate at emergencies, resuscitations, intubations, and invasive procedures such as cut-down or postmortem. During nighttime, they stay on-call with a nurse and chief assistant. The AP is not required to stay in the hospital at night interval.

Residents have no critical care experience when they take over the ICU. During this study, they were in the twelfth month of their specialty training in pediatrics. Particularly, the chief resident was trained in pediatric wards for 16-17 months (i.e., second year resident). Events and the general atmosphere of the PICU could have been more stressful if this study were conducted with a less experienced team.

Yet the team members did not consider their experience range as a weakness. On the contrary, they focused on the positive aspects of getting an all-encompassing training in a very short time. They reminded the researcher the fact that their function is not to decide about the care plan but to apply the procedures decided by their faculty members, and to remain alert to recognize patients' problems. However, they were aware of the mistakes caused by the lack of experience (i.ca.2.8). The chief resident claimed that their youth enables them to be kinder. Additionally, she finds it very unhealthy for the nurses to stay in the claustrophobic and stressful ICU environment for more than a few months. She suggests nurses also need to be posted in rotation to other wards every month like the residents (i.cr.6). Nurses expressed the same need. The CR did not consider the absence of faculty during night shifts as a disadvantage. They can call them, and she felt even more comfortable being alone.

The last group was comprised of two bedside nurses, and a diet specialist. All nurses in the Turkish model were females in their late twenties.

No architect was included in the health team. Neither was there a facilities coordinator or manager, who could provide more support and information regarding physical facilities. However, the head physician and chief assistant were interested in design issues, leading major architectural decisions. Social workers, volunteers, research coordinators, and supporting staff members were also absent. The

⁶² A common belief in Turkish society, which applies to developing countries overall, is that lay people's health is not valued. Leaving the care of very ill children to a young and little experienced staff for training purposes may support this belief, despite the fact regarding limited human resources.

tasks of a respiratory care therapist, who is a critical part of the health team in the West, were shared among nurses, residents, and interns.

The interview mood was as follows: The interviews with administrators and caregivers were interrupted many times by phone calls, caregivers and patients who came to ask a question. The head physician did not answer phone calls, and asked people who wanted to talk to him to wait. The attending physician, on the other hand, was more flexible, and answered both phone calls and face-to-face questions since she left the door of her room open. At one point in the interview, she went to the PICU for a consultation. During this time, a colleague of her answered the questions instead of her.

It was very difficult to schedule a time with the head nurse since she was always very busy; she could not even leave the PICU for lunch. The first attempt to conduct an interview with her in the nurses' room was cancelled since a patient underwent cardiac arrest. The second time, there were a few other nurses in the nurses' room, who were chatting loudly. Despite all efforts, the interview settings often lacked privacy and silence, yet the interviewee had some degree of control in ensuring better conditions.

5.1.3 A Typical Day of Caregivers and How They Seek Happiness

Unlike many caregivers who reported to be unhappy, the chief resident (CR) found herself very happy in this type of environment. During the interview, it became clear that she had a conscious awareness of the value of a day. She wakes up at 5 am, which is very early compared to Turkish standards. She showers and gets dressed up, reads the newspaper, has a breakfast with her parents who prepare milk and boiled eggs for her, drives to the hospital, sleeps at lunch, and goes to play tennis in the evening, or gathers with friends. In this way, she tries to feel alive (i.cr.2).

Having lost her cousin to cancer, she discovered being happy is as simple as remembering to be, and remembering to laugh. Particularly with children, she has more chances to kiss and hug them. The adults may get mad if they have pain. Children, on the other hand, are very responsive and positive; they call her "sister," and play with her. Thus she is much happier with children. Another strategy she used to actively seek happiness has been to separate her social world from that of the hospital; thus most of her friends are from other occupations. She often goes traveling in Turkey with them (i.cr.3).

Consequently, she believes that she remains alive, energetic, healthy, and happy. Otherwise, there is no way to avoid depression in this setting, she adds. Yet most of her team members did not care for their own health and happiness, even for their sleep; instead "they were only watching television after hours." She, on the other hand, has been more conscious and went to play bowling with her interns at lunch to socialize. In short, she believes they need to create various release mechanisms to stay healthy. She also discovered that "a caregiver has to be happy to make others happy" (i.cr.3).

5.1.4 Why They Chose Their Occupations

The motivations of the U.S. caregivers for choosing their careers at CMCD related to various factors such as 1) the fact that it (CMCD) is a teaching hospital, flourishing a learning environment, 2) the

chances to have a lot of input in delivering care and contributing to the medical plan of care (for nurses), 3) the satisfaction of seeing the kids doing better, 4) having very good role models and mentors, and a very good experience in pediatric ICU following residency (for physicians), and 5) the opportunity to implement change and to plan for the future (for administrators).

Turkish caregivers, on the other hand, expressed both universal and particular (cultural) factors influencing their decision. For most of them, it was an altruistic reason, i.e., the desire to help other people (i.ha.2.2; i.hr.2; i.ap.2). Yet they (the HN, bedside nurses, the AP) also chose their jobs because of their family's influence, which reflects a common wish of Turkish parents, who are usually very influential over their children's major decisions such as career and marriage. While they aim innocently to prepare them for a safe future, they may destroy other possibilities that are greater.

The most unusual answer came from the chief resident: she became a doctor to give people joy and humor (i.hr.2). When she was in high school, she got very sick, and met a Pakistani physician, who gave her joy and laughter. Soon she understood she would like to become a doctor, too, especially recognizing she could also make other people laugh. Therefore, she had an Eastern role model resembling the North American figure of "Patch Adams"⁶³.

5.1.5 The Best and Worst Liked Features of Their Occupations

The main advantage of her position for the head nurse was not to have night shifts. Attending physicians are also free from this service. Only the interns, residents, head residents, head assistants, and bedside nurses take over the night shifts, suggesting a threshold of 30 years of age to draw from for this demanding service in Turkish hospitals.

For the chief resident, the worst part of her occupation was the risks associated with the hierarchy of the residents, the above-below relationship, especially the risk of ruining relationships and losing the friendship of her residents. Yet she was lucky, and no harsh relations occurred because both her interns and head assistants were wonderful people. Still there were many risks linked with the extreme amount of responsibility put on the chief resident (i.hr.5).

5.1.6 Cultural Characteristics of Management and Leadership

The first cultural difference is found in the language used to refer to job titles, where administrative functions are represented by the addition of the word "head" in front of job names, such as head physician, head nurse, head assistant, head/chief resident or *kidemli* (i.e., "the one with the power"), etc. In the U.S., on the other hand, job titles emphasize the specific function of the job rather than the hierarchy, such as "clinical manager," "ICU director," "registered nurse," "respiratory care therapist," and "equipment technician."

⁶³ Patch Adams is an American doctor, a clown, and a social activist, who has devoted over thirty years to changing America's healthcare system, a system, which he describes as expensive and elitist. (<http://www.patchadams.org>)

Second, several administrative key positions incorporated into the American ICU are absent from the Turkish model. There are also major differences in the roles and responsibilities of similar positions, particularly in nursing. First, there is no equivalent of the nurse administrator (clinical manager or nurse manager/executive) in Turkish ICUs. Although the head nurse is at the top nursing position in the ICU, her role is very different than the North American nurse administrator, who heads up the care team. The HN reported that her responsibilities are limited to equipment maintenance and caring tasks, while the role of the nurse administrator has dramatically expanded in the U.S., from fiscal management and marketing to the development of clinical models (Lowery, 1997). Turkish nurses need to be more aware of their potential roles, organize within the nursing profession, and claim to participate in administration and decision-making to implement a more humanistic care philosophy.

The “team leader” position to manage smaller groups of caring teams is also absent from Turkish hospitals. Most importantly, the ICU was managed for 15 years (from its beginning in 1986 to 2001) without a permanent director, who could be a physician or nurse. Instead, the head physician of the hospital worked in collaboration with three head assistants posted to the ICU for one year, and temporarily (i.e., for one month) with the attending physician. Yet ICU staff complained their unit was not autonomous, and could not resist the flow of patients from other specialty departments, particularly when professors transfer patients that do not need monitoring and mechanical ventilation. Therefore, the need for a physician directed PICU was stressed, who would permanently “own” the unit.

This need was recognized, and in 2001-2002, they sent one of their former head assistants of the PICU and the chief physician of the emergency department to Johns Hopkins Hospital in Baltimore, U.S., for one year for his specialty training in PALS (pediatric advanced life support), mechanical ventilation, and HFOV (high frequency oscillation ventilation) in pediatric critical care. Starting from 2003, he became the chief physician and took over the PICU permanently.

The trend to send young Turkish physicians to the U.S. and Europe for research and specialty training has been common since the fifties. When they return back, they function with administrative capacities. The Western and more humanistic notions of caring are carried over in this way by a new generation of physicians, which is a hopeful trend that led to the establishment and improvement of modern Turkish hospitals. More generally, visiting the West has become a prerequisite academic standard in all Ivy League Turkish universities in all disciplines.

Another factor impacting administrators’ worldview is age and gender. The informal dialogues during pilot studies at several other Turkish hospitals that were conducted prior to this case study suggested important differences between younger and older physicians: The former were naturally more humanistic, progressive, and appreciated the impact of the physical environment on healing. While they were critical of the local and institutional culture, and the way to do things, they requested that they be anonymous.

The second function relates to gender, which may be the most important human variable to affect the practice and place characteristics in Turkish hospitals and other public buildings. Being a traditional, masculine and patriarchal society, the societal role of women was significantly diminished. While women

have a balanced distribution over the total percentage of physicians, the policies and practices in Turkish hospitals indicate the dominance of a masculine mind, such as 36-hour shifts, or the elimination and total ignorance of a staff lounge, which creates a positive *yin* (female) energy and caring atmosphere.

Male and female caregivers in this study exhibited different approaches towards caregiving. The latter were more sensitive to the psychological needs of participants, in particular their socialization needs and human interactions. To humanize caregiving in the future, Turkish hospitals need to 1) increase the number of female administrators, and 2) expand the role and administrative functions of nurses. Finally, female place functions and activities should be implemented, including a home-like lounge with comfortable furniture, and a kitchen with an oven, refrigerator, and the smells of home-baked food, where families, caregivers, and even patients could gather spontaneously and share a healthy food prepared to their own taste. Although these ideas may look very soft and unrealistic for a developing country, this concept is known as “planetree,” which has an enormous role to play in Turkish hospitals.

5.2 Evaluation Of The Physical Environment

The interview method addressed two major categories: 1) Place functions and characteristics, 2) the psychological, social, and cultural characteristics of the participants occupying this place. When the informants were asked to evaluate the unique *place characteristics*, they referred to the problems within the current physical environment. Particularly, they evaluated 1) the best and the worst liked design features, 2) the most needed spaces, equipment, and interventions, 3) comparison of the past and present physical environment of the children’s hospital and PICU, 4) social and behavioral problems associated with place characteristics, 5) adjacencies and proximities between spaces, and their impact on staff behavior. The evaluation of *architectural design*, on the other hand, addressed 1) recent design improvements and design trends in the hospital and PICU, 2) design modifications for the future, and 3) master planning issues. Finally, the relation of technology to caring and healing were explored.

5.2.1 Overall Evaluation of the Children’s Hospital

To begin with, the attending physician (AP) criticized *the location of the children’s hospital*, which is in the middle of urban chaos and traffic being very close to the city center. The hospital is located in a central campus, which is composed of five faculties related to medicine: Faculty of Medicine, Faculty of Dentistry, Faculty of Nursing, Faculty of Pharmacy, and Physiotherapy College. She suggested locating the hospital in the suburb with access to nature or man-made landscape (a natural or artificial lake) would be much more beneficial for patients and caregivers⁶⁴ (i.ap.8).

⁶⁴ The AP referred to another hospital located in the same campus (Ibni Sina Hospital), whose floor plan was copied from a German hospital. Yet they extended the originally for 4-story-building to 16 stories, introducing enormous traffic problems with the elevators (one for faculty, one service elevator). Therefore visitation hours turn into a torture in this hospital. She believes that all floors should have exterior views to nature as much as possible, thus the building height is a critical design element (i.ap.8).

Yet the main disadvantage of the hospital building is its age (46 years in 2004), which introduces enormous space constraints both inside the hospital building and outside due to new spatial requirements; problems with infrastructure; and lack of restrooms, and adequate handwashing and shower facilities. Although they renovate their building all the time, the AP resembled it to an old woman refreshing her make-up continuously, yet “she is still an old woman.” She claims a new building is necessary (i.ap.8).

The construction of the hospital started in late fifties (1958), and its spatial development was completed during sixties, following the reconstruction and expansion after the 1961 fire. Resulting from the design notion of the sixties, critical spaces such as *waiting rooms, restrooms, cafeteria and social interaction spaces, or other support spaces for families and caregivers* have never been provided. Neither was there a strong demand for *visitors’* presence before, and the role of the family was not discussed. (Family members in Turkish hospitals are traditionally referred as “*refakatci*,” which means *visitors*, which may diminish the value of parental role and presence.) Today the world of medicine and nursing are more aware of the importance of parental presence, and Turkish administrators recognize the need to respond to the changing times even if the families do not seek for participation in their child’s care (i.hp.9).

The “*never-ending*” construction work in the hospital, which does not progress consistently, was another negative concern (i.hr.15; i.hn.7). The caregivers of the PICU mentioned they did not interact with the rest of the hospital, and their passage to the ICU through the hospital was comfortable, except for the construction activity at the staircase because there was no smooth surface to step on, nor any balustrade or other barrier to prevent them from falling down, which is very dangerous at night due to the low light level. The negative effects of the construction work on patients’ medical outcomes both in the pediatric and adult hospital were also stressed. *Feeling happy to come to work* was another theme regarding the transition from home to workplace.

Other problems related to the expansion were: 1) Reduction of the garden and outdoor seating areas. 2) The noise problem; especially the noise created by the construction work and drilling machines disturb the patients very much. While renovations are necessary, the work schedule must be planned carefully, or they shouldn’t admit patients where there is construction to minimize nosocomial infections. Although they block entries and exits at the construction site, Turkish people find a way to pass through (i.hr.15).

Hygiene and pest control was another issue (i.hr.15): They need to be improved, although there were few problems during the case study due to the recent shift to private cleaning services.

The need for on-site accommodation for families coming from other cities was mentioned (i.hr.15). Families need a place where they can stay, bath, and cook, which may be as simple as a student dorm. A building on campus would be very beneficial. Later in 2003, a hotel was built in the proximity of the campus area to accommodate this need, which is very progressive for a Turkish hospital.

Positive Comments: Caregivers praised: 1) the presence of a natural campus environment with trees (Figure 5.2), even if they cannot interact with it sufficiently. The landscape where the hospital is located is very nice, providing peaceful outdoor places to escape for the caregivers, yet not for the patients

and their families (i.hn.7; i.ap.8). 2) The décor and atmosphere of the pediatric hospital because it is much friendlier than the adult hospital. In particular, the outpatient clinics have a playful and child-appropriate formal language. 3) The tidy and orderly environment of the children’s hospital. 4) The inpatient wards and outpatient clinics were planned in separate blocks, which is a positive design feature enabling better hygiene and infection control, safety, traffic control and circulation, and workflow (i.hp.9), which were the main functions emphasized by the HP.

5.2.2 Evaluation of the Pediatric Intensive Care Unit

The PICU was established in 1986 to manage critically ill children who needed ventilatory care as well as close monitoring (i.hp.11). When the hospital was built in 1958 as the first modern children’s hospital of Turkey (following the historical Sisli Etfal Children’s Hospital in Istanbul), no PICU was planned. Since pediatric patients can get very sick suddenly, the first administrators approached all patients as critically ill patients, and decided to scatter critical care in all wards. The HP claimed if the number of patients in a unit is about 25, there are always one or two patients who must be monitored. This ratio was higher before the PICU was opened in 1986; since then the quality of care increased both in inpatient units and in the PICU. Yet pediatric critical care is still a new concept for them (i.hp.10).

The HP argued: “Before 1986, critical care was delivered in regular pediatric wards, and a critically ill patient was supervised by a physician and a skilled nurse all night long. When the PICU was opened in 1986, the quality of equipment and technology (i.e., monitors and ventilators) was very low. Between 1986-2001, not only equipment but also the skill range of staff improved a lot, in particular, the experience range of the head nurse, head assistants, and residents” (i.hp.15).

Before 1986, the lack of a PICU caused the caregivers in pediatric wards to get overly exhausted when they cared for a critically ill child during a shift or for a few days. Their exhaustion often continued for a few weeks, highly impacting staff performance, motivation, and ability to care. Therefore, they appreciate the existence of the PICU (i.hp.29).



Figure 5.2: Nature Characteristics, Hospital Campus (Source: Hospital Website)

5.2.3 Problems with the Current Physical Environment and Proposed Solutions

The caregivers find the current physical environment of the PICU very disturbing (i.h.n.8, 21, 38; i.hr.16), particularly due to the lack of provisional and functional interventions. Yet higher levels occupant needs, such as symbolic language of the ICU, ambience, social and psychological needs (such as social interaction or privacy) and shared or private spaces supportive of those needs are not recognized either. It would be very difficult to respond to higher environmental needs before satisfying the lower needs.

The main problem of the PICU is the lack of space and its constrained size (Figure 5.3). Its location on the second floor, and the lack of access to outside world due to the minimum amount of windows provided are further problems: An upper floor would enable staff to see outside or the sky.

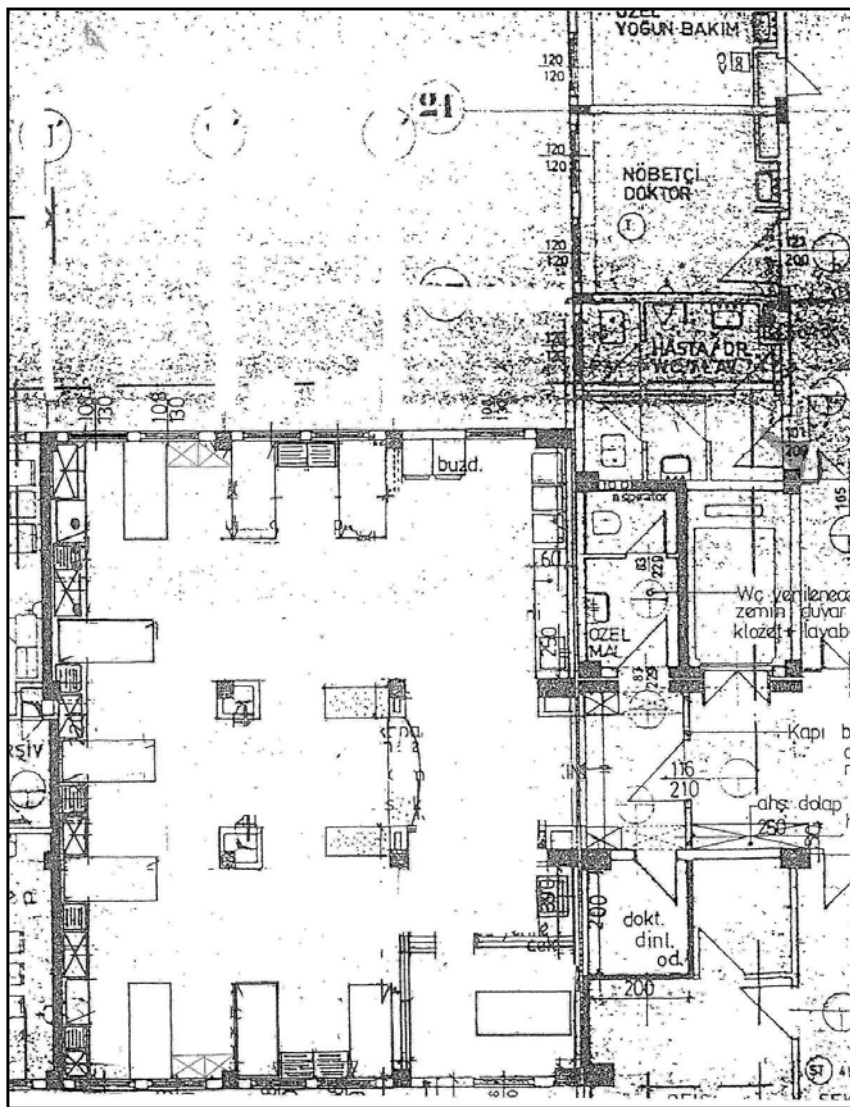


Figure 5.3: Floor Plan of the Turkish PICU Showing the Open Bay Arrangement (Source: Hospital Archives – Modified by the Researcher to Fit the Existing Situation)

Following spatial constraints, the most serious functional requirement in the Turkish PICU impacting medical outcomes negatively may be the low level of environmental hygiene and infection control (Table 5.1). Particularly, female caregivers emphasized the need to provide more sterile conditions and more effective infection control measures.

Second, the lack of adequate storage spaces and ordering systems is a further functional and provisional problem, which creates a chaotic and cluttered workplace, thereby negatively impacting staff performance (Table 5.2).

Third, there are no spatial opportunities to ensure rest and relaxation for staff and families (Table 5.3). On the contrary, it has been assumed that eliminating such spaces would discourage staff members from resting and relaxing, thereby increasing their efficiency. This strategy may have stemmed from a modernist and less humanistic work culture of the sixties, which seems to be still influential in Turkey. However, contemporary research studies (Smith, 1996), particularly in corporate America, show that staff members will function better, make fewer errors, and respond much better to their patients' care if they have a chance to rest. A similar workplace strategy of the administration was the assumption "if families' needs are left unrecognized and unsatisfied, they would not stay in the hospital." Yet this also turned out to be wrong: Families never leave their patients, neither in Turkey nor in the U.S.

The observation regarding the lack of a carefully planned resting and relaxation function in the Turkish PICU was contrary to contemporary design trends in the West: There is an enormous need to conduct global research studies showing the benefits of staff and family support spaces on patients' medical outcomes, staff performance, and families' satisfaction and well-being, thereby informing a niche for hospitals. Particularly in the very competitive environment of the health facilities market in the U.S., this trend is getting more important.

Turkish caregivers also reported their need for resting and relaxing in formal support spaces over and over. Hospital administrators need to recognize and respond to this need, by providing staff and family support, relaxation, and shared social interaction spaces in close proximity (and maybe visual relationship) to the PICU. Although relaxation and social interaction functions seem to contradict one another, it would be enough to create multi-functional spaces for both functions as the first step. Although there was no knowledge and conscious awareness of its benefits, before the 1999 renovation, they had a very small room, which functioned well as a staff and family lounge, and influenced caregivers' memory of place.

Fourth, caregivers mentioned a number of problems relating to the field of environmental psychology due to the particular atmosphere of the PICU (Table 5.4): The limited scale and increased density of the unit, its limited access to nature (outside) due to the insufficient amount of windows, its institutional and sterile materiality, its low and claustrophobic ceiling height, its poor air quality and lack of odor control were among those problems.

Fifth, the lack of functional interventions prevents an effective workflow in the PICU (Table 5.5).

Sixth, all caregivers complained about noise levels in the PICU. The researcher observed that the high noise level interfered with patients' sleep. During a night interval she stayed in the PICU, the television was on for the whole night, preventing children from sleeping efficiently (Tables 5.6 and 5.7).

Finally, the adjacency and proximity between spaces can be a major problem, which is influential in the hospital scale (i.cr.5). The chief resident reported that the proximities between various departments and their distances to the CR office were critical: Particularly it gets very difficult to walk to distant spaces during late night shifts. She has to check all inpatient departments once or twice throughout the night. Especially during critical events, it takes more time to reach out to certain departments, including the inpatient babies and infants and the ER, which are not located in the vicinity of other spaces. In those cases, they have to run since the elevators may not work efficiently. Yet the PICU is located adjacent to the CR office, which is very efficient because they can always check those patients. Its proximity is also advantageous during critical events. To sum up, the location of different units affects staff behavior both during critical events and regularly. If a space is located far away, head assistants or chief residents are less willing to walk down to check the patients. They can walk to most distant located units about twice a day. Therefore locational or relational (configurational) accessibility of spaces in relation to others is as a major design intervention needed in the Turkish setting.

Regarding the impact of the physical environment on patient-caregiver relationship, the HP argued that the open bay arrangement might have a negative impact. Individual patient rooms would be more conducive for patients and families. However, the advantage of the open bay arrangement over individual rooms is the visibility of all patients by caregivers (i.hp.30) and vice versa. One of the residents concurred. They only have one individual room in the ICU, which is the isolation room (Figure 5.6). The researcher observed it was boring for a child to be *isolated* in this room, particularly when the mother was not around.

The researcher further questioned the advantages of the open bay arrangement, where all kids are together watching the high pace ICU environment and events. The social bonds of the Turkish culture, including children, make the individual patient room almost a less desirable alternative, despite the provision of a private television, window and more daylight. The AP focused on the psychology of the patient, who wants to be visited and interact continuously. Therefore physicians need to spend more time with their patients during visit and consultation hours (i.ap.31; i.ap.32). Families, child life specialists, and volunteers spending quality time with patients could be another solution if there were space.

In short, Turkish caregivers confirmed the recurring idea of this study: There are a number of simple, inexpensive, yet fundamental changes in Turkish hospitals that will enormously improve patient outcomes, staff performance, and families' well-being. Some of these changes require behavioral improvements, such as 1) being more careful about keeping the noise level at the minimum, 2) discouraging interns and secondary staff members from entering the unit during emergencies, 3) becoming more respectful of parental presence (and of the dying process), and 4) defining individual responsibilities and job descriptions precisely by assigning individual nurses, interns, and residents to specific patients. Table 5.8 summarizes the minimum guidelines and services for the Turkish PICU.

TABLE 5.1
Infection Control Function – Problems and Solutions

Infection Related Problem	Proposed Solution
<p><i>1. Clean utility:</i> Clean linens are not kept separately under sterile conditions.</p>	<p>1. Provide separate rooms for clean and soiled utility, and enough support space for ICU inside or outside the unit.</p>
<p><i>2. Separate toilets for patients and staff:</i> Caregivers and patients share the same toilet, which family members also utilize against the rules.</p>	<p>2. Provide separate restrooms for staff, patients, and families (outside the ICU).</p>
<p><i>3. Handwashing facilities:</i> 1) There are no separate sinks for handwashing and urine disposal. 2) They have an isolation room, yet it is insufficient, and does not have a sink. 3) There are no separate sinks and disinfections at each patient's bedside.</p>	<p>3. Provide: 1. Separate sinks/areas for urine disposal and handwashing. 2. A sink in the isolation room and at each patient's bedside. 3. Develop appropriate standards and guidelines for the use of sinks and mandatory handwashing.</p>
<p><i>4. Bathroom:</i> There is no tub or bathroom to wash the patients: Currently, they wash the babies in the sinks and clean the older children with wipes (Figure 6.4).</p>	<p>4. Provide a bathroom for washing patients, who stay for many days.</p>
<p><i>5. Refrigerator:</i> There is only one refrigerator for the patients. Yet staff members store their food and beverages in the same fridge. Due to lack of space it gets overly packed, causing food and drink items to drop and explode, creating unsterile conditions.</p>	<p>5. Provide a separate staff refrigerator in the staff lounge.</p>
<p><i>6. Equipment disinfection:</i> Nurses disinfect used equipment such as oxygen pumps and masks, and dry them on clean towels laid on unoccupied patient beds.</p>	<p>6. Provide: 1. A clean space. 2. A disinfection unit for sterilizing used equipment. 3. Hire a professional cleaning team.</p>
<p><i>7. Waste containers:</i> They use open plastic bins, which are not durable or operable.</p>	<p>7. Provide durable and operable containers, which are preferably stainless steel and specially designed.</p>
<p><i>8. Gloves/Galoshes:</i> Gloves are not used during all medical and nonmedical procedures, including drawing blood. Masks and galoshes are not mandatory for visitors.</p>	<p>8. Provide gloves and portable glove box holders, and make their use mandatory.</p>

TABLE 5.2
Storage Space and Ordering Systems – Problems and Solutions

Storage Related Problem	Proposed Solution
<p><i>1. Medications storage:</i> 1. Medications and drugs are stored in a cabinet within the ICU. 2. Nurses mentioned they get medications, particularly narcotics and tranquilizers, for their own individual use.</p>	<p><i>1. Provide:</i> 1. A separate room for storing medications is needed because conscious and physically active patients may reach to drugs from the medications cabinet when staff members do not watch them. 2. Medication station with drug refrigerator and locked narcotics cabinet must be located in a separate place.</p>
<p><i>2. Proximity of equipment storage:</i> Equipment storage is located outside the ICU. While they need to separate those functions such as storage, medication station, or nourishment center from the ICU ward, they need to locate them centrally within the unit. Currently, the ward (i.e., all countertops, cabinets, emergency cart, staff station) is cluttered with daily used equipment, yet nurses still walk a number of times during the day to the storage outside. Unused equipment and ventilators are also stored inside, cluttering the space even further.</p>	<p><i>2. Provide:</i> 1. ICU equipment storage located centrally within the ICU but outside the ward (proximity of supplies and storage). 2. Smaller storage spaces for patients' and caregivers' belongings within the ICU ward.</p>
<p><i>3. Equipment maintenance:</i> ICU equipment must be accessible only to primary ICU staff because other departments borrow it and do not bring it back. Other times, equipment is taken without permission, and the HN cannot locate it (i.hn.6).</p>	<p><i>3. Provide</i> locked equipment storage accessible only to primary ICU staff (controlled access to ICU equipment storage).</p>
<p><i>4. Emergency equipment storage:</i> The emergency cart is always cluttered and packed, making it very difficult to move it during emergencies; instead nurses get what they need and carry them in their arms to the bedside.</p>	<p><i>4. Emergency cart must always be free of clutter: Therefore provide sufficient storage space in the ICU.</i></p>
<p><i>5. Counter and cabinet space:</i> They cannot use storage spaces efficiently, they need more cabinet space (and more drawers); they cannot easily access patients' cabinets, or store patients' personal belongings, especially of long-term patients; they also need special cabinets at each bedside to store patient's files.</p>	<p><i>5. Provide:</i> 1. Accessible and functional cabinet space for patients' personal protection and files. 2. Patients' personal effects storage, which may be external.</p>
<p><i>6. Radiation control:</i> The portable x-ray machine is stored in the ICU, and brought to the bedside when needed. However, staff members are intermittently exposed to radiation during the day, although they try to minimize the harm hiding behind the columns. Although they are not sure, they think it may be less harmful to be more distant.</p>	<p><i>6. Provide specially designed partitions to separate the bed from the rest of the unit and to absorb x-rays, and rules to make its use mandatory</i></p>
<p><i>7. Controlling disturbing sights:</i> The view of cluttered equipment, particularly cords and cables, is very disturbing; they are always in the way, creating risks of sliding on the floor. "Everything would be more in order if there were no cables," said the HN, suggesting patients should be closer to the front, with wall-mounted cables behind. Cables also block access to the patient and his cabinet, and sabotage infection control since they are difficult to sterilize (i.ap.20.f; i.hn.40-41).</p>	<p><i>7. Provide:</i> 1. Power column or wall-mounted systems for hiding cables, hygiene, as well as for the economy of space and for preventing accidents. 2. Easy, rapid access to head of bed (clutter-free and cable-free).</p>

TABLE 5.3
Social Support, Social Interaction and Relaxation Functions–
Problems and Solutions

Social or Psychological Problem	Proposed Solution
<p><i>1. Staff support spaces:</i> Nurses complained about the lack of a place 1) to “breathe,” 2) to eat, drink, and relax, and 3) to change their clothes: Currently they walk to another department outside the PICU for those functions. Additionally, residents on-call either sleep on a reclining chair in a very small room (Figure 6.4) or do not sleep at all.</p> <p><i>2. Family support spaces:</i> There is no waiting room for families, where they can stay, sit, sleep; and no space to meet with them privately and support them when their child dies.</p> <p><i>3. Transparency – Unwanted family surveillance:</i> Caregivers complained about families’ constant surveillance due to the lack of a waiting room and the visual relationship between the PICU and its entry, which enables crowded groups of families to gather in the gateway and view inside through glass doors. This creates 1) psychological pressure and increases stress causing them to make more errors, for instance, their hands may shake when drawing blood. Their skill level reduces and they feel less competent (i.ap.13). They also feel restless, and like “fish in an aquarium” (i.e., “fish bowl environment” effect). HN claimed families’ perception is distorted since they believe terrible things happen inside, and their reactions are often exaggerated. Before the renovation, the ICU entrance was completely transparent without a locked entry and controlled access. They implemented opaque glass surface and locked entry system, which also failed. Second, they replaced the curtains separating patients visually from one another with partitions, but this did not work either. Currently they ensure patient and staff privacy discouraging families from entering, and accepting them shortly at mealtimes only because there are many disadvantages linked with their presence: Particularly, seeing everything that happens to their child (intubations, invasive procedures, resuscitations) is neither beneficial to them nor to staff because families may think they are incompetent (i.hn.13.a). CR claimed families would remember their child in the worst condition if they saw resuscitation and the last phases of hospitalization. 2) Sometimes, “when there is nothing to do,” caregivers sit and rest shortly at the staff station. Yet families perceive this behavior as is they do not care for their children, “sitting there all day long” (i.ap.13). If team members socialize and laugh in the ICU (because there is no other space to do that), families get offended and alienated. Some of them complained about this “respectless” behavior (i.ap.14).</p>	<p><i>1.</i> Provide 1) separate staff support spaces for nurses and physicians located in close proximity yet outside the PICU, 2) staff refrigerator and kitchenette (maybe microwave etc.), 3) staff locker and dressing room, 4) M.D. on-call room with a comfortable bed, 5) doctors’ break room for daytime socialization, and 6) staff counseling services.</p> <p><i>2.</i> Provide 1) Family waiting room, 2) family toilet (in the waiting room), 3) patient/family personal effects storage (patients’ may be internal), 4) family kitchenette, refrigerator, teakettle (in the waiting room), 5) a carefully designed family counseling room, 6) counseling services addressing families’ psychosocial needs.</p> <p><i>3.</i> Provide 1) Controlled access (efficient working locked entry system) to the PICU and use of less transparent materials at the entry system, 2) waiting room so families don’t gather in front of the ICU and at the gateway, 3) staff lounge for staff interaction & socialization in private, and 4) an outer corridor space for families that enables them to view inside.</p>

TABLE 5.4
Ambient Interventions – Problems and Solutions

Ambient, Atmospheric or Environmental Problem	Proposed Solution
<p><i>1. Scale and Density:</i> There are many problems linked with many people working in a limited space: three nurses, the HN, three residents, six interns, the AP, and others create a minimum population of fifteen in a space of only 1300 square feet (86 square feet per staff):</p> <p>1. It is difficult to maintain smooth working relationships and effective communications with many different members of the health team and families in a very small physical space. 2. The available space does not permit parental presence. 3. The increased population sharing the same air in a small space causes outside infections and microorganisms to be carried inside (i.ap.12). 4. The fact that all medical and non-medical procedures are provided “communally” reduces staff performance and sense of responsibility. Particularly, nurses care for all patients, and they may not do what they need to do individually. Informal cooperative caregiving also conceals individual nursing and medical errors. Surprisingly, the AP argued staff performance is at its peak at weekends due to reduced staffing (i.ap.12). 5. Density of caregivers intensifies panic: During an emergency (arrest, resuscitation, intubation), it gets very crowded (at least 9-10 people) at the patient’s bedside, increasing risks for errors. Narcotics teams, outside caregivers in close proximity, and a large group of interns come to see or help with the resuscitation. The researcher observed about thirty people inside the ICU at hectic times (about 43 square feet per caregiver). Although most caregivers were against interns’ presence during emergencies, they admit them since other departments were under renovation (i.ap.12).</p>	<p>1. Provide a bigger space, particularly at patient’s bedside, even for the single ward. Currently, the size for the same patient population (e.g., 9-10 patients) is about one fifth of the U.S. unit. To increase the bed-to-bed distance between two patients about twice would allow one parent to stay at the child’s bedside, give caregivers more space, particularly during emergencies, and also positively influence staff interactions with families. An initial standard for bed-to-bed distance may be a minimum of 8 feet. Other solutions to improve scale are: 1) provision of minimum guidelines for separating patients, such as transparent partitions, 2) efficient HVAC, 3) precise division of labor among staff, 4) controlled access during emergencies, maybe through magnetic card access for the primary ICU staff.</p>
<p><i>2. Access to Nature – Lack of windows and access to daylight:</i> Caregivers get claustrophobic due to lack of windows: They want to see outside, sunsets, sunrises, daylight, rain, and the changes in the weather: “The lack of windows may be considered more beneficial for the ICU but we are utterly bored and depressed here” (i.hn.8). Patients also need to view outside; they get very happy if they can. Sometimes they change the locations of beds to allow conscious patients see outside (i.hn.21). Lack of windows and of access to natural light cause isolation from the outside, prevent distinguishing between day and night, and disturb the body’s circadian rhythm.</p>	<p>2. Provide a window for each patient and direct access to natural light, and implement this into design by law as a mandatory standard in all hospitals.</p>
<p><i>3. Materiality – Use of institutional and sterile materials:</i> Due to the single use of white ceramic tiles on walls and floors, caregivers feel as if they are enclosed in a bathroom the whole time (i.hr.16).</p>	<p>3. Increase the use of warmer and natural materials such as wood (maybe at staff station).</p>
<p><i>4. Ceiling Height:</i> The ceiling is criticized as very low, creating a compressed, claustrophobic and “boxed” feeling. AC vents are also too close to people, making it noisier.</p>	<p>4. Provide a new space with a higher ceiling, or rearrange the ceiling height.</p>
<p><i>5. Functionality – The need for ambient air quality, odor control and HVAC systems:</i> Although the ICU is air conditioned, it does not work efficiently, and does not prevent smell, i.e.; bad smells from a patient spread out to the whole ward. While the cleaning team wipes the same floor continually, the smell is persistent.</p>	<p>5. Provide efficient HVAC systems, regular maintenance and replacement of AC filters, a standardized personnel and procedure.</p>

TABLE 5.5
Functional Interventions – Problems and Solutions

Important Functional Requirement	Proposed Solution
<p><i>1. Proximity of laboratories:</i> 1. It takes too much time to transfer blood tubes to the labs, and blood tubes wait too long at the staff station before they are delivered. This causes the blood sample to be wrongly interpreted, and to repeatedly draw blood, causing more pain than necessary. 2. Equipment technicians are supposed to walk the whole day, which requires a younger population. This will also free the interns from doing the delivery job, and they could use their training time more efficiently.</p>	<p><i>1. Provide</i> 1) Blood gas interpretation equipment in the PICU, 2) Pneumatic tube system, 3) Laboratory--microspecimen capability located in closer proximity (e.g., within 15 minutes) to the PICU, and 4) Equipment technicians (<i>i.e., postmen</i>) working efficiently and professionally. Replacement of ill-educated, careless, and very informally behaving delivery members with younger, more energetic, more educated, and more professional team members might be necessary.</p>
<p><i>2. Computing systems:</i> There is one computer in the whole ICU, preventing the chances for computerized charting, data gathering (demographic data, LOS days, morbidity/mortality scores, etc. for research purposes), and database forming. They need to have at least two computers at the staff station because when a nurse needs to put in some information (such as medications), or look at patients' medical outcomes, she has to wait. Additionally, physicians cannot search databases in the PICU.</p>	<p><i>2. Provide</i> a second computer or more, and generally improve computerization to achieve a more advanced state of knowledge, research and data gathering</p>
<p><i>3. Telecommunication:</i> There is only one telephone line: caregivers and families call the ICU for hours to reach the unit and get information.</p>	<p><i>3. Provide</i> a second phone line or more, and create a separate (secretarial) area for the telecommunication function to reduce noise and crowd in the ICU</p>
<p><i>4. Support spaces:</i> 1. For daily discussions, residents, interns, and the AP walk to outside departments located in close proximity to the ICU (i.hp.16). 2. Due to the lack of a meeting room in the ICU, they stand up for extended periods (45 minutes to an hour) at the bedside during consultations. Yet they experience fatigue and their blood pressures go down, particularly if they are not well nourished.</p>	<p><i>4. Provide</i> a conference room in close proximity to the PICU ward (internal)</p>
<p><i>5. Patient bed standards:</i> 1. They need modern comfortable (and air compressed) beds. 2. Difficulties in adjusting them for giving the patients comfortable positions and postures (and caregivers), and 3. Due to the lack of appropriate equipment, they tie patients to the bed (so they do not detach their equipment; Figure 6.5).</p>	<p><i>5. Provide</i> comfortable and adjustable beds for patients</p>
<p><i>6. Pharmacy function:</i> Families refer to outside pharmacies.</p>	<p><i>6. Families</i> should be able to find all needed medications and drugs in the pharmacy of the hospital.</p>
<p><i>7. Mechanical ventilators:</i> At least, they must provide a certain number of beds always equipped with ventilators so they can direct patients who need mechanical ventilation to these beds. They also need somebody responsible and knowledgeable about the maintenance of ventilators.</p>	<p><i>7. CR</i> suggested providing separate aspirators and mechanical ventilators at each bedside, rather than mobile equipment carried where it is needed (i.cr.17).</p>

TABLE 5.6
Safety and Privacy Function – Problems and Solutions

Function Related Problem	Proposed Solution
<p><i>1. Visibility:</i> Columns in the middle of the PICU sabotage the visibility of patients, and entering traffic. Caregivers want to be able to see patients from everywhere in the unit. Yet not everything should be visible when people enter the ICU. There must be partitions or curtains between beds, and partitions separating the information desk from the patients (i.hn.21).</p> <p><i>2. Access to the PICU:</i> The entrance doors, the whole entrance system and real barriers are poorly designed. Many people can enter the unit easily. Neither are there enough symbolic barriers to discourage people from entering.</p> <p><i>3. Difficulty of accessing the head of patient's bed:</i> It is very difficult to access the bedside, particularly the head of the patient even during resuscitations due to the high number of people involved in an emergency situation, the very narrow space, and the presence of many cables and cords all over the place. The lack of space at the patient's bedside also creates enormous tension among team members during emergencies: for instance, residents may tell the nurses to step off.</p> <p><i>4. Accidents, falls and medical errors:</i> Density leads to more accidents, for instance caregivers often hit their heads or bodies to equipment and surfaces because they have to work in very narrow spaces (i.cr.17; i.hn.21). Once, a ventilator dropped onto a nurse. Although caregivers did not report the impact of density on nursing and medical errors, it is certain that it will increase those errors as well.</p> <p><i>5. Staff safety:</i> Educational constraints impact safety: Nurses reported that they were threatened by some very rurally oriented and ill-educated families. Some were even attacked. Once, a father entered the PICU during his son's resuscitation, watching them from the bedside. Staff could not prevent him since everybody was trying to save the kid. This father was very angry and aggressive, disturbing all patients in the ICU. He threatened caregivers when they tried to take him out. Sometimes, dad and mom enter and start mourning inside, increasing the stress of the caregivers and other patients. They have very bad memories, particularly death is stressful, and it is very stressful to lack a room to inform families in the right place. Instead they inform parents in the public corridor, where they often black out (i.hn.13.b).</p> <p><i>6. Secretarial and information desk:</i> It should be separated from the patients to reduce noise, and to more effectively serve the families, which are not accepted inside the unit.</p>	<p><i>1.</i> Provide 1) a new ICU design with careful consideration of the visual relation between staff station and patient beds, 2) Central monitoring system at the staff station, 3) Controlled access to the PICU and elimination of through traffic.</p> <p><i>2.</i> Provide a longer corridor before they arrive at the PICU; the relation of the current circulation path to the ICU is very sudden and intimate. They need: Controlled access to the PICU (no through traffic).</p> <p><i>3.</i> Provide enough space at the patient's bedside to allow caregivers access the patient's head</p> <p><i>4.</i> Increase patient's bedside space at least one and a half times and ease access to patient and patient's head</p> <p><i>5.</i> Provide space for family education, and a private space for the caregivers (break room), block illegal access to the unit, increase the range of transparency for the families to see inside the unit even if they are not allowed inside, and provide space for family-staff meetings</p> <p><i>6.</i> Provide a separate information desk area outside the unit</p>

TABLE 5.7
Noise Control Function – Problems and Solutions

Function Related Problem	Proposed Solution
<p><i>1. Telephone:</i> The most disturbing sounds for many caregivers were cell phones ringing continuously: caregivers use them all the time without considering patients' need for silence and deep sleep. Electromagnetic waves are also harmful to human health, monitors, and other electrical equipment (i.ap.20.f). The most disturbing noise for the HN is the constant background noise from the compressor and AC, although they cannot distinguish it anymore unless they turn it off (i.hn.40).</p> <p><i>2. Television:</i> The sounds from the TV are most disturbing to the CR, especially the national music channel broadcasting non-stop Turkish pop and arabesque music.</p> <p><i>3. Music and recreation:</i> Due to the freedom to listen to personally preferred music and television programs, and the lack of behavioral codes and rules regarding the audial environment and noise levels, strange events can take place, e.g., one of the residents brought his stereo and pop music, and played them at high volume at the staff station for several days.</p>	<p><i>1.</i> Provide 1) An electromagnetic system that blocks cell phones, or 2) make people use their cell phones minimally and with care. For instance, they can walk out of the ICU when it rings (i.ap.20.f). 3) The ringing of the phone at the staff station can also be controlled through low or silent ringing phones (a red button flashing instead of the phone ringing). 4) Provide a silent AC compressor (i.hn.40).</p> <p><i>2.</i> Either the TV should be taken out of the ICU (maybe to the staff lounge), or it should be kept at a beneficial channel broadcasting soothing music and views from nature or sightseeing/traveling.</p> <p><i>3.</i> Provision of codes regarding the audial environment, noise levels, and appropriate music types (soothing and healing music, such as healing nature sounds or classical music).</p>

TABLE 5.8
 Needed PICU Facilities –
 Minimum Guidelines and Services

Infection Control

Needed Spaces

- Clean utility room
- Soiled utility room
- Disinfection unit for sterilizing used medical equipment
- Staff toilet
- Patient toilet
- Family toilet (external)
- Bathroom for washing long-term patients

Needed Equipment

- Separate sinks for urine disposal function only
- Provision of a sink in the isolation room
- Staff refrigerator
- Operable stainless steel waste containers (instead of open plastic containers)

Needed Interventions

- Development of appropriate guidelines for handwashing by staff & families (mandatory)
- Provision of gloves and portable glove box holders
- Mandatory use of gloves

Storage And Ordering Systems

Needed Spaces

- Medication station with drug refrigerator and locked narcotics cabinet
- ICU equipment storage located centrally within the ICU
- Locked equipment storage accessible only to primary ICU staff
- Accessible and functional cabinet space for personal protection and patient files
- Patients' personal effects storage (may be external)

Needed Equipment

- Provision of an emergency cart free of clutter
- Specially designed partitions to separate the patient's bed from the rest of the unit and to absorb x-rays, mandatory use of partitions during x-rays
- Power column or wall-mounted systems for hiding cords and cables
- Easy, rapid access to head of bed (clutter-free and cable-free)

Environmental And Behavioral Improvements

Needed Spaces

- Family waiting room (so they do not gather in front of the ICU)
- Staff lounge room (for staff interaction and socialization in private)
- Provision of a window and direct access to natural light for each patient

Needed Equipment

- Efficient HVAC (heating, ventilation, air conditioning) systems

Needed Interventions

- Precise division of labor among staff
- Control of ICU traffic, particularly during emergencies
- Magnetic access cards given to primary ICU staff only

TABLE 5.8 (Continued)

Relaxation And Social Interaction Function

Needed Spaces

- Family waiting room with restrooms, refrigerator and kitchenette
- Patients' & families' personal effects storage (patients' storage may be internal)
- Counseling room to address psychosocial needs of families and staff
- Staff lounge located in close proximity to the PICU
- Staff locker room and R.N. (registered nurse) room
- M.D. (doctors') room
- M.D. (resident) on-call room
- Conference room
- Replacement of the glass ICU entrance door with an opaque material
- Playroom for conscious and active patients

Provisional And Functional Intervention

Needed Equipment

- Provision of a second or more computers and improvement of computerized charting
- Provision of a second or more phone lines
- Provision of blood gas equipment in the PICU or laboratory--microspecimen capability located within close proximity (within 15 minutes)
- Comfortable and adjustable beds for patients

Needed Interventions

- More efficient and professional equipment delivery (*posta*) service

Noise Control

Needed Equipment

- Replacement with a more silent AC compressor system
- Low/silent ringing phone (a red button may flash)

Needed Interventions

- A system that blocks cell phones
- Minimizing the use cell phones (e.g., caregivers can walk out of the ICU when it rings)
- Either the TV should be taken out of the ICU (maybe to the staff lounge), or it should be kept at a beneficial channel broadcasting soothing music and views from nature or sightseeing/traveling channels.

Housekeeping And Maintenance

Needed Equipment

- Efficient HVAC systems
 - Provision of contant staff for ICU equipment and A/C maintenance
 - Regular intervals to check the performance of ICU equipment and to change A/C filter
-

5.2.4 Comparison of the Renovated ICU Space to Original Design

While evaluating the current physical environment of the PICU, many caregivers referred to its previous state before the renovation in 1998, when they shared a multifunctional social room with families. They praised the advantages of this room, arguing the lack of this room damaged their social interactions with one another and with the families.

Before the Renovation

Various support spaces were located in the front zone between the ICU and entrance corridor. Once entered, the first function was the restroom at the right that could be used by staff and families. It was in its current location; they just divided it into two areas for providing separate toilets for staff and patients. The limited space opposite the restroom, which is currently used as the doctors' room, was used for clean utility and small equipment storage. Adjacent to the first rooms within the front zone, two additional support spaces faced one another: The space near the restroom incorporated various functions and activities such as staff lounge, secretary and information desk, a dining/study table, staff meeting, family counseling, and a microscope (laboratory function). The space near the utility room was divided into two areas: nurses' dressing room in the front, and the M.D. on-call room behind, where they slept. Yet when the nurses were changing, a male resident could not walk in or out. In the main patient zone, there were only seven beds in open bay arrangement. The staff station was not located centrally facing the entrance; it was at the entrance. There were very old wall-mounted metal cabinets all around the space, and medications cabinets were in the center. Monitors were present. The columns were about the same size; they tried to reduce their size but it did not work since they are load-bearing (i.hn.9) (Figure 5.4).

Advantages: The main advantage of the old spatial configuration was the provision of important functions, including clean utility, staff lounge, staff meeting, family counseling, and even family toilet, and the provision of all functions in a compact arrangement reducing walking distances. Caregivers informed: 1) Nurses did not have to walk outside to pick up needed equipment or to change their clothes; everything was inside the unit in close proximity. Although it was tight, it was much more functional and practical than the current arrangement. 2) They had larger windows everywhere, through which they could follow the time of the day and feel healthy. 3) They had a staff lounge with a dining table, where they could cook their own meal, eat, drink, rest, socialize, communicate, and interact with the families (i.hn.10).

Disadvantages: The main disadvantage was that daily used equipment was scattered and cluttered everywhere since all available spaces were used for storage function. This included all horizontal surfaces such as countertops, staff station desk, top surface of nurses' and doctors' cabinets, and the surfaces in the doctors' room.

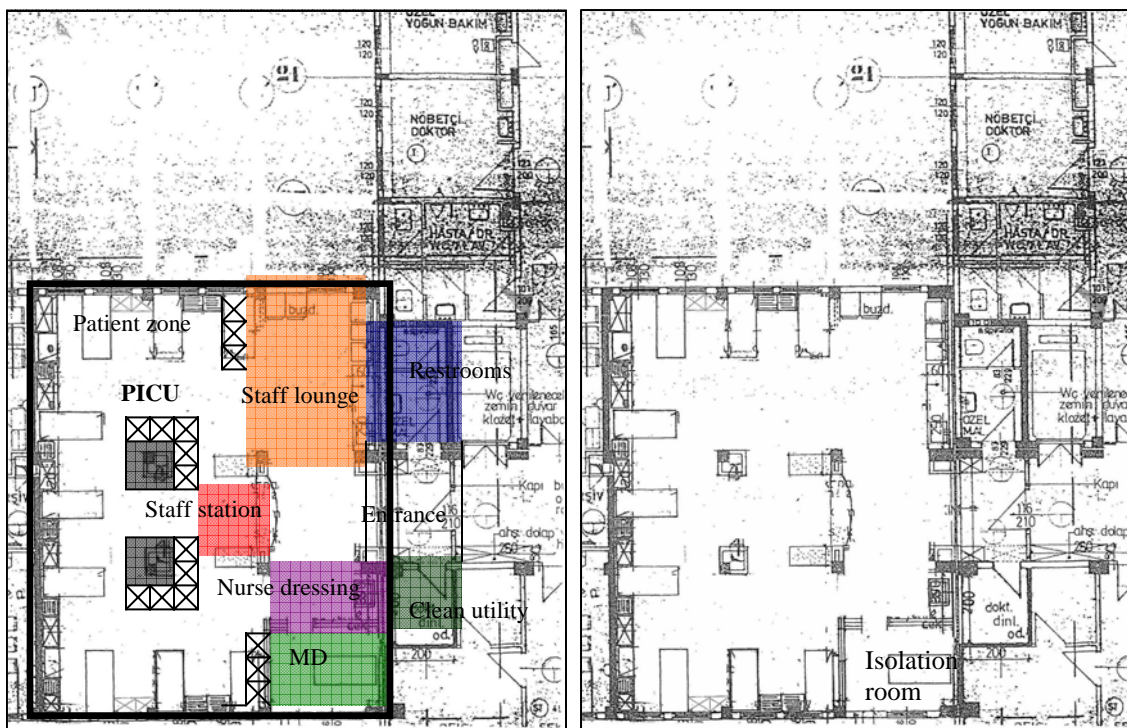


Figure 5.4: PICU Space Before (Left) and After the Renovation (Right), Turkish PICU

After the Renovation

The new ICU consists of nine beds and an isolation room. To expand the bed number from seven to nine, incorporate an individual isolation room, and create a centrally located and more visible staff station, various important functions including the staff lounge and family counseling were eliminated, while storage and nurses' room functions moved to a nearby department on the same floor (Figure 5.4).

Advantages: Design improvements in the renovated ICU included: 1) The choice of a more conscious color palette and softer tones (*ambient intervention*), 2) improvement of the first impression (Figure 5.5) through the provision of a modern and technological appearance and the view of a centrally located staff station with all caregivers around, which increased families' trust in care (*symbolic/ambient intervention*), 3) controlled access and circulation of traffic through the provision of two entrance doors that could be locked (*functional intervention*), 4) improvement of hygienic conditions through provision of hand washing facilities, disinfections, soap, paper towels, trash, constant water and photocell system for the sinks that were absent before (*functional and practical intervention*) (i.ap.11; i.hr.15).

According to the HP, the most important benefit of the renovation has been to expand the bed number from 7 to 10. However, the current ICU space was never intended to be critical care space. Since they are space-locked, they cannot modify its physical environment progressively, nor can they change its location. Yet they are improving other aspects of it to increase workflow and staff efficiency: 1) They provided air conditioning in the ICU, as opposed to regular spaces in the hospital that are not ventilated,

and 2) they are more flexible with costs when purchasing ICU equipment: recently, they purchased newer generation ventilators and updated some of their monitors although the old ones were sufficient in number. 3) They respond to equipment and maintenance problems of the ICU much faster (i.hp.12).



Figure 5.5: The First Impression of the PICU (Left) and Staff Station (Right), Turkish PICU

Disadvantages: Most caregivers liked the renovation at first due to the progressive visual environment, the use of colored ceramic tiles and brand new materials. However, they soon recognized the new design destroyed fundamental functions, such as staff meeting and family-caregiver interaction, particularly during admission when they record the history of a patient, and discharge procedures. Additionally, 1) they have no private space to talk to the family whose child just died. 2) Nurses walk to another department to change their clothes. 3) There are no curtains between beds, and a very tight space between two beds due to the increased bed number: The AP often changed the location of a patient to access the bedside and head of the bed (also due to her knowledge of feng-shui principles). 4) The columns in the middle block views to patients. Therefore, they want to move to another ICU space (i.ap.9; i.ap.10).

The impact of renovation on social interactions and patient care: Caregivers believed that the renovation of the ICU damaged social interactions and patient care (i.ap.10). Before the renovation, they had a space for family-caregiver interaction, where they could serve families with tea, and listen to their stories in depth. By providing them with a familiar and home-like behavior (i.e., serving tea) they were helping them to feel more comfortable. Caregivers believe that the lack of communication with families negatively impacts patients' medical outcomes. They need to find cues from families' stories, which often requires an in-depth conversation and may last a few days. When they arrive, families are often panicked, cannot concentrate on their stories in a public place, and are interrupted by outer circumstances (views, general atmosphere of the ICU). Therefore the elimination of the staff lounge had a huge negative impact on 1) nurse-physician relationship, 2) family-physician relationship, and 3) patient medical outcomes.

The design process of the renovation: Administrators and designers did not have any nurse/physician input when they converted the existing space to an ICU in 1986 and renovated it in 1998. Due to the lack of communication with the architect involved in the renovation project, it was unknown if they followed an ICU design or floor plan.

Caregivers suggested that the single design concept was discouraging people from sitting in the ICU since they should always work, without getting any break. However, sitting at the staff station does not mean they will check up the patients all the time. They need to rest and escape intermittently during the day from this small and claustrophobic space. Before the renovation, they had such a place where they had a large table, read monthly journals, made tea or coffee, and sat in the couch (i.ap.9).

In short, the main disadvantage of the renovation has been eliminating important support spaces for the PICU. Yet administrators believe there was no other way since the spatial development of the hospital building was completed long ago. Therefore, similar to the U.S., the lack of space is the main problem preventing a substantial growth in the ICU and children's hospital. Yet Turkish administrators do not find it feasible expanding through a new building (i.hp.16). Another difference is that in the U.S., where they continuously expand their facility, nobody missed the previous design.

5.2.5 The Future of the Hospital

The Need for a New Hospital Building and PICU

The best solution to the enormous spatial constraints of the PICU and children's hospital may be to relocate the facility in a larger area. The current campus where they are located is land-locked. The AP suggested they should move all pediatric specialty departments such as oncology and lung infection to their suburban campus of the university, which is about half an hour from the city center and located in the middle of nature (i.ap.8; Figure 5.6). This would leave a large space available for the functions of emergency department (ED), outpatient clinics, and ICU in the current location of the hospital for easy transportation. However, administrators do not plan to move the pediatric hospital to a new building/location in the near future.



Figure 5.6: Nature Characteristics, University Campus (Source: Hospital Website)

It may be more expensive in the long-term to renovate and maintain an old building rather than building anew. In the U.S., the life span of a hospital building is about 30-40 years, which is not common in Turkey, even Europe⁶⁵. The life span of a hospital building in Turkey may be about 50-60 years, or longer. Since most Turkish hospitals and other public institutions were built during fifties after the establishment of the Turkish Republic in 1923, the future of the case study setting and other hospital buildings will establish the standards for the average life span of a Turkish hospital. Private hospitals, on the other hand, have mushroomed starting from late eighties and early nineties. They are newer, yet they occupy the lots of constrained apartment buildings. The economic comparison of the cost efficiency of maintaining an old building versus building anew is a needed research area to determine the optimum life span of a hospital building in Turkey.

Currently, administrators deal with existing space problems in their facility by renovating many areas in the hospital. The neonatal ICU (NICU) that was renovated in 2001 is the most progressive physical environment of the hospital (Figure 5.7). Space and equipment costs were about one trillion TL (equivalent of \$700,580) for this project. While they locate three beds in a room in other wards, they provided a comfortable chair for the accompanying parent at each bedside in the NICU. They want to increase the quality and functions of this chair in the future, by providing a reclining or rocking chair. The NICU example shows us clearly that it is also possible to solve most of the existing spatial problems in the PICU, if there is a will to do it.



Figure 5.7: Renovation of the NICU, Turkish Hospital (Source: Author)

⁶⁵ Major U.S. healthcare architecture firms (such as HKS) are building new facilities for England to replace their existing facilities, which are very old.



Figure 5.8: “Mom’s Room,” NICU, Turkish Hospital (Left) Compared to the Nursery of a U.S. PICU (Right, Source: Hospital Website)

In the NICU, they provided innovative functions such as the “mom’s room,”⁶⁶ which includes a comfortable chair for the mom (unlike two chairs provided for both parents in the U.S. nursery; Figure 5.8), a small open baby crib, a large window with access to daylight, and other beneficial functions including washer and dryer facilities, handwashing/shower facilities, hair dryer, and television (for distraction) within a limited space of 20 square meters. This room is important for moms [parents] and their babies to spend time together. In this room, moms (parents) will be able to hold their baby when she or he is medically stable and able to tolerate handling. Once babies become stable and no longer require the ventilator, they may be taken into this room, which is a symbol they are getting better and getting ready to go home with their parents. In this room, things are less hectic and less overwhelming than in the NICU, and moms [parents] are able to spend some time nursing and caring for their baby. For moms coming from other cities, this room is even more beneficial since they can get a shower and wash the clothes of their children - - under the supervision of the head nurse, of course (i.hp.13).

Although a new building may partially solve their growth and expansion problems, a rapid increase of the total bed number of the hospital is risky due to management problems. A hospital should ideally grow in carefully planned stages, similar to the growth of corporate organizations in the U.S. (i.hp.17). Therefore, following the North American administrators, the HP also praised the corporate world as a successful economic and social model to be embraced by the hospital. He also recognized the risks due to substantial expansion and growth, such as maintaining the skill level of staff.

As a measure against uncontrolled growth and patient flow, they do not admit patients when the hospital is full; instead they transfer them to other hospitals. There are two university hospitals, a military hospital, a social security hospital, and several private hospitals in the City offering pediatric critical care services, however their hospital is the largest. Additionally, since they serve a very large patient base

⁶⁶ In the U.S., staff would be hesitant to label a room the “mom’s room” since dads seem to be increasing their role (Shepley, 2003; personal communication).

from all over Turkey, most of the time their patients are very sick due to the national patient referral system. That is, before a patient arrives at their hospital, she or he is usually referred from another hospital, sometimes as often as three or four times (i.hp.18).

Master Planning Issues

Starting from 1998, a huge emphasis was placed on renovating existing departments in the hospital, which included the NICU (Figure 5.7) and pediatric brain surgery department in the third block. They also planned to improve infrastructure, electrical and water connections, and the outpatient departments in the second block. They renovated the PICU twice since 1986; the monitors and bedside equipment were changed completely a few years ago. However, many other departments have still not been renovated. They expect to finalize most of their renovation work including infrastructure, spatial and equipment interventions by 2005 (i.hp.13).

Due to the pressures of modernization, and their image as the nation's best public children's hospital, there is a need to renovate their building, and make it "look better." All administrators (president of the university, head physicians, president of the hospital and his assistants) are in agreement regarding the need to improve the physical facilities. Despite being a public hospital with a limited budget and the severe economic crisis in 2001, they improved their economic structure since 1998 by calculating the balance between their costs and profits carefully, and focusing on the "hospital as business." They plan to follow this economic model and renovate as much space as possible by 2005. Yet in order to provide a fair distribution of resources and finances for all departments, they will not relocate the PICU. Particularly, they need to care for those pediatric wards that provide a step-down service to critical care (i.hp.13).

Design Modifications for the Future

Participants were asked to choose the most important environmental needs to provide in the future among eight items. These items included 1) waiting and resting room for families, 2) privacy for patients, 3) privacy for families (i.e., private family rooms), 4) privacy and rest opportunities for physicians and other caregivers, 5) spaces to increase social interaction between families, 6) spaces to increase family-staff interaction, 7) improving environmental conditions (natural light, windows, access to exterior views, odor and noise control, lack of chaos and complexity, etc.) and 8) improving the general atmosphere and décor (familiar, home-like, comfortable) of the PICU. The two major place functions chosen to provide in the future were 1) waiting room for families with enough places to sit and rest, and 2) resting spaces and provision of some privacy for caregivers. Secondary functions such as places for families to interact with each other, or private family areas were found unnecessarily luxurious for the Turkish context.

Privacy for patients: Private/individual patient rooms are not desperately needed in Turkish ICUs. However, other measures are needed to protect patient privacy: 1) The provision of curtains, 2) isolation of severely critical patients from less critical patients through step-up/step-down units (when the AP was in an ICU, she was disturbed a lot due to a patient vomiting continuously), and 3) provision of standard and

comfortable clothing items for patients both for privacy and hygienic reasons (currently, they are naked or have inappropriate clothing). Particularly, as one could expect, adolescent female patients appeared to be even more ashamed and uncomfortable due to their public nakedness (i.ap.20.b; i.hr.21).

Privacy for families: Most caregivers believed private and isolated family rooms are unnecessary in Turkish ICUs because the Turkish mood is very fond of chatting, even during hospitalization. The AP informed that family members are always chatting, even in elevators. Further, they even found joy and peace in listening to sad stories because they are able to share and empathize with others. Although she perceives these as the traits of an “arabesque” (i.e., pain-focused) culture, families socially and psychologically support and educate one another due to the same culture. Particularly, ill-educated moms learn a lot about childcare from educated moms. This is a very positive side of Turkish culture, which eliminates the need for private family rooms (i.ap.20.c).

Turkish families do not demand privacy in a public institution, the HP argued. Regarding patient privacy, he answered they take good care of their patients by providing high technology (i.e., monitoring and mechanical ventilation) in all pediatric wards, focusing on their strengths. In this hospital, the physical environment played against privacy, and most caregivers did not recognize the importance of satisfying this fundamental need, which is very important particularly for conscious and adolescent patients. The researcher observed the pain and trouble of a naked female patient, who was brought from one of her countless surgeries. Vulnerability, shame, weakness and fear of death were evident on her face. Her fractured teenager body was exposed publicly, and was not covered. Additionally, unsightly views resulting from worldly human functions such as bleeding, urinating, diapers and trashcans were part of the open bay arrangement without any curtains.

Following the unrecognized need for privacy, the need for providing spaces to facilitate social interaction, particularly staff interaction, was found even less important. The HP claimed social interactions would occur naturally if people have a chance to have some privacy and rest (i.hp.24). Although this is true, the functions and activities of a place may still reinforce chatting and socializing. Yet it is natural to underestimate the value of positive social interaction in Turkey since it is a natural aspect of the culture and society, which is taken for granted. Additionally, social (not professional) interaction may even be considered a negative behavior if it sabotages staff performance. However, the researcher observed it is the strongest aspect of the health of Turkish society.

The researcher also felt letting social interaction occur naturally, i.e. without using social or spatial invasions, is a noble choice rather than capturing this natural and unscheduled behavior free from environmental interventions. Yet she also perceived that healing design notions and social practices that are well recognized and responded in the U.S. due to their benefits, particularly the impact of family presence, nature, and social interaction, are significantly undermined in Turkey. While the health care market in the U.S. uses those humanistic notions to sell their design, Turkey may only be able to recognize the value of its natural resources such as social interaction in the future, when the society changes significantly, losing these values.

Counseling room: The need for a carefully designed counseling room, and the décor and general atmosphere of this room, where they could inform families about the critical status and death of their child, was a fundamental question. Currently, the head assistants' office space located adjacent to the ICU serves this function (i.hp.27). Caregivers agreed that a specially designed room could help families with handling with death, while reducing the stress for the caregivers in delivering this information.

The HP focused on the importance of the available environment prior to death, such as spaciousness, lack of noise, lack of interference during family-physician meeting, the quality of indoors air and light, and the choice of colors. Comparing the events and activities that take place prior to death to the moment of death and its emotional atmosphere, which either occurs suddenly (lasts for a moment) or lasts for an extended period of time (i.e., a few hours), he argued they are more in control of the events before death, or if death proceeds slowly. The families are aware that they are in one of the best ICUs in Turkey, so they trust the caregivers and no major problems take place. Other times they just accept the situation because they have no other choice⁶⁷ (i.hp.27).

The AP described a more specific atmosphere (i.ap.26): 1) Seating arrangements for both the parents and the physician (and maybe the nurse). 2) A dark room with a low level of indirect lighting, preferably with calming green hues. 3) Provision of eye contact, yet also some distance and personal space (about 50-60 cm in radius) through a table, which would enable a more controlled interaction. 4) Privacy and lack of noise so they can talk in honesty, and cry or laugh if they need.

The HN suggested (i.hn.14) that the counseling room should be distant enough from the PICU since she expects families to react and express their pain in the same traditional way, i.e., crying loudly, mourning, or getting very angry, which affects both staff and patients, especially adolescents. They want this noise to be controlled. Yet families need a place where they can sit and even lay down, because some of them get very sick and have blackouts. Provision of oxygen supply and an oxygen tube is also needed (they often carry the oxygen tube outside for families). A comfortable and peaceful décor with soothing colors, blue and green tones, and natural light would help.

The layout of the unit to facilitate interaction between families and caregivers: Caregivers argued that their current relationships with families are very bad. A common room could improve this relationship. They don't know the families, and lack of adequate telecommunication eliminates the possibility of developing a relationship. Particularly when a patient dies, the phone is always busy since there is only one line. Therefore, families cannot reach the unit to receive information. Even the AP cannot reach the ICU many times over the phone. Administrators are afraid a second phone line would be abused. Yet the AP suggests this mentality needs to be replaced with a trust relationship: If people are free to use resources, abuse will reduce and disappear eventually. If they knew they could call their friends anytime, they wouldn't. If they provide pencils at staff stations, people may take them home for the first days but eventually they will stop doing that because they will know the pencils will always be there.

⁶⁷ Suing is one of the major differences in family behavior between the U.S. and Turkey: Turkish families are not aware they can sue, and Turkish laws do not protect family or consumer rights as much.

Therefore they need to provide the minimum PICU facilities first, and then wait to see what happens (i.ap.20.e). They should also remember they can lose big to save little.

Providing comfortable, familiar, and home-like atmosphere: Unlike the popularity of providing *home-like* and *comfortable* spaces in the U.S., the HR believed it could reduce staff performance if they provide the same level of comfort in the hospital like in one's home environment. She was against the transformation of the hospital to a home-like environment (i.hr.21). She also disliked the idea of designing a central support space providing a familiar and comfortable environment for staff and families. Similar supportive and familiar place functions would be a daycare for the children of staff, natural areas with plants and flowers, well-lit reading areas, a kitchen to prepare their meal, or sleeping areas for those who want to sleep during lunchtime. The time spent in this space would be very short for rejuvenating oneself for the long-term work period. As they go to other units, they would know they have a place to go back if they need.

Regarding *the lack of windows and lack of access to natural light*, the HP stated they could not do it because of the limitations of the existing building. They could do it if they had a larger unit with about 20 patients (i.hp.25).

Design Modifications Implemented After the Case Study

Important physical modifications took place in the hospital after the case study period: first, they built a hotel in 2003 for families' on-site accommodation in close proximity to the hospital building. The same year, they incorporated a new room for family-caregiver meeting and information giving function, which is in close proximity to the ICU. This room is located outside the ICU opposite the HA room, and in front of the locked entry of the adjacent Department (22). Before the 2003 renovation, the first room at the right of the corridor of this department was used as storage and nurses room, which has changed. The new meeting room is between the ICU and 22, and in controlled access to the entry corridor of the ICU. It is the only room at the first left in relation to the ICU entrance space. The entry system to 22 is through magnetic access, which eliminated the need for an in-between corridor space, which existed before. The meeting room was the meeting room of Neurology Department before the renovation. The meeting room has window and it is air-conditioned. It has a long rectangular geometry divided into two areas in the middle: The first area is used for many purposes including family meeting and conference room functions. In this space, they provided an L-shaped secretarial desk, where they will assign a secretary. Currently they still do not have a computer, which would better represent the ICU in the future with these progressive interventions. They also have two direct phone lines connecting to the ICU.

The room behind the meeting room is used for storage and nurses' dressing room, which has two spacious windows yet since it is the dressing room curtains block the views to outside. In the nurses' room, they provided a circular dining table for breakfast, a refrigerator, and hot water access. Although these amenities are progressive, this arrangement continues to sabotage the needed privacy for the meetings between the families and caregivers, repeating the chronic problems of shared spaces.

5.3 Evaluation Of Psychological Environment And “Needs”

This section deals with the psychological characteristics of participants, the recognition of their needs in place, and the evaluation of the practical and functional environment in response to those needs.

5.3.1 Psychology of Patient Family and their Need to Stay at the Unit

The three most important needs of Turkish families are 1) to see their child, 2) to receive information, and 3) to have a waiting room (i.hp.21). To start with the perceptions of the HP regarding family presence in the West, he conceived “family members do not stay in the ICU with their patients; even the families of the sickest patients are allowed temporarily.” Reminding the researcher of the fact they allow visitation hours, he referred to the behavioral differences of Western and Turkish families: “In the West, families leave the hospital once their patient is hospitalized. They come back during visitation hours to see their patient and receive information. Yet they don’t wait the whole time in front of the ICU,” he claimed. Although they tolerate families’ visitation behaviors, they reject parental presence if their demand to see their child interferes with the workflow and effective functioning of the PICU (i.hp.19).

This statement should not suggest that the HP perceived Western families as being less committed to their patients. He rather perceived Turkish families’ commitment as a traditional behavior, which relates to their educational and sociocultural level. However, it may be useful to remember that: 1) Western families have a waiting room and other support spaces in the hospital. 2) Most of the ICUs in the U.S., including the adult world, have 24-hour visiting schedules. 3) Western families are not very different from Turkish families in that they “stay” in the hospital. American families were sleeping on couches, chairs, even on the floor. Although their emotional, practical and functional needs are better satisfied, they also sacrifice from their comfort during hospitalization of a family member.

Recalling the demand of staff members for adding a few chairs in front of the ICU for families, the HP reminds that this space cannot be used as a waiting area since it is surrounded at four sides by a staircase, ICU, head assistants’ office, and oncology unit. The addition of chairs would make the problem more severe (i.hp.19). However, the problem was recognized, and solutions were searched.

Family-caregiver relationship varied according to the particular family, and could take place irregularly when the family needed to talk to the physician. In the future, they plan to offer: 1) Two daily face-to-face parent-physician meetings; one in the morning and one in the afternoon, even if the physician is very busy or the family does not demand it. The nurse will also be present at these meetings. 2) In the past, they did not ask for a second telephone number to call the family. Therefore they will collect more complete family contact information, and ask them to leave. 3) They also aim to build a trust relationship between the physician/nurse and family. Although they cannot prevent the crowd waiting in front of the ICU, they aim to reduce it about 30 to 50%. Even 10% reduction would be a gain (i.hp.19).

While these interventions are more sensitive to families’ emotional needs, they need to provide them with a waiting room where they can rest, relax, and have some privacy or interact with other families, even if it is located in a more distant area of the hospital. Particularly, families coming from other cities

need such a room. While they want to increase parental comfort and well-being, they cannot offer them a waiting room. Instead, they can allow [encourage] them to wait in other waiting areas in the hospital or at outpatient clinics. They believe even in the West, families are not given another space beyond the waiting room (i.hp.20). However, family support functions such as resource, grieving, sleep, and training rooms are also available in the U.S.

Regarding the education of families, the HP viewed illness as an opportunity to educate both the child and family regarding important health issues, including parental health, preventive medicine, prevention from accidents, protective measures for personal and public health, protection from solar effects, immunizations, and smoking (i.hp.22).

Environmental and Psychological Needs of Patients and Families

Families need to have access to 1) information, 2) education, and 3) a waiting room, yet their most immediate need is to see and communicate with their child. Caregivers very often stressed the “mom’s” needs rather than parental needs. The AP perceived that the trauma of separation (absence syndrome) is severe both for the child and mother, especially over extended LOS days. The need to stay with the mom is the most important need of a child. No matter how sick, all children should be able to have their mother present. Also for the mom [and dad], it is traumatic to send their child beyond closed doors. Occasionally the physicians come to ask them some questions and get their signature (i.ap.17; i.hn.18).

The second most important parental need is to be informed regularly, even if there is no change in the child’s status. Unrecognizing these needs and the lack of appropriate physical conditions extend LOS days (i.ap.17) because anything that impacts the parents impacts the child. They also need a private room where they can meet with the caregivers and discuss about their child’s situation, not standing up but sitting down (i.hn.18).

Third, families have no place to sit or rest. Even if they are not permitted inside the ICU, they should have a peaceful place outside where they can sit 24 hours. They wait for two reasons: 1) they are curious, and 2) they have no money to go to a hotel room. They need to have a place to have access to food, a tea kettle or coffee machine, handwashing/shower facilities, rest and sleep (i.ap.17; i.hn.18; i.hr.18).

There is a respiratory therapeutic value for the child if the mom holds her or him in her arms. If a child lies down constantly, fluid gathers in her/his bronchus. Therefore touching, holding, even squeezing the child enables her/him to do muscular and respiratory movement and discharge congestion. Other times, the child’s physical condition is good, yet the trauma of hospitalization exceeds the physical problem: Feelings of panic, fear, being surrounded by a crowded group of unfamiliar people, getting injections, and being accused of the behavior that caused hospitalization may reside in the child for a long term (i.ap.17).

Families are also responsible for finding needed medications. Yet it is unfair for the family to run after medications in such a stressful time. Besides, the family member taking care of medications cannot remember everything precisely especially if she/he is an older person. Rather than dealing with medications, families need to receive professional counseling services by a psychiatrist to calm them down

(i.hr.18). Since each family has one of the three different types of insurance provided⁶⁸, the provision of three different pharmacy departments for each insurance type would be ideal. Under this scenario, a particular pharmacy department (such as SSK), rather than the family, would directly contact the particular healthcare maintenance organization (such as SSK) to take care of medications.

Finally, the need for spiritual support especially for religious families was expressed: Caregivers argued families should be allowed to put a Koran, or a prayer book, on the patient's bedside, which may provide peace for the patient and family. The AP recalled research studies proving that coronary heart patients who prayed before by-pass surgery had better outcomes. Exterior views in their unit would also contribute extensively to psychological and spiritual health (i.ap.19).

The identification of psychological and spiritual needs, such as allowing religious support to enter the patient's bedside (whether it may be a religious book or a person, like an *imam*), revealed a major struggle of Turkey: Whatever is considered beneficial in the U.S. unit, it would be incorporated in the ICU due to a pluralist approach to healing. Yet it would be problematic to incorporate spiritual healing interventions in the Turkish ICU because Turkey, which is at the intersection of the East and West, is struggling with extreme pressures of identity, which sabotage most people from turning to religion (which symbolizes the Eastern culture and identity). Yet the exclusion of spirituality also prevents people and institutions from transcending from existing to higher states of knowledge, which are legitimate in the U.S.

The Need for a Physical Setting Conducive to Families' Presence and Well-Being

Two major reasons blocking FCC are the lack of time (and family education) and the lack of space. A physical setting conducive to family presence and well-being would ensure the provision of 1) information, 2) social support and staff time spent with families, and 3) family support spaces including a comfortable waiting room, a private meeting room with the physician, overnight accommodations in/outside the hospital, and 4) gardens. The HR also indicated the need for: 1) An outer layer of corridor enabling families to view inside the ICU through glass windows, 2) controlled views of the interior with miniblinds or curtains during resuscitations, 3) central monitoring system (despite its disadvantages), 4) noise control, 5) provision of a booth inbetween two rooms (i.cr.10).

Regarding family-caregiver meeting and counseling room, the CR indicated that families are usually at their homes when mortality occurs. They call them to tell their child is not doing well. They need to call family as soon as the child's situation worsens so families do not accuse them (i.cr.11).

The CR indicated families should never see resuscitation, and the patient must be absent when they inform the family about death. They need 1) to provide the family with a preparatory speech in a formal meeting room, and maybe 2) take them to a place where they can see the ICU, other patients, and

⁶⁸ The three types of social security/insurance organizations in Turkey are: 1) The Turkish Pension Fund (Emekli Sandigi or ES), a compulsory pension and health insurance system for civil service employees and their dependents, 2) The Social Insurance Corporation or SSK, which is the counterpart of the ES for private sector employees, 3) The Social Insurance Corporation for the Self-employed (Bag-Kur), a voluntary savings bank for self-employed persons.

the effort, so they can accept death, while the caregivers are not distracted. They should see it is not in their hands but God's will. Yet it would be still very difficult in the Turkish culture, because families are mourning, yelling, and do not react calmly. While crying is God's mercy, they often exaggerate (i.cr.12).

The duration of death and dying, i.e., if it is extended over a longer period of time, or very sudden and unprepared, impacts how to deliver the information. Physicians find it easier to deal with a chronic and expected death, where they can plan it and their relationship with the family.

5.3.2 The Needs of the Caregivers

The CA indicated his awareness of the notion of holding *caregivers' job satisfaction* in front of *family satisfaction* because if a caregiver is not happy, she or he cannot satisfy the needs of the patient and family. Therefore provision of *social interaction spaces* and *release mechanisms* is critical to staff satisfaction (i.ca.1.8). Practical, psychological, social and organizational needs of staff are also explored, with a focus on the physical environment.

Major Caregiver Stressors

The major caregiver stressor in the Turkish ICU is the high nurse-to-patient ratio: A reasonable ratio of 1:2, which would ensure good care, could not be maintained due to current human resources. Instead, the ratio was 1:3 during daytime and 1:5 during nighttime. Other stressors confirmed those as listed by Vachon and Pakes (1985) earlier in this study: 1) a "fish bowl environment," in which the families and exterior staff members can see and hear what they do and say, 2) transport arrival when the ICU is already full, 3) heavy workload, 4) learning to deal with equipment, 5) death events, especially sudden events, since there is no time to prepare the family; or the death of the patients who have been around for a long time, 6) multiple deaths; sometimes there are just too many sick kids and too many deaths following one another, 7) maintaining smooth working relationships and effective communications with many different members of the health team and visitors through a relatively small physical space, 8) expectations from caregivers to function at a high level of professional competence, 9) conflicting role expectations, and 10) distinguishing between role boundaries; problems with role overlap and over-stepping⁶⁹.

The Need for a Healthy Nurse-Physician Relationship

Most interview participants agreed there is a strained nurse-physician relationship in their facility and other Turkish hospitals, which is a cultural trait. The HP argued that nurses and physicians do not know how to interact more efficiently, and draw from one another's knowledge and experience. He argued that the improvement of job definitions and workflow could improve this relationship (i.hp.31). The

⁶⁹ Two caregiver stressors of the West did not emerge in the Turkish ICU: 1) A maldistribution of nurses among shifts, and a sense of discrepancy in the nurse's personal evaluation of her responsibility versus her competence, and 2) the conflict over the mode of death, especially with regard to parental presence, i.e., whether the parents should be allowed at the bedside when a child dies, sometimes disconnecting a child from machines to allow him to die in his parent's arms.

researcher observed that the nurse-physician relationship is limited because of the existing medical culture, in which physicians do not view nurses as their equals. Most nurses expressed, on the other hand, that they were not well respected by physicians, even the families and society. While physicians received all the credit for curing and healing the patients, most of them did not respect other caregivers. Within this kind of environment, where people were not treated equally, nurses felt uncomfortable to participate in the care plan of patients.

The AP suggested two sides of the same problem: 1) either the physicians are very narcissistic, or 2) the nurses do not appreciate the knowledge of the residents on rotation. Sometimes a nurse with 10-15 years of experience collaborates with a resident in the first two years of her or his training. They also encounter territorial problems in that the newcoming resident may behave the nurses as if she or he “owns” the place⁷⁰. However, they need to respect one another because they cannot function without the “other.”

The limited available space further sabotaged R.N.-M.D. relationship. For instance, there are not enough chairs at the staff station for nurses and residents. Nurses used the staff station less often when more physicians were around. Second, there was a desire to create two separate private [break] rooms, one for the physicians (who did not have office space) and another one for the nurses, where they can rest, change their clothes, and eat. The AP indicated if they don't provide equal opportunities and support spaces for both groups they could not improve this relationship. Before the renovation in 1998, both rooms were located opposite one another and within the vicinity of the main ICU ward (Figure 5.4; left). This provided not only respect but also increased communication and a healthier nurse-physician relationship. During that time, the AP was an HR, and had chosen her best friends among the nurses. Currently, they don't even know nurses' names (i.ap.28).

The Need for a Physical Setting Conducive to Rest and Relaxation

Provision of a staff break room: The most important need is the staff lounge. The HR indicated that they have very bad days, need to cry, and have a private place to drink a cup of coffee or eat snacks. A separate and air conditioned place for smokers could also help some caregivers to relax (i.hr.19; i.ap.15).

Access to food and beverages: The staff break room should provide opportunities to eat and drink, even prepare meals. Although the need for having soft drinks [except for water] intermittently during the day is not as common in Turkey as in the U.S. [because they cannot afford it], Turkish caregivers drink tea to stay alert. Yet they complained they never have time to finish a cup of tea. They also stay hungry for long hours. There is neither a cafeteria in close proximity, nor a staff refrigerator where they can store their

⁷⁰ Hospital administration and current staffing policies in Turkey do not support the nurses. Despite the length of their experience (they start the profession at an earlier age than the physicians), dedication, and intimate relationships with patients, the individual strength and skills of a nurse is the only tool for getting rid of her traditionally “repressed” and discriminated role in her relationships and communications with physicians. [Once again, the emerging theme is “the individual rather than the system is strong in Turkey.”] Turkish nurses should organize, network, conference, and get involved in research and education activities [showing negative patient outcomes due to the strained RN-MD relationship, and nurse's limited role in care plan] to elevate their profession in the eyes of healthcare industry, and in society in general.

food. Since they work for many hours without getting a meal, or snacks, their blood pressure goes down. Therefore, they need to have access to food and beverages, particularly cold water, tea, coffee and a coffee machine located in close proximity to the PICU (i.hn.15; i.ap.15).

Second, there are no hospital policies requiring staff to cover their beverages within the PICU. Due to the lack of a staff lounge, they drink from open cups and eat snacks at the staff station, thereby increasing risks for infection and accidents.

Hospital administration can intervene spatially supporting a healthy place and encouraging healthy eating and drinking habits by providing a staff lounge with a kitchen or kitchenette where staff can prepare their own food to their own taste. This step would also allow administration to prohibit the presence of open food and beverages in the ICU. Additionally, administration could offer healthy food such as healthy salads and drinks (in spite of the strongly flavored yet unhealthy Turkish tea caregivers drink all the time as if following an irresistible habit⁷¹), thereby increasing staff happiness and performance.

Separate staff toilet: A separate staff toilet is needed for infection control, privacy and enclosure. Currently, they rush even when they are in the restroom, because somebody else is knocking on the door. They also share it with families and male staff members, which is not comfortable (i.hn.15). They also need a private sink -since they currently use the same sinks used for patients- (i.ap.15), shower facilities, and a private space (i.ap.15).

Laundry facilities: The hospital laundry is not sufficient; therefore nurses and physicians take their own scrubs and linens home to clean, which they don't like.

Décor and atmosphere: The HR emphasized the importance of function and durability rather than the image, for instance, their drawers etc. get broken very soon although they look good. The provision of enough space and all needed equipment (self-sufficient ICU), equipment storage, they shouldn't call other wards when they need something, patients' personal effects storage, accessible patient cabinets (the current ones not accessible and most of them are empty), ability to find something when they look for something are other important functions (i.hr.24). Upper floors are better for the ICU.

The HR was opposed to providing a home-like and comfortable décor in the hospital claiming home and work are two functions that must be separated. When she is home she wants to feel the difference. The satisfaction of primary staff needs and functions, such as hygiene and comfort, a clean cabinet to put their towels, a bed for the visitor, counter space, tea/coffee machine, and carpeted floors (so they don't slide) would be nice to have, yet there is no need to personalize the workplace. All (doctors') rooms may be furnished the same reflecting the institutional character. Having a private refrigerator, mini-bar, a small private bathroom with washer, and a stereo would be nice, yet it doesn't have to be home-like, or like their home (i.hr.25).

Release mechanisms: The HR suggested they are land-locked; if they had more campus space, they could have a pool outside where they could go during lunch break, or a gym to go to aerobics (i.hr.19).

⁷¹ Drinking Turkish tea is almost identical with being Turkish, as experienced in Turkish hospitals and in the daily lives of many Turkish students living in the U.S.

Behcet Uz Children's Hospital in Izmir has such a facility, which is a unique hospital site nationally not only because of the chances to have access to the luxurious pool of Hilton Hotel located adjacent to the hospital [providing chances to exercise at the workplace] but also due to its intense nature qualities.

Individual strategies: Finally, individual strategies influence rest, relaxation, and happiness. Despite many physical barriers minimizing the chances for resting, the HR used lunchtime for sleeping every day. She is able to sleep in the doctor's room in spite of extant natural light. Although she was not able to sleep in the ICU, she usually slept when working in other pediatric wards (i.hr.4).

Psychological, Social and Organizational Needs

Similar to environmental needs, the psychological needs of the caregivers are relatively easy to satisfy. First, the AP referred to the *psychological hunger* of staff because their needs to be seen, recognized, appreciated, known, and shared are left unsatisfied. She doesn't *know* the residents, their problems, hobbies, what makes them happy or sad, or their expectations. There is no time to chat and deepen the relationship. They only evaluate one another through their work performance. Night shifts are difficult, and residents may be sleepless or very tired. Yet no personal relationships are flourished in this atmosphere. Thus, the lack of staff communication may be the main psychological problem (i.ap.16).

Participants, especially female caregivers (AP, HA, HN and bedside nurses) honestly expressed their feelings about death events, and communicated their need to receive *professional psychological support and counseling services to deal with death and dying*. They work with the sickest patients and go through very sad and stressful events, such as arrest, resuscitation, and death. They lose patients they cared for days and weeks⁷². They even feel as if their caregiving does not have any impact, particularly when there are too many sick kids and too many deaths following one another (i.hn.15).

The "nurse syndrome of exhaustion" was another psychological problem. The HN reported she felt even more tired than other caregivers because everybody asks her everything, she answers everybody at the same time explaining same things over and over, she has to keep an eye on equipment, to solve discussions and make peace among arguing people (i.hn.15). (There may be more discussions and social conflicts in Turkish hospitals due to high stress.) She often feels incompetent due to this heavy workload.

As a visual and psychological need, caregivers want *to see outside* because they get depressed from staying in the same room the whole day. Sometimes they cannot even breathe in this place because the A/C does not work efficiently, and it gets very hot or smells very bad (i.hn.15).

In terms of *the need for social interaction*, the HN suggests they work together so they need to be able to socialize. Yet the hospital does not organize any social events and activities for staff outside the PICU. There is simply no time (i.hn.15). Therefore, the satisfaction of the need for socialization is a function of the social skills of an individual.

Rotation for nurses: Residents are on rotation in the ICU for one month so they can tolerate the lack of a comfortable environment. However, the nurses do not rotate; they always work with very sick

⁷² The handicaps of caregivers' emotional bounding to patients are discussed in U.S. nursing literature.

patients without getting any rest. Hospital administration increased their salaries to make it easier for them to manage with stress and increase their emotional well-being (i.hp.23). The nurses, on the other hand, claimed that the difference in their salary is not worthy of recognition. The HP mentioned they would also improve the physical environment for the nurses if they had evidence it would increase their performance.

The HR claimed that “the girls” (nurses) spend their life in the ICU, always dealing with very sick patients, and working too hard. When they pass out, residents were getting them from the floor (i.hr.6). They may need a separate cafeteria for lunch, and special food prepared for them. The idea of separating social/support spaces for nurses and doctors, such as break room or cafeteria, suggests the presence of a strong social segregation and stratification in Turkish society among doctors and nurses, unlike the U.S. where these two groups are more comfortable with one another. Vacation, social support and counseling services are also important for nurse retention (i.hr.19).

Supporting staff members: *Everybody does not have to do everything. The HA mentioned the need for having specialized blood draw teams so nurses and physicians do not need to do that, and their relationship with the patients is not damaged due to patients perception’ of them as causing pain.*

5.4 Evaluation Of Caring And Technology

This section deals with the cultural diversity of the Turkish setting as a function of the *social* characteristics of the participants (i.e., patients, families, and the caregivers), and the resulting social practices and caring philosophies in response to specific cultural needs and characteristics.

5.4.1 The Role of Technology and its Relation to Caring

Technology and caring are two basic alternatives offered for healing. Unlike the U.S. setting, where caregiver-technology interaction was a dilemma of the ICU environment, Turkish caregivers’ criticism of technology emerged only after the need for providing an adequate physical environment and satisfying the psychological and practical needs of occupants. Therefore technological needs were better recognized than the physical and emotional environment, and the level of technology was highly appreciated due to the provision of state-of-the-art equipment: The PICU was well equipped with two Siemens 300, four Newport, one PLV and one SLE ventilators. The SLE ventilator was capable of HFOV, an advanced mechanical ventilation mode due to its high frequency oscillation feature (Source: hospital website). The CA found technology as the most positive feature of their ICU, claiming they may have better equipment than the hospitals he visited in Canada (i.ca.1.17).

In general, Turkish caregivers’ criticism of technology stemmed from different reasons (e.g., not due to increased dependence) than in the U.S.: It related either to the lack of the best available technology, sufficient computerization, and enough equipment, or to the medical errors caused by the lack of sufficient understanding of that technology.

In the literature review, a short criticism of technology by Ivan Illich (1976b) was provided: Comparing the attitude of developed and developing or underdeveloped countries to technology, Illich

observed the universal demand for modern hospitals with cutting edge technology. However, the poorer the country, the more expensive it is to provide for that technology, including modern patient beds, mechanical ventilators, and operating room equipment imported from developed countries. The maintenance of technology in developing and underdeveloped countries is another problem due to unpredicted local factors such as climate, and the lack of adequate repair/maintenance technicians, which reduce its performance. Finally medical errors that result from caregivers' lack of knowledge in using high technology would cause serious clinical problems, including death.

While Illich criticized modern technology due to its degrading consequences in those countries, the criticism of modern hospital technologies may sound out-of-context in Turkey, which struggles to obtain technology. Yet caregivers reported the malfunctions of technology and the errors caused by it.

Medical errors: Participants' normative statements and researcher's observations confirmed the argument that foreign technology may be used without a full understanding of its applications, thereby creating stress, medical errors, malfunctions, even death (i.ap.3). In the past, they have encountered serious problems with mechanical ventilator due to lack of sufficient knowledge to operate it when it failed to work in expected ways. Another time, they experienced a malfunctioning due to the lack of an adequate hemodialysis machine for a certain age group.

Comatose patients: The medical decision to separate a comatose patient from the mechanical ventilator was explored. No standardized rules exist in Turkey to determine brain death, or to separate a patient from the mechanical ventilator. Instead, they try to keep a patient alive until the last minute. A physician can never decide about this decision by himself. Yet the quality of care given for a long-term patient significantly reduces in time. Therefore, rather than the brutal decision to stop ventilation, they end his life in a less visible way extended over a longer period of time (i.ap.33).

The length of resuscitation: Having been informed that the resuscitation process usually does not extend beyond 20 minutes in the U.S., the researcher expected to find a different resuscitation length in Turkish hospitals due to the different approaches of the two cultures towards death and dying. The AP reported that she would usually not give up before 20 minutes; she would at least try 30-45 minutes if the patient's status was promising. Yet if they know the patient's life standards will be very low even if she or he survives, they can give up after 15 minutes. Therefore the length of resuscitation depends on the patient's status and the physician's experience (i.ap.34).

The relationship between technology and computerization: The domination of caregiver activities by computers and computerized charting systems in the North American ICU was defined as an important outcome of the ICU technology in the fourth chapter. Comparing the U.S. case to Turkey, the most important technological difference may be in the level of computerization and in the changing nature of knowledge in the former, being the most computerized society of the world. It is expected that the gap between developed and developing countries will grow wider in the future as a consequence of computerized knowledge systems (Sarup, 1993).

5.4.2 Care Models and Philosophies

Transition to Family-Centered Care

The researcher explored whether it may be possible to transition to a patient focused and family centered care (FCC) model in Turkey, increasing families' participation in care, especially in PICUs and children's hospitals. To indicate their openness to FCC, the HP claimed they have always behaved critically ill children and their families kinder and more tolerant. Due to the increased nursing shortage in recent years, and families' indication of their demand to participate in care, they also changed their policies regarding parental presence: They started to accept one parent at the bedside, *if approved* by the HR and AP. They need family support and FCC in all pediatric wards, while in the ICU they need it the most, allowing families to visit their children as often as possible, informing them regularly, and letting them participate in decisions regarding their child's care (i.hp.26). However, these good intentions were not realized in 2001, mostly due to the lack of space and an adequate physical environment.

The second most important challenge with FCC in the Turkish model will be to deal with the differences in families' education level, and their ability to understand their child's disease. The HP suggested they might need to determine if FCC would be appropriate for each family⁷³, yet it would be difficult for the inexperienced and unstable residents and nurses. Therefore, the head nurse⁷⁴ has a critical role to play as the only stable member of the ICU team in building healthy and professional relationships with families. The triangular relationship between the resident, HN, and family will enable her to cover up the weaknesses of residents in the long term, and learn from them (i.hp.26; i.hp.31).

The meaningful relationship between the HN and HP was further discussed. The support the HP receives from the residents is different than the knowledge he gains from the HN. For instance, in the NICU, the HN coordinates the management of the mom's room, which has a frequently changing population. At the same time, the HP and other administrators provide her needs in this room, such as a refrigerator, yet they have to prevent this space from converting to a cafeteria to maintain hygiene and safety. In general, the HP prefers not to interfere with patient-caregiver relationship. Yet he wants them to know he is present when needed (i.hp.26).

Although the HR said she was supportive of parental presence, she claimed: "It is not possible to educate families no matter how much you explain." Yet they can still give them information (i.hr.8). Two reasons preventing them from providing families with regular information, psychological and social support, and education are 1) the staffing shortage and 2) the lack of space. Also, they may be aggressive

⁷³ To ensure there is no discrimination of ill-educated families, administration may need to set a standard policy regarding families' minimum education, such as primary or high school, to allow FCC.

⁷⁴ The HN needs to have 1) a thorough knowledge in nursing, 2) sufficient work experience in various pediatric wards and pediatric diseases, 3) healthy relationships with other staff members and patients. They choose younger nurses for the HN position at inpatient wards (due to 24-hour service requirement) while older nurses serve at outpatient clinics. Nurses draw free from night shifts after tenth year (i.hp.26).

due to the heavy workload. Misunderstandings, being very tired and sleepy (perceived fatigue), and working for 36 hours without going home affect their behavior towards families negatively (i.hr.8).

36-Hour Shifts

The first-year-residents have to keep night shifts, which results in approximately 36 consecutive work hours, often without getting any sleep or rest. The disadvantages of caring for so many hours on physician well-being and performance, patient outcomes, and physician-family relationships were explored. Although the performance and decision-making skills of a resident will significantly reduce during 36 hours, the HP claimed (i.hp.37): 1) This practice lasts only for one year, enabling them to get exposed to various diseases.⁷⁵ 2) Residents do not make clinical decisions, but only follow the orders of the CR. 3) During daytime, they have the support of three head assistants located within a few meters from the ICU, and at night, there is one head assistant on-call. 4) They also have the support of attending physicians and visiting professors of specialty departments.

The HP admits that 36 hours of caring is difficult, and they would like to change the protocol in the future. However, it is due to current human resources and the flow of residents, assistants and nurses, which is determined by the national health plan. In order to stay at the top rank of public hospitals, they have to use their resources more skillfully: they use the residents for 36 hours, and give them a rest for 24 hours. They also reduce the resident's workload during the second day, transferring it to the other resident who will stay on-call. The HP believes this practice does not negatively impact the ICU, although it could be harmful in a more crowded unit (e.g., about 30 patients) (i.hp.37). Figures 5.9 and 5.10 indicate the physical environment and social atmosphere of caregiving at the patient's bedside in the Turkish ICU.



Figure 5.9: A Comatose Patient Surrounded by Bedside Technology, Turkish PICU

⁷⁵ Both the AP and HP stressed the importance of the first 12 months in the training of residents: This may be a threshold when they become more reliable in their expertise and specialty training.



Figure 5.10: Professional Staff Interaction: Physicians and Nurses on Consultation, Turkish PICU

5.4.3 The Psychology of Death and Dying: A Meaning-Giving Experience

“How do you feel when a patient dies? Do you ever feel being in the hospital prevents the right of a patient to die peacefully at home or a familiar setting with her or his family? How humanistic do you find the PICU with regard to dying?” In the Turkish setting, the question focused on the emotional and spiritual aspects of death and dying. In the U.S. setting, on the other hand, the same question addressed the functional and rational aspects linked with death and dying rather than its meaning: *“How do you cope with death? How can the physical environment respond to your psychological needs, and the needs of families, after a patient dies?”* The reason for this shift was to simplify the question in the U.S. setting, which carried too much meaning to handle and made it difficult to answer.

Home care of terminal patients: Caregivers approve home care when they are certain a patient will die (i.cr.13; i.hp.43). Yet it is important to stabilize her or him. The HP mentioned it was more common in Turkey to send terminal (i.e., very sick) patients home during the eighties, when he was opposed to this practice. Currently, the opposite trend is dominant: More families prefer to keep terminal patients in the hospital until death. However, if they know death is inevitable, it is a tough decision. That is, there are times when a person (a child) *deserves* to die at home, yet it is critical to distinguish her or his emotions and motivations: If she/he is crying to go home, is it a simple cry or are there deeper emotions? They also need to know how good the family will take care of and *tolerate* the patient. Therefore, they need to distinguish the situations when a patient needs to stay in the hospital and when she/he deserves to die at home. The problem in Turkey is that the standards to make this decision are ambiguous. Even if they were precise, it would be difficult to evaluate each situation. Also, there is always something they can help with at the last minute in the hospital (i.hp.43). These indicate the need to improve the criteria to determine the convenience of this care model in Turkey. If they should allow a patient to die when they wish was another theme: When a patient has a lot of pain, she may want to stop the procedure and die peacefully, which they do not allow most of the time (i.cr.14).

To inform humanistic design issues in the PICU, the HP emphasized the need for training supporting staff members other than nurses and physicians, and getting support from families' presence and participation in care. Although he finds their ICU humanistic, it needs improvement regarding the provision of a waiting room and staff support spaces. Yet he reminds us there was no allocated space for those functions, including the ICU. He believes their critical care service is distinguishable not only citywide but also in the country. While spatial configuration, architectural programming, workflow, manpower and human resources need to be improved, what they have is an important gain (i.hp.44).

The HN has conflicting perceptions regarding the level of humanism in the PICU, depending on the patient's status. If it is a terminal patient, she finds it inhumane to give injections, draw blood, and do the aggressive and invasive procedures. Yet they provide care and love; and if the patient has a chance to survive, all medical and non-medical procedures seem to be meaningful and humanistic (i.hn.37).

5.5 Conclusion

To summarize interview findings conducted with Turkish caregivers, there was a lot of emphasis on the functional, pragmatic and rational, i.e. the "lower needs." Yet the hierarchy of needs reflected four different categories: 1) Physical, spatial and pragmatic: Problems related to the current physical environment and lack of minimum facility and service guidelines and standards, such as infection and noise control. 2) Psychological (occupant needs): Provision of FCC and a physical environment supporting FCC; taking staff needs, job and role satisfaction, and happiness seriously; providing them with rest, relaxation, and socialization opportunities. 3) Human interaction with technology and caring: Description of the level of technology, staff interaction with and competence over technology, problems with insufficient computerization; criticism of social practices and the current institutional culture, such as the 36-hour shifts and the limited participation of women and nurses in hospital administration; the meaning of death and dying. 4) Cultural, societal and organizational: Cultural differences, diversity, and cultural identities, such as the patriarchal and authoritarian culture, the "repressed" female identity, and the feeling of impotence.

In response to those needs, a number of design interventions are recommended: 1) Provision of minimum PICU facility and service guidelines (e.g., 24 hour/day emergency communication to the PICU, standardized admission and discharge policies, system of record-keeping, standardized brain death criteria), 2) transition to family-centered and patient-focused care and Planetree philosophies (improving visitation policies and expanding the presence, participation and role of families in care), 3) expanding the role of females (who are more capable of relating to others and socializing), especially nurses, in every aspect of the caring practice and administration, and supporting their contribution in care by providing female place functions and activities, such as kitchenettes and social interaction rooms, 4) taking social relationships seriously, intervening to improve them, recognizing and respecting the social skills of Turkish people through place functions and activities supporting social interactions, 5) initiating simple interventions for a "culture-shift," and evaluating their impact on occupants and the organization, and 6) recognizing the impact of the total ICU environment on healing. Tables 5.9 and 5.10 summarize these findings.

TABLE 5.9

The Hierarchy of Needs and Corresponding Healing Functions for the Pediatric ICU Environment

Outcomes of Healing Functions	Hierarchy of Needs & Corresponding Healing Functions	
LOWER NEEDS: FUNCTIONAL, PRAGMATIC & RATIONAL OUTCOMES	LOWER NEEDS: FUNCTIONAL, PRAGMATIC AND RATIONAL	1
Reduced length of stay (pragmatic measure) Patient transfers	Infection Control	RATIONALISM
Reduced perceived pain	Storage and Ordering Systems	
Reduced pain medications	Noise Control (sleep quality)	
Reduced emotional distress	Air Quality	2
Reduced perceived fatigue	Rest & Relaxation (fatigue control)	
	Absenteeism	
MEDICAL & TECHNOLOGICAL OUTCOMES	MEDICAL AND TECHNOLOGICAL	
State-of-the-art technological equipment	Perceived medical & service quality	TECHNOLOGY
Specialized nurses and physicians	Perceived technological compatibility	
Improved place functions and activities	Nursing time spent with the patient	
CULTURAL, SOCIETAL AND ORGANIZATIONAL OUTCOMES	CULTURAL, SOCIAL AND ORGANIZATIONAL	3
Family time spent with the patient	Social interaction	SOCIAL INTERACTION (LOVE AND CARING)
Perceived respect for family role	Sense of place	
Caregivers' job satisfaction	Sense of community	
Caregivers' perceived control in job	Progressive leadership	Sense of community
Perceived teamwork & collaboration in unit	Caregivers' job satisfaction	
Perceived medical and service quality	Perceived staff control in job	
Commitment to hospital	Staff communication	Family centered care
Willingness to recommend the hospital	Teamwork and collaboration in unit	
Emotional distress	Caregivers' commitment to hospital	
Absenteeism	Family centered care	
Nursing time at bedside	Family time spent with the patient	
	Perceived respect for family role	
	Perceived quality of relationships	
	Willingness to recommend	
HIGHER NEEDS: EMOTIONAL & SPIRITUAL OUTCOMES	HIGHER NEEDS: EMOTIONAL & SPIRITUAL	4
Controlled emotional distress	Social interaction	DEATH, DYING, EXISTENCE
Stress reduction	The need to chat & deepen relationships	
Increased positive social interaction & love	Teamwork and collaboration in unit	
Increased teamwork & collaboration	Caregiver's role satisfaction	
Caregiver's role satisfaction	Perceived staff control in job	
Perceived staff control in job	Patient control in hospitalization	
Increased staff performance	Overall satisfaction	
Overall satisfaction	Positive distractions (nature, water)	
Commitment to hospital	Spiritual support	
Increased meaning & spiritual transformation (self-transcendence)	Psychological hunger to be "seen"	

TABLE 5.10

Expected Occupant and Organizational Outcomes of the Proposed
Functions in the Turkish PICU
(Outcome Measures adapted from Berry, L; Parish, J.; Ulrich, R.; Varni, J.; 2003)

Functional Design Solutions Outcomes	Occupant Outcomes	Organizational
INFECTION CONTROL	PATIENTS	Costs
Clean utility room	Medical errors	Revenue
Separate restrooms	Nosocomial infections	Staff/physician attraction
Handwashing facilities	Rehospitalization rates	Staff retention
STORAGE AND ORDERING SYSTEMS	Sleep quality	Institutional culture
Medications storage	Reduced length of stay	Market share
Equipment storage	Patient transfers	Philanthropy
Emergency equipment storage	Reduced perceived pain	
Counter/cabinet space	Reduced pain medications	
Radiation control	Increased overall satisfaction	
Proximity of supplies and storage	Reduced emotional distress	
NOISE CONTROL	FAMILIES	
Human noise (cell phone)	Time spent at facility and with patient	
Equipment noise (A/C)	Perceived medical and service quality	
Unnecessary noise (TV)	Perceived respect for family role	
AIR QUALITY	Commitment to hospital	
HVAC control	Willingness to recommend	
Infection control	Overall satisfaction	
Odor control	Emotional distress	
POSITIVE DISTRACTIONS	NON-PHYSICIAN CLINICAL STAFF	
Windows, nature, daylight	Job satisfaction	
Music, artwork	Perceived control in job	
STAFF SUPPORT SPACES	Perceived teamwork in unit	
Break areas	Perceived fatigue	
Access to nature	Perceived medical and service quality	
Staff lockers and R.N. room	Commitment to hospital	
M.D. (doctors') room	Willingness to recommend	
M.D. on-call room	Emotional distress	
Conference/meeting room	Absenteeism	
FAMILY SUPPORT SPACES	Nursing time at bedside	
Waiting room	PHYSICIANS	
Toilet and kitchenette	Role satisfaction	
Personal effects storage	Perceived control in job	
Family counseling room	Perceived teamwork in unit	
PATIENT AND FAMILY CONTROL	Perceived fatigue	
Parental presence in the ICU	Perceived medical quality	
Comfortable seating	Perceived service quality	
Lighting	Commitment to hospital	
Noise (lack of television)	Willingness to recommend	
Privacy	Emotional distress	

CHAPTER VI

ANALYSIS OF PARTICIPANT OBSERVATIONS AND BEHAVIORAL MAPS CONDUCTED AT THE TURKISH HOSPITAL

The previous chapter summarized the analysis of the emerging ideas and findings resulting from the in-depth interviews conducted at the Turkish children's hospital. This chapter analyzes the participant observations recorded simultaneously including: 1) in-depth field notes recorded on structured or semi-structured observation sheets, and 2) behavioral maps recorded on the floor plan of the ICU.

The interview method explored caregivers' reflections on the most needed environmental and social modifications of the PICU. Observations, field notes, and behavioral maps, on the other hand, included the presence and behavior of all participants to cover all observable aspects of the PICU atmosphere and provide a more reliable account.

6.1 The Observation Method

The in-depth observation of patients, families and staff members as a whole provided a major source of information for the Turkish PICU since no hospital rules or standardized policies were established to protect patient and caregiver rights, including privacy, which would prevent the researcher from participating at the PICU atmosphere and events to the same level that she did. While Turkish hospitals may evolve towards increased patient and caregiver privacy in the future, and become less accessible places for social scientists, the level of freedom the researcher had during this particular study enabled her to better understand the social and spatial problems of Turkish hospitals. An important factor that enabled her to witness and to be informed about many private matters related both to the welcoming and straightforward nature of the Turkish culture and the fact that she is Turkish.

These observations were critical to understanding the emotional, practical, and physical atmosphere of the PICU, revealing behavioral cues not expressed during interviews. Continuous-interval recording technique identified participants' behaviors, activities, social interactions, and background variables. A new observation or behavioral map was recorded every fifteen minutes on a new observation sheet or the floor plan of the ICU. Controlled observation intervals and locations and a semi-structured protocol to guide the categories to be observed produced standardized notes. Although the scale was different, the observed categories were the same as in the U.S. setting (Chapter 4.1).

6.1.1 Observation Strategies

Observation Locations

A mobile mode was used, shifting observation locations systematically in the unit. Even though the ICU was a very small and limited space, there were still opportunities to change the location from the interior or exterior of the staff station to patients' bedsides, and the isolation room, which is the only single room in the ICU. The unit accommodated 10 patients and included one centralized staff station. Based on this spatial organization, five observation locations were selected (Figure 6.1), including the staff station, the bedsides of patients in three different patient zones, and the isolation room. Although the ICU was a small environment, it was usually very dense in activity level, and it was impossible to carefully attend to all events at once. Therefore, during each 15-minute interval, the researcher focused on one of the five areas in the unit, except for the introductory and concluding observations at the beginning and end of each 3-to-4-hour session. There were no step-down or other parallel pediatric critical care environments to compare the results, except for the NICU, where no structured observations were conducted.

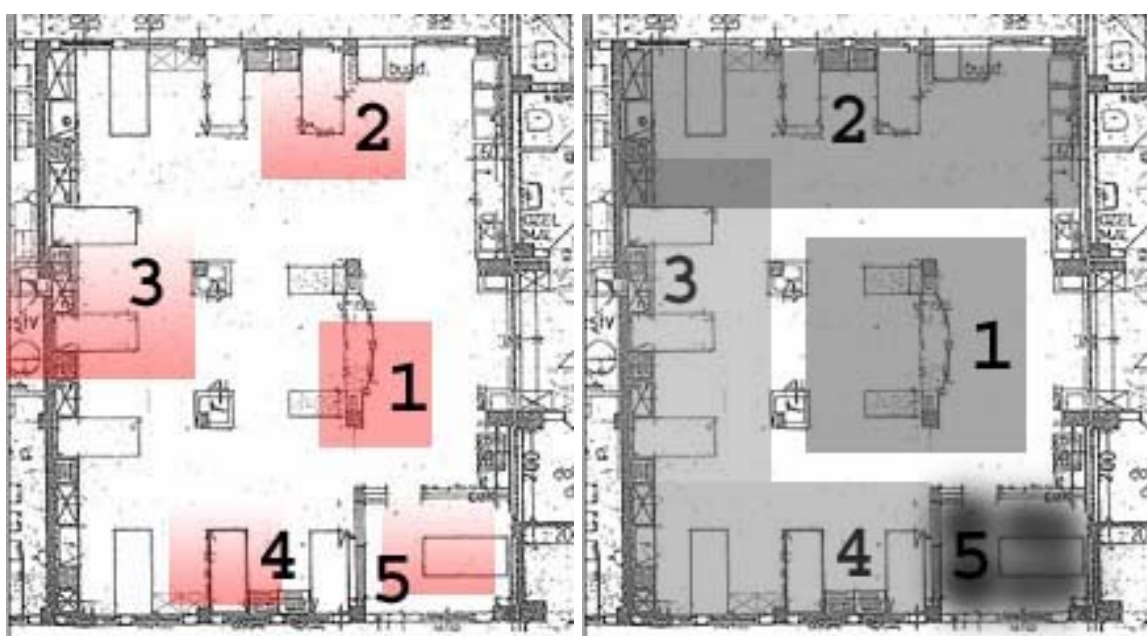


Figure 6.1: Observation Locations (Left) and Observed Areas (Right) in the Turkish PICU

In order not to interfere with patient care, most observations were conducted from the staff station. The researcher also changed her point and position at the staff station to more closely observe the particular patient zone observed, and to experience the different perceptions of the caregivers and other participants from the interior and exterior zone of the staff station. Observing the ICU by standing up from behind the

staff station allowed a more careful observation and a larger visible area, which produced a wider variety of recorded activities. However, when she became tired due to long hours of observation, she sat down in the interior zone of the staff station, which was interrupted more often due to social interaction with the caregivers using the resources at the staff station and asking what she was recording.

Observing the unit from within the staff station, which is the most central and active portion of the ICU, allowed the observation of five zones: Zone 1 was the caregiver zone that included both the interior and exterior zone of the staff station. Zones 2 through 4 were patient bedsides, which provided visual data on the patient-caregiver, patient-family, and caregiver-family relationship. Zone 5 was the isolation room.

There was no designated hallway, which would allow more spacious and comfortable movement opportunities for the caregivers, equipment, visiting external people such as families, administrators, maintenance people, and the transportation team of equipment technicians that bring a patient in or out. Instead, all circulation patterns were limited to the area between the staff station and patient beds, which always had to pass around the staff station.

Finally, no observations could be conducted in social interaction spaces such as family waiting room and staff lounge since they were not present. Instead, the nurses' room was the only place where further observations could be made during interviews.

Behavioral Mapping

Behavioral maps were based on the same criteria as described in Chapter 4. Although the bedsides of patients were accessible (unlike the U.S. setting) to record observations, most of the behavioral maps in the Turkish unit were conducted at the staff station, which resulted in 152 maps in June and July 2001 recorded during fifteen days. This indicates an average of recording 10 maps daily for 2.5 hours. The total amount of time spent for behavioral mapping varied from a minimum of two hours (6 maps) to a maximum of six hours (18 maps).

Observation Times

The researcher conducted observations and behavioral mapping in combination to describe morning, evening, and nighttime in the ICU during a four-to-eight-hour period. Despite the value of observing the ICU during the change of shift hours, due to the low level of staffing during night shifts, the change of shift in the morning was not a peak time to observe in the Turkish PICU. Regular observation times ranged from 8:30 AM to 6 PM for four weeks. For the last week, the night interval was observed beginning from 5:00 PM to midnight, with one night from 11 PM until 4 AM to test the validity of the emerging generalizations from daytime observations.

At the end, 200 participant observations were made and 152 behavioral maps were generated in Turkey. Table 6.1 illustrates the final schedule and location of observations.

TABLE 6.1
The Observed Turkish Experience
June 7, 2001 through July 17, 2001 (26 days)

Observation Period	Observation Duration	Number of Observations	Number of Behavioral Maps
8 AM to 8 PM	127.25	200	152

Distribution of Observation Sessions and
Blocks of Observation Times

Selected Points (5) of Observation	Morning (M) (8 o'clock to 11 or 12 o'clock)	Afternoon (A) (12 or 1 o'clock to 4 or 5 o'clock)	Evening (E) (4 or 5 o'clock to 7 or 8 o'clock)
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Staff Station

Patient zone 1

Patient zone 2

Patient zone 3

Isolation room

Note: Every block of time lasted approximately for three to four hours at a specific point of observation, and was usually divided into twelve fifteen-minute intervals, with a different observation sheet or floor plan for behavioral mapping every new interval.

Observation Categories

Recorded observation categories were parallel to the U.S. study (Chapter 4.1.1). At the beginning of each block of 3-4 hours of observation, general information was noted on the starting sheet. In addition to noting the date, time and observation number, the researcher recorded the number of people present on the unit, their job titles, the family members' presence and behavior at the bedside, the nature and severity of patients' status, and the equipment attached to them, as well as the general atmosphere reigning in the unit, general environmental appearance, foreground and background sounds (sudden noises and alarms), illumination levels and temperature.

On each 15-minute recording sheet, the observer recorded the events, medical and non-medical procedures, the changes in the visual and audial environment; the visual and vocal behavior of patients and the things at which they look unless they are sedated; the caregivers' type of attention and interaction with

the patient, their proximity to the patient and their tactile, visual and vocal stimulation of the patient; the presence, behaviors, and caregiver functions of family members, and their interaction with their child and with the caregivers.

In all observations, the researcher paid special attention to the use of bedside space, the impact of the presence of monitors, ventilators, and other equipment on the practice of caring, the functionality of the spatial organization, and the behaviors and social interactions specific to the local culture.

Observation Protocol

The same observation protocol was used as in the U.S. setting, which is described in detail in Chapter 4.1.1, including: 1) predesigned observation sheets, 2) the floor plan, and 3) behavioral coding charts. Figure 6.2 represents a sample filled-out observation sheet from the Turkish ICU. Figure 6.3 illustrates a sample behavioral map recorded on the floor plan of the Turkish ICU. The available floor plan from the Turkish unit did not include all details of the spatial organization, and did not match totally with the real physical situation, yet it indicated the basic arrangement of the ICU.

Behavioral codes helped the observer to describe an increased number of events and activities. In addition to the universal activities, behaviors, and social interactions expected to occur in a PICU, the behaviors that emerged in the Turkish ICU were incorporated (Table 5.4 summarizes the resulting coding charts used for both case studies). While these codes guided most of the recording, unexpected events and activities, that would not easily lend themselves into behavioral codes, were also included.

6.1.2 Analysis of Observations, Field Notes and Behavioral Maps

Twenty-six days of data collection, which lasted for 6 to 9 hours per day, produced extensive amount of data. The analysis process was similar to the analysis of the interview method, transcribing verbatim all field notes, behavioral maps, and journal notes, and dissecting this data into discrete units of analysis, which were then classified into relevant categories. Emerging categories from this data enabled connections between different themes, some of which appearing more often, thereby informing six major categories resulting from observations and behavioral maps, which were compared against the categories derived from the interviews. The differences between quantitative and qualitative analysis of behavioral maps were described in previous chapters (Chapter 4.1.2).

7/4 Wednesday 4 observations

CONTINUOUS INTERVAL RECORDING 1 Behavioral map

CODE #: 0.7.4.1
 INTERVAL: 15-30-30
 OBSERVATION LOCATION: H/S cot Observation #1

Obs #1
 EVENTS: 1) Pat came to the desk to request portable PEG, they didn't give it. That's a rule, so why do people keep asking? (Tunçay)
 2) Grandpa came to desk to see his grandson / daughter. They rejected simply his request but v. gently (Sideris). Difference from obs P to another. He came from long distance. Thus they said him they will allow his presence 1/2 hr. later, ~~later~~ after a critical patient came to PICU.
 3) They also reject some other v. gently, explaining that they only allow parents
 4) Staff Yst. came with his portable bed/cot / chair to transfer Muri to Department 3B. HM adjusts / organizes the many cables. Mum / relatives comes to desk to ask where he has been transferred.
 MEDICAL & NONMEDICAL PROCEDURES: (M2) HM repairs equipment #2 (Ment) Monique takes tape into her arms HM talks to Monique
 5) Tunçay's grandpa comes again to see him but rejected gently again with a longer explanation about his status.
 6) Exterior door stayed open for 3-4 min, # Ps got irritated and worried that it gets closed.
 7) Ibrahim @ PC, telling probably Ayşe Supur's sodium (Na)

135
36

 potasyum
 8) Büyük yemeğin boyut aygıtı, kırması için yemeğin, kafesin kovanı, eller
 # 1-3: 7: sitede beş, looks to İker when he comes close. koturundan yatağına başlı. plastik eldiveni, beyaz ayakkabıda
 # 2/5/8: - nuru yatağında 2 tane kurumu kısı gıfandı. yeme tabaklarını üstüne dikke kaydı (ne kuller hijyenik?)
 # 3-6: 9: yeni bebek kuma odununa geçildi. Hemen wablatma. kışkında. enüde getims olabilir ama Ozel şifre olabilir. Memelilerin amare dağıtılmasında yeme eki 3 ünütlük etti.
 # 10: yatağın altına yeme yyer. Dönerbuzulu Kıtılış Taburda Kanallıkta. Kırmızı arabalarında pup-cam şifre. Ba aynı plastik.
 genel ortam Sakin, stable. yeni ekipman ilümlük yok.
 ENVIRONMENT:
 • Use of Bedside Space:
 • Change of Décor & Equipment:
 • Sounds (Sudden Noises, Alarms & Other Sounds):
 PATIENT'S:
 • State, Comfort & Well-Being
 • Visual & Vocal Behavior
 • Things/ Places at which she looks
 - bir ağzında plastik. İki plastikin birdeki / ortasındaki desken aygıtı etti.

Figure 6.2: Sample 15-Minute Continuous Interval Recording Sheet

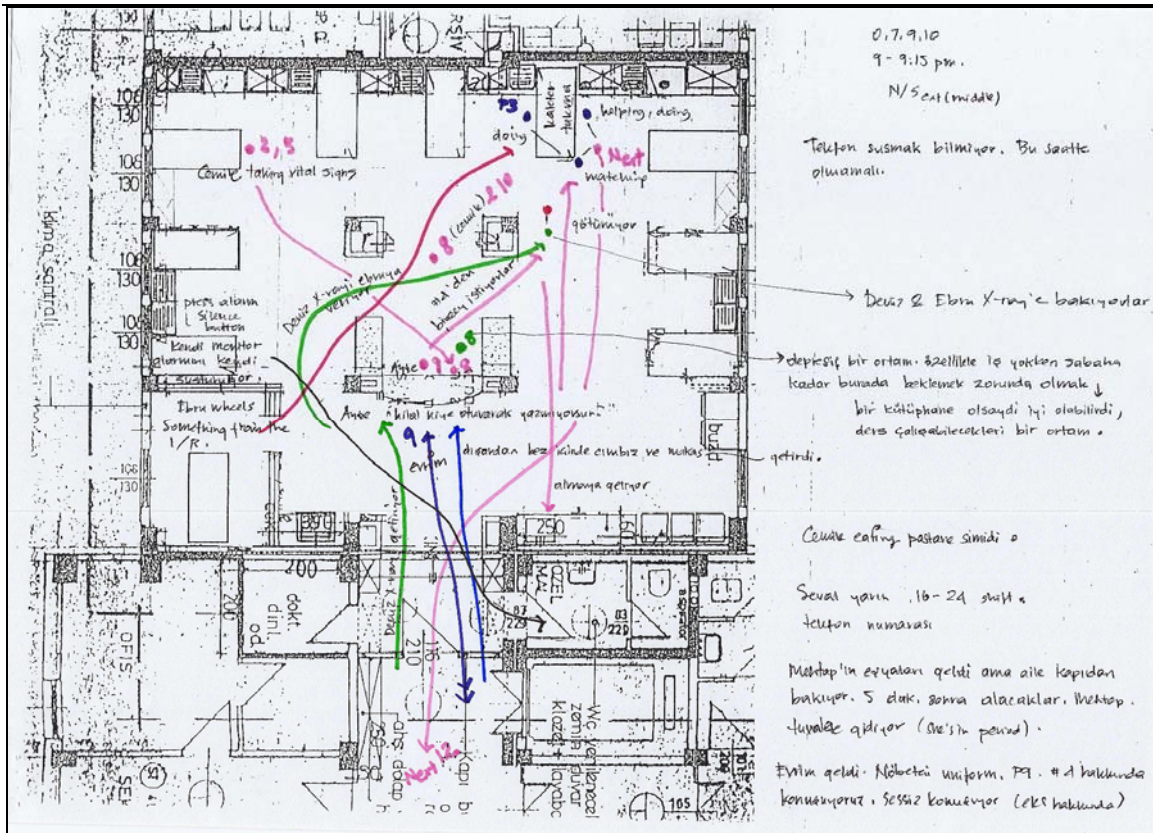


Figure 6.3: Sample Behavioral Map Recorded on the Floor Plan of the Turkish PICU

6.2 Results Of Observations And Behavioral Maps

6.2.1 Description of the General Physical Environment, Décor, and Atmosphere

Staff Station

The location of the PICU is physically distant from the ER, NICU, and surgery department. The general atmosphere in the ICU is crowded and chaotic. The décor is much less progressive and high-tech than the NICU.

Caregivers were not comfortable with the current physical environment of the PICU. The main problem is the lack of space, the high amount of clutter, and the difficulties of moving and being efficient in a very small and inadequate space. They demand a larger and more private PICU.

The main distinguishing physical feature of the staff station is its location in close visual and physical proximity to the entry of the ICU, making the families waiting outside the unit or in the hallway between the two glass surfaces at the entry an integral yet unwanted part of the visual environment.



Figure 6.4: Staff Station (Zone 1), Turkish PICU (Source: Author)

The equipment at the staff station is limited to a computer and a few gliding chairs for the resting and paper charting functions of staff. There is also mobile equipment stored at the station, such as the emergency cart and file cabinet. There are no additional computers for secretarial and computer charting functions, a central station monitor, even a fax machine or copier. Figure 6.4 shows the staff station.

Patient Zone

Patient Beds and Bedsides: The three patient zones and the isolation room occupy approximately half of the size of the whole ICU space. No family zone exists to accommodate parents to stay even for short periods of time with their children. Since there is not enough space for the family member between two patient beds, there are also no sitting arrangements for them and their presence cannot be easily accepted in such a tight environment. Based on the spatial configuration of the unit, the proximity between two beds changes depending on where the bed is located. Therefore some physicians placed the bed of the most critical patients in the most spacious area.

The windows in the ICU are very small, and very few in number: There are only two windows for nine patients and another window for the patient in the isolation room. This caused a significant loss in the amount of total window surface provided. Although there are no shading devices, the lack of sufficient sunlight affects the atmosphere, ambience, and mood of the ICU significantly (Figure 6.5).

The types of beds are mechanically adjustable full-size beds for older children. There are no regular nursing cribs for babies and young infants since they are all in the NICU. (This is different from the U.S. where older babies are typically in the PICU.) Patient bed positioning is considered to allow convenient observation and supervision of patients by nursing staff. However, staff members criticized the columns, which blocked their views to the patients and the monitors.

The ICU entrance sabotages privacy for patients and the caregivers. Although the initial function of the entrance door included a lock system to block unwanted visitors from entering the unit, it was destroyed in time and did not function as a real barrier during the case study period. The glove and galosh

box holder is parked in this area for easy accessibility by visiting parents, yet this location does not provide for nurses' immediate needs and, maybe partly for this reason, they do not use gloves regularly before starting a new procedure. For easy maintenance of the floor material, affordable vinyl tiles are chosen that are square and have a pastel color. The walls are white, consistent with the modest color scheme of the unit. The suspended ceiling provides for the needed AC and lighting equipment, but the ceiling height is insufficient and AC vents are very close to patients and noisy. No acoustical materials to reduce noise levels or visual properties are integrated to ceiling, walls, or floor. Patient and caregiver zones are not clearly separated from one another. There are no support areas for play, education, and other child life functions in close proximity to the ICU.

Patients' bedsides are packed with equipment to facilitate the practical and clinical tasks of the caregivers, such as a procedure cart, a portable lamp (when needed) for small medical procedures that can be conducted in the unit, such as cut-down [there are no surgical light systems], a gliding chair temporarily moved for the parent present at the bedside, a ventilator for the assisted mechanical ventilation of the patient, and infusion pumps with cart. Monitors to trace the vital signs of patients are mounted on the headwall. A personal protection cabinet is provided at the bedside of each patient for her or his practical needs, although most often they are not accessible. Other equipment used temporarily in the ICU adds to the chaotic environment, particularly the X-ray machine is always stored at a corner in the unit since there is no nearby equipment storage, or the electrocardiogram (ECG or EKG) machine on the cart may stand in the ICU for extended periods of time. Two televisions mounted on the columns face the two patient zones and add to the noise in the unit. Finally, open plastic waste containers create unpleasant views.

Circulation Zone: The area between patient beds and staff station located in-between the two columns in the middle of the ICU comprise the circulation zone. Small-scale equipment is often parked temporarily in this area in front of patient beds, for easy accessibility and due to the lack of a storage space. Other equipment such as linen carts, emergency/resuscitation cart, aspirators, and defibrillators on carts are parked in the unit for extended periods of time, resulting in a chaotic environment. Clutter-free and efficient design solutions for the limited size of the Turkish ICU should be explored.

Unit Ambience and Relation to Hospital Building

By using pink and blue tones and ICU equipment in animal shapes, they tried to create a child-friendly environment in the ICU. The use of a soft and pastel color scheme and a child-friendly décor and murals over the walls throughout the hallways are also repeated in the hospital. Children's hospitals apply this type of animation, as if following an irresistible habit, which seems to be the only ambient characteristic provided. Yet this type of animation, which does not suggest any organic or natural content, may not be beneficial or meaningful for children. The application of visual images to positively impact pediatric patients' outcomes should be explored further. Administrators can invite local artists to produce artwork, and children (both in the hospital and from the outside) may help with this process, and choose images reflecting their own nature or artistic preferences.



Figure 6.5: Patient Zone, Turkish PICU (Source: Author)

6.2.2 Place Functions, Activities and Design Considerations

Entrance Hall and the Entrance

The main function of the entrance corridor outside the ICU is to gather families, who wait for information or to visit their child. Even if they cannot visit their child or receive any information, there is a chance they might see their child if they walk to the area in-between the two doors. Family-caregiver interaction also occurs mostly at this space, even more often than in the ICU, including family grief counseling. Yet there are no chairs or other seating arrangements in this naturally created space to support family presence. Particularly, a vending machine would be beneficial since they do not leave for nourishment. However, caregivers try to discourage families from waiting, and they may be uncomfortable for three reasons: first, it is very difficult for a family member to stay for an extended time in this space. Second, the unsightly views of families sitting on the concrete floor undermine the perception of the hospital as a sophisticated medical establishment. The third reason is the overlapping traffic, because this space opens up not only to the ICU but also to the elevators, chief resident on-call room and office space, and another pediatric ward. Finally, due to lack of privacy, caregivers get irritated and warn others to close the door even if the unit entrance door stays open for only a few minutes.

At the entrance, negotiations are common between family members and caregivers regarding visitation, particularly due to the spatial configuration of the entrance. Most of the time, the head nurse (HN) has to deal with families. One day, extended family members were waiting to see their patient, although the HN was trying to convince them to leave because of the risks associated with their presence in the unit. In this case, the family was very persistent since they came from far away, and would not go unless they were allowed to visit their patient for a minute, revealing that seeing their patient even very shortly would comfort them. When the HN allowed their presence shortly, a physician reacted immediately,

asking them from whom (i.e., which physician) they received permission. This example indicates that physicians may treat families like children, and may not respect them. Additionally, interior conflicts are generated within the ICU staff, and maintaining smooth working relationships with different members of the health team and with the visitors through this small space gets increasingly more difficult. Table 6.2 shows space-related social problems categorized into six relationship types, and needed spatial solutions.

Staff Station

The staff station is the area where the caregivers gather, which is observed by the visitors from the outside as representing the total health unit team. The limited nursing resources in the Turkish ICU were stretched to its limit, with more patients coming in all the time. Sometimes there were no beds available to admit critical patients, who had to wait in other pediatric wards until beds were available. Nurses' job intensity was further increased due to the lack of respiratory care therapists: since there is no formally recognized profession of respiratory care in Turkey, respiratory caregiving function was provided by nurses, physicians, physical therapists, and medical interns.

TABLE 6.2
Relationship between Social Interaction Types and Design Considerations

Type of Relationship	Spatial Problem	Design Solution
FAMILY-CAREGIVER Negotiation for visitation Giving information Grief and support	Lack of family space at bedside ICU entrance blocked by families Infection risks due to overcrowding	Family space at bedside Waiting room Family education space Grief counseling space
FAMILY-PATIENT Sharing mealtimes Tactile/vocal stimulation	Lack of family space at bedside Lack of individual patient room Lack of privacy, lights, seats, etc.	Larger bedside space Shared semi-private rooms Progressive bedside design
FAMILY-FAMILY Social support and interaction Informal education Grief and support	Lack of spaces for family interaction Lack of socialization spaces Lack of education spaces Lack of grief spaces	Waiting room Family resource center Garden and nature
CAREGIVER-CAREGIVER Information exchange Cooperative/collaborative relations Positive social interaction Interior conflicts	Lack of caregiver space & privacy Lack of release mechanisms	Private entry arrangement Semi-private patient units Staff lounge Staff support spaces
CAREGIVER-PATIENT Medical/non-medical care Tactile/vocal stimulation	Lack of sufficient workspace	Increased bedside space Staff support spaces Noise and sound control
PATIENT-PATIENT Surveillance (visual relation) Hearing other patients	Lack of bedside space, patient privacy Increased environmental stimulation High noise levels	Shared patient rooms Semi-private patient units

The Turkish staff station is much smaller in size compared to the U.S. station: it is about half of the size of the smallest staff station in the U.S. unit. Unlike the U.S. model, it is not adjacent to a support space. Rather, it stands by itself in the middle of the ICU. In addition to staff sitting and resting, it incorporates the following functions: 1) It facilitates computer-related activities such as charting and other data management tasks, yet there are no individual or semi-enclosed work areas. 2) No central monitor is provided, yet due to the small size of the ICU, caregivers can view the newer and larger monitors at patients' bedsides from the staff station. 3) There are no built-in cabinets to store patient files, only a mobile file cart (data storing function). 4) There is no copier, fax, or other office equipment. The head assistants' office provides the need for such functions. Either there may be significantly less paperwork needed and less need for office functions, or vice versa. 5) The emergency cart is parked at the back of the station, which is not mobile due to the equipment load on its surface. The space between the two columns also provides a more protected and private socialization area for the caregivers.

Two observations were made: First, since the space provided for the work function at the staff station is very limited, one can see more caregivers just sitting and watching around or chatting in the Turkish ICU, as opposed to the views of the North American staff members almost always working or charting on the computer. Therefore, the first step to increase the work productivity and improve patient information gathering and storing systems would be to add more space for the work (both desktop and computer) function. Second, the physical proximity between the people occupying the staff station is much closer than in all five staff stations observed in the U.S. setting, which may increase staff interaction.

Due to the small size of the ICU and open bay arrangement, not only caregivers at the staff station could view patient monitors but also all patients. This may be a superior design feature over the individual patient room system, where certain rooms are usually out of sight (from the staff station). The optimum-size open or semi-open bay arrangement enables caregivers to sit down and rest in close proximity to their patients, while also observing them and interacting with other caregivers about work or social life. It is found that this is a very positive feature of the open bay arrangement, which may be kept in future ICUs.

Regarding the staff station work function, cooperative relationships are common, so workstations for two may be inserted, and the more private and isolated charting/documentation of the care function may be separated from the information desk, which is a rather noisy and social activity. Information exchange among staff is another work function, where patient information is exchanged publicly. Another major information exchange at the staff station is to make phone calls or answer the phone. For computerized or paper charting, which is usually conducted in collaboration between two or more members (one reads the numbers and the other punches them down), there is very limited space available. Communications also occur with the members of outside departments, who come to the ICU to borrow equipment, such as EKG.

An obvious need at the staff station is to allow individual and semi-enclosed workstations for documenting the care and other computer related tasks. The public character of a common station may not adequately serve this function. Especially, the front desk automatically adapts a communicative function between the ICU team and those (other caregivers, external staff, and families) who need information or

support. Although providing communication, information, and help is the main function of a staff station, they also need to work and think about the care plan in close proximity to patients and other caregivers if they need to ask something. Therefore, semi-individuated and more comfortable study spaces should be provided, especially for physicians and residents.

The information desk function should be separated from the staff station, and the ICU ward. A team of two health unit coordinators for secretarial tasks located in the entrance area would eliminate at least one overwhelming function from the ICU atmosphere. Family members and visitors should be informed at the information desk, so they do not disturb the staff station. Currently, both nurses and the physicians deal with them, informing them why they cannot visit whenever they wish. In this way, a nurse or physician is used like a secretary, which is a waste of resources.

Another function of the staff station is parking and storage: The special team for food delivery brings the food to the station from where it is delivered to the mothers of the patients. While the surface of the desk is already cluttered, the food trays parked on the same surface adds to the chaos.

A functional design element, the wall-mounted pneumatic tube stations, would significantly reduce walking, and save the nurses valuable time to spend with their patients.

Finally, irrelevant functions and activities increase the unit density, for instance, a nurse from an outside department came to the staff station to measure her weight. A separate area for patient diagnosis function and locating needed equipment in this area would discourage this type of use.

Patient Zone and Patient Bedsides

Sound Control: The patient bedside is very noisy due to the machines, beepers⁷⁶, people, nurse work, traffic, noise coming from staff station and the presence of many patients in a small environment. For instance, when one patient starts to cry, all follow. The air handling noise in ductwork and vents are another source of noise, which the head nurse and many caregivers evaluated as the most disturbing noise in their ICU. The presence of two televisions, which are always turned on, increased noise pollution, which was possible to avoid by turning them off at certain times of the day.

Although the decibel levels in the Turkish ICU were not measured (due to the lack of equipment), they certainly exceed the levels recommended for adequate sleep in Western hospitals and ICUs, which are 35 decibels at night and 45 decibels during the day as informed by the U.S. Environmental Protection Agency⁷⁷. High noise exposures may result in abnormalities in the stress response of the caregivers and in patients' sleep patterns. First, loud noises contribute to stress, and may interfere with communication and privacy (Thomas & Martin, 2000). However, Turkish caregivers did not seem to know that increased noise levels and disrupted sleep affect patients' health outcomes. Particularly, the risks associated with ICU

⁷⁶ A loud beeper can produce as much as an 80-decibel sound (Berens, 1999).

⁷⁷ While the levels of noise in the Turkish ICU may not reach OSHA levels, i.e., more than 85 decibels for eight continuous hours, which cause noise-induced hearing loss (Berens, 1999), the patients were exposed to continuous moderate noise levels that might cause hearing impairment.

psychosis marked by symptoms of nighttime disorientation and delusion need to be highlighted. Sleep deprivation can also adversely affect respiratory muscle function, possibly hindering weaning from mechanical ventilators.

The consequences of noise pollution as they relate to pediatric patients' medical outcomes and caregivers' stress response and job performance, along with needed preventive measures to reduce noise pollution, are to be further explored in the Turkish PICU. For instance, semi-private patient cubicles may reduce noise levels at patients' bedside by inserting wall surfaces with acoustical materials to restrict the movement of sound at the patient zone. However, preventive measures such as keeping noisy functions away from the bedside as much as possible and turning the arabesque or pop music channel off would play the most significant role in noise reduction in the Turkish ICU, which has limited resources to intervene.

Light Control: The third problem regarding patient comfort and well-being relates to excessive light levels: During daytime, they are never turned off. During nighttime and particularly before midnight, the ICU is still quite bright. Only one observation was made after midnight, when the lights were dimmed. Similar to noise, continuous bright light interferes with sleep. Adequate lighting is also critical for the caregivers: Night shift workers become drowsy, with lower body temperatures through the night (White, 2003)⁷⁸. Therefore light levels need to be reduced at all times in the Turkish ICU.

Patient Beds: The children are not comfortable and those, who are not sedated, cry often extensively. This may be due to the problems with existing beds: 1) the bed size for adolescent patients is insufficient and they can hardly move. 2) ICU beds are not automatically adjustable for changing patients' posture intermittently during the day, so caregivers have to attend to this physical need manually, which is usually forgotten due to the intensity of their activities.



Figure 6.6: Two Physicians Collaborating at the Patient's Bedside for a Simple Medical Task

⁷⁸ Recommended lighting standards for caregiver activities in the NICU are 300~500 lux in work areas; 1000~2500 lux for medical procedures; 200~500 lux for daytime and 5~50 lux for nighttime at patients' bedsides (White, 2003).

Privacy and Stimulation: Patients are exposed to disturbing scenes, such as resuscitation or surgical procedures of other patients. During such times, a nurse usually takes a patient in her arms and walks in another direction so the patient could not see what is going on.

Caregiver Functions and Activities: The main activity at patient bedside is caregiving (Figure 6.6); particularly nurses spend a lot of time at the bedside. The second function is information exchange during change of shifts. The third function is teaching, which takes place through regular consultations of patients in the morning, afternoon, and evening, and by attending to the resuscitation or surgical procedures, when caregivers gather around the patient's bedside to observe and learn.

Regarding the parental activities at patient bedside, if the mother is present she usually feeds her child, and after that they either interact or watch TV for a short while. Other than feeding and helping with a simple function, parents often engage in tactile and vocal stimulation of their child. When the child is sedated, they still need to observe her or him.

Isolation Room: The family member in the isolation room is subject to more flexible rules regarding her or his presence. She can enter the ICU without giving an explanation. She can shut the door to have privacy when she helps her child with a private caregiving function (such as urinating). When the mother is absent, or when there is no patient inside, caregivers gather and chat in the isolation room.

Circulation Zone

The most important function is the transportation of patients, when they arrive on a mobile bed, are given oxygen, and intubated as soon as they are placed on their new bed. There is no professional team of paramedics responsible for transportation function. Instead, equipment technicians help with the transport and arrival of the patients. Yet at certain times, such as lunch hours, they may disappear.

Regarding the movement of the caregivers, different patterns exist. First, specific staff members such as the diet specialist move from one patient to the other in a counter-clockwise circle. If the focus is on a specific patient, specialists from outside departments are directly oriented to that patient, and they usually arrive in teams of at least a few. Caregivers also prefer to stay in the hallway in the middle of the ICU when they are on their cell phones. Regarding families, their presence may be more disturbing to staff when they circulate around, as opposed to their stable occupation of the patient's bedside.

Support Space: Preparing medications, unloading the medications and small equipment that arrived in the ICU, checking the X-rays, and using the microscope are the main functions (Figure 6.7).

Staff Lounge

In addition to the equipment storage that was the original function of this space, staff support functions are incorporated such as placing personnel belongings in staff lockers, changing clothes, eating lunch, resting, having a private telephone conversation, and staff socialization. No personalization efforts are evident, such as hanging family photographs on the lockers, which is common in the U.S. hospitals to de-institutionalize staff lounges.



Figure 6.7: Two Views from the Circulation Zone: The Hallway Left Open for Traffic (Left) and Support Space with Refrigerator, Microscope, and X-Ray Viewing Screen (Right)

Regarding the proximity of the staff lounge to the ICU, nurses expressed they felt psychologically distant to the ICU. The ICU must incorporate its own space for both staff and family support activities, and provide visual access to the ICU from both spaces.

Administrators fear if they provide a nice staff lounge in close proximity to the ICU, it may encourage staff to take breaks more often. The previous lounge, which was located centrally, may have been eliminated for the same reason. Yet the benefits of a multifunctional lounge are extensive. The analysis of behavioral maps showed the negative impact of the lack of a staff lounge: Caregivers used the staff station for socializing, bringing their own music and food particularly during celebrations. Yet this may be offensive to families who observe staff socialization from the hallway, and caregivers are also uncomfortable with their presence in the unit. The provision of a staff lounge would not only increase the quality of resting and social interactions, but also be more respectful of families' need for silence. Separating the social atmosphere from the professional environment of the ICU, providing release mechanisms for staff well-being, privacy, job satisfaction and happiness, and an improved context of staff-family relationships would be further benefits and meaning linked with the staff lounge.

The name "staff lounge" represents first the basic needs and functions of the caregivers, such as a small kitchenette to prepare healthy food, a tea kettle, coffee machine, even a blender for preparing healthy drinks, maybe a small conventional oven to bake practical food (instead of a microwave), a refrigerator for storing the fresh food, which nurses bring from their home, seating for 12-16 people (i.e., several dining tables and chairs), provision of views to nature or at least exterior views, access to daylight, operable windows, even a balcony, healing music instead of TV, and a bookcase or several racks filled with medical and non-medical information (healthy living, arts, home and child-related magazines). The staff lounge may also display staff pictures from family and social life, flowers in containers, staff artwork (poems, paintings, hand-knit items). The provision of family photographs in shared places may closely relate to the development of the self and individual in modern society. In Turkey, sharing personal pictures of family

and close friends is often considered too private to share publicly; it may even be perceived as the elevation of one's ego. Yet this traditional culture is in transition to a global and postmodern situation.

Providing an environment of respect for one another's differences, needs, desires and preferences would be the second aspect of the staff lounge. The size of the lounge may particularly be critical to achieving respect and harmony among staff. Due to significant social class and gender (rather than individual) differences among Turkish caregivers, which impact preference for rest and relaxation activity (music, television, chat), creating two separate rooms for nurses and physicians may be a solution, although it would eliminate potential positive social interactions from sharing a single staff lounge. Privacy and gender separation is more important for the functions of restroom and nurses' dressing room. Staff wellness opportunities during work time can be provided with simple solutions, such as a comfortable couch to lie down for a few minutes, or a few private cubicles to study or just stay alone. The need for smoking, a major stress reliever in Turkey, should also be considered. The balcony may satisfy this need. A clean and spacious restroom, where they would not hesitate to touch surfaces, and other feasible arrangements to make staff happy and enjoy their work environment would be beneficial. If there is a VCR and a few good movies, they may even want to stay after work hours. Finally, provision of modest exercise opportunities in close proximity would be beneficial.

In short, the practical and functional aspects of the staff lounge (and the other common spaces in the unit) transcend its role as a merely "beneficial" place function: the intention to meet the needs of the caregivers gains a new ontological meaning regarding the needs of the "self," relation to "other," and self-expression. Comfort and control are two major constructs of this ontological self, which relate closely to the social atmosphere of healthcare environments. Therefore, the higher function of the staff lounge, and the whole ICU space, is to help in the transition of each staff member from a neutral human being, an object or "body" in the world, to a unique individual, a subject, whose needs are to be cared for and respected. The personalization of this space with personal pictures may symbolize this transitional process.

6.2.3 Floor Plan Evaluation and Design Recommendations

Staff Support Spaces

M.D. Restroom: The functions of the current M.D. room, which is located in a minimal space in the vicinity of the ICU are 1) resting and sleeping for the doctor on-call, 2) staff socialization, and 3) family grief counseling. It is also used as a storage area, which diminishes any potential for ambience. (It is used both for temporary storage for small equipment, and for storing the personal/daily belongings of staff.)

Hallway and Patient Rooms: The main function of a hallway is circulation, and it may not need to be incorporated in the Turkish ICU for two reasons: First, good visual access to each patient is already present in an open bay arrangement. Second, privacy of individuals is not as critical in Turkish society: People are usually more transparent and would tolerate the lack of individual patient rooms, if other aspects of this space were designed carefully. In the West, transition to an individualistic society brings not only freedom and privacy but also social isolation. In a traditional society like Turkey, on the other hand, social

functions and the social nature of the human subject are more important than the need for privacy and individualism, although it may play against the emergence of the “modern” individual and her or his chances for self-expression. Therefore, the “detached” rooming-in concept in the Western ICU, where there is enough space to invite the family and even provide family pictures and belongings to personalize the room, may be replaced with attached semiprivate patient pods, which are progressively designed, providing enough space for each patient and her or his support unit, including the caregivers and family. This would indicate the respect shown for each patient, while maintaining social ties and cooperation.

The hallway in front of the patient room in the North American unit provides a preferred space for staff communication and collaboration, particularly 1) during change of shifts, and 2) between the nurse and the doctors involved with the patient. This space represents design concepts like proximity, threshold, interval, territory and interiority. Yet a sophisticated interval and relationship among individuals may not be preferred in Turkish culture, where recognition of individual differences and territories does not support social interactions. On the contrary, familiarity (the canny), straightforwardness and transparency are the engine of social interactions, while the differences between the two sexes are more difficult to transcend.

In addition to visibility problems of patients, the hallway seems to be a negative function since it creates a lot of traffic and noise, and consumes space. Design solutions that incorporate an increased number of functions (staff lounge; staff workspace for meetings, consultations and studying; family waiting and resource room, grief counseling room, etc.) with the minimum amount of circulation space may be more beneficial. A square or rectangular (i.e., rationally-based) geometry embraced within a circular or elliptic (infinite) form provides good opportunities for incorporating meaningful functions at both ends of the central ICU core without introducing a waste of circulation space, and suggesting flexibility to grow and extend beyond the circular border when needed.

In staff support zone located adjacent to the ICU, immediate functions such as medications storage, patient refrigerator, a closet space, soiled and clean utility rooms, and equipment storage can be housed in compact arrangement and in immediate reach for maintaining minimal walking distance across the two spaces. Research and work functions such as a team meeting room with access to a medical library with internet access and other staff resource functions, and needed office space and equipment such as fax, copier, document destruction machine, etc., may extend a little further spatially, while maintaining the visual access of the former (i.e., team meeting room) to the ICU. Finally, staff lounge and restrooms would be located a little further, symbolizing and celebrating the (yin-yang) distinction between opposites, i.e., the sacred (work and knowledge) and mundane (resting, nourishing) functions of daily life.

Family Support Spaces

The other end of the ICU core would be family support and empowerment function. The hierarchies embedded within the family support space would be a combination of sacred and worldly functions as well, with one end incorporating family education, grief, counseling, and other meaningful activities and higher needs of human beings, and the other end symbolizing practical and lower needs, such

as eating, sleeping, resting, and even social interaction. Since there is always one patient or two in an ICU, who are more critical, it would be humanistic to incorporate at least two private family rooms for the on-site accommodation of these families. The preparation and transition of the family before entering the ICU also refers to both practical and ontological needs: The practical needs require providing 1) an information desk at the beginning of family space, 2) physical mechanisms for comfortable waiting, nourishing, etc. for parents' physical well-being and emotional availability and presence while in the ICU, 3) infection control mechanisms such as a sink to facilitate family hand washing and an anteroom for putting on gowns, gloves, maybe masks. Finally, the ontological needs relate to a preparation in terms of knowledge and the presence of spirituality to deal with death and dying. Religious coping mechanisms such as the presence of an *imam* with a good level of education (in addition to a professional counselor) and *Kuran* scripts available around may be extremely helpful in calming families.

The preparatory space preceding the ICU experience might benefit from views and windows to the unit. Ideally, no public hallway and its natural crowd, noises, jokes, laughter, running, and vivid social atmosphere should interfere with families' presence and transition to the ICU. If they are directed to the family support zone as soon as they arrive in the ICU department (Figure 6.8), and can carefully transition to the ICU to see their patients at certain intervals, this atmosphere of *silence*, *solitude* and respect can be provided. *Solitude* and *silence* [except for healing music and needed communication] must also be ensured in the ICU ward during their visits as a prerequisite of an efficient patient-family interaction and a meaningful spiritual experience for the families during their whole stay in the ICU. The family zone located adjacent to patient pods may enhance families' experiences by providing them with views to the unit, from where to witness the care and dedication given to their own children as well as others'. A practical design solution such as locating the family zone a little higher than the level of the ICU may provide better visual access, and enhance a more spiritual experience.

Family Involvement and Empowerment: The most important problem in the Turkish ICU is that space and privacy were not provided, particularly hindering parental involvement in care. Yet empowering families through social support (i.e., supportive social communications and interactions) and education is important design criteria. Even if creating individual or shared patient rooms remains impossible in the future, semiprivate patient cubicles may incorporate parental space at each patient's bedside, which may be personalized with family photographs, favorite toys brought from home, gifts from family, caregivers (and volunteers), even home-baked cookies for staff.

Sufficient rooming-in space for parents who wish to stay with their child will most likely not occur in the near future in the Turkish PICU. However, providing a small yet comfortable reclining chair at the patient's bedside for their presence would be progressive. Parental involvement, and giving them the ability to spend extended hours and overnight stays in the ICU would be very effective in general, which may reduce the occurrence of critical incidents and traumatic events in the future.

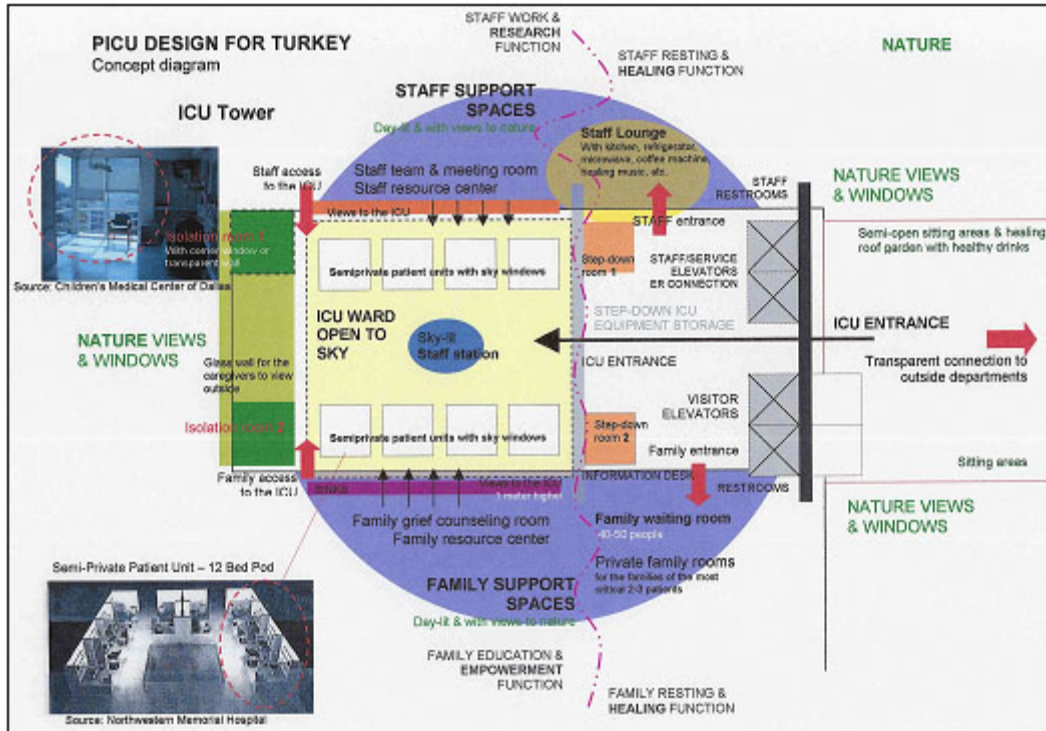


Figure 6.8: Programmatic Diagram for a Proposed Turkish PICU Design

Even when the duration of parent-child interaction remains limited, the quality can be increased. The siblings of the patient may not be allowed inside, yet could view the patient from the family zone if they want. During medical procedures, caregivers should be able to block the views with curtains or mini-blinds. Finally, regarding access to daylight and views to nature, in comparison to parents sitting in a dark room for extended hours without leaving the patient's room, the family zone with natural light and uninterrupted views to nature would be healthier.

Semiprivate Patient Pods

To begin with, cooperation between staff members may be stronger in the Turkish ICU, where they often ask one another to take care of their patients and may be more comfortable about seeking for help, which is similar to neighboring relationships. “Neighboring” in general is a very strong aspect of the Turkish culture, which is reflected into the ICU environment. Semiprivate patient pods with clearly distinguished nurse work areas could enhance both the clear separation of the nursing tasks and the maintenance of the supportive and cooperative “neighboring” relationships among nurses.

Circulation: While the nurse would still need to walk a great deal, it would be significantly less than the current environment, where they intermittently walk out of the ICU to bring needed equipment, and than the U.S. model, where the provision of spacious individual patient rooms maximized circulation space. In the recommended diagram (Figure 6.8), all staff support spaces are located adjacent to the main

ward. Also, the semiprivate pod arrangement would free the nurse from moving extensively back and forth between two rooms, enabling her to spend more time with her patients.

Staff interaction: The programmatic design proposal shown in Figure 6.8, which is the combination of semi-private patient pods with additional step-down and isolation rooms, suggests to better identify the division of labor among nurses. For instance, a nurse may be responsible for three adjacent beds, while also getting support from collaboration with other caregivers in close physical (and immediate visual) distance. Semiprivate pods would also make it more practical for the nurses to simultaneously attend to the caregiving functions of several patients, due to lack of separating walls.

The relation between the nurse at the patient pod and the staff station: The nurse would not need to leave her patient while asking for information or help from the staff station. However, this division may suggest a more threatening workspace to ask for help for the nurses, whose personal performance, including both their achievements and nursing errors, could disappear behind group work. The impact of semiprivate patient pods on staff roles and functions (and the staff station) needs to be further explored.

Access to daylight and views to nature: In addition to reducing unnecessary noise, more careful staff behavior is needed regarding light levels in the ICU at each patient's pod and in general. Caregivers would need to be able to turn on the lights at each pod only when they work with the patient.

Staff Station

The staff station in the trauma ICU may be borrowed as a reference, which was the most progressive solution in the U.S. hospital. The provision of a ward type of environment with a single staff station to observe the whole unit was praised due to its compact spatial arrangement and the visibility it offers to view all patients simultaneously. Yet the staff station should be arranged much bigger in size than its current size. As such, it can be fragmented into several areas to incorporate staff work, rest, and communication. Since there are only about eight pods, the density of the ICU would be very low. In general, the ICU ward should provide a very spacious and bright environment, resulting from the maximum amount of window space and the large floor-to-ceiling window surface provided at one end of the ICU across the staff station. The copious amounts of natural light and the exterior, nature or sky views would enable the most conducive environment to healing for all participants. Based on the behavioral map analysis conducted at the staff station of the trauma ICU at Children's, which is a similar model in its spatial arrangement, it is expected that staff performance would improve with this type of staff station in the Turkish ICU, while maintaining the high level of social interaction and cooperation.

Ambient Intervention

Provision of Nature: Many caregivers expressed their wish to be happy and excited to come to their work environment. Therefore, all spaces should be made as welcoming to patients, families, and caregivers as possible. Nature would play an important role in creating a welcoming experience, by incorporating as much nature and landscape amenities as possible, in addition to nature images and

simulations. Framed artwork can be chosen not only to include child-friendly cartoons and animations for children, but also friendly and beautiful nature images and natural scenes from Turkey and all over the world both for the children's and adults' visual needs. The function of the television can be reinvented in the ICU to enhance this function by broadcasting nature images, along with healing music. Yet in the broadest sense of the use of nature as the most important measure of ensuring ambience in the ICU, the new location of the unit should be carefully reconsidered in a natural campus environment if possible, such as the other campus of the University in the suburb, which would have lots of views to wonderful landscape. If the current campus location remains their only option in future master planning, the ICU can be relocated in an upper floor with views to the sky through windows and even skylights.

Green Concept: To begin with, the greatest development in the Turkish ICU would be providing more light, air and space for the patients, caregivers, and families. The current environment of the ICU, particularly the staff station pointing directly to the entrance, where caregivers feel under pressure due to families' constant surveillance, and families feel offended due to caregivers' ignorance of their emotional needs, is not a healing environment. To strengthen the effect of the three programmatic (provisional, locational, and functional) design interventions, an ambient healing design feature is also to be incorporated into the design of the Turkish ICU prototype. The nature of the healing environment could be particularly developed to satisfy the workspace needs of the caregivers.

Central to creating a green concept would be the reliance on day lighting that would directly illuminate the staff station and patient pods. While the latter could ideally benefit from daylight and views of a sky-lit ward arrangement, all work, office, social interaction and support spaces such as waiting rooms, family resource centers, and staff lounge would also be day-lit and have natural views. The areas that do not require infection control, such as staff lounge, waiting room, and office spaces, could have operable windows for access to air, which would allow occupants to control their environment, and save energy.

The most visible feature of the green concept might be to introduce a vertical garden at the ICU tower, which could be located at the connecting bridge that repeats itself at each level of the tower, forming a continuous garden, providing a monumental healing design feature (not necessarily in scale), and symbolizing the location of all ICUs (adult, surgery, cardiac, pediatric, NICU) from the outside. Amenities such as natural ventilation, access to outdoors (a balcony), sitting areas and healthy drinks could be incorporated in the garden outside the ICU, which could be located at the bridge connecting the ICU tower to the main hospital block. The second location for a vertical garden in a rather universal ICU prototype could be the other end of the central ICU axis, facing the main ward. In this scenario, the gardens would become the visual and social focus for a cluster of patient pods and staff station from the inside of the ICU at each floor. In either scenario, gardens would also play an ecological role, bringing daylight, green, and maybe even access to fresh air into the most central area of each ICU around the staff station, which may also act as a natural ventilation chimney up the building to replace the currently inward-facing and inhumane ICU staff stations in Turkey and U.S.

Social Support Intervention

Social Stratification: The custodial staff member, who was in his early twenties, was almost always in the unit, wiping the floors and disinfecting all surfaces continuously. Yet he never interacted with the ICU team, which indicates the strong divisions between the different members of the ICU health team. The researcher felt that his social isolation from the rest of the caregivers was unhealthy. Yet he interacted with the patients, by observing and looking carefully at their faces on a daily basis. He was even taking well patients into his arms giving them a walk in the unit. (Another isolated staff member may be the secretary. Yet she usually has more chances to interact with others.) This suggests everybody involved in the setting from the lowest to the highest hierarchy are involved in care. Therefore the ICU needs to be humanized by eliminating class distinction and social stratification among the different members of the health team, which is typical of Turkish society. (According to Shepley (personal communication, 2004) this hierarchy exists in the U.S. too, especially with custodial staff.) A local understanding of the value of diversity against social segregation is critical in transcending these social barriers.

A New Model for the Turkish PICU

The following behavioral observations were made, which informed design decisions: First, families perform more passive functions and behaviors than active caregiving functions (such as vocal/tactile stimulation, feeding the child, or changing diapers) while they are in the ICU. Second, some of these passive functions are not healing or beneficial in a ward type of environment, including watching television, or other patients in critical situations.

More specifically, active parental functions at the bedside include: 1) feeding the patient (~15-30 minutes), 2) interaction with the caregiver (~15-30 minutes), 3) bedside education (~30-45 minutes). Therefore the physical presence of the family in the ICU can be limited to about two hours, if carefully organized. Passive parental functions at the bedside include: 1) watching television, 2) watching other patients, 3) resting, and even 4) having a meal. All these functions (except for 2) can be provided in the family support space, while it would be better to prevent them from watching critical events in the ICU.

Therefore, parental physical presence in the Turkish ICU can remain limited in the future, if the time spent physically in the ICU is very carefully arranged and incorporated with active family empowerment functions, such as providing stimulation, feeding the patient, receiving bedside education, and maybe participating at the medical care plan and consultations intermittently during the day.

Based on the spatial and staffing limitations of the Turkish ICU, there is no real benefit for the families from staying in the ICU the whole time. It would be more beneficial if they could stay in their own (family support) area and participate in the healing activities provided in this space.

Despite the provision of carefully planned visitation hours in the future, families should be able to view the ICU at all times, except for resuscitations and other critical situations. Therefore caregivers should be able to control the views and patient privacy from the inside. In addition to providing staff

support spaces in close proximity to the semi-private ICU ward, more design solutions for the caregivers to feel less stressed despite parental surveillance are to be explored.

There are a number of other functions to be reduced, minimized, discouraged, or eliminated from the main ICU, including: 1) Staff laughter and enjoyment in a very overt sense in the presence of families, 2) family traffic and families' approaching staff station to receive information, and 3) family having a meal inside at the patient's bedside. If each group had a lounge, functions 1 and 3 would occur less frequently.

Traffic: Currently, families' entry to the unit cannot be controlled. Particularly when the general atmosphere reigning in the unit is busy and there are not too many caregivers around to block their movement, they enter. Yet they often do not obey infection control rules since they do not know about infection risks caused by their entry. Minimized entries and exits, and a more sterile and less crowded environment are vital to provide. Traffic patterns were more crowded than in the U.S. setting, including the movement of equipment, families, and caregivers, particularly since outside units continuously borrow equipment from the ICU. Increased inter-departmental interactions increase traffic, noise, and infections.

Efficiency: One major problem in the Turkish unit is the slow pace of work due to lack of needed equipment, including computers, printer, fax machine, copier, and additional phone lines. For instance, caregivers punch down numbers from the computer on paper instead of printing. For a progressive work environment, all data gathering, storing and management functions are critical to provide generously.

6.2.4 Quantitative Analysis of Participant Observations and Behavioral Maps

The analysis of occupants' activities at the staff station, hallway and patient's bedside recorded for three-hour intervals revealed the following hierarchy of event frequency: 1) Clinical interaction with other caregivers (20 times) and families exceeded all other activities, including the interactions with space and technology. Therefore, unlike the U.S. setting, technology emerged to be a lower activity in the Turkish unit following social and professional interaction. 2) Medical procedures such as drawing blood or family time spent with the patient at the bedside were also common: these types of activities were usually performed as a group rather than individually, thereby supporting the social interaction and collaboration function. 3) Compared to the U.S. unit, more time was spent with organizing the environment (7 times), particularly staff station, which may be due to the lack of a standardized internal order. Figures 6.9 through 6.11 represent the hierarchy of activities at the three major shared areas of the PICU, indicating circulation within the staff station (28 times) and social interaction to be most commonly occurring activities.

Other frequent activities included: 1) computer related tasks (17 times), 2) social interaction with other caregivers (16 times), and 3) interaction with the researcher (9 times). Interaction with family members did not happen during the analyzed interval at the staff station or in the hallway, which suggests that this function occurs mostly at the patient's bedside or outside the unit. Another difference regarding the functions of the staff station relates to the use of phone: due to the lack of individual rooms, the only phone of the unit at the staff station is almost always ringing. The lack of a formal staff lounge causes the staff station to be used as the place to rest and relax: staff interactions were more common than in the U.S.

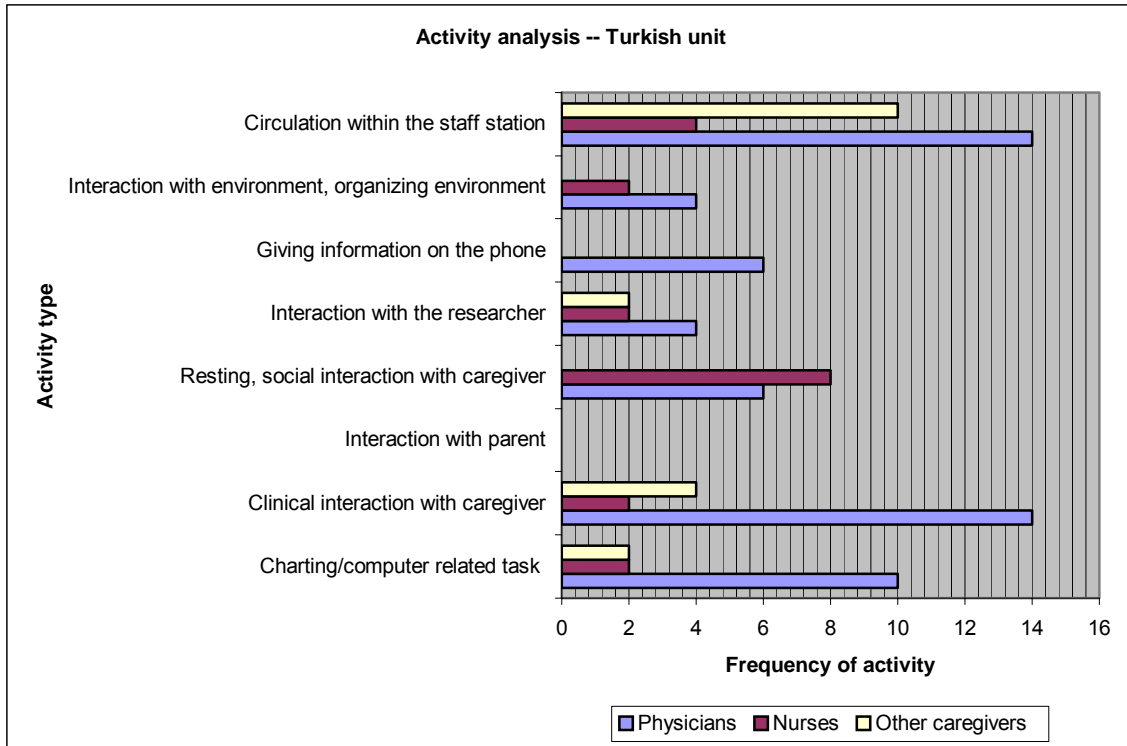


Figure 6.9: Activity Analysis at Staff Station, Turkish PICU

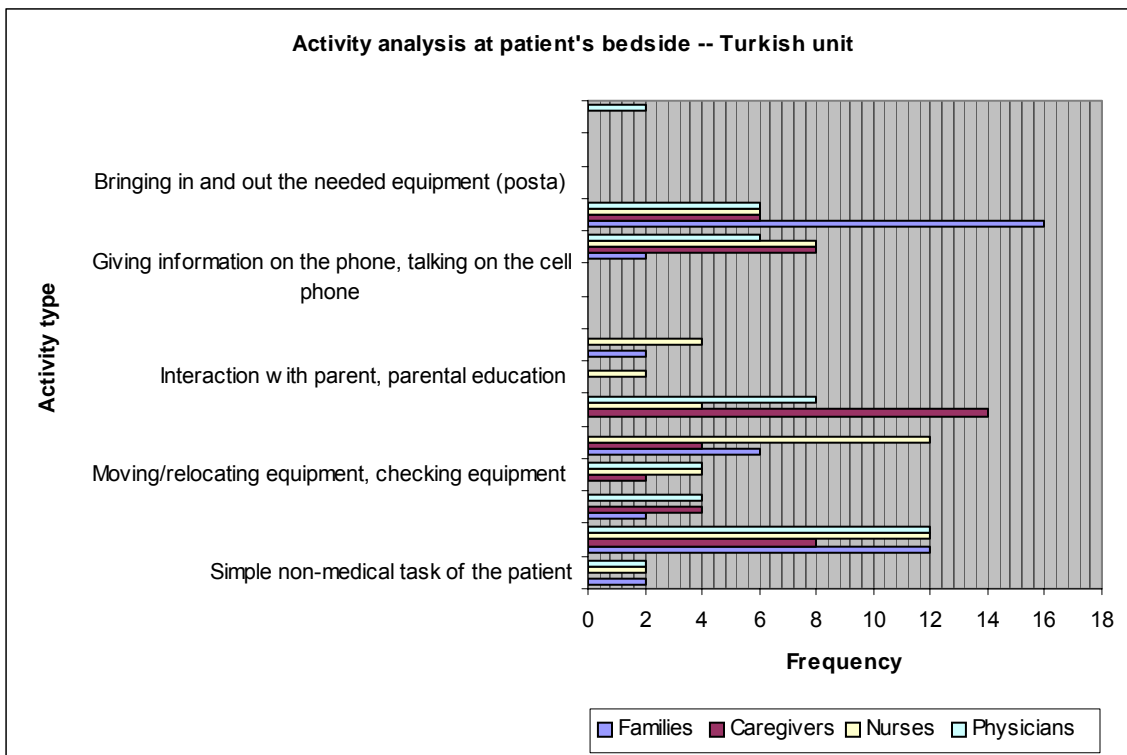


Figure 6.10: Activity Analysis at Patient's Bedside, Turkish PICU

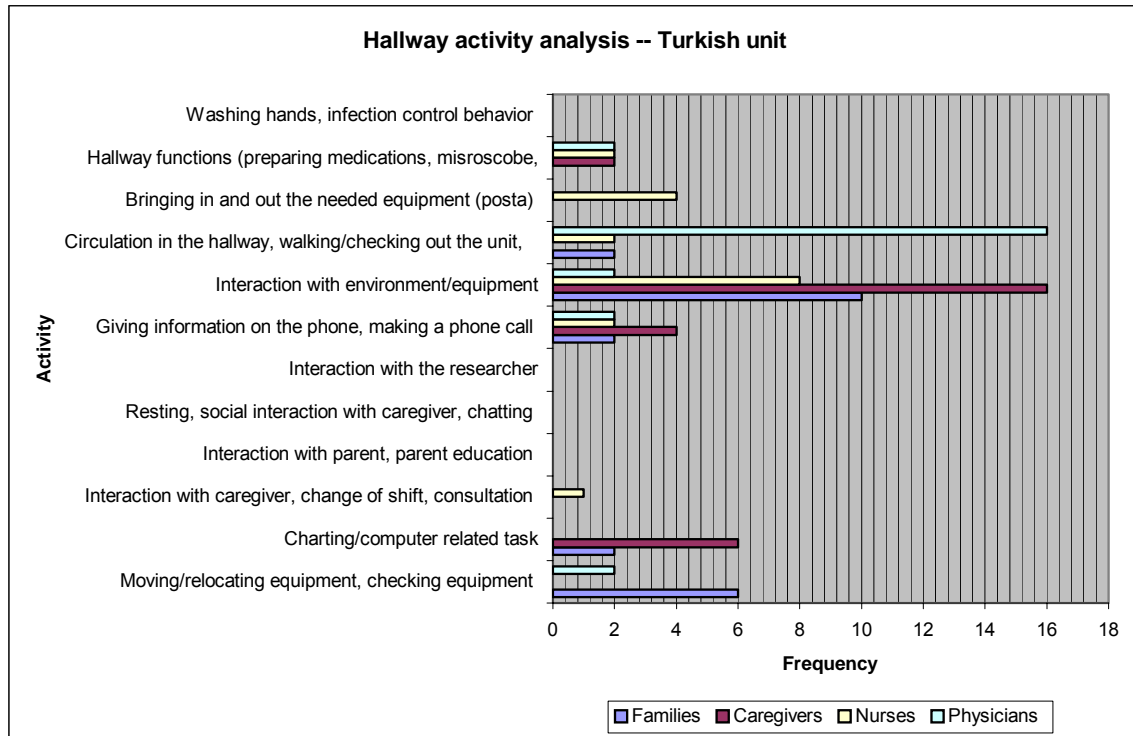


Figure 6.11: Activity Analysis of Hallway, Turkish PICU

6.3 Conclusion

The observations and behavioral maps revealed the fact that there is a close relationship between the rational and programmatic aspects of the PICU space, such as the provision, size and location of its major functions, and higher ontological needs of its occupants. Particularly, ICU space can symbolize and contribute to the need for positive social relationships among the ICU community, or *Gesellschaft*. This social unit is currently dominated by class and gender distinction, social segregation and stratification in Turkish society⁷⁹, unlike the individual differences and diversity of the U.S. society. Therefore rational design interventions informed by the practical needs of daily life can impact healing through sensitivity to individual, gender and class differences, and other forms of the “unfamiliar” sources of tension.

The practical and functional aspects of the staff lounge (and all other shared spaces within the ICU) transcend the role and meaning of this room as a “beneficial” function and activity: the intention to meet the needs of the caregivers gains a new ontological meaning regarding the needs of the “self,” relation to “other,” and self-expression. Comfort and control are two major constructs of this ontological self, which relate closely to the social atmosphere of healthcare environments. Therefore, the higher function of the staff lounge, and the whole ICU space, is to help in the transition of each staff member from a neutral human being, an object or “body” in the world, to a unique individual, a subject, whose needs are to be

⁷⁹ The transformation of Turkish people from a community, or *Gemeinschaft*, to a society, or *Gesellschaft*, (i.e., from an organic to a mechanic state of societal ties) may be the major reason behind these struggles.

cared for and respected. The personalization of this space with personal pictures may symbolize this transitional process.

Philosophical ideas regarding the meaning of the “self,” “other,” and their social relationship may support this argument. According to Harris Berger (1999), the world is a public world there for others. Second, the subject is social in origin. As Husserl observed (1962), assimilating the concept of subject simultaneously establishes the concept of the self and other. In one’s first reflexive experience, one discovers that the counterpart to oneself as an *experiencing subject* is oneself as a body in the world. Finally, the diverse acts by which the subject constitutes experience are radically social, which are informed by situated event and broader social contexts, actively deployed to achieve social ends, and potentially consequential for others and society as a whole.

The concept of “self” and her or his social relations inform the higher meaning and social aspects of the staff lounge beyond its everyday function. The staff lounge represents the presence of the spirit of community, and the community’s recognition of its individuals along with their rights and value to the society. The meaning of the staff lounge emphasizes the social interaction function as the only way to reveal one’s *experience* and make it possible to share experiences, which is critical to being understood and creating harmonious relationships despite differences and the diversity of the human condition. Therefore the provision of the staff lounge represents the self, and diversity of people, which does not play against the possibility for a harmonious social unity.

CHAPTER VII

CROSS-CULTURAL AND SOCIOLOGICAL COMPARISON OF CASE STUDIES

Having content analyzed both case studies, the cross-cultural comparison of the Turkish and North American setting is the last methodological analysis. Although the scope of this study was limited to the PICU context for making this comparison, the everyday experiences of the researcher in both contexts were critical to her concluding insights, as supported by the choice of “naturalistic inquiry.” Therefore a summary of wider sociological observations in both contexts is included.

This chapter summarizes the cross-cultural and sociological findings, particularly those obtained from the interviews. The separation of the cross-cultural data from the rest of the study can offer a meaningful system of evaluation to compare the similarities and differences in both ICUs. Additionally, pluralistic research strategies (e.g., cross-cultural, phenomenological) could render the evaluation process for each ICU with overloaded results in the previous chapters.

Observations revealed various insights regarding the characteristics, similarities and differences of both models within a scale of five cultural indicators, which ranged from the culture of the PICU unit, the hospital system and culture, the culture of the city and region where they are located, and the Turkish and North American culture, to the culture of the West and East, and their relationship to one another, which signified the holistic notion of the interrelatedness of both samples.

In addition to healing interventions through positive social interaction, love, stress reduction, and relaxation, which emerged previously, the cross-cultural analysis revealed appreciation of cultural diversity might have healing potential. The characteristics of each ICU indicated the tendency of both units towards diversity and globalization. The relationship of social interaction and stress reduction to cultural design solutions to meet healing functions was also explored. Cultural diversity was then evaluated according to four categories: 1) Social interaction and social relationships, 2) the organizational culture and the meaning of leadership within each environment, 3) comparison of each unit to other PICUs and children’s hospitals in the nation, and 4) the strengths and weaknesses of both cultural environments. Finally the universal and particular characteristics of both models were summarized, indicating the results of this cross-cultural assessment. The conclusion chapter builds upon that information, and summarizes all emerging healing design interventions, which form an evaluation basis for further cross-cultural studies.

7.1 The North American Model

Diversity of the Contemporary North American Culture

The cross-cultural perspective extended the scope of the study beyond healing ICU design to the evaluation of contemporary North American culture. However, this was a very difficult and challenging task for several reasons. First, the fact of cross-cultural misunderstanding, as well as the global mass-production of preconceptions that highlight only the best values of North American culture and lifestyle attest to the difficulties of knowing and describing the real American experience.⁸⁰ Additionally, despite the fact that the researcher spent about five years in the U.S., her perceptions of the culture could not be neutral due to the domination of her background in Turkey. Finally the image of the U.S. both inside and out as an “idealized abstract object possessed by a group of individuals” is too strong to challenge. This dominant view may be the source of the “feeling of impotence” commonly felt outside.

The researcher recognized that the U.S. has its own health problems, particularly crime, an incredibly fast and inhumane lifestyle, a very expensive healthcare system, a high percentage of uninsured people, difficulty of having access to healthy food, lack of natural opportunities for physical activity, the high level of drug and alcohol consumption, and increased psychological and social disorders, particularly social isolation. Yet American culture also represents diversity, particularly freedom of the individual and of expression, the ability to respect the “other,” effective participation of people and pluralism of ideas, and increased participation in urban life and culture.

The Culture of the American PICU

The North American PICU confirmed the universal importance of positive social interactions for healing. Particularly FCC approach has a central role to play. Additionally, interview findings identified the tension between caring and technology in the U.S. unit, revealing social interaction is critical not only to healing but also to embodying meaning in technology. Caregivers suggested that technology, especially ICU technology, is not meaningful if it plays against human interaction. Particularly, computerized charting and invasive measures, which are part of the ICU technology, created ambiguous feelings among staff regarding their usefulness. However, nurses’ and physicians’ perceptions were different: the former generally were more skeptical of the usefulness of cutting edge technological approaches, such as increased computerization systems, use of ceiling mounted booms, and heroic measures. Instead, some of them called for a “return to caring and simplicity” (i.e., preference for simpler solutions), such as using traditional headwalls rather than ceiling mounted booms.

While the viewpoints differed regarding how much technology is needed in an ICU, all caregivers called for increased opportunities to relate to nature, maybe disregarding the need to measure the level of nature to be included. Similar to technology, the definition of nature, a fundamental healing construct, is commonly drawn according to its usefulness for human ends. Yet nature may not be all good and useful,

⁸⁰ Yet there are also negative preconceptions and stereotypes about the U.S. culture, such as U.S. parents do not love their children enough to keep them at home, or do not care about their elder parents.

just as technology seems not to be. However, in contemporary hospitals, there are not enough opportunities to relate to beneficial nature resources, which encourages more nature to be incorporated readily.

7.1.1 Social and Professional Relationships in the North American PICU

An important part of the PICU culture is social and professional relationships, which include: 1) The relationship between the caregivers, and particularly nurse-doctor relationship, 2) family-caregiver relationship, 3) family-patient relationship, 4) patient-caregiver relationship, and 5) child-adult relationship in North American culture (e.g., how an adult respects a child, explaining complicated things).

Caregiver-Family Relationship

Most staff members rejected the presence of socio-economic, cultural, educational, religious, or ethnic barriers in their connections to families. One of them said, “they have put this aside.” They agreed a little more attention might be paid to somebody occasionally, but not usually (i.fc.25).

The APs argued their interactions with families is frequent so they are used to it (i.ap.16; i.ap2.21). Additionally, they have a diverse staff, which represents the broad range of patients, and results in a good ability to identify with patients and families (i.ap.16). They also have translators and special people to help families. Sometimes there are issues based on religious or cultural differences, which they overcome through communication and understanding (i.ap2.21).

The AP argued that the most important differences are a combination of cultural, educational, socioeconomic, and religious factors, with education being the hardest one to overcome. If a patient has a very complex problem, and if the parents cannot understand it, it is very frustrating for them. They also have parents who are very highly educated and want to know every little detail that doesn’t necessarily help them, or their child. On the contrary, it might be more stressful for them (i.ap2.22).

The CM argued that they have barriers not only at a socio-economic level but at all levels at Children’s due to the dominance of people not exposed to other types of people, or having little tolerance for differences. She suggested they need more education on cultural diversity (i.cm.32). Generally, everybody confirmed the presence of sociological barriers rather than a socio-economic barrier. Another aspect of the caregiver-family relationship was revealed to be the difficulty of caregivers in relating to grieving families. The CM stressed the importance of touching patients, grieving parents, and one another in an ideal ICU. Therefore touch is a major healing intervention:

When the staff is comfortable, you have to teach them how they need to get in touch with how they feel: you are walking down the hallway to your child, and somebody says, “I am so sorry, are you okay?”... We need to be more mindful how to get the staff to that level where they are comfortable in stating and putting their arms around somebody, holding them, getting comfortable with that. Especially in that culture, they are not touchy feely people here. They are very standoffish; they don’t touch. I have rarely seen anybody hugging anybody here. And where I came from I was hugging everybody (i.cm.24).

Touching is a sign, a symbol that shows that you care. Touching one another is supportive. There is a reason for touch: *that’s the way God made us: to touch and to respond to touch*. However, not

everybody is comfortable with touching or being touched, which creates a barrier. At Children's everybody is very distant. It is important to go beyond this barrier to feel somebody with the touch. Feeling somebody is with you, going through with you makes all the difference in the world (i.cm.25).

Nurse-Physician Relationship

Nurse-physician relationship in the U.S. model seemed to be friendlier and more supportive than in the Turkish unit, and they treated each other more as equals rather than in a hierarchical relationship. Nurse-physician marriages were also much more common among the first. The researcher recognized that improvements in an ICU could be matched by improvements in the nurse-physician relationship.

However, the CM argued the nurse-physician relationship is strained at Children's because of the existing culture, in which they believe physicians are always right.⁸¹ She argued that nurses have too much respect for the physicians, yet respect should be for one another, not for a title. She knows other hospitals where people feel more equal and everybody have a right to express how they feel. Whether or not one's idea is accepted or rejected, how she presents must be more important. Within this kind of positive culture, they can feel like they can make all the difference in the world (i.cm.29).

The FC, on the other hand, observed that in other countries he visited, which are mostly South American countries, the physicians were put on a pedestal position, and the nurses were very subservient to them. All the positions other than the nurse were even lower (i.fc.23). This generalization may apply to the nature of the nurse-physician relationship in the Turkish ICU, where nurses are highly respectful for the physicians.

The AP found that there is a good level of collaboration between the nurses and physicians at Children's (i.ap.27). Although they work for very long hours, they maintain their ability to be caring because they have a lot of people around that help them out all night or multiple nights; i.e., there is support between caregivers (i.ap.34).

7.1.2 The Social Practice of Caring and Institutional Culture

Culture-Shift: Managing Transition

Changing the established culture and social environment of a hospital may be the most difficult goal to attain, although it may not require expensive modifications; it is just a humanistic concern. Sometimes hospital administrators may be unwilling or afraid of change in their institutions, especially in Turkey. Changing the existing hospital culture to a friendlier, less institutional, more equal and residential character may start with simple ideas, by adding softer finishes, colored curtains, flowered bed sheets, real flowers, the tones from a musical instrument, or the smells of homemade cookies or bread, particularly in those spaces that allow such interventions. However, people who want to initiate simple environmental modifications usually get a low response from administrators, who prefer to spend the money for hard

⁸¹ Yet her statement was in contrast with those expressed by the nurses, who argued they are well respected by physicians.

technology or practical functions: for instance, they would prefer “really cool monitors, which cost 2 million dollars because it is well worth to do this” (i.cm.26).

One of the managers expressed that she is not completely comfortable with the existing culture at Children’s. She believes that the people at Children’s may be less open to new ideas, and have less trust between nurses and physicians. Having “grown up” with a lot of physicians at another hospital in the Northeast (she was there when they came as attending physicians), they built strong relationships within time. Therefore, the long-term stay of the caregivers in a hospital brings a temporal dimension to relationships. Having spent twenty years in a facility, which ranked the first many years among the U.S. pediatric hospitals (*Child Magazine*, 2003), she wants to “pour” this culture into Children’s.

Another difference is that the physicians are not as cohesive at Children’s: they have independent physicians since they do not employ them. Yet it is easier to unite people around a concept and the philosophy of the institution, as opposed to when people are independent (i.cm.9). Finally, because the different ICUs have always been together at Children’s, there are six clinical managers, each having her or his own unit, and since they are a group, they cannot be as individualized as they wish.

Another administrator suggested that the current culture at Children’s would be friendlier to families over the time, despite the challenges stemming from the nature of the ICU practice, which includes the intensity of technology and the invasive procedures. However, there should be no secrets between the families and the caregivers. Over the last five years, their ICUs have become more inviting to families, but the process is not complete. Culture is a lot harder to change than anything else. That culture-shift will not only take an evolution of the staff members, but also of the doctors, who are not necessarily comfortable with family presence. Because in the current U.S. society, people do a lot of lawsuits, which makes it more frightening for the physicians to allow the families in the room all the time. It takes a mutual relationship between the families and the caregivers. Research shows the more information caregivers give to families and the more open they are with them, 1) the more satisfied families are, 2) the more they trust them, and 3) the less they sue (i.ud.23).⁸²

7.1.3 Comparison to other PICUs and Children’s Hospitals

Comparison to other countries: Several interviewees revealed their awareness of the extreme differences in the healthcare conditions in other countries, especially in developing countries. The U.S. caregivers hear the differences in care in other countries mostly through international fellows who are in training in North American hospitals, including Turkish physicians and intensivists.

The CM argued they need more exposure to cultural differences to understand 1) what is happening in other parts of the world (both inside and outside hospitals), and 2) what they do in the U.S. in comparison to those places is more than enough (i.cm.30). They need to find a balance, yet continue improving the care they deliver. Comparing their model at a relatively smaller scale to other domestic hospitals, she argues that they need to share what they have: “The children here are no different than the

⁸² In the pediatric environment, not getting enough information is the number one dissatisfier (i.ud.23).

children in Philadelphia. If you can get good childcare in Philadelphia, you should be able to get good childcare here... It shouldn't be about one little section of the world" (i.cm.30).

The PA, on the other hand, visited many facilities in England, where public hospitals are very old compared to the U.S. standards: they use health facilities built over a hundred years ago, such as ward environments with as many as 24 patients. However, they recently developed a huge financial initiative to construct new hospitals, in which 25% of the patient rooms will be private rooms. She also heard somebody describing an Indian hospital, where the families provided all the meals for the patients, and where they had a common kitchen, and a porch to sleep on. Although they are rudimentary, these hospitals work as good as possible under the current situation. Finally, she advised the researcher to look at Japanese ICUs, since they have been able to make technology fit into their unique culture⁸³ (i.pa.26).

Recognition of staff needs in different countries: The FC, who had exposure to healthcare environments in Venezuela and Guatemala, felt that those countries have a less humane approach towards their caregivers, which is: "This is a very labor-intensive, task-oriented job. Your comfort is not my concern." They do not worry about employee turnover because once somebody gets the job, she will put up with not having a nice space because it is a high paid position in the hierarchy of the society, and caregivers are well compensated for their educational level. Therefore, once the nurse gets the job, she will do everything to keep it (i.fc.20.1). Although the lack of comfort is a common observation relating to work conditions and work environments of Turkish caregivers, the economic benefits of Turkish nurses do not match with the conditions in those countries because nursing is a very low-paid job in Turkey.

It was also suggested that the healthcare market has very different strategies in different countries to deal with the needs of the caregivers. Staff needs are ignored worldwide, resulting in a global nursing shortage including the U.S., where the needs of families and patients are recognized better. Therefore U.S. hospitals have to make their facilities user-friendlier and more comfortable for the caregivers to be able to keep them over a long period of time. If they do not pay attention to staff needs, caregivers will go to other hospitals, and make similar amounts of money, but have a nicer and more comfortable space, as well as a more humane work culture (i.fc.22). The recognition and satisfaction of staff needs is an emerging trend in U.S. hospitals, which was ignored for a long time. Staff needs should also be recognized in Turkey and other countries to improve their national health systems and cultures.

Cultural care concept: Cultural care, which relates to understanding and respecting cultural and religious differences of the patients and their families, is another cultural difference in the service industry of the U.S. PICU. The reason is that the U.S. society has enormous cultural variety, which results in the need to address the special needs of different patient populations and of their families. The FC argued that religious differences do not impact the care, yet they try to accommodate different religious aspects. If they have a Muslim or a Jewish patient, they are more sensitive to the specific issues such as their diet, or they

⁸³ The PA recalled: "Japanese people are adapters of technology. If the [prevailing] culture is not good with technology, that is different. Japan is very technology-oriented; they love technology" (2002; personal communication). Other cultures that are anti-technologist may also be recalled.

avoid giving a Muslim patient drugs derived from pigs. When they had a terminal Buddhist child, they contacted their local monastery, and brought Buddhist clergy in to offer their services (i.fc.26).

They also show concern by accommodating language barriers of different populations: 40% of the population in the city is Hispanic and Spanish-speaking; 40% is English-speaking; and there is a large oriental community, Chinese, Korean; and some small French communities that speak their own language.⁸⁴ At Children's, they provide speakerphones in all patient rooms so they can contact their telephone translators. Since the biggest translation needs are in Spanish, they have in-house translators twenty-four hours a day. Although the translators and speakerphones are unique to Children's, most U.S. hospitals are very attuned to the needs of other ethnicities (i.fc.26).

Comparing public versus private hospital: Another cross-national difference is between public and private hospitals. The FC suggested that middle-to-upper class families prefer private hospitals, and lower classes have to go to a public facility in many developing countries, including Turkey. In the U.S., too, upper class prefers private hospitals, yet they are often not as advanced as public or university hospitals, and they are not superior in patient treatment, while they may be better in service industry and patient support systems. The FC claimed that in a public hospital like Children's, richer patients might still have all the benefits they wish, including private physicians or nicer rooms. However, in terms of patient care, everybody gets the same treatment. He tells a joke, which is, "if you are in Parkland in the no-insurance floor, you do not get the carpet." Additionally, a public hospital in the U.S. will exceed a private hospital in trauma and ER (emergency) expertise due to the variety of patients, as in Turkey.

7.1.4 Strengths and Weaknesses of the American Model

Strengths of Children's and the U.S. Culture

The medical program at Children's (i.ap.21), the state-of-the-art care they provide for children (i.ap.21), their ability "to do anything" (i.cm.34), their commitment to research (i.fc.28), and the physical environment especially in the new ICUs (i.ap.2.27) were stressed as their strengths. The AP argued their medical program has very good people, influencing the quality of the medical, nursing, and respiratory care provided. Children get excellent care because a lot of their work is at the forefront of pediatric critical care. Things they have at Children's are not necessarily available in other places, including participation in a lot of studies (i.ap.21).

Another strength of the hospital is the benefits resulting from the strong economy of the city:⁸⁵ First, the city has many big corporations and wealthy executives, which lends itself to a lot of money and

⁸⁴ The FC obtained these rough statistics from the Local School District, when they did the last Census.

⁸⁵ There are multiple philanthropic organizations and individuals in the city, which are approached and received through the Children's Foundation: they have a strategic plan to gain the required funds. They were getting ready for the kick off during the case study period. Most of the fundraising takes place through private donations but they also have other financial arrangements. Many private families in Texas donate money to the hospital every year (i.df.13).

cash flow. People that make more money find ways to donate money. In that sense there is a big corporate America in this city with big corporations like EDS, Dr Pepper, and JC Penney, and their corporate headquarters (i.ud.14).

Second, it is not only about the “new money,” but it is also the “old money.” When the state was first blooming (before the 50s and 60s, when oil was very big in the State), a lot of people made a lot of money on oil, and other industries. That money has been sustained in the State and in the region (i.ud.14).

Finally, there is an enormous professional sports base in the city, such as hockey, soccer, basketball, and football. The ICU director reminds that the American sports figures make and donate a lot of money. For instance, Troy Akeman donated a million dollars and built an entire center (Foundation) at Children’s under his name. He also donated money for Cooks Children’s Hospital in Fort Worth, where his sister is a social worker. Children’s supports a big indigent population: many families have no money to pay for health care, or they are under Medicaid, which is sponsored by the government health care reimbursement programs (i.e., they don’t have private insurance) (i.ud.14).

Cultural diversity of American society: Comparing the U.S. society to other nations,⁸⁶ the FC focused on the diversity of the U.S. population, and its advantages. He concluded that it is advantageous to recognize and respond to the differences of others. Although he never lived in a country where most of the population is one background, like “Turkey or Germany,” he found the lack of diversity disadvantageous.

He argued further it is very advantageous to their Hispanic or Jewish patients to have Hispanic or Jewish people in the staff, who recognize certain elements within their faith and culture, and the people within the facility to interact with patients and families of a similar background. It is not only about having the same faith, but also knowing that Friday nights have a different meaning to them. In summary, it is very advantageous to the patients when the staff recognizes their differences and their special needs, and makes accommodations for their comfort and wishes (i.sb.27).

Weaknesses of Children’s and the American Model

Space constraints (i.fc.29), limitations in the physical plan and in the number of beds needed (i.ap.21), lack of nurses (i.ap.21; i.ap2.27), insufficient staff amenities (i.ud.18), existing hospital culture (i.e., the limits to family centered care and the quality of the nurse-physician relationship) (i.cm.35), and disadvantages of the high-tech and high-pace work environment (i.ud.16; i.ap2.27) are suggested as the potential weaknesses and challenges faced by Children’s.

One of their main disadvantages relates to the lack of physical space for a substantial growth on-site after the towers get built: all the property around Children’s belongs to other hospitals, local

⁸⁶ The FC based his arguments on his experience in Venezuela, where every patient is Catholic and speaks Spanish, which eliminates considering the special needs of different patients. Regarding Turkey, he argued that, in spite of the migration of many cultures throughout centuries, it sustained the same base of people.

government buildings and power plants. Therefore they will need to expand in other phases and with satellite hospitals, which will not change the use of the current building (i.fc.29).⁸⁷

Second, they do not have enough bed space for all the patients that need to come to the ICU, although they try to serve an ever-increasing population. Neither do they have enough nurses, especially those trained in critical care. “Someday they don’t have enough beds but nurses, and other days they have beds but not enough nurses” (i.ap.21; i.ap2.27).

The CM who came originally from an outer facility suggested their weakness is their inability to openly embrace change: “They are going in the right direction; they are just not getting it yet” (i.cm.35). Another struggle is that Children’s is a university system based on a medical center approach, which is not an ideal work environment for many nurses (i.df.16). Especially, the hospital has limited staff amenities and limited funds to improve them since most of the donations goes to patient care areas (i.ud.18).

The AP suggests that the work pace gets extremely busy at certain times. People get very stressed out if they are in the hospital for two or three days at a time. It is also harder to get feedback when people cannot sit down and eat. However, the intense pace is the nature and culture of the big city hospital, which she generally enjoys (i.ap2.27).

Finally, money can also be an important restrictor if they cannot get the required funds to build the Grand Scheme. Although the community was very generous in funding Children’s in the past, they had never asked them for a huge amount of money⁸⁸. They believe that the community will respond, and they will know by the end of 2003 if they can do everything they want to do (i.ud.13).

Social class distinction in American society: Contradicting the perspective of the FC, the CM focused on her own experience in the U.S., where she always faced with social barriers as a black woman. She is now comfortable with it; she grew a “thicker skin,” thereby overcoming struggles. Usually she can win people over through the experience of being with her and getting to know her. Minimally, the barriers will come down to a comfortable level. However, when she was in the nursing school during the 80s, it was very difficult for African-American people to get into their top five percentages. She argues she has faced these obstacles daily and regularly:

In this state, you feel the difference at times, and they talk about cultural acceptance or tolerance. If somebody is tolerating something, that is an awful word. Because when you tolerate something you are not really accepting it. You say, “Okay, this is what we have to do.” We have to work on cultural diversity, to recognize and accept we are all one, and we are all the same. *Be it the truth rather than something we strive for* (i.cm.33).

⁸⁷ They are building a hospital in a suburban area. They also have clinics in surrounding areas around the Metroplex, which is the major metropolitan area (i.fc.29).

⁸⁸ They will ask for approximately two hundred million dollars to support the Grand Scheme. Other hospitals in the region already asked for huge amounts of money, went through big foundations, renovations, and even built a brand new hospital recently.

However, the FC claimed that the social class distinction is much more predominant in other countries than it is in the U.S., remembering that, in the U.S., patients from the lowest and highest levels of the economic scale will be treated in adjacent rooms by the same doctors and the same caregivers (i.fc.24):

In many U.S. hospitals, patients are treated the same by the same people in the same environment. On the top floors of Baylor, they have ultra executive patient rooms, where they are served with china with real silver, they have noon TV, etc. But that is an exception. In many countries, people in the general hospitals are middle class or lower, and those above that class threshold are in a private hospital. The physician you see may only be seeing ten patients in that hospital⁸⁹. Your nurse may have one or two other patients. Here you have one nurse with two patients in the ICU. In Guatemala, it was two nurses for eleven patients in the ICU. *A lot of care is dramatically different.*

7.1.5 Conclusion

The case study highlighted the U.S. model based on the researcher's experience in the PICU for several weeks, which were not isolated from her daily observations in the North American culture. While it is likely that this study better represented the characteristics of Texas hospitals, their systems and cultures, it may insufficiently have attended to the diversity of North American society and its hospitals.

The first cultural difference, compared to Turkey, is that the PICU is a specialty department in U.S. hospitals. The diversity of the North American PICU was particularly represented with the FCC approach, the nurse-physician relationship, progressive leadership models, particularly of the "nurse administrator," the advanced status of public hospitals over private facilities, the diversity of patients, families and caregivers, cultural care concept, and social class distinctions and social domination, particularly as perceived by an African-American female caregiver and administrator.

7.2 The Turkish Model

This section summarizes the Turkish PICU model as a function of the Turkish culture. Six questions addressed Turkish caregivers' perceptions of the diversity of their unit. It was assumed that children have more universal qualities and may behave more similarly than adults. The cultural and sociological environment was evaluated addressing 1) the behaviors of families and caregivers, 2) caregiving practices and the institutional culture, 3) design trends in Turkish hospitals, and 4) stereotypes of the Turkish character. Additionally, more concrete data was included through: 1) transnational comparison to other children's hospitals abroad, 2) national evaluation of Turkish PICUs and children's hospitals, and 3) the weaknesses and strengths of the Turkish model. The conclusion brought new ideas about Turkish culture in comparison to the global model.

⁸⁹ More clinical experience comes with more patients, despite disadvantages in the care given to the specific patient. There may be an optimal number for patients per physician.

7.2.1 Social and Professional Relationships in the Turkish PICU

Previous data analysis revealed the relationship of social interaction to healing. Therefore characteristics of Turkish families and caregivers and their social and professional relationships were a major part of this cultural analysis. First, the researcher observed inhumane behaviors in some caregivers' treatment of families, and the lack of standardized hospital policies and education programs to establish idealized family-caregiver relationships. There were also problems in the professional nurse-doctor relationship, patient-caregiver relationship, and child-adult relationships in general (e.g., caregivers often do not explain procedures to a child). Finally, although social interactions were strong and natural, social class segregation and stratification between groups prevented establishing a context for greater social interactions and a sense of community.

Culture, Behavior and Relationships of the Rurally Oriented Family

The Turkish ICU is not as friendly and inviting to families as the U.S. model, and information is kept from them. Although space constraints play a major role in excluding families from their child's care, families' low level of education prevents them from understanding the care given, thereby discouraging caregivers from giving detailed information. However, they need to improve families' education level regarding care and their interpretation of what they hear, so they can treat them as equal care partners.

Since most families coming to the hospital are rurally oriented, which have not completed their transformation into urban culture, family characteristics generalized in this study relates mostly to rural families. However, due to the lack of an efficient documentation system, no demographic data could be obtained about families' socio-economic and educational status (e.g., income, years of education received, other factors influencing intellectual development). In the future, this data would help researchers to evaluate family's status and readiness for a transition to FCC.

The researcher observed that some rural families, particularly older family members, were characterized by crying and mourning loudly after their patient's death, ignoring hospital rules and entering the ICU many times illegally, and asking the researcher, whom they could approach, for information. Most families were silent and powerless, yet they kept smiling sincerely and being positive. They were also respectful of the caregivers, and appreciated every bit of information and care they offered. Urban families, on the other hand, were more active and demanding, and received better treatment, higher respect and more information from the caregivers. Regardless of socio-economic status, all families provided emotional support for other families, particularly during death and dying.

Caregivers also reported their observations of the rural family: 1) Exaggerated mother-child attachment, which may be insecure, 2) public and loud response to their child's death, 3) parental relationship, unequal role distribution and lack of family communication, 4) family-caregiver relationship, 5) the lower status of the woman, which increases if she has a male child, 6) the higher influence of the grandparents, 7) illegal visitation behaviors, and 8) problems with the perception of disease.

First, mother-child attachment is found often exaggerated, overly dependent, and insecure. The CR suggested that mom's attachment to her child is not peculiar to Turkish culture: it is a universal feeling, and a mother cannot be separated from her child. Yet the child's attachment to the mother may vary in different societies and families. Even within the same culture, this is heterogeneous: they can see very dependent or independent and mature children in the same ward within the same age range. Yet there may be cultural differences, which can be indicated quantitatively (e.g., it may be 80% in Turkey and 75% in Greece). Insecurely attached children may also have secondary gains, for instance, they may be the only child in their family, receiving gifts and praise, and getting spoiled if they show dependent behavior. Sometimes the family is sick, not the child, which happens all over the world (i.cr1.29).

The CR reported further behavioral examples from the dysfunctional and rural family. Particularly, the mother, who is under great stress and anxiety, can behave strangely. When her child dies, she feels guilty. Since she needs to give an explanation to her husband, she may accuse the caregivers to get rid of the guilt. Also, a mom's mourning after her child's death may not only stem from pain: "she may be playing her role in the family." Particularly, the loss of the male child, who provides her a higher status in the family, means the loss of this status. Yet these are only "case reports" from the rural and ill-educated family, and they cannot be generalized (i.cr1.29). However, the value assigned to boys is inherent in Latino Mediterranean cultures, including Turkey.

Sometimes the woman's role and status in the family is very low, and there may be a lack of parental communication. For instance, if the mother needs to socialize, and her husband does not respond to this need, she might suggest their child is sick to be able to go to the hospital, which is a public place, where they can meet people (i.cr1.29). Another common behavior in the PICU is when she avoids the responsibility of her child's home-care education, such as the application of the child's nutrition from the nose through a feeding tube, which is known as NG or nasogastric (nose to stomach) nutrition⁹⁰ (i.hn.32).

Despite the presence of these behaviors, family ties and child-parent attachment are extremely strong in Turkish family. Additionally, there is a balance between parental roles: although the father seems to be stronger and more authoritative, the mother adjusts the "things and tension" (i.hn.32). Additionally, parental roles have changed extensively in middle-class families, and became more equal.

Family culture also influences visitation behavior. The HP mentioned that family members stay in the hospital no matter what to hear some information or see their child (i.hp.33), although they don't even have a restroom. They also disobey visitation rules, and enter the PICU as often as possible.

Finally, the perception of disease is another culturally influenced characteristic. Particularly families may be ashamed of certain diseases, and may even hide "bad" or chronic diseases, such as cancer or infectious diseases. On the other hand, if the problem relates to a problem like traffic accident, which was not in their hands, they reveal it (i.hp.35). The reason of these different perceptions of disease may relate to religious beliefs regarding the connection between disease and God's will.

⁹⁰ An NG (nose gastric) tube is a gastric (stomach) feeding tube (enteral nutrition), which is passed through the nose, down the throat, to the stomach. (The PEG requires an outpatient surgical procedure to implant it through the abdomen into the stomach.)

The Culture of the Caregivers: Nurse-Physician Relationship

Although caregivers represent a well educated section of society, and an advanced stage of the cultural transition from Eastern and rurally oriented values to Western, modern and urban values, they are still under the impact of the shared culture, history, tradition and language.

Analysis of the spoken and unspoken cues from interviews, conversations and recorded dialogues revealed the hierarchical relationships of the caregivers: 1) Nurses were perceived as lower level caregivers, which started early in the medical education system. Nurses reported that most physicians do not even know their names. 2) Since nursing is a female profession in Turkey, nurse-physician relationship is further strained by gender issues: most male physicians seemed to avoid socializing with nurses unlike the U.S. model, where nurse-physician relationships and marriages were common. 3) Some female physicians emphasized the “femaleness” of nurses, reflecting a higher perception of their own occupation. 4) A head physician in another hospital, who was met during preliminary studies, tortured physicians, caregivers and even other administrators. Abuse of power may not be uncommon in other hospitals, where the concept of leadership is a troubled and misinterpreted area. Although the observed hospital has staff-oriented administrators with a progressive vision, they may be behind Western notions of the meaning of leadership and management, which is based on teamwork and collaboration rather than individual power.

Other relationships were also explored. The HP suggested that the patient-caregiver relationship in their hospital may be warmer, kinder, and more sensitive than in the West. However, families, even staff members are usually shy to participate in the care plan of the patient. Particularly family members are not comfortable to ask questions to their physician. The HP argued they have to create a hospital system that works effectively despite the individual weaknesses of families and caregivers (i.hp.34).

7.2.2 The Social Practice of Caring and Institutional Culture

Social Practice and Caring Models

Visitation hours: Limited visitation hours are still enforced in Turkish PICUs due to the lack of space and family-centered care model, particularly since family members visit in overly crowded groups. Although administrators are aware of the handicaps of imposing visitation hours in the pediatric environment, they need those hours to ensure infection control, safety, circulation control, and an efficient workflow. They also need to direct the visitors using the key role of the parents. Sometimes grandparents rather than the parents might play this role in the family, which was more common in previous times. To transcend to a family-centered and patient-focused care, they need to accept the parents’ fundamental role in every decision, and satisfy the child’s needs in the caring process. They may even need to accept and value the grandparents’ role in the family, which is peculiar to Turkish society (i.hp.33).

Staff time spent with patients and families: Following the recognition of patients’ and families’ role in the caregiving process, staff time spent with patients and especially families, and healthcare education of families is desperately needed for a transition to FCC. The HP admitted that Turkish physicians do not spend enough time with families explaining the care they give due to the very heavy

workload. Yet more experienced physicians usually recognize eventually the importance of spending more time with families. There are also differences between a chronic care and an acute care specialty physician: As an oncologist, he was always inclined to build relationships with families. They expect to improve the physician-family relationship and family education, once they assign a pediatric intensivist as the ICU director. They will also provide more conscious information, particularly standardized discharge information packet to ensure preventive medicine and reduce the occurrence of traumatic events (i.hp.41).

Public health consciousness and the lack of public health education: Recognizing the U.S. President Clinton's best practice as delivering important messages on public health, the HP argued that the most important health problem in Turkey is the lack of public consciousness to care for health, which relates to the lack of modern public health education (i.hp.35). The lack of this education and the lack of public awareness to care for health may result from the traditional order, which presented alternative traditional medicine since the time immemorial, and ill-functioning contemporary national institutions.

Discrimination of nurses: Economic and social discrimination of nurses is a common problem of all developing countries. Even in the West, nursing profession does not attract people for similar reasons. In Turkey, they are not perceived and treated as equal partners of the health team, and unlike the U.S., their experience is not commonly valued for management roles.

To summarize, the statements of Turkish administrators mostly confirmed the notions of Western model, yet they could not change their current PICU model and incorporate more humanistic design interventions for satisfying staff and family needs. Particularly, the lack of FCC and the lack of the recognition and satisfaction of staff needs need improvement. While patient focused FCC model has been evolving in the West, staff needs remain unrecognized in many hospitals all over the world.

Stereotypes of the Turk

Although a large-scale generalization of a certain nation will not be sensitive to individual differences, and may introduce clichés and wrong ideas, exploring the Turkish stereotype was part of the interview method to reveal uncovered local differences of Turkish people in comparison to the West. To begin with, the attending physician (AP) was sympathetic of the "Turk." She described her or him as someone who likes to help other people and participate at events around, even if only as an "assisting actor." Usually, she or he has a lower educational and socio-economic status, and may be insecure. She or he also wants to be liked by the "West"; dresses up like the people in the West (Figure 7.1); is fond of learning foreign languages; and would spoil a foreigner who is not even popular in her or his own country (i.ap.30).



Figure 7.1: Westernization Images from Turkey: Left: Cover Illustration from *Yedigün*, a Popular Family Magazine from Mid-thirties (The “new” image of the Western-looking modern “Turkish” woman is collaged against a background of Istanbul). Right: The “New” Turkish Woman in the Arts, 1939. (Source: Bozdogan, 2001).

Other negative features of the “Turk” are 1) she or he lacks self-discipline, 2) the father or masculine figure is influential in determining discipline, which she/he lacks, 3) she/he is often willing to accept whatever is offered, and does not aim to receive “more” or “better” (caregiving), 4) she/he is overly respectful of older people because of her/his upbringing (and maybe Turkish education system; for instance, during primary and high school education, students have to stand up when their teacher enters the classroom), 5) titles of respect are added in front of the names, determining one’s value regardless of her or his achievements, and 6) she/he does not like to ask questions, has no passion to learn or to understand why the disease occurred, and if someone offers this knowledge, she/he gets emotionally attached immediately (i.ap.30). In short, she or he is often an uneducated person with good intentions, who is going through the process of modernization.

A colleague of the AP, who came to the room during the interview, was passionate about the discussion and wanted to share his ideas: according to him, the “Turkish” character 1) has a very good and innocent heart, 2) wants to participate at everything and everybody’s business, 3) is curious about others, which is in contrast with one’s social isolation and alienation in the West, 4) lacks confidence towards the West, yet is extremely fond of the West; for instance, if a Western professor of medicine is in their facility,

families throw themselves to be diagnosed by him since they have extraordinary trust in the knowledge of the Western man. Yet the AP reminds the fact that similar feelings were influential in most places in Europe. She observed that people were more respected if they spoke English rather than their native language in Netherlands (i.ap.30). This lack of confidence in one's own culture and language may relate to the universal impact of the American image.

The head nurse, on the other hand, perceived the following characteristics of Turkish people: 1) They are very emotional, and like to exaggerate events, 2) they tend to use their social relationships for personal gains, 3) they are usually not open to criticism, 4) in communication, they are not direct but face saving; they lack communication skills and self-expression, which may be due to low educational level, 5) it is difficult to explain them something; it is even difficult to communicate with the people at the top. Yet they are very good, warm, friendly, and loving people fond of socialization (i.hn.31).

7.2.3 Comparison to other ICUs and Children's Hospitals

A major cross-cultural difference is that the PICU became a specialty department in North American facilities, whereas it is still a unit in Turkey. They plan to expand it to a department in the future, when they can hire faculty that belong to the PICU, a director of ICU services, and more pediatric intensivists trained. While receiving specialty training in North American hospitals is a strong trend among Turkish physicians and intensivists, the chief resident (CR) reported that there were no pediatric intensivists in Turkey in 2000. Yet after the 1999 earthquake, this need became obvious (i.cr1.30). He became the first director of the PICU in 2003 upon his return from Johns Hopkins Hospital in Baltimore, U.S.

Having visited two foreign hospitals, which are the outpatient clinics and pediatric wards of 1) McGill University, and 2) Saint Justine Hospital in Canada, the CR observed that the patient-family (particularly, child-mom) relationship is similar and universal in the West. He liked 1) the provision of special step-down rooms located adjacent to the PICU, where children stayed with their moms, and 2) the nurse-to-patient ratio. However, he found the level of equipment and technology similar to their ICU. He disliked dark room and silence practices in the NICU (i.cr1.30), yet such spaces have been demonstrated to support healing. He prefers light in the NICU and PICU so nurses can follow up their patients.

The HP, on the other hand, visited North American and Kazak hospitals, observing that: 1) the administrative and institutional structure is extremely powerful in the U.S. health facilities. 2) Compared to Turkish facilities, U.S. hospitals do not have any spatial problems. 3) Job definitions and workflows are much more precise. He believes that the most important problem of the Turkish ICU is the lack of space. Although the workflow of the ICU is good in itself, in admitting patients, and in deciding what to do if a patient cannot be admitted, problems relate to the physical environment and its behavioral consequences on caregivers and families (i.hp.36).

According to the HP, although health issues need to be improved all over the world (“even in England they admit a patient in a month”), and patient flow is relatively good in their hospital,⁹¹ it is always very busy and there is a lot of turnover (i.hp.35).

National evaluation of pediatric intensive care units: The researcher explored 1) the impact of the social and economic factors of Turkey on the development of PICUs and children’s hospitals, 2) the characteristics of the city on pediatric healthcare delivery, 3) the comparison of public and private children’s hospitals, and 4) why PICUs and children’s hospitals, which tend to be a very profitable industry, have not been well developed in Turkey. A Turkish pediatric intensivist argued: “For care to be profitable particularly for private hospitals, there has to be good reimbursement or enough private, rich patients. More than 95 % of sick children requiring hospital care in Turkey are however either very poor or government insured unable to pay for any private hospital so far” (personal communication, 2004).

Comparing their hospital to non-academic public hospitals, the CR argued, “if you refer a patient here from such hospitals, families believe you are a good physician who rightly diagnosed the problem. Therefore it is easier to be a physician in those hospitals since you can refer to us when you cannot handle a critical care patient” (i.cr1.31).

Social and economic characteristics of the city: Ankara represents peculiar characteristics of its own as the capital of the nation, which employs many public officials and bureaucrats. Its social conditions are therefore determined by the demographics of this population. Those who are insured (i.e., working in government institutions) go to social security or university hospitals, while the “uninsured” or the “rich” seek health care in private hospitals (i.cr1.32).

The CR reported that it is very expensive to build an ICU in the city; instead public hospitals usually invest in beds that can offer critical care (i.e., monitoring and mechanical ventilation) when needed. In this way, they can use the same bed for both regular and critical care patients, which is more cost-efficient since critical care patients come rarely (i.cr1.32). Yet in Turkey, “an ICU is still defined as a room with extra oxygen connections, monitor and ventilator supplies, and these are the only costs involved in an ICU according to most administrators” (personal communication, 2004).

Private hospitals, on the other hand, are neither well-developed nor well-designed: they convert multi-storey apartment buildings into a hospital building, converting the mechanical room in the basement into an operating room, and incorporating the ICU function (i.cr1.32).

The CR compared Ankara to the case of Istanbul, where ICUs are much more common in private hospitals, and receive much more money due to the significantly higher socioeconomic class living in the city. The private healthcare industry in Istanbul developed in a very different way than the academically oriented healthcare system of Ankara. Operating through an ICU “pool system”, all the money gathered

⁹¹ A recently approved health coverage agreement between Turkey and England proposed to enable English patients to get health care in Turkish hospitals. Turkey also has bilateral health coverage agreements with five European countries: Austria, Belgium, France, Germany, and the Netherlands. Such agreements ensure citizens of these countries who hold valid health coverage policies from their national social security institutions equal access with Turkish citizens to free-of-charge healthcare services in private Turkish hospitals.

from the patients is shared among physicians, reaching astronomical values. Yet the physicians that care for outpatients are paid per patient. Therefore, private hospitals and ICUs are well developed in Istanbul unlike Ankara (i.cr1.31). However, the national government has always supported and invested in Ankara more than any other city. In Izmir, on the other hand, which is the third big city of the nation, private hospitals are less developed compared to those in Istanbul because public and social security (SSK) hospitals operate much more effectively in the former.

Comparing public and private children's hospitals: The public and private hospital comparison may provide a more complete national evaluation. The CR claimed that the number one concern of private hospitals is to profit through cost efficient patient care, yet an ICU means risky patients that can die. The rapid development of the NICUs in Turkey was an outcome of money: they are much more profitable than PICUs, which makes them more common with the provision of better facilities in public and private hospitals. Particularly, the cost of babies' isolettes⁹² per night is very expensive. They need to see that PICUs are also profitable to invest in (i.cr1.31).

The HP summarized the advantages and disadvantages of being a public university hospital in Turkey (i.hp.14). He claimed that private hospitals mushroomed starting from mid-nineties, yet have not completed their development. Since they are not well established, most of their distinguished faculty stayed in the hospital despite more attractive salaries from private hospitals. Their quality of nursing services is also the best in the city. Private hospitals, on the other hand, witnessed crisis situations; one of them was sold, another was closed, and other hospitals encountered financial problems.

Additionally, the ethics of care are not well defined in private hospitals. Usually it is a function of the ethical standards of the hospital administrator. These mechanisms function more efficiently in well-established university hospitals, where the control is not only from the top but also people spontaneously check one another all the time, enormously increasing the quality of caregiving. However, the main disadvantage of being a public hospital is their grand scale: Particularly, 1) changes are implemented very slowly, and are much more costly. 2) Unlike the private sector, it is not possible to fire staff; they can only punish them, yet there is no effective punishment system in the government sector. 3) They have many problems with human resources and staffing shortage.

In sum, private hospitals in the city need to achieve the quality of the medical staff, and the ethical and caregiving standards of public university hospitals, while the latter need 1) to be able to make decisions and implement change much faster, 2) provide better management of human resources and more focus on the financial side, and 3) create a visionary team based on long-term planning (i.hp.14).

Design trends: ICU design issues were explored in order to prevent the degenerative copying of elements of hospital and ICU design from the West, and honoring and respecting the diversity of the Turkish culture that should inform pediatric hospital and ICU design. Yet caregivers perceived that they needed to have a special interest in architecture to be able to answer this question.

⁹² The special newborn beds used in the NICU are called isolettes or incubators, which are designed with a plexiglass-like material around them to provide protection for the baby and reduce the noise the baby hears.

The HP perceived that they should follow Western hospital and ICU design models, without emphasizing cultural specificities, since they will not be influential over the workflow of an ICU. Particularly, they are proud of the U.S. medical system they have followed since their beginning. Yet minor modifications would be necessary while adapting Western design prototypes, as they did when they renovated their adult surgery and brain surgery ICUs in 2001 (i.hp.39). However, the hospital was established in the 1960s according to the U.S. model, and little if any change occurred since then in contrast to North American hospitals, which underwent major structural renovations, expansions and reconstructions in the past 30 to 40 years. Additionally, the design of U.S. hospitals, which has long been dominated by rational functionalism, is becoming more innovative and creative, transforming the institutional examples of the past.

Regarding cultural specificities that need more sensitive ICU design, the HP noticed that the size of the family waiting room should incorporate overcrowded visitation of families and friends due to the lack of individual patient rooms, “yet no major cultural differences exist” (i.hp.40).

In addition to missing provisional and functional spatial requirements, ambient needs were also ignored. For instance, there was almost no access to daylight, and an exterior view or a view of the sky was not available either to patients and caregivers. “Turkish PICUs almost always have to be fit with what the administration gives them. Physicians and other PICU staff are almost never asked what they want,” stated a Turkish physician (2004, personal communication). Design solutions that 1) improve family waiting and visitation and staff caregiving function, 2) increase and improve family time spent with their children, 3) increase and improve staff time spent with their patients and families, and 4) improve family healthcare education are critical to explore for future Turkish PICU design.

7.2.4 Strengths and Weaknesses of the Turkish Model

Strengths of the Turkish Model and Organizational Culture

While the researcher found social support and social interaction among caregivers and families, and informal cooperative staff relations to be the major strengths of the Turkish model, caregivers valued their nationally top ranking education system and being a teaching hospital to be the highest.

Teamwork, group practices, and physician interactions: Their emphasis on teamwork, group practices, and physician interactions was the most recognized strength. The HP claimed their decision- and policy-making processes are based on networks and group practices among physicians and administrators, unlike many other Turkish hospitals⁹³. The number of faculty in pediatric care is above seventy, who

⁹³ While this statement may contradict with an observation in Table 8.3 that Turkish physicians are more independent and autonomous as compared to Western physicians, teamwork and group practices in the observed Turkish hospital may still not be as strict as in Western university hospitals.

provide continuous feedback through academic interactions in weekly and monthly meetings. Within this type of atmosphere, no single person can make an individual and authoritative decision⁹⁴ (i.hp.38).

Academic hierarchy: The attending physician (AP) and other physicians praised their academic hierarchy, in which everybody has to inform the person above him, i.e.; intern to resident, resident to chief resident, chief resident to attending physician, attending physician to the department head, and the department head to the department heads of other specialty departments such as oncology and cardiology. In this kind of system, various units visit a patient and control one another. Students evaluate professors and vice versa. Yet within this type of atmosphere, people also become paranoid and insecure. They need to identify someone to be responsible for medical decisions. They share responsibility to minimize personal guilt in mortality. The AP claimed this might be a cultural trait, or the particular culture of their hospital (i.ap.35), which most people perceived as strength. However, the researcher was skeptical about the benefits of this type of atmosphere, which plays against individual leadership skills.

A Turkish pediatric intensivist reported “in the U.S., one could easily observe that the atmosphere of the medical educational activities is radically different from the unduly harsh and aggressive (and sometimes irrelevant) discussions in most Turkish institutions.” Yet he noted that the caregivers from the observed hospital are often very proud of their conferences being harsh and aggressive. The researcher felt a similar social atmosphere during her interviews, which was also indicated by the HP.

Education activities: The HP viewed their weekly academic and mortality meetings as an important tool for establishing the relationships and control mechanisms between various departments, thereby increasing the quality of care and education. Every weekday they discuss various cases, CPs, selected patients from inpatient and outpatient clinics. These discussions may be very harsh and aggressive. All students participate and speak up at these meetings; yet they cannot participate at mortality meetings. The Dean questions the medical errors and ill performed practices. ICU members including residents, chief residents, and head assistants actively participate in clinical presentations. Everybody gets alert and careful in this atmosphere (i.hp.32), which is beneficial to learning.

Physician training program: Due to their heavy workload and patient flow, the training of physicians and other caregivers excels through exposure to a variety of diseases/patients not only from Turkey but also many regions in the Middle East. Although physicians complain about their heavy workload, they appreciate this all-encompassing experience they received in a very short time once they go to other places (i.hp.35). The CR also praised the opportunity to work with specialty departments unlike many university hospitals that offer general pediatric training (i.cr1.3).

Patient rights: The HP argued that patient rights are better developed in their hospital in comparison to the rest of Turkey. Patient families can meet with him individually, when they wish to thank

⁹⁴ As an example of group decisions regarding the physical environment, the entrance of the PICU was recently discussed, which is an open circulation area always packed with family members waiting either by standing up or sitting on the concrete floor. Although the HP proposed to bring chairs in front of the ICU to make it more comfortable for families, they decided not to do it since it is an open space. The decision was taken as a group, including the nurses and physicians (i.hp.38).

or complain (i.hp.32). Finally, due to religious concepts such as “the will of God,” they care for a patient until the last minute she or he dies. They never want to detach a patient from the mechanical ventilator. The AP perceives this cultural trait as a very positive and humane concern (i.ap.35), although it is not cost-efficient. Beyond religious reasons, the limitation of care of any kind, particularly withdrawal of therapy is still illegal in Turkey. While the researcher felt strongly about the need for eliminating human intervention (e.g., detachment from ventilator) from death and dying, she was also reminded that many ICU beds in Turkey are always occupied and unavailable for those, who would have a chance for a cure otherwise.

Weaknesses of the Turkish Model

Patient flow: The first problem is the slow pace of patient flow and extended LOS (length of stay) days in the PICU. The AP suggested they should work dynamically, stabilizing critically ill patients in a very short time (24-48 hours), and transferring them to other wards, with the freedom to make decisions and receiving the support of outside departments when needed. Yet they only offer ventilatory management and monitoring. Currently, some patients stay there for 1-2 months. She recalls a patient who stayed for 11 months. Yet ICU team members cannot have the same feelings and excitement for long-term patients. Therefore, extended LOS makes the patient’s status chronically ill, and creates increased medical and nursing errors due to reduced staff performance (i.ap.6).

The second problem is the high patient flow from all departments, and transport arrival when the PICU is already full, which is a major caregiver stressor. They accept patients from the pediatric ED (emergency department) and pediatric wards, yet there is a tendency to transfer all critical care patients to the PICU. They are challenged particularly due to “hospitality” concerns (even more than medical care). To reduce this patient flow, the HP provided other wards with ventilators. However, head assistants wanted them back arguing they needed them more in the ICU. The HP plans to increase the skill level of nurses in regular wards to discourage them from transferring their patients to the ICU⁹⁵. He reminds that the ICU cannot accept more than ten patients since admitting each patient significantly reduces the quality of care for the rest. However, even ten beds are a huge relief to the rest of the hospital, particularly when compared to prior to 1986 before the ICU was established (i.hp.28).

Strained relationship with other specialty departments: 1) The AP stressed the lack of freedom and autonomy in the PICU: it is not self-sustained. ICU team members are challenged to work within group practices with other departments, yet outside departments are more influential over the care plan of an ICU patient, limiting their role to drawing blood, resuscitation, and other burdens. They cannot decide over the long-term care plan although they are the primary caregivers of the ICU (i.ap.6). 2) The strained relationship between the ICU and specialty departments: particularly, ICU team members get mad if a

⁹⁵ Due to the choice of Naturalistic Inquiry, the researcher focused on participants’ use of language and their verbal cues. For instance, she observed that Turkish administrators tend to refer to their individual achievements rather than emphasizing teamwork of their unit, such as: “Let me educate your nurses if they are not educated; let me train your physicians if they are unskilled.”

patient that is not critically ill is admitted to the unit. 3) They complained about the gap between skill levels: They stabilize a patient, yet other wards often reverse her condition and send her back to the PICU.

The lack of a step-down unit: The lack of a step-down unit (SDU) or high dependency unit (HDU) may be a major reason why the ICU has extensive patient flow from, yet a very slow patient flow pace to pediatric wards. They need an SDU or HDU, which may have a few beds, is located in close proximity to the PICU, and would function as a step down unit to the PICU and step up unit to pediatric wards. Patients who do not require ventilation but need close monitoring could be admitted to this unit. The HDU should be equipped with bedside monitors for respiratory rate, pulse, blood pressure and oxygen saturation and also to perform various pediatric bedside procedures.

Nursing shortage and nurse-physician relationship: During the day, all caregiving activity depends on four nurses, including the head nurse. Although intern nurses were present, they were in training. The HN is always anxious something will go wrong (i.hn.6). The CR complained about nurses and nursing shortage: she experienced nurses' skill level was low during her residency, and that there were many intern nurses in the ICU, which impacted the workflow because they were not able to complete doctors' orders on time. Nurses also threw responsibilities on doctors, for instance, when they needed to ventilate a patient (i.cr.7). Therefore the nursing shortage and the ambiguity of job definitions are major stressors impacting nurse-physician relationship in the Turkish model.

Discrimination of nurses: This problem of the caring environment applies to developing countries overall. Despite her supportive comments about nurses, the chief resident complained twice about their performance. She expressed 1) the need for more nurses, 2) a larger physical environment, and 3) designed intervals to meet with the family, explain them the care they give, and the pros and cons of a medical procedure, because they have a right to be present. However, they may also need to remember their child in a good condition. Therefore families shouldn't see the last phases of their child in the ICU such as resuscitation, but patient and family rights need to be recognized (i.cr.7). Despite her appreciation of the general knowledge and professionalism of the HR, the researcher was skeptical about the honesty of this statement: looking parents down and sending them out of the unit, the HR seemed against parental presence at many times. Another organizational weakness relates to *incomplete family education* (i.cr.7).

Problems with human resources and staffing shortage: This includes the current nurse-to-patient ratio, the lack of secretarial staff and other assisting personnel in the ICU. Doctors are used everywhere even for secretarial tasks, and the tasks of nurses, which is a waste of human resources (i.ha.1.18).

Equipment maintenance and the lack of adequate storage and ordering systems: The HN reported that outside departments borrow ICU equipment without her permission, and do not bring them back, which is very stressful. If they do not use a particular piece of equipment for a long term, it is more difficult to notice its absence.

Weaknesses of the Turkish Organization Relating to Culture and Traditionalism

The description of social practice and spatial troubles in the Turkish PICU required a frank assessment of the Turkish culture and the organizational model influenced by local culture. Caregivers' reports on "what is not going well in the PICU" reflected major weaknesses of the organization, including: 1) discrimination against the weak (nurses, lower level caregivers, and families), 2) the problematic status of Turkish women and the existence of inequalities between women and men in social practice and administration, 3) the influence of cultural traits and traditionalism playing against comfort and self-improvement, and 4) the existence of the feeling of impotence against Western culture.

Discrimination against the weak: Turkey is not the only country to find people's equality a difficult goal to attain. Discrimination against the weak, and abuse of power, which are all over the world, also find a context in the patriarchal and authoritarian tradition of Turkish culture. Therefore, most of the architectural and operational interventions suggested in this study call for the recognition of the rights and needs of a traditionally unrecognized, disrespected or discriminated population.

In the Turkish ICU, the practical and emotional needs of patients, families (particularly during their child's death and dying), and caregivers, particularly nurses, intern physicians and residents, are not well recognized. Families and nurses can be exposed to class segregation and discrimination: nurses reported that they felt excluded from the caring team, particularly during emergencies, since their presence at the patient's bedside is discouraged due to space constraints. However, most intern physicians and residents were not as critical of social practice, including extended work hours. This may be both due to altruistic and cultural reasons: 1) they highly respect the experience of their older colleagues, and 2) they have a general trust for the hospital since it is a first level university hospital in the nation.

Discrimination against the weak may be linked with broader cultural contexts and traditions that encourage respect⁹⁶ rather than individuality, sabotaging the chances for art, creativity, self-actualization and awareness of one's deeper self, which are often not desirable in an authoritarian and patriarchal culture. Particularly, the emergence of the female self is potentially more threatening, and social institutions (such as marriage) usually function to reduce the societal role and identity of the female self. However, the researcher observed similar troubles were common in the U.S. culture.

In a traditional culture, the relationships between children and their parents, students and their teachers, and other child-adult relationships may sabotage the self-awareness of the former, causing them to shrink and be fearful. For instance, the chances for self-expression are discouraged in all schools prior to university level to preserve the uniform (and controllable) identity of students. However, the concept of the "feeling of impotence" can be linked with this totalizing order and practices, particularly in educational and healthcare settings, i.e. the most critical places of a nation.

⁹⁶ In Turkish society, "the *law* is to *love* one's youngster and *respect* one's oldster," a phrase repeated every morning ceremonially before classes start, which lasts throughout primary education and even later.

Islam, which encourages modesty and transcendence of the Self (ego), is often misinterpreted to mean conservation of a culture of respect, exploitation and hiddenness. Yet the researcher observed it might also provide a healing opportunity, increasing one's chances to harmoniously connect to others.

In summary, the patriarchal Turkish culture and its traditionalism support a context of greater social interactions, yet the intimacy and strength of social ties seem to inhibit self-improvement and the ability to make creative choices. In the PICU, the lack of social services and support spaces for resting and social interaction functions can be linked with the lack of appreciation of personhood and individuality.

The status of the woman: Women are discriminated in Turkey. Nursing, who traditionally has been a female profession, is particularly subject to troubles with gender equality and respect of their rights. However, the status of nurses contradicts the equal status and increased distribution of female physicians. Actually women in Turkey have done the best in professions, as in Europe and the U.S. They are commonly physicians and university professors, indicating most strongly the development of Turkey. They hold important posts in public and private sectors, and the arts and sciences. Female lawyers, bank managers, judges, journalists, pilots, diplomats, police officers, army officers are common. Nearly two thirds of health personnel including doctors and pharmacists, one quarter of all lawyers and one third of banking personnel are women. In commerce and industry, women find it easier to enter the work force than to rise to the top. In the home, the majority of housework is still done by wives and daughters. Yet a great number of educated women actively oppose this situation. In general, improvements in the Turkish economy have been matched by improvements in the status of women (<http://www.turkishculture.org>).

Today, literacy and professional-employment rates for Turkish women are higher than anywhere else in the Middle East and compare well against even the developed countries in Europe and America. In the fields of architecture, science, medicine, pharmacy and law, at least one out of three employed is a woman. In colleges, women constitute about 35 percent of the faculty. Almost 40 percent of all young traders at the Istanbul Stock Exchange are women. Even in engineering, with a participation level of 12 percent, Turkish women are slightly ahead of their American counterparts⁹⁷. Women in Turkey make up a larger proportion of the country's lawyers and doctors than they do in the U.S. Moreover, Turkey has an expanding list of women writers, actors, artists and musicians with international acclaim (<http://www.dofa.org/articles/twppf.html>). Overall female participation rate in the labor force is 35 percent (less than 20 percent in the cities), lagging slightly behind the U.S., yet three out of every four women in the work force work in agriculture as unpaid family workers with no social security coverage.

Despite the advanced status of the professionally occupied Turkish woman, observations confirmed the researcher's preconception regarding her repressed status in the rural, traditional or ill-educated family. While law books suggested that women in Turkey have been equal for more than half a

⁹⁷ The higher distribution of female physicians, architects, and engineers in urban Turkey may be linked with the lack of an extensively capitalistic and competitive work atmosphere, which may have eliminated more women from sophisticated professions in the U.S. Yet American women dominate in some subspecialties in engineering, medicine, and various other occupations.

century, reality has not always matched the law. Tradition dies hard, especially in the rural areas of Turkey, where women fill more traditional roles, and are oppressed.

Turkish nurses, on the other hand, have a much lower status than their role and function in the U.S. Their capacity for “relational interaction,” including the skills of relating, listening, understanding, accepting, socializing, caring, healing, and even homemaking/placemaking (i.e., the ability to turn a neutral space into a place with character) are also significantly undermined.

The researcher also observed that some of the female doctors, in accepting and enduring to the terms of the system currently in force, had become like “men,” thinking of themselves more in masculine terms due to the “knowledge-power” they possess. One of them referred to the nurses as the “girls,” implying a different and probably lower gender.

Finally, the problem of gender conflict was mixed with social class segregation in Turkey: particularly the strained relationship between nurses and physicians could not be overcome with social interaction, preventing greater staff collaboration. Social stratification between them, and also between physicians and all the lower level caregivers, was much stronger than in the U.S. While physicians hardly socialized and collaborated with lower level staff members, relationships seemed to be even more stressful between a nurse (who is always female) and a male doctor. Finally, focusing on nurses’ perceptions, which were central to this study, seemed to be at least revolutionary for some physicians. The limited staff interaction between physicians and lower level caregivers (nurses, secretaries, equipment technicians, cleaners) and families may relate particularly to the physicians coming from upper class.

In summary, contradictions of globalization, modernization and traditionalism had an impact on the status of women in Turkish society. Constraints of underdevelopment and structural adjustment and of religious fundamentalism and claims based on ethnic rivalries presented sources of conflict with long-term prospects that were unfavorable for the status of women. While globalization may offer new hopes for transcending the inequalities between women and men and those in the nursing profession, operational efforts to increase the number of women in decision-making positions in the hospital should be intensified.

The lack of comfort: The interpretation of the data about the staff lounge revealed a new theme: The North American habit of “personalizing one’s immediate environment,” which may relate to the issue of individuality and occupant comfort. In Turkey, there is a stronger distinction between the workplace and home, particularly if work environment is in a public building. While homes are usually very clean and comfortable, reflecting the personality of their inhabitants, the workplace is viewed as no man’s land. As expected, Turkish caregivers (particularly females) expressed their lack of satisfaction with the current standards of hygiene and comfort. However, they did not perceive the lack of a familiar and home-like environment as a problem.

Regarding comfort, the major need is to provide opportunities for patients, families and caregivers to rest and relax. Patients, in their tight beds, cannot change their posture. Sometimes they are tied to the bed to prevent them from hurting themselves. They are also exposed to a lot of unnecessary noise and fluorescent lighting, and cannot sleep well. Staff members, on the other hand, share a very small

environment, which increases tension among staff. There are not enough chairs or seats around the staff station, and no support spaces outside the ICU, except for the existing doctor's room and nurses' room, which are extremely small and claustrophobic. Finally, families endure the worst conditions: They wait in the corridor for hours, usually sitting on the concrete floor. They are not permitted to use the restroom. However, in 2003, the hospital provided a space for the communication of families and caregivers, which may have provided a more comfortable environment for families. They also built a hotel for families' on-campus and affordable accommodation. Therefore there is evidence of progress in the Turkish ICU.

Feeling impotent: The idea of impotence or incompetence, and the lack of self-appreciation, particularly in comparison to the U.S., has derived from the normative statements of Turkish caregivers. That is, the majority of people, like in many other places, believe in an idealized image of the U.S., which is replacing one's confidence and appreciation of one's own culture, thereby playing against diversity.

The idealized image of the U.S. is further supported by North American mass media, particularly with images of patriotism to enhance the national feeling of superiority. Especially after 9/11, "being proud to be American" became the spirit, and American flags entered every inch of the society. However, these ideas may be dangerous against diversity, which is the richness of the North American culture.

7.2.5 Conclusion

The purpose of the Turkish case study was to provide an evaluation of the current situation of pediatric intensive care units in Turkey. While considerable progress has been made in NICUs, which are now available in almost all university hospitals and large centers, the situation is different for PICUs (Yildiz, 2001): They are not well-established and organized. Therefore a considerable number of critically ill children receive care and treatment in adult ICUs. Although some PICUs have been established, because of shortcomings in the curriculum, nurses and physicians are inadequately prepared for specialist pediatric intensive care practice. An independent and in-depth education program for them is not available either. This study emphasized the need to improve the current situation of PICU design in Turkey.

The case study highlighted the Turkish experience based on the researcher's own culture, with a focus on the repressed gender and class and the choice of a public rather than a private hospital. While this study may have reflected the characteristics of Turkish ICUs and children's hospitals, it is likely that it insufficiently attended to the differences within the Turkish society and Turkish hospitals. That is, broader social contexts are too complex and heterogeneous to be projected onto one another, or to represent the society as a coherent organized whole based on a single case study. Therefore a total social or cultural order (generalization) such as "the Turkish experience" may not exist at all.

7.3 Comparison Of Turkish And North American Models

Tables occurring on pages 268 through 270 indicate the comparison of the Turkish and North American model by comparing and contrasting their similarities and differences in terms of their value systems, social practices, cultural and organizational models, and their physical environment.

7.3.1 Similarities or Universals

To begin with, both hospitals share some similarities or universals, including a pediatric university hospital culture, the universal characteristics and vulnerability of children in healthcare settings, the attachment of families to their children and the crisis situation they experience during their child's hospitalization, caregivers' caring and concern for patients and their families, techno-scientific domination, and the problematic relationship between technology and caring. The dominance of female caregivers, particularly nurses, and their deep female self, which is particularly capable of caring and nurturing, is another universal. The study found the importance of social interaction for healing and wellness to be the most meaningful similarity between the two cultures. Finally, the involvement with death and dying, which are the most meaning-giving opportunities, was shared in both contexts. Therefore similarities revealed an absolute human nature and human characteristics such as vulnerability, pain, child-parent attachment, caring, concern and love as indicated at the Table occurring on page 269.

The environment, including both the physical environment and organizational culture of the hospital, shared other similarities: The interviewees in both contexts suggested that it is much harder to change the existing social culture in their hospital than anything else, including the physical environment. However, one would assume the social and practical aspects of care to be easier to improve, especially in Turkey, where there are not enough finances to support renovation or construction projects. The researcher observed that the focus to update the physical environment exceeded the efforts to improve the social and organizational culture of care. In that sense, there is a similarity between the Turkish and U.S. model, which is their reliance on the physical rather than the social environment for progress. Although the researcher found social interaction to be more critical for healing than the physical environment, the openness of both hospitals to embrace architectural transformation is very positive.

Environmental and atmospheric similarities included problems with staffing and human resources: 1) Nursing shortage crisis, which is a global condition in healthcare, 2) the problem that staff needs are ignored in both settings, and consequently 3) exhausted and burned out workforce.

Similarities in terms of the physical and spatial environment included: 1) Problems associated with the lack of space, particularly since both hospitals are located close to downtown areas in big metropolitan cities, although the scale of those spatial problems are very different, 2) both hospital's desperate need for expansion, 3) ongoing construction work on-site, and 4) inadequate work conditions and environments for staff. Child-friendly environments and the use of child-like decorations on walls, which suggest the gap between healing intentions and needed interventions, are another universal.

Despite the presence of similarities, there were more differences between the two settings in terms of the physical and social environment. However, the researcher felt that human behavior, which reflects basic and absolute structures such as caring, concern and love, changes significantly while adapting to its physical and social context, particularly the techno-scientific environment of the Western model.

7.3.2 Differences or Particulars

This includes the differences between the two settings and the people in them, particularly the differences in their value systems (Table 7.1), which contrast the similarities of the two models (Table 7.2), and the differences in their social practices and organizational cultures (Table 7.3). Despite the similarities regarding human nature and characteristics, there are major differences regarding Turkish and North American people and the ways in which they relate to one another: In the ICU setting, 1) family-caregiver relationship, 2) nurse-doctor relationship, and 3) patient-caregiver relationship were particularly different.

First, unlike the U.S. setting, social class distinction and stratification across different groups, such as the physicians and nurses (and all the “lower level” caregivers), or the caregivers and family members were very strong in the Turkish ICU. Caregivers perceived social stratification to be unavoidable due to the underlying differences in received education level of different groups. While families’ perception of stratification could not be represented in this study due to the research design, the troubled consequences of social segregation and stratification in the ICU were clear. Caregivers yelling at family members or inhibiting parental presence created a negative atmosphere, influencing the well-being of patients and families: the healing power of connecting positively to others, and providing care, concern, and love for those in need was not acknowledged operationally. In the U.S. unit, yelling or disrespecting the family because of status, education level, culture or religion was eliminated from the caring practice. However, there were other troubles in the social and emotional connection between families and caregivers. For instance, a professional relationship was preferred over an intimate relationship.

TABLE 7.1
Author's Observations –
Contrasting Turkish and North American Values

Traditional Turkish Values In Transition	Contemporary North American Values
Local culture	Global and contemporary Western culture
Traditional	Universalistic and less traditional
Interaction (social)	Time and action
Group affiliated and collectivistic	Individual and self-sufficient
Respect of the “older” and her/his experience	Respect of individuality and personhood
Naturalistic: less intentional and goal-driven	More intentional, strategic, goal oriented
Indirect and tactful	Direct and open
Face or honor saving	Disclosing
Formal	Informal and more comfortable
Passive	Assertive
Deeper and life-long friendships	Causal friendships (time constraints)
Hierarchy	Equality and equal opportunity
Homogeneity	Diversity
Authority	Freedom of expression and individuality
Ideas of authority	Pluralism of ideas
Natural cooperation and collaboration	Effective participation of people
Cooperation	Competitive
Faith	Choice
Fatalistic	Optimistic
Excessive emotion & melancholy “which blurs the vision”	More realistic, rationalistic and reasonable
Intuitional	Intellectual
Unitarian and totalitarian	Fragmented
Modern (based on utopia and grand narratives)	Postmodern (context-based realities)
Holistic and generalist	Positivistic, mechanistic and Cartesian
Platonic	Aristotelian
Feeling of impotence, incompetence and modesty	Feeling of confidence and superiority
Based on perfection of soul	Based on “forgiveness”
White and black perceptions	Gray & pluralistic: “Anything goes”
Careful use and sharing of resources	Abundance and abundant consumption
Existing in harmony with nature	Controlling nature and natural phenomena
Local sense of community	Professional communities of interest
Healing	Curing (heroic & invasive measures)
Socialist and community-based	Capitalistic: production and profit-based
More laid back and comfortable with time	Hard-working (yet inhumane)
Straightforward	Presentation and representation of identity
Sufi philosophy:	Freedom of expression and self-expression
“To look what you are, or to be what you look”	Importance of “looking good”
Degenerative copying (sometimes)	Brainstorming, invention and production
Dominance of “past,” nostalgia and melancholy	Futuristic and optimistic
Respect, trust and longing of the “old”	Trust in the “new” and “little experienced”
Knowledge oriented (including narrative knowledge)	Information and technology oriented
Narrative knowledge (reliance on traditional knowledge, explanations of nature & self-knowledge)	Scientific, materialized and merchanted states of knowledge becoming dominant
Less educated on average (yet knows “America”)	Better educated on average (yet lacks knowledge of the “outside” of the U.S.)
Rootedness, connectedness, and nationalistic	Futuristic and progressive
Patriarchal, patriotic, and masculine society	Patriotic and masculine society

TABLE 7.2
Similarities Between the Turkish and U.S. Pediatric Healthcare Models

Based on the Turkish Model, 2004	Based on the U.S. Model, 2004
HUMAN NATURE	
<ul style="list-style-type: none"> • The universal characteristics and vulnerability of children in healthcare settings • The attachment of families to their children (particularly the attachment between mother and child) and the crisis situation they experience during their child's hospitalization • Caregivers' caring and concern for patients and their families • The dominance of female caregivers, particularly nurses, and their deep female self, which is particularly capable of caring and nurturing • The importance of social interaction for healing and wellness • Involvement with death and dying, the two most "meaning-giving" opportunities of existence • Human characteristics such as vulnerability, pain, attachment, caring, concern and love • Techno-scientific domination and the problematic relationship between technology and caring 	
ORGANIZATIONAL FEATURES (STAFFING, HUMAN RESOURCES, CULTURE)	
<ul style="list-style-type: none"> • Pediatric university hospital culture • Nursing shortage crisis • The fact that staff needs could not be satisfied in both settings • Exhausted and burned out workforce • The high-pace work environment for caregivers (e.g., physicians work 60-80 hours a week) • More focus on changing the physical environment rather than the social or organizational culture of care ("It is much harder to change the existing social culture in the hospital than anything else") • Openness to embrace architectural transformation (Faith in architecture as a tool for improvement) • The socio-economic and educational differences between families and caregivers 	
PHYSICAL AND SPATIAL ENVIRONMENT	
<ul style="list-style-type: none"> • The "site": Both hospitals are located close to downtown areas in big metropolitan cities, therefore they are relatively unsafe and surrounded by extensive traffic and noise • Problems associated with being "land-locked" due to their limited site conditions • Desperate need for expansion • Continuous construction work and expansion projects with negative impacts on patient recovery • Inadequate work conditions and work environments for staff • Use of color and child-friendly design attempts (e.g., child-appropriate animation and decorations on wall and ceiling surfaces, medical equipment in animal shapes) • Limited chances for visual and physical access to nature • Perceptual monotony (for instance, patients staring at walls and the ceiling) 	

TABLE 7.3
Differences Between the Turkish and U.S. Pediatric Healthcare Models

Based on the Turkish Model in 2004	Based on the U.S. Model in 2004
<p>PHYSICIANS' CULTURE: Despite strict control mechanisms inherited from being a university hospital, the physicians in the Turkish hospital may be relatively more independent and autonomous in their practices, as compared to North American physicians.</p>	<p>PHYSICIANS' CULTURE: Physicians are challenged increasingly to work as members of networks and group practices: they work with multi-disciplinary teams, including nurses, nurse practitioners, physician assistants, psychologists, counselors and community health workers.</p>
<p>HOSPITAL CULTURE: 1. It is more authoritative than participative: authority is restricted to physicians with administrative capacities. 2. Staff relationships are often strong and not scheduled, yet not very collaborative and professional. Particularly there is a strained relationship between nurses and physicians.</p>	<p>HOSPITAL CULTURE: 1. It is participative, consultative, and based on teamwork, as indicated by the presence of posts like "team leaders." 2. Organizational culture supports staff interactions, which may not occur naturally. Yet nurse-physician relationship is friendlier and collaborative.</p>
<p>FAMILY-CENTERED-CARE: FCC is not embraced. Families are usually treated without respect and dignity, and they are not part of the healthcare team.</p>	<p>FAMILY-CENTERED-CARE: There is an increasing focus on FCC. Families are treated respectfully and considerately, and function as part of the healthcare team.</p>
<p>SPECIALIZATION OF LABOR: Nurses and physicians do all the work, even secretarial tasks. In a 1994 study (Yazıcı et al.), only 28% of 57 observed Turkish hospitals had nursing job descriptions.</p>	<p>SPECIALIZATION OF LABOR: There is clear division of labor, particularly among nurses and respiratory care practitioners.</p>
<p>NURSING SHORTAGE: 1. Supporting members of health care teams are rare and there is much less specialization in staffing and human resources. Respiratory care practitioners (RCPs) are not a permanent part of the ICU team. 2. There is not an active effort to attract more people to nursing, maintain their retention, or develop strategies to increase the number of nurse employees.</p>	<p>NURSING SHORTAGE: 1. Due to nursing shortage, healthcare industry is creating new and less credentialed areas, separating the general tasks of the traditional nurse. 2. New programs are developed due to nursing shortage and continuing financial pressures. For instance, area programs advancing Licensed Vocational Nurses to Registered Nursing credentials are enrolling students in record numbers (The Houston Chronicle, February 2004). Yet nursing quality may reduce as a result of this.</p>
<p>NURSING ROLES: The traditional role of the PICU nurse continues, emphasizing the immediate caregiving function at the patient's bedside, and without any decision-making and administrative role in the long-term care plan of the patient.</p>	<p>NURSING ROLES: RN serves in an administrative, case-management capacity, heading up the care team. The role of the nurse administrator (nurse manager & executive) has dramatically expanded, and she or he plays an active role in everything from fiscal management and marketing to the development of clinical models (Lowery, 1997).</p>
<p>NURSE-TO-PATIENT RATIO: This ratio is 1:3.3 during daytime and 1:5 during nighttime. It was 1:1-2 in 44%, 1:3-4 in 28% and 1:5-10 in 28% of 57 observed Turkish ICUs in 1994 (Yildiz, 2001).</p>	<p>NURSE-TO-PATIENT RATIO: Nurse-to-patient ratio in the PICU was 1:2 in 2003.</p>
<p>LENGTH OF STAY: Patients spend more days in the PICU. The average length of stay is unknown. (General LOS in pediatric departments was 5.98 days in 2003 in another Turkish hospital.)</p>	<p>LENGTH OF STAY: Patients spend fewer days in the PICU: The average length of stay was 4.7 days in 2002.</p>
<p>LENGTH OF SHIFTS: Nurses work 5-6 days a week on 8-hour-shifts, totaling 40-48 hours per week.</p>	<p>LENGTH OF SHIFTS: Nurses work 3 days a week on 12-hour-shifts (36 hours/week), which supports retention.</p>

TABLE 7.3 (Continued)

Based on the Turkish Model, 2004	Based on the U.S. Model, 2004
<p>HISTORY: 1. In recent years, independent PICUs have been established in big city hospitals, incorporating several beds within pediatric departments. The observed PICU was established in 1994, 25 years after the first U.S. PICU. 2. The hospital and some other modern children's hospitals were established in the sixties according to the U.S. model, yet little change occurred since then. Neither did the PICU progress significantly in the past ten years physically or conceptually.</p>	<p>HISTORY: 1. The first PICU in the U.S. was built in 1969 in Children's Hospital of Philadelphia. Children's Hospital of Boston and Nashville were among other pioneers. The PICU program at the U.S. hospital was established in 1977, along with three other pioneers of the nation. 2. North American hospitals and PICU departments underwent major structural renovations, expansions and reconstructions in the past 30 to 40 years.</p>
<p>CAPACITY: The PICU capacity is 10 beds, and there are no short-term plans to expand. Spatial layout is based on a single ICU ward and open bay arrangement.</p>	<p>CAPACITY: 54 beds in 2002, and 75 in 2004. Spatial layout is based on private individual patient rooms, which have continually grown in size in every new ICU.</p>
<p>SIZE: The exact measurements of the PICU ward and bed-to-bed distance could not be obtained. Yet floor plan analysis revealed the distance between two patient beds to be about 1-2 meters, which equals 4 to 6 feet, which is at best one fourth of the same distance in the US. The total ICU ward is less than 1300 sq. f. (120 sq. m.), and with ICU support spaces it makes less than 1600 square feet (150 sq. m.). Finally, the Turkish PICU in 2004 has only 160 sq. f. per bed (e.g., the total PICU department size per bed), which is the size of the U.S. ICU 35 years ago.</p>	<p>SIZE: In Washington (State), which requires the largest dimensions in the U.S., a patient room must have a minimum of 16 f. in either direction, and the distance between two patient beds 16-18 f. The U.S. ICU progressed from patient observation rooms of 150 sq. f. per bed, to units approaching 700 sq.f. per bed (<i>i.e.</i>, department size, not room size). At Children's trauma ICU in 2002, single patient room size was about 280 sq. f., and department size per bed was more than 770 sq.f., about five times more than the Turkish ICU.</p>
<p>DAYLIGHT: There are no enforced codes for the provision of a window or "awareness of light" for each patient. There are only four windows in the ICU, and one is cluttered by equipment. Window surfaces are extremely small, limiting daylight. Fluorescent lighting supports indoor luminous environment.</p>	<p>DAYLIGHT: An exterior window is required in every patient room: the window surface is increasing in size, allowing sufficient natural light. Indoor luminous environment is a combination of daylight and fluorescent lighting.</p>
<p>SUPPORT SPACES: 1. There is no waiting room: families wait in the hallway. However, in 2003, they provided a new room for family-staff interaction, which may function as a waiting room. 2. There is no staff lounge. Nurses use the storage room for storing their personal items in lockers, changing clothes, eating lunch (brought from home), and making private phone conversations or chatting. 3. No sleeping arrangements were present for families inside or outside the hospital until 2002, when they built a hotel for their on-site accommodation.</p>	<p>SUPPORT SPACES: 1. There is a separate waiting room for each PICU on different floors, usually on the same floor with the unit. 2. Several staff lounges are provided on different floors. Each room includes dining tables, TV, lockers, and a kitchenette with refrigerator and microwave. 3. Alternative sleeping arrangements are provided for families, including Ronald McDonald House, hotel discounts, and foldout sleeper chairs in waiting and patient rooms.</p>
<p>COMFORT: The ICU does not support occupant needs and comfort. Ambient or functional issues (e.g., privacy, personal space, control, careful choice of furniture, color and materials) do not impact design issues.</p>	<p>COMFORT AND FUNCTIONALITY: The ICU is more supportive of occupant needs and comfort with the provision of programmatic, functional, ambient design issues.</p>

Regarding social practice and organizational culture, FCC was the major factor reflecting the different status and perception of the importance of the family unit. Patient-focused care, in which the physician explains everything to a child before starting with a procedure, was also absent in the Turkish setting. Generally, child-adult relationship was significantly different in both cultures. Other differences were linked with the societal status of the female.

Working hard for long hours was appreciated and encouraged in both settings, yet the notion of rest and relaxation was different. Awareness of relaxation benefits was integral to the U.S. model. However, a group of Turkish residents and interns argued that the hospital environment was purposefully designed uncomfortable to prevent staff members from resting, relaxing, taking breaks, and in order to keep them working hard all the time eliminating physical spaces for rest and relaxation. This notion may have stemmed from the less humanistic work culture that was dominant in the modern era during the 50s, when the hospital was constructed. However, in today's postmodern world, it is known that the lack of rest opportunities, and an inhumane corporate philosophy in general, do not increase staff performance. On the contrary, people do not stay in their jobs if there is not an adequate and comfortable physical environment.

The approach to self-criticism was another difference. Generally, U.S. interviewees referred to their failures and weaknesses sympathetically, balancing them with their accomplishments, whenever they criticized themselves, their workplace or the social practice.⁹⁸ Compared to the feeling of "impotence" of the East, the idea of "forgiveness" seems to be more beneficial for enabling self-criticism. In a Turkish hospital, on the other hand, it would be usually more difficult to initiate or respond to self-criticism. Therefore the concept of forgiveness⁹⁹ may have created a more open and enabling culture in the West. For instance, U.S. administrators suggested they couldn't take good care of their caregivers. This may exemplify that North American people are more realists in identifying their problems. In the East, on the other hand, there is "lots of melancholy which blurs the vision and saps the energy to invent, to invest, and to create," as Pamuk, a Turkish novelist, observed insightfully (Cottrell, 2003).

Another cultural difference relates to the city where the hospital is located. For instance, the American metropolis represents the "urban capitalist experience." Caregivers viewed the city and its corporate opportunities as an appropriate image of the U.S. culture. In other words, the capitalistic model and its accomplishments, including children's hospitals with all their technology and innovations (e.g., space, daylight, even nature) were embraced as a symbol of the American culture and American values (e.g., the level of care for children and their families), of which they are very proud. Therefore caregivers found the capitalistic North American lifestyle positive due to its progressive and innovative nature. Yet

⁹⁸ For instance, one of the interviewees argued, "The least liked design feature was not having enough workspace to do everything we wanted to do, which we could in a brand new building. It generated tensions with staff. *But we were able to deal with it.*"

⁹⁹ The corporate feeling of forgiveness in the West may relate to the Christian notion of forgiveness. However, if the Christian culture is more forgiving than other religious cultures is uncertain. For instance, if you don't accept the Prophet Jesus Christ as your savior, you are "damned to hell."

they also recognized that it was driven by an incredibly fast pace of life, preventing them from spending time with their patients and their own families.

Finally, the relationship between city resources (particularly wealthy families) and the hospital is very strong in the U.S., and North American children's hospitals are often named after the city in which they are located. In Turkish hospitals, on the other hand, there is usually no direct support coming from the city. It may be more common for this reason to name a hospital after its founder.¹⁰⁰ In general, in Turkish culture, assigning individuals' names to a public property is an effective way to show respect of the achievements of an individual and her or his impact on the society.

The cross-cultural evaluation also revealed lack of awareness of other healthcare systems: First, North American caregivers repeated over and over that 1) they have little exposure to the healthcare conditions in other countries, and 2) they do not understand where they stand in comparison to other, especially poorer countries. This view may support the idea that the West has not tried enough to understand the rest of the world. However, from a holistic notion, the ignorance of the East, which is the other half, is threatening. According to Pamuk, the basic problem between the East and West is not religious differences, a clash, or even poverty: it is "the feeling of impotence deriving from degradation" (Cottrell, 2003). This feeling impacts even the most Westernized people. It also influences the design of health facilities by sabotaging the relationship between the building and its local site and culture, which could inform a richer, higher and more diverse order.

7.4 Conclusion

This study originated from a strong belief in the insights that might result from comparing two cultures, the U.S. and Turkey, because each is in possession of valuable resources, which can help remedy the deficiencies of the "other." Case studies revealed the diversity of both models, their similarities and differences, their strengths and weaknesses in comparison to one another, and potential design solutions that can stimulate cultural healing functions (Table 7.4). For instance, the idea of resignation (acceptance of God's will) can be a central concept for healing rather than having control over the patient, which can be symbolized using tranquil water features and familiar, traditional and culturally expressive design elements that stimulate healing. The use of an Islamic courtyard, wide overhanging eaves, modular window patterns, and traditional domestic plan types on a larger scale in a hospital can tremendously support healing by incorporating functionality. An ICU dome with an obelisque to the sky may be another design element symbolizing healing through eternity. High-tech visual and audio simulation of nature in traditional building elements may indicate healing throughout different times.

¹⁰⁰ In the case of the observed Turkish hospital, the founder of the hospital did not want his name to be given to the hospital. Yet one of the rectors gave his name to the hospital in the 1990ies.

TABLE 7.4
Proposed Architectural Solutions Based on Cross-cultural Comparison

Existing Culture and Organization	Architectural Solutions
TURKISH PICU	
The need for a transition to FCC model	<ol style="list-style-type: none"> 1) Provision of spaces to integrate families in care, particularly counseling and education rooms, and waiting room, which may have visual access to the unit if families cannot be allowed inside the unit 2) Provision of enough family space at the bedside of each patient, which can be separated from the caregiver zone not to interfere with procedures (spatial & material transformation of family space)
The need to improve family education	<ol style="list-style-type: none"> 1) Provision of small education rooms incorporated into family support zone of the ICU department
Strained & distant nurse-physician relationships	<ol style="list-style-type: none"> 1) Separate, private staff lounge for nurses & doctors 2) A shared/common (dining) area with kitchen to bring them together and facilitate their interaction (e.g., making coffee/tea or preparing a meal together) 3) Nurses providing care more individually for their patients in separate and shared patient rooms or semi-private caregiver zone at each patient's bedside
Natural staff cooperation and collaboration	<ol style="list-style-type: none"> 1) More progressive ward design to sustain constant visibility and continuous support of all caregivers for one another at different bedsides
Limitation in the number of nurses	<ol style="list-style-type: none"> 1) Preference of shared (double, triple or quadrant) patient rooms over individual patient rooms, caregiving for several patients in a single room 2) Sustaining constant visibility of the caregivers to see and collaborate with one another 3) Provision of symbolic yet transparent barriers between each shared patient room for 2 or 3 patients
Support and education function between families	<ol style="list-style-type: none"> 1) Design of the interior settings in the waiting room to encourage interaction between families 2) Creating interior settings for the separate socialization of women and men, which is common and familiar in the social life of traditional families
Existing social & organic bonds among staff Extensive staff socialization in patient care areas	<ol style="list-style-type: none"> 1) A separate lounge for staff socialization 2) Comfortable and private areas for staff relaxation 3) Spatial comfort (size) of the shared patient room (double, triple, or quadrant) or patient's bedside with a comfortable chair for the nurse to stay with her patient (Personalization & individualization of patient/staff area)
The need for a "culture-shift" to encourage staff to work more professionally, socialize less for leisure during caregiving activities in patient areas (since it creates a lot of noise and may distract them from their responsibilities), yet rest and relax intermittently during the day.	

TABLE 7.4 (Continued)

Existing Culture and Organization	Architectural Solutions
NORTH AMERICAN PICU	
The desire to progress with FCC approach	<ol style="list-style-type: none"> 1) Provision of new spaces to provide families with alternatives and a more active function in care, including family resource center with Internet accessibility, medical library and education rooms 2) Transforming the character of the family space at the patient's bedside, and exploring a new parental role, which is more competent in her or his knowledge regarding their child's disease and care (intellectual transformation of family space)
Nurse-patient interaction time should be increased	<ol style="list-style-type: none"> 1) Nurses' walking distances in the ICU can be reduced with a more compact arrangement. 2) A nurse functions in two adjacent rooms, yet if these rooms were visually and physically connected, it would reduce walking and enable her or him to spend more time with each patient.
Nurse charting time should be decreased	<ol style="list-style-type: none"> 1) The CM (clinical manager) called for a return to paper charting, yet it does not look realistic. 2) Creating a new specialty of labor for nurses doing only documentation: Space can accommodate this type of fragmentation of nursing activities. This can also help with the nursing shortage and resulting strategies for creating new yet less credentialed areas.
Due to the severe nursing shortage, healthcare industry is moving towards the creation of new and less credentialed areas, separating the general tasks of the traditional nurse.	<ol style="list-style-type: none"> 2) Creating a new specialty of labor for nurses doing only documentation: Space can accommodate this type of fragmentation of nursing activities. This can also help with the nursing shortage and resulting strategies for creating new yet less credentialed areas.
Nurse-physician relationship can still be improved	<p>Separate staff lounges for nurses and doctors</p> <p>Provision of common (dining) areas and kitchen to bring them together for leisure activities, such as preparing healthy drinks or sharing meals</p>
Increasing staff cooperation and collaboration	<p>Constant visibility for all caregivers in different patient rooms to see and support one another continuously, and more careful planning of the location of each ICU room (so no room is outside the kinship of other rooms)</p>
Families' dual need for privacy and interaction	<ol style="list-style-type: none"> 1) Design of the interior settings in the waiting room to encourage interaction & support between families 2) Creating private modules in the waiting room for their need for separation and isolation when needed 3) Providing alternative and flexible settings
Increasing social relationships among staff	<p>Provision of comfortable and private spaces for staff interaction during breaks</p>
Staff socialization during the family's presence	<p>Provision of an attractive and comfortable lounge for socialization, which has visual access to the PICU so nurses are more open to taking a break more often</p>
Staff need for resting intermittently during the day	<p>Staff lounge with a massaging chair, healing music, nature views, and other consciously chosen amenities for effective relaxation (rather than the TV)</p>

The cross-cultural evaluation indicated the relationship of healing to cultural diversity, sense of place, and sense of community. Particularly, diversity is a critical concept to understand, which indicates the vast range of human experiences and achievements in different cultures, including healing functions. According to Amos Rapoport, diversity is the source of complexity in design safeguarding the knowledge and experience embodied in various landscapes (Couvelas, 2004). Diversity intimately relates to healing all over the world. Therefore healing design should respond to the differences in cultural expression.

Supporting the argument for diversity, the researcher found more differences than similarities between Turkish and North American models. For instance, she perceived strongly a capitalistic U.S. culture under techno-scientific domination, where knowledge is used for economic power. Turkey, on the other hand, is less capitalistic and techno-scientific, yet it is changing rapidly towards the American model.

The differences of people and their social interactions in both cultures were linked with the differences of their physical and economic environments. Yet the development of a universal and global architectural language for PICUs, children's hospitals and other hospitals, which responds to a universal medical culture, may standardize caregiving practices in the future. Particularly, Turkish physicians trained in U.S. hospitals are developing international standards of caregiving in Turkish hospitals, such as FCC. Therefore the relationship of healing to diversity and globalization may inform new design interventions for future healthcare environments, which call for complexity and a higher order.

The U.S. PICU model reflects a beneficial culture. However, it introduces new challenges for humanity, particularly its relationship to technology, which influences fundamental human qualities such as caring, concern and love. Therefore, the meaning of health care experience and social interaction must inform the design of future hospitals by incorporating a meaningful technology.

The emphasis on diversity rather than a global state of knowledge was reflected in the research method: the cross-cultural comparison provided close observations of both settings and of the people involved in them, introducing a pragmatic, contextual and local knowledge rather than Universalist, essentialist, and foundationalist ideas. This postmodern¹⁰¹ approach is radically different from the Grand Philosophy of the modern era, which calls for big ideological explanations of the social world.

Finally, the cross-cultural analysis suggested that embracing global values (e.g., respect of individuality and personhood, freedom of expression, pluralism of ideas, effective participation of people, and choice) and appreciating the value of its own culture would balance the ongoing modernization process of Turkey. Particularly, the shared history, tradition, lifestyle, and social ties may inform Turkish architecture, which is in a crisis of identity since fifties due to the opposing forces of traditionalism, religious fundamentalism, modernization and globalization.

¹⁰¹ Postmodernism is the name for a movement in advanced capitalist culture, particularly in the arts. The term originated among artists and critics in New York in the sixties and was taken by European theorists by the seventies. Postmodern theory became identified with the criticism of universal knowledge, foundationalism, and essentialism. Postmodern thinkers argue we can no longer talk about a totalizing social order, philosophy, or a totalizing idea of reason since there is no Reason, only reasons (Sarup, 1993).

The major observed weakness of the Turkish culture was encouraging respect and honor rather than valuing personhood. However, synthesizing the local culture with the Western or North American model proved well in the nation's best institutions, including the observed hospital. Therefore, The Turkish model would benefit from embracing what the contemporary Western culture has to offer.

The assessment of organizational culture in this chapter also revealed power theories, such as feminism and Marxism, and the need to reinterpret their role in relation to contemporary healing environments. According to Michel Foucault, for instance, old theories "always tend to argue power was held exclusively by dominant groups in society -- for Marxists, power could only be exercised by the rich ruling class who owned the means of production; and for feminists, power was something held by men." Both models fail relying on stable and clear-cut ideas of identities: there are no confusions as to whether people are ruling class or workers, male or female, straight or gay. Foucault, however, does not accept the assumption that certain people will possess power, and not others. Instead, power is something to be used by particular people in specific situations, which itself produces counterbalancing reactions and resistances independent of specific groups or identities¹⁰² (Gauntlett, 1998).

The researcher also found that women or certain social classes such as the nurses are not one unified group. For instance, a North American female nurse may have much less in common with a Turkish nurse than a North American physician. These observations shift the focus from traditional power theories such as feminism to more complicated solutions, which oppose social domination. Particularly physicians all over the world may reject the idea that they constitute a dominant and powerful social group controlling the most critical function of society: health. However, it is still meaningful to apply feminism and Marxism to contemporary situation to achieve greater complexity and a more realistic interpretation of social life.

Regarding power relations and holding control of the medical system, a major cultural difference of the Turkish setting is the lack of recognition of patients' and families' right to have some control – environmental, clinical or otherwise. Instead the Muslim faith, i.e. submittance to the goodness of God's will, which is in control of everything, constitutes a healing strategy in dealing with death and dying.

To conclude, the cross-cultural analysis added to the previously suggested findings, thereby proposing four major healing interventions: 1) Positive social interaction and love (including touch, prayer, caring), 2) stress reduction through rest, relaxation, comfort and recognizing the practical needs of occupants, 3) cultural diversity, including cultural, religious and spiritual coping strategies, particularly resignation and submitting to God's will in the Turkish context, and spiritual transformation in both contexts, and 4) equality and expression of diverse occupants of the ICU within architecture, particularly through feminism and elimination of social class segregations and stratification in the Turkish context, where these movements are still developing, in contrast to the more stable U.S. context, which transcended to more complex and humanistic societal conditions in children's hospitals.

¹⁰² This dynamic model of power may apply to the distribution of power between the East and West.

CHAPTER VIII

CONCLUSION

The previous chapters discussed research findings and emerging healing design interventions. In this final chapter, the research process and findings of the preceding chapters are summarized. Out of all previously emerged categories, six healing design interventions are recommended to guide the universal design of future PICUs, and establish a context for more positive social interactions and healing. Finally the shortcomings of this study and the implications for future research conclude this work.

8.1 Summary Of Research

The review of literature identified the existing areas of research regarding healing ICU environments. Yet the researcher recognized that the current state of knowledge was not balanced: There was a lot of emphasis on a few well-documented and evidence-based design interventions but not a comprehensive overview of the potential of architecture for healing. Particularly, studies regarding the positive impact of outside and nature views dominated the literature, limiting the field. Therefore this study aimed to generate a more balanced account of healing design interventions through a holistic, pluralist and interdisciplinary research strategy.

The researcher recognized two research directions were missing from pediatric ICU environments: 1) Cross-cultural and trans-national comparisons of the physical environment of PICUs, and 2) sociological (and philosophical) evaluations of the meaning and experience embedded within the PICU space (there was more emphasis on the psychological environment of the PICU).

The existing state of knowledge in the literature was informed by the healing benefits of incorporating a few ambient design elements, particularly nature and color, while a comprehensive assessment of critical design elements such as room size and scale, unit configuration and transparency was not realized. Very few studies measured the effect of unit spatial configuration, location and proximity relations between spaces, and walking distances on the social practice and medical outcomes. Finally, most studies used a quantitative and statistical research methodology, which has been considered more rigorous.

In summary, this literature review identified the strengths and weaknesses of the existing state of knowledge, informing the current research strategy: To create a more balanced and holistic evaluation of potential healing design interventions, a qualitative methodology could be equally beneficial, meaningful and revolutionary than a mainstream quantitative study indicating the positive impact of one particular

intervention on healing. Qualitative studies also have the potential to indicate new research directions long not recognized.

The definition of healing in this study as a complex interplay of the physical, practical, psychological, social, and ecological aspects of the human condition and environment impacted the design interventions to be revealed: this definition eventually included those interventions that could respond to psychological, spiritual and existential needs. In the final analysis, 1) positive social interaction and the reduction of anxiety through love, touch, talk, meaningful sharing of experience, transcendence of prejudices, relaxation and rejuvenation, and provision of an equal and democratic practice of caring, 2) a psychological sense of belonging to a local and cultural environment (sense of place and community), and 3) spiritual transformation or self-transcendence emerged to inform the functional, psychological and phenomenological requirements of healing ICU design.

8.2 Summary Of Findings

8.2.1 Findings Associated with Provisional Intervention

Provisional intervention in this study deals with defining spatial needs, and providing important activities and spaces in the PICU for establishing an improved context for greater social interaction among patients, families, and caregivers. Provisional objectives also relate to the quantifiable aspects of space and basic programming issues, such as the quantity (number), size, scale and type of spaces.

Provisional Intervention

The first category of findings was associated with the need to provide important functions and spaces, such as family waiting room, staff lounge, family-staff meeting room, and family counseling room. This “lower” need transcends all other needs in the Turkish ICU. In the U.S. model, on the other hand, the challenge was to create a more progressive environment through new spatial programs: A family resource center equipped with research facilities, Internet accessibility, business center services (fax, copy machine, printer etc.), and a library of medical information is one of those functions intended for the future.

Findings revealed the effectiveness of a family-centered-care (FCC) approach closely relates to the provision of those functions and spaces, which would increase the chances for positive social interaction (communication), support and collaboration, thereby creating a greater context for healing. Turkish administrators have become more aware of the importance of both FCC approach and families’ need to receive information about their child, social support, and interaction. In 2003, they introduced a new place function, where families meet with ICU team members privately to receive information and support.

Unlike initial expectations, the findings revealed that the provision of individual patient rooms may not be the best solution for the Turkish model due to severe staffing shortage and other problems with human resources. Instead, support spaces for families and caregivers in closest proximity and good visual relationship to a shared ICU space, which is a very progressive environment accepting families presence at

patient's bedside, seems to be a more feasible solution to transition to FCC and other equal and democratic models of critical care practice.

Findings also revealed that the image, comfort and transparency of the unit are important design criteria influencing staff and family well-being. Particularly, the tension between transparency and privacy (or emergence versus hiddenness), and the influence of unit transparency range on all types of social interactions occurring in the ICU are directly associated with provisional intervention.

The provision of more space in general is particularly important to incorporate and practice family-centered-care (FCC) in the Turkish model, where the need for space exceeds the cultural and economic limitations preventing progress in the delivery of pediatric critical care. Since FCC is based on accepting and encouraging the physical presence of families in the hospital at all times, the provision of family space has a fundamental influence on social practice and related health outcomes.

Staff Resource Center: An important provisional need emerged to be the provision of a staff resource center, or simply a staff lounge, which will impact job satisfaction and performance of caregivers through positive social interaction, communication and collaboration. Fifteen Turkish caregivers reported that the level of staff interaction, collaboration, and consequently satisfaction with their coworkers was much higher before the renovation of the ICU in 1998, when they had a small multi-functional social room, which provided a natural space to prepare their own meals, eat, drink tea or coffee, interact socially, celebrate important days, study (especially during night shifts), and interview family members for their child's admission. However, hospital administrators were not able to see the healing benefits of this room, thereby choosing to eliminate it.

This data is important because it emerged naturally from the field, constituting a grounded theory and hypothesis. It is also hopeful showing that small changes in the Turkish ICU may impact the quality of care through increased staff satisfaction and performance: Turkish nurses expressed their need for a staff lounge (preferably for nurses only), where they could escape for a short break. Currently, there is no cafeteria or dining facility in close proximity to the PICU, and none within the building. Several cafeterias are located outside (and adjacent to) the hospital building, but they are both expensive (for nurses) and distant from the PICU. Thus nurses cannot leave the PICU at lunch. Instead they work for extended hours without feeding themselves, or have very light meals (they bring from home), which they cannot store in the refrigerator (because there is only one refrigerator for patients). This reduces their performance.

The provision of a small room designed for eight or nine caregivers with a kitchenette, refrigerator, a dining table and a comfortable sofa may have a huge impact on staff satisfaction and job performance. Beneficial functions such as a medical library with access to Internet and electronic databases would further improve this room's functionality. These changes are easy to implement, and cost little (less than opening a brand new cafeteria in the hospital). Therefore big differences in Turkish hospitals may result from small changes, a little expenditure of money, and the provision of beneficial healing functions such as a staff lounge. Figure 8.1 shows the current status of the staff lounge in the Turkish and U.S. unit.



Figure 8.1: Comparison of the Staff Lounge in the Turkish (Left) and U.S. (Right) Unit

Individual Patient Rooms: An important need in the Turkish ICU is to move from the single ward concept to the provision of shared rooms for a smaller number of patients, if not single or double-occupancy rooms. Yet this modification cannot be implemented without reconsidering staffing issues, since more patient rooms would need more staff members. At Children's, only their first and oldest ICU is a single open ward, which is currently used as a step down unit. The other three ICUs for the general, cardiac, and trauma care consist of individual patient rooms, which have increased in both individual patient room and unit size as they have been implemented. Problems linked with the lack of individual patient rooms are multi-dimensional for patients: 1) Lack of environmental control, 2) lack of privacy, 3) overstimulation for all occupants, especially due to extreme levels of noise, 4) difficulty accepting families' presence in the ICU, and 5) psychological risks associated with exposure to aggressive clinical scenes, such as resuscitation, death, and dying. Finally, the lack of individual patient rooms influences social interaction negatively, eliminating the chances for building relationships between caregivers and families.

The provision of individual patient rooms would also increase the chances for staff consultation and collaboration. Although working in individual patient rooms may reduce the chances for simultaneous supervisions and interactions, the staff station would be perceived to be less threatening. However, if the PICU is a single room, the staff station might not provide real support because of the open design and overcrowded social atmosphere, which plays against privacy during consultations. For instance, when a nurse needs support from her colleagues, she may not want to seem incompetent, or ask for help. Further, if she walks to another bedside to ask for help, this may imply that the other patient is less important. (However, it is also possible that a nurse may offer help without being asked whenever she sees the need.)

In an ICU with single patient rooms, a few caregivers are often present at the staff station, which functions naturally as a support unit: feeling less threatened to be overheard, the nurse may invite others for input. Therefore the provision of individual patient room context may provide a more appropriate environment for staff collaboration. In the Turkish model, where interactions and spontaneous cooperative relationships among caregivers occur naturally, double or triple rooms may further support this function.

Family Waiting Room: The lack of an ICU waiting room is another chronic problem in Turkish hospitals: families wait in public hallways in front of the unit. At Children's, they have visual access to the ICU, which creates troubles: First, families are psychologically disturbed by continuous exposure to PICU events, without being a "participant"-- mere "observers." Additionally, the physical layout suggests that their presence is not recognized. Second, caregivers are disturbed due to lack of privacy (from being exposed to families the whole time). Third, there are cross-infection risks since families access the unit against the rules: most of them do not obey standardized infection control measures, such as the use of gowns and masks. Finally, caregivers try to keep families away, warning them to leave when they enter, wasting a lot of energy. During the interview with the hospital administrator, he proposed to schedule meetings with parents for half an hour about their child's care, and send them home. Yet this approach would not recognize the need/right of families to be present in the ICU and get information.

Family Resource Center: Family resource center is a direct outcome of FCC. The provision of a centrally located resource center with adequate facilities such as washer/dryer, refrigerator, 24-hour food service, a kitchen to prepare their own meals, eating and sleeping arrangements, and other amenities may significantly improve their emotional well-being, and consequently patient recovery. More advanced services such as a library of medical information, a library of leisure reading, internet access, business center services (fax, copy machine, printer), and meeting rooms accommodating small and large groups for educational sessions within this center are also discussed at Children's to support families' presence in the hospital (Strategic Research, 2000).

A further innovative step may be the idea of not only recognizing but also getting support from families' presence, which will not be limited to their collaboration in less desirable jobs (such as changing diapers), which gives families a chance to participate in their child's care in the Turkish model, but by expanding their role and power in the care of their children. Every patient is special, and the family knows a lot about her or his special needs. Additionally, showing families that they are needed would be the best therapy for them. They should be allowed to participate in care because their presence has a potential to heal their children. However, this type of change should be implemented carefully to enable the efficient use of a family resource center, and deal with the negative consequences of implementing this space.

Meeting Rooms for Educational Sessions: Although the lack of space is the most important environmental barrier to FCC, families' low education level is the most critical social factor against the implementation of FCC. Spaces for educational facilities must be provided to increase family understanding of their child's disease and treatment. Especially, families and patients with chronic diseases such as cancer, asthma, and metabolic disorders require detailed information to understand the problems associated with the disease and education regarding appropriate lifestyle. The hospital must provide educational facilities in the PICU to improve families' education level, and implement FCC.

Scale Intervention (Size, Scale and Proportion)

Findings informed us that following the provisional need, the right size and scale of a space is the next important programmatic need, which plays a vital role in the effective functioning of an activity in the ICU. Additionally, the size of shared social spaces such as family waiting room and staff lounge are intimately linked with cultural factors and spatial comfort that is also culturally influenced.

First, scale is a relative system of measure, which can range from intimate size, scale and spatial order to gigantic and monumental. Human scale has been a reliable source of measure, influencing the design and perception of buildings. Anthropomorphism is a major approach to the human scaling of a building, which addresses the role of the human body in architecture and the relationship between architecture, human body and human sensory experience in general. Scale is also linked with *comfort* and *image*. Scale diversity recognizes that 1) spatial comfort will be culturally influenced, and 2) different people in different cultures will utilize, perceive and experience space in different ways (Tabb & Ozcan, 2004). Scale diversity particularly relates to the size of hospital waiting rooms in different cultures. The Turkish ICU needs a larger waiting room than in the U.S. due to large families, relatives and friends visiting the patient. Physicians reported informal social support is extremely strong in Turkish culture, and a proposal for a waiting room to accommodate 50 visitors would be insufficient in a PICU for 10 patients.

In the Turkish ICU, the scale of each space and the total setting are considerably smaller than in the U.S. setting (Figure 8.2). However, whatever was perceived to be a comfortable size in the North American ICU was found “out of scale,” improper, even inhumane by some Turkish caregivers, when they were shown images of progressive healthcare settings in the U.S.¹⁰³ Particularly, they cannot imagine the individual patient room concept functioning efficiently with the current human resources and available technology in their unit. On the contrary, most caregivers felt comfortable with an ICU ward, where they could see all patients. Yet they complained about the lack of space when participating at the caregiver activities at the bedside: Nurses were very disappointed with the current scale of the bedside space, and joked about how they could deliver simultaneous care for two patients in two adjacent beds during emergencies. The tight environment, on the other hand, challenged physicians particularly during invasive medical procedures due to their inappropriate posture. The right bedside scale in an open ICU bay will be incorporated. In general, all patient, family and staff areas should be scaled appropriately to human proportions to enable an efficient, safe, comfortable and therapeutic environment, whether it is family waiting room, staff lounge, staff station, or counseling room.

¹⁰³ Showing participants hospital images from another cultural setting, asking for and recording their honest perceptions may inform a new research design method in future studies.

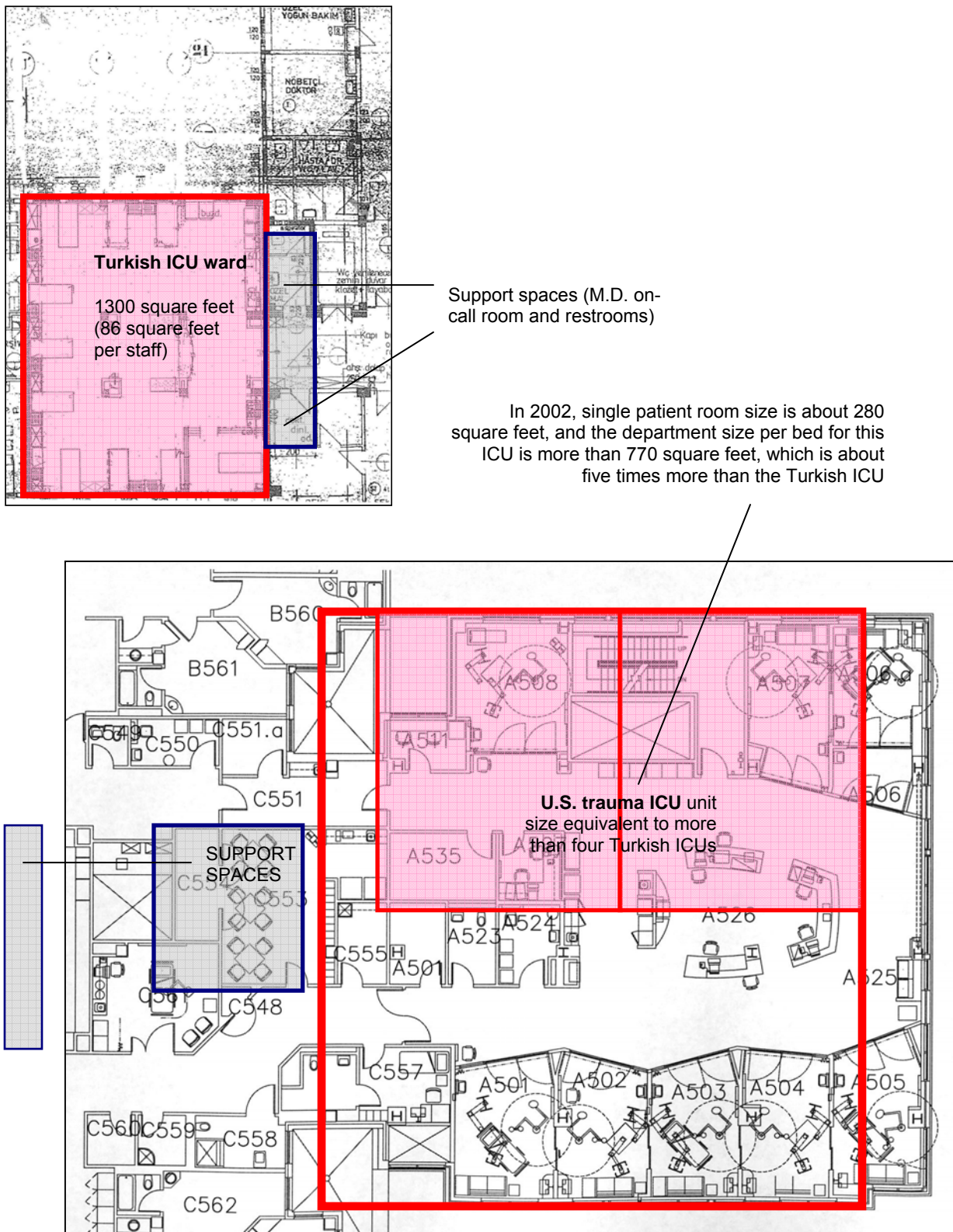


Figure 8.2: Comparing the Size of the Turkish PICU and U.S. Trauma PICU

Locational Intervention (Relational Interactions and Spatial Ordering Systems)

The location and proximity (adjacency) between spaces is the third aspect, which makes the core and support spaces needed for intensive caregiving function work more efficiently (Table 8.1; based on the table format developed for the paper “Diversity in Design” by Tabb and Ozcan). Locational objectives include: 1) to reduce walking distances between related spaces, 2) to increase the channels of movement, 3) to create separation for other functions, and 4) visual goals linked with transparency and privacy. The provision of minimum walking distances between patient areas and staff support spaces, such as equipment storage, to enable nurses spend more time with their patients emerged as the most important relational objective. Another frequent navigation through the PICU is between patient areas and staff lounge. The more distant the lounge from the ICU, the less chance caregivers will have to rejuvenate intermittently during the day. Yet administrators worry if the lounge is too close or very accessible, it may impact care by encouraging staff to overly utilize it, particularly in Turkey. Therefore an optimum distance between the lounge and ICU should be explored. The visibility of the lounge from the ICU is also critical: Some caregivers expressed they would be more comfortable if they have visual relation to the ICU even when they take a 5-minute break, while others prefer to be totally isolated for a short time to be able to rest and relax. The human processes underlying resting and relaxation may be explored in future studies.

In the Turkish ICU, interviews, observations and behavioral maps revealed the impact of locational intervention on the efficiency of the ICU, the walking function, and its impact on social interaction. 1) The location of the equipment storage in relation to the ICU was inappropriate, introducing numerous trips for the nurses in-between the two spaces, causing fatigue and reducing their performance. Additionally, nurses walking out of the ICU encounter with families when they cross the hallway, becoming distracted every time they walk out. 2) The problems associated with the transportation between the ICU and other departments, particularly the labs, were another issue. The delay in the transport arrival of blood tubes from the ICU at the labs required staff to draw more and more blood, causing more pain. 3) Head assistants reported that the location of their room in relation to the ICU was efficient and beneficial to enable them to check out the patients and ICU staff intermittently during the day. This immediate relationship suggests that administrative tools easily find their strategical place in the Turkish ICU and other public buildings (i.e., even if the other configurations are insufficient) since many people rely on a central authority for the effective functioning of their society.

In the North American ICU, despite increased walking distances of the nurses, walking was not the real time consumer: It was the charting function, which prevented them from spending meaningful time with their patients. Yet comparing the two units, which differed significantly in size, scale and overall spatial configuration (open ward versus individual patient rooms), the researcher observed that the physical layout in the U.S., which is not compact and referenced to the human scale anymore, still increased walking distances significantly, thereby encouraging a more mobile ICU team and inhibiting staff time spent with patients. However, even when they were gone, they would be back shortly, reducing the negative impact on patients. Therefore walking, similar to resting and relaxation function, may not be harmful unless staff

absence exceeds a certain amount of time. Second, to minimize the negative consequences of the increase in size and scale, there is a recent effort of locating related functions most closely and beneficially. The awareness of the proximity between related spaces, particularly the location of the waiting room and staff lounge in relation to the ICU, is likely to evolve in future ICU designs (Table 8.1).

Finally, behavioral mapping information, which recorded the activity, path and interaction of all subjects in the unit for extended hours resulted in 263 data entries in both countries, suggesting that the time used mostly for staff walking function in the U.S. model was still not utilized for interaction with patients or families, but rather staff interaction and relaxation in the Turkish model.

TABLE 8.1
Programmatic Intervention – Healing as an Outcome of the Recognition of Programmatic Needs, Including Provisional, Scale and Locational Intervention

1.	<p>PROGRAMMATIC – Healing as an outcome of the architectural program</p> <p>PROVISIONAL INTERVENTION (Provision, scale and location)</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td colspan="3">Space, function and activity not present in the ICU inhibiting privacy, social and professional interactions & FCC</td> <td colspan="2">Space, function and activity present, influential & highly descriptive in the ICU ICU design and program allowing privacy, staff interaction & collaboration</td> </tr> </tbody> </table> <p>SCALE INTERVENTION (Size, scale and proportion)</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>intimate</th> <th>small</th> <th>human</th> <th>large</th> <th>monumental</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td colspan="3">Intimate size, scale, spatial order & character scaled to the human May be inhumane when it is too small (e.g., M.D. room)</td> <td colspan="2">Monumental size, scale, spatial organization and heroic public character, may be inhumane too (Reference: Baier, <i>Bed Number Ten</i>)</td> </tr> </tbody> </table> <p>LOCATIONAL INTERVENTION (Relational and configurational interactions and spatial ordering systems)</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td colspan="3">Compact spatial arrangement Moderate walking distances No proximity awareness</td> <td colspan="2">Extended spatial arrangement Increased walking distances “Other” functions influence location</td> </tr> </tbody> </table>	none	low	moderate	fair	high	1	2	3	4	5	Space, function and activity not present in the ICU inhibiting privacy, social and professional interactions & FCC			Space, function and activity present, influential & highly descriptive in the ICU ICU design and program allowing privacy, staff interaction & collaboration		intimate	small	human	large	monumental	1	2	3	4	5	Intimate size, scale, spatial order & character scaled to the human May be inhumane when it is too small (e.g., M.D. room)			Monumental size, scale, spatial organization and heroic public character, may be inhumane too (Reference: Baier, <i>Bed Number Ten</i>)		none	low	moderate	fair	high	1	2	3	4	5	Compact spatial arrangement Moderate walking distances No proximity awareness			Extended spatial arrangement Increased walking distances “Other” functions influence location	
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Locational intervention relates to planning for the most adequate and beneficial locations and proximities between provided functions and spaces. The analysis of behavioral maps was useful in suggesting the most beneficial locations for social interaction spaces in the PICU. An important impact of locating spaces most adequately will be the reduction of caregivers' daily walking distances, particularly those by nurses (and clinical/equipment technicians), who are recognized as being on their feet all the time.

Since increasing the size of spaces often increases walking distances, the provision of more space is not necessarily better. It makes an important difference to staff performance and patient outcomes if a caregiver has to walk an extra ½ mile per day. In short, increased walking distances take away from the time nurses could spend with their patients. Therefore the following interventions are recommended:

Location of Staff Station and Patient Rooms: The adequate location of the staff station and patient rooms is critical. The central staff station or substations should be located in such a way that they have visual access to each patient. Its location and configuration should also provide direct walking paths between different patient rooms to enable caregivers to immediately react to emergency situations in other rooms when they are in a certain room. Particularly respiratory care practitioners, who, unlike nurses, take care of more than two patients in adjacent rooms, would benefit from locational intervention.

Location of Staff Resource Center: The beneficial location of a staff resource center (staff lounge) in close proximity to the PICU will have enormous benefits for staff, increasing their communication, collaboration and performance through increased opportunities for social interaction. In the Turkish model, beneficial functions that can be included in a staff resource center, particularly a medical library with access to Internet and medical databases, are outside the hospital, inhibiting doing research within workspace.

Although the term “staff resource center” indicates an ideal room for caregivers away from the stresses of the PICU, the researcher conducted her observations within the “staff lounge” to gather locational data. At Children's, each unit has a separate staff lounge in different locations and proximities from the ICU. Only on the second floor, the caregivers of the main ICU and cardiac ICU share the same lounge located within the main unit, although the cardiac unit is located more distant to the lounge, thereby increasing walking distance. The staff lounge on the third floor is designed for all PICUs, yet the only ICU on that floor is the step-down unit located at the other end of the building. However, the emergency staircase may be used as a direct link between the three ICUs located on that side of the building, thereby relating the staff lounge to the other PICUs on different floors at the east end. Finally, on the fifth floor, the lounge is outside the unit in close proximity to the trauma ICU.

The differences in the location of staff lounge areas in relation to the PICUs seem to be ideal to measure the health outcomes of their physical and intellectual adjacencies, particularly their impact on the utilization of each lounge, and the level of staff interaction, thereby improving medical outcomes.

Location of Family Resource Center: The patient family focus group researchers at Children's concluded (Strategic Research, 2000) that if the family resource center (FRC) is too far from the child's room, many parents will not be willing to take the time to visit this center. Currently, there is no such

facility at Children's to study the behavioral impacts of the location of an FRC. Thus, this study focused on the location of waiting rooms, which are closest in function to an FRC, although they impose a more passive waiting behavior as opposed to families' active presence in an FRC.

Location of Waiting Room: In the Turkish unit, families are welcome to use the waiting rooms of other departments, yet they want to stay close to their children. Therefore they wait in a small hallway between the PICU, office space of the chief resident, and the oncology unit, standing up or sitting on the floor for hours. Therefore a waiting room, which is located very close to the PICU, is an urgent need.

At Children's, similar to staff lounges, family waiting rooms are located in different locations and proximities from the PICU, thereby changing the walking distance between the waiting room and the unit. The waiting room of the main unit on the second floor is within the unit, and in closest proximity to patient areas. However, the waiting room of the second floor cardiac ICU is located one floor above, creating more walking distance for families. The waiting room of the fifth floor trauma unit is in close proximity on the same floor, but it is outside the unit. Finally, the waiting room of the step down unit on the third floor is also located on the same floor, but it is a little distant. Only the waiting room of the main unit is located within the PICU department. In short, the fact that three out of four waiting rooms are located outside the unit may negatively affect families' perception of their role in their child's care, and create inequalities in visitation: families using the more distant waiting rooms may visit their children less frequently.

8.2.2 Findings Associated with Functional Intervention

Research findings informed that a functional, efficient, flexible and accessible environment is a major aspect of the critical care setting. "Functionality" in this study is also intimately linked with the function and meaning of technology. Finally, rest and relaxation emerged to be equally important as social interaction to influence healing.

Functionality, Efficiency, Flexibility and Accessibility

Functional intervention is linked with providing important resources to support the practical functions of staff, patients, and families, particularly those functions that increase the chances for greater social interaction among all participants. Some basic functions are the resources needed for rest, relaxation, and nourishment, particularly a shared space equipped with an oven, a few tables, a table, beverages such as water, tea, coffee, and soft drinks, a comfortable chair (maybe a massaging chair), and quiet areas for parents to relax away from the stresses of their child's bedside. Overnight sleeping, separate phone, laptop computer connectivity, comfortable seating are other important functions to provide for the parents.

The range of human needs in the ICU may be as simple as providing staff and family access to energizing drinks, or as complex as inserting ceiling-mounted equipment to free the patient room from unnecessary technology. The responsiveness of a PICU to needed functions can be evaluated within a five-scale measure from simple and cost-effective interventions (e.g., access to drinks or providing love) through moderate (e.g., provision of staff lounge or waiting room) to highly complicated functions (e.g.,

ceiling mounted booms) (Table 8.2). Previous chapters summarized one of the most successful and highly complex functional objectives at Children's during the design process of the patient rooms of the cardiac ICU, which applied zoning principles that separated each rectangular room and its associated equipment into three functional zones for families, patients, and caregivers.

Functionality is not limited to the provision and beneficial location of shared/social interaction spaces and rest and relaxation functions. Multifunctional rooms, such as staff lounge, staff-family meeting room, family-counseling room, and staff consultation room may be designed for increased flexibility. Giving families 24-hour access to the PICU and other support spaces is another fundamental need. Patient family focus groups at Children's concluded that the family resource center must be accessible 24 hours per day, as many parents will feel most comfortable visiting the center late at night, while their child is asleep (Strategic Research, 2000).

Technology (Access to High Technology and Technological Dependency)

Functionality also relates to meeting the more complex human (mostly staff) needs and technological innovations. Therefore one end of the term relates to complexity and technology, while the other end is closely linked with the provision of more fundamental and humane needs to enable relaxation and socialization. The presence of modern equipment and highly trained caregivers, who need the most efficient environments possible to help them work and carry on their responsibilities, and maximum building performance underlie the need for functionality and an ICU setting designed to fit its purpose.

Functionality and efficiency together with the use of high technology may symbolize the increased level of sophistication in clinical and medical advances achieved in critical care.

Rest and Relaxation Function

While caregivers recognized having access to drinks, snacks and small meals increases their performance extensively, there is not enough knowledge regarding the human processes to restore in very short times. "Power naps," which do not extend 20 minutes, is one of the well-evidenced areas regarding the benefits of short-term relaxation, which can be inserted into the ICU by providing time and space for the caregivers to take advantage of their lunchtime for a nap. A Turkish physician, who slept at lunchtime regularly, also emphasized the benefits of power naps. Architectural solutions for encouraging resting and relaxation can range from providing a comfortable couch or a few recliners in relatively silent, dark, and private areas of the ICU to providing a sleep room with a comfortable bed.

TABLE 8.2

Functional Intervention – Healing as an Outcome of the Recognition of Functional Needs, Including Functionality, Efficiency, Flexibility, Accessibility and Technology

2. FUNCTIONAL – Healing as an outcome of the provision of needed functions, including efficiency, flexibility, accessibility, technology & relaxation

4 **FUNCTIONALITY AND EFFICIENCY (Efficient provision of functions)**

local	semi-local	neutral	semi-intern.	international
1	2	3	4	5
Simple and locally generated function & aesthetic; homogeneous spatial organization; symbolic/historic content			Highly complicated universal function & aesthetic; heterogeneous spatial organization; generic content	

5 **FLEXIBILITY AND ACCESSIBILITY (Multifunctional spatial order)**

none	low	moderate	large	high
1	2	3	4	5
Internal spatial layout, character, place functions and activities overly singular and monotonous Insufficient wayfinding and signage			Diverse and multifunctional spatial character and layout variations Access to public and private uses Good wayfinding and signage	

6 **TECHNOLOGY (Access to high technology & technological dependency)**

low	simple	moderate	complex	high
1	2	3	4	5
Low-tech, imported from foreign countries; lack of knowledge of its operations & maintenance problems			High-tech, locally generated & accessible; specialized knowledge fields	

REST AND RELAXATION (Spatial, functional, operational and ambient opportunities for rejuvenation)

none	low	moderate	large	high
1	2	3	4	5
No resting & relaxation functions in architectural program and building details Low nature awareness Inhumane shifts and organization			Rest function present, influential and descriptive in design (central staff lounge, waiting room, resource centers) Use of healing benefits of nature More humane shifts and organization	

8.2.3 Findings Associated with Symbolic Intervention

Research findings revealed that healing could also be influenced by the symbolic and communicative function of architecture by sending meaningful messages to its users. A symbol is a thing that represents something else. It is through symbols that a building may come to be understood as representing a real idea, or other objects or contents. The symbolic content of architecture particularly relates to materiality, transparency, interiority (interior settings and order) and form language.

Materiality

Findings indicated positive symbolic intervention is linked with the appropriate choice of materials, colors, textures, furniture, finishes and other interior settings, informing communicative value (Table 8.3). Both hospitals used practical industrial materials with long-term efficiency. For instance, ceramic tiles are used on the walls and floors of the Turkish PICU, since they are easy to clean and have long-term-efficiency without reconditioning (unlike painted walls). However, they also suggest “sterility” of the environment, thereby sending an institutional and authoritative message. Likewise, it has been argued that in North American schools dating from the fifties or sixties, tiles symbolized the authoritative nature of education during that era (Steve Daniel, 2002; personal communication). In the Turkish unit, staff disliked the use of tiles because they felt as if they were in a bathroom or a fish bowl. To avoid this feeling and symbolize a participative design approach, where staff and even families are an important member of the design team, the most soothing and nurturing materials, colors, and textures should be chosen.

More broadly, materiality relates to the celebration of the experiential and sensual dimensions of architecture, which can be achieved through both exterior and interior building materials and systems. Materiality does not only inform a rational (e.g., function, economy, and durability) or symbolic content but also conceptual responses to the design problem. Some practical design strategies that impact materiality are “green,” sustainable and nontoxic design intentions, or response to ambient and psychological needs of participants (e.g., the use of homelike and familiar materials for reducing stress). Other times, materiality can be used to dominate, imposing the sterile, institutional, authoritarian and powerful character of a facility. With the passage to a postmodern culture, this prevailing symbolic function of materiality is transforming to humanistic ends in contemporary hospitals.

The materiality (and transparency) of an ICU can symbolize the idea of healing through a particular meaning associated with the choice of materials and textures that is culturally influenced. Materials can represent the idea of healing through a sense of comfort and well-being (or dwelling). The choice of local/traditional materials¹⁰⁴ and textures may also represent a design process, which is humane

¹⁰⁴ For instance, hand-made carpets and rugs have been an important part of the interior settings of the traditional Turkish house for providing a sense of comfort and dwelling. However, with the transition to modernity starting from the thirties, rational concerns (such as durability and hygiene) eliminated carpets from the modern workplace (and homes): instead concrete floors, vinyl or ceramic tiles became the standard materials in public buildings such as hospitals or educational facilities. Currently, marble or

and respectful of local culture, empowering the relationship between the building and its users, rather than disregarding and alienating them from the “material” building.

TABLE 8.3
Symbolic Intervention – Healing as an Outcome of the Satisfaction of Symbolic Needs,
Including Form, Geometry, Materiality, Transparency and Interiority

3. SYMBOLIC – Healing as an outcome of symbolism and meaningful design					
7					
MATERIALITY (Symbolic content of materials)					
	monotonous	simple	moderate	variegated	multifarious
Exterior	1	2	3	4	5
Interior	1	2	3	4	5
	Local & cultural choice of materials			Advanced high tech & industrialized materials	
	Institutional and authoritative feeling			Friendly and home-like intentions	
	Yet could be soulful & hand-made			Yet economical & machine-made	
8					
TRANSPARENCY (Concealed to known)					
	opaque	solid	moderate	open	transparent
ICU ward/room	1	2	3	4	5
Staff lounge	1	2	3	4	5
Waiting area	1	2	3	4	5
	Separating the inside from outside concealing activities and accessibility			Making the interiority visible, dematerialized, accountable, open, knowable and useful	
9					
FORM LANGUAGE (Geometry, image, symbolic/communicative value)					
	dominating	certain	moderate	friendly	humane
	1	2	3	4	5
	Strict, assertive, unforgiving, perfectionist, certain, indifferent fixing & controlling human behavior			Friendly & respectful to local culture Gives confidence to its users Accepts human weaknesses	

granite surfaces are popular due to their prestigious nature. In the Turkish hospital, they used granite for renovating the staircase leading to the ICU and the head physician’s office. However, most caregivers criticized this intervention due to the waste of money and neglect of more emergent needs. In the future, a return to traditional materials in the staff lounge or waiting room may help create familiar feelings linked with the local culture, and a sense of place, differentiating common areas from others in the world and expressing their difference from generic ICU place functions.

Transparency

One definition of transparency, a major concept relating to the meaning of a hospital, is the “dematerialization of form.” Relative to healing, transparency would suggest that healing relates to the “visible” and “knowable.” Healing in this sense reveals the meaning of the tension between emergence and hiddenness, which is the inspiration of any work of art, including the human being. Therefore healing can be expressed in terms of its relation to the ability to distinguish between the hidden and visible to transmit content, intentions, ideas and Truth. The relationship between transparency and healing indicates the phenomenological interest of this study. According to Vidler, a phenomenologist, “transparency is the contradiction between that which appears and that which signifies” (Tabb & Ozcan, 2004). Therefore, healing may be expressed physically in degrees from translucent to opaque, and indicate various functions of an ICU, such as including the family unit in the care of children rather than being inaccessible, invisible, exclusionary, vague, unfriendly or mysterious spaces.

The intended transparency and emergence of the socialization function in the ICU may support healing. The way an ICU reveals itself, its emerging functions and activities, its perceivable size and scale, spatial organization, circulation, the relationships and accessibility between its spaces, the use of its colors, materials (particularly glass) and furniture/interior settings, even the exposition of its structural and mechanical systems can suggest a *physical and functional transparency*. The ways in which the caregiving and socialization activities and the presence of all participants in the unit become part of the expression of the ICU would reveal its *social transparency*. When the internal practices in the ICU are informed to the public, particularly the patients’ families, transparency embraces a whole new social meaning and purpose. Finally the intention to de-materialize and disappear the distance between interior and exterior ICU functions may suggest a “*threshold transparency*” (Tabb & Ozcan, 2004).

The physical characteristics of transparency are most dramatically indicated with the surface qualities and thresholds of the ICU, where both tectonic and programmatic (functional) qualities may become revealed both inside and out. Turkish caregivers reported many times how they felt about the threshold between the staff station and hallway outside, which made them “visible” to the families against their will. In this case, the healing purpose of the ICU may be explored in a different type of transparency.

The phenomenological interest of this study is particularly linked with transparency and openness: Phenomenology focuses on the fact that human interaction is always buried in preconceptions and prejudgments, which often inhibit the chances for a true understanding, meaningful flow of shared information, and the development of love, which is essential to healing.

In reality, increased visibility and transparency are perceived to create negative social interactions. For instance, in the Turkish ICU, the more visible the ICU team members were to the families, 1) the more threatened and uncomfortable they felt, and 2) the more negative behaviors and misunderstandings they received from the families (e.g., some caregivers reported that some family members threatened their lives). While the family-centered care (FCC) notion in the West is a social manifestation of the intention to make the PICU the most accessible, visible and transparent to families, traditional and “safe” design

concepts continue. For instance, the staff lounge is usually located distant from the ICU, making it totally invisible and unperceivable to families, so they cannot see that staff members can also laugh, socialize and feel happy. This is considered necessary due to the fact that families' perception during their child's hospitalization is often far from reality, i.e., they can get offended very easily. However, it is worth of exploring if there may be any benefit in aiming for a totally transparent experience in future PICUs, thereby manifesting the intention for an improved openness and meaningful sharing of human experience, possibly through an evolution in FCC and diversity.

Form Language and Geometry

Various elements of form language, such as geometry, shape, color, texture, tectonic quality, size and scale, aspect, volume, order, axis mundi, and regularity may represent the idea of healing. Particularly, architectural forms can strongly represent the idea of healing, which relates not only to the vulnerability and fragility but also the capacity for self-organization of the human condition. On the negative end of the spectrum (Table 8.3), certain architectural forms can be very strict, dominating, insensitive, and inhumane. Similar to certain materials, architectural forms and the interior order of a hospital may ignore the individuality and uniqueness of the patient and her or his family. Baier's *Bed Number Ten* (1995) illustrates the inhumane ideas sent through form language and interior settings clearly. Tall hospitals, one of the dominant symbols of modern healthcare, also have a definite language, which usually does not permit chances for access to outside ("mother earth"), nature and human scale.

The form and geometry of an ICU can symbolize the idea of healing through a universal meaning associated with the chosen form, or a particular meaning of the form that is culturally influenced.

Geometry relates to perfect form. Throughout the history of human kind, many people have had a strong desire to work with geometries (e.g., sacred geometry, Islamic geometry, Gothic geometry) in that a geometry can be isolated from reality as a coherent organized whole and can make one feel the perfection of God (Tabb & Ozcan, 2004). The geometry and form chosen for an ideal PICU proposal in Turkey (Figure 6.8) resemble both a *nautilus shell* (Figure 8.3) and the classic *yin-yang symbol*. The yin-yang distinction between the opposites is not only present in form but also in spatial organization, symbolizing the distinction between sacred and mundane ICU functions: Sacred functions may include 1) knowledge-based activities, such as staff and family education, reading, work, research, teamwork, and 2) meaning-giving activities including death, dying, grieving, and counseling. Mundane functions relate to lower human needs, such as eating, resting, and sleeping. Social interaction, the main function of healing, may be considered both as a mundane and sacred activity. This distinction can also be extended over gender, by differentiating between male (work, research) and female place functions (caring, social interaction).

The idea of *social interaction* can also be expressed with form and geometry. The in-between stance of social interaction between the mundane and sacred may suggest that it stems from the ontological presence of the human subject in the world, which is defined with her or his relationship to the "other." In the proposal for an ideal PICU, the form is a square embraced within the circle. The square represents the

ICU core space, symbolizing the centrality of the curing function. The circle expresses the social support and interaction spaces, through which healing will occur. “Squaring of the circle” symbolizes not only the human need for social interaction, but also one’s experience between the world of senses and Reality (or Truth), where the square is earth and earthly concerns and the circle is heaven and the heavenly realm. According to Tabb (2003, personal communication), it is an ancient exercise to see if one can approximate the area and perimeter length of both such that they are the same. By such, it suggests that one can never achieve the balance between the two, i.e. earth (square) and heaven (circle), yet approximate them. Finally, geometry may also symbolize the qualities found in the West and East: Squaring of the circle may symbolize the overlap of Christian Rationalism (square) with Islamic geometry (circle).

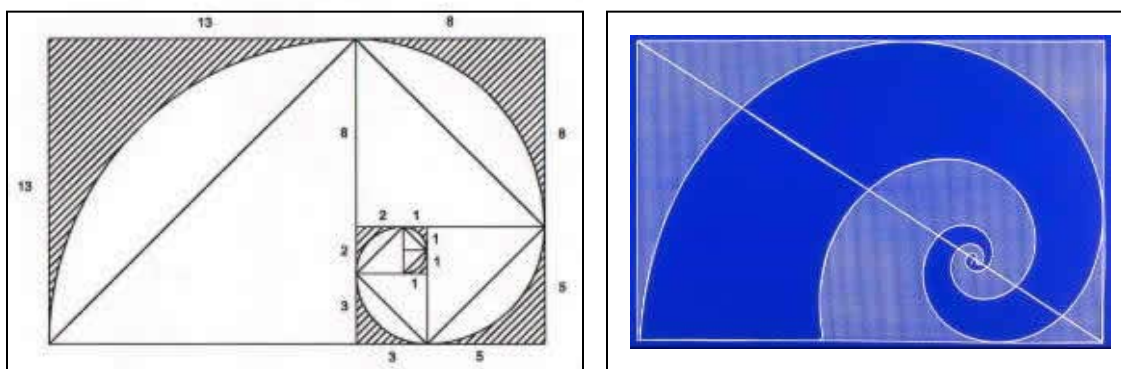


Figure 8.3: Analysis of the Nautilus Shell and the Exercise of “Squaring of the Circle” as an Ideal Informant of ICU Form and Geometry

8.2.4 Findings Associated with Ambient Intervention

Ambient intervention deals with creating a “home-like,” familiar and comfortable feeling (rather than an institutional environment), which is sensitive to the needs of the participants particularly in major social interaction spaces of the PICU (patient bedside, staff lounge, and waiting room). Other tools to establish an ambient healing environment are access to nature, extant natural light opportunities, shapes of spaces, use of color, high degree of enclosure and privacy, modulation, and proportion.

Comfort and Familiarity

Phenomenological insights, which are based on one’s everyday experiences, would suggest that comfort and familiarity of the interior setting of a hospital may contribute significantly to a dwelling and healing experience. Likewise, research findings suggested that the healing function of a PICU could be supported through a comfortable, familiar, and personal (e.g., personally expressive) interior setting (Table 8.4). Comfort and familiarity may be clearly illustrated where healing directly relates to the celebration of social interaction made possible within shared interior spaces, particularly the patient room, family waiting

room and staff lounge. For instance, family photographs displayed in the staff lounge are common in U.S. hospitals. Families also tend to personalize their space in the waiting room; they even get territorial. A feeling of comfort or dwelling can bring forward the full capacity of social interaction and healing. As Lawlor suggests, “like ... people coming together to celebrate the human spirit, deepening into architectural dwelling is an everyday practice” (Tabb & Ozcan, 2004).

Comfort, and the phenomenological concept of home, may be expressed through the selection of furniture, particularly seating arrangements and “comfort of the family space,” provision of needed functions (e.g., lighting and laptop computer connectivity), use of healing colors, materials, artwork, attention to detail to project an image of individuality, and the general atmosphere of shared spaces. In U.S. hospitals, comfort and home-like design have been key postmodern design trends. In the Turkish ICU, however, some caregivers argued that comfort, familiarity, and personalization should be limited in the hospital to be able to distinguish between home and workplace. The institutional atmosphere of the hospital reflected the same notion. This cultural difference may be explained with the transition from modern to a postmodern spirit, which influences the meaning of place as perceived by the participants.

Image and Character

The image and character of a setting provide a more complete definition of the term “ambience” or “interiority.” Interiority refers to the “interior quality or character, inner life or substance” of a place (Tabb & Ozcan, 2004). Within the context of the ICU, image and character may refer to a sense of place, which tends to create a local and unique feeling rather than a generic and universal hospital feeling. Similar to comfort and familiarity, the focus on image and character is more likely to influence healing within the context of social and cultural activity settings rather than universal, independent, and clinical or high-tech ICU functions and spaces, because the place tends to become more personally expressive, unique, full of character, and comfortable within the former.

Image and character may be expressed with the choice of colors, materials, furniture that reflect the local and familiar culture rather than a universal and indifferent order (e.g., use of Turkish carpets).

Nature Responsiveness and Access to Nature

Nature responsiveness is proven to be the most effective principle for healing through access of the PICU to nature and extant natural light opportunities. For instance, at Children’s, window surfaces are maximized in the patient rooms of the cardiac and trauma units to increase visual access to the outside (e.g., city skyline) and daylight. Access-to-nature research focuses on human response to exposure to indoor plants and gardens, outdoor gardens, views of nature (both artificial and real) and natural light. One study, for instance, looked at psychiatric patients’ length of stay in sunny versus non-sunny rooms; patients in sunny rooms stayed an average of 16.9 days, while patients in non-sunny rooms stayed 19.5 (Levin, 2003).

TABLE 8.4
Ambient Intervention – Healing as an Outcome of the Satisfaction of Ambient Needs,
Including Comfort, Familiarity, Image, Character and Nature

4. AMBIENT – Healing as an outcome of ambient and atmospheric qualities																																											
10	COMFORT AND FAMILIARITY (Dwelling and healing)																																										
	<table border="1"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Patient's bedside</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Staff lounge</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Waiting area</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3">Institutional, authoritative, civic</td> <td colspan="2">Home-like, familiar, comfortable</td> </tr> <tr> <td colspan="3">Distant, sterile, uncomfortable</td> <td colspan="2">Chances for privacy & self-expression</td> </tr> <tr> <td colspan="3">Senses enforced by the institution</td> <td colspan="2">Natural, informal</td> </tr> </tbody> </table>	none	low	moderate	fair	high	1	2	3	4	5	Patient's bedside					Staff lounge					Waiting area					Institutional, authoritative, civic			Home-like, familiar, comfortable		Distant, sterile, uncomfortable			Chances for privacy & self-expression		Senses enforced by the institution			Natural, informal			
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11	IMAGE AND CHARACTER (Form character and innovation)																																										
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8.2.5 Findings Associated with Social Intervention

This includes 1) provision of support for patients, families, and caregivers, and 2) display of cultural sensitivity, particularly in the U.S. with diverse families. A healing ICU should provide space and structure for social interaction. According to Levin (2003), environmental psychologists researching

healthcare and workplace situations have found that individuals with a high level of social support experience less stress and greater wellness. People with lower levels of social support, on the other hand, experience higher rates of illness and less favorable recovery indicators. For example, cardiac patients with a higher level of social support recover more quickly from heart attacks and have more favorable long-term survival rates. The benefits of social interaction and connectedness to a social unit for pediatric patients in an ICU require further exploration.

This study found social interaction to be the most beneficial healing principle: Social interactions may be particularly influenced by: 1) floor and room layouts, 2) the locations, physical and visual relations (transparency), and walking distances between spaces, 3) furniture placement and settings, and 4) interiority (interior settings). For instance, “heavy or unmovable furniture inhibits social interaction, while comfortable and movable furniture that can be arranged in small, flexible groups can facilitate it” (Levin, 2003). This study did not measure the health outcomes of suggested design interventions quantitatively. However, it identified the importance of spatial organizations, particularly the interaction between family waiting areas, staff lounge and resource rooms, and patient’s bedside. It is expected that locating these areas, where unscheduled social interactions occur more naturally, closer to patients would improve social relations, communication and collaboration among all participants.

Social and Organizational Support

Social design is linked with providing the social systems and requirements that make the “place” work, and create an appropriate atmosphere supporting physical facilities. The most important services to increase families’ comfort and positive experience in the hospital may be influenced through the provision of social services rather than the physical environment. These services include providing adequate 24-hour food service, providing or improving sleeping arrangements inside and outside the hospital, and providing more convenient parking, although this is more important in the U.S. Planned activities for siblings, private meetings with doctors away from the child’s bedside, support group and educational meetings for parents about their child’s disease and care, and religious and spiritual services are some other chances.

Transition Towards FCC: The most important social requirement in the Turkish model is managing a transition towards FCC. Although the provision of space may be the most important factor for FCC, no matter how much space is provided, and how adequate it is, FCC will not happen if they do not change their operational policies. For instance, they renovated the NICU to build a state-of-the-art facility. However, support group and educational meetings for nurses and families were not implemented despite the provision of space¹⁰⁵.

The social situation in the Turkish model is highly complicated: while the hospital must respond better to families’ needs, they fear that families may misuse the facility. The head fellow at the Turkish PICU hypothesized that homeless children may use the hospital as a hostel if they create a pleasant

¹⁰⁵ The reason may be that hospital administrators fear they will lose their authority if they empower nurses and families. However, FCC is based on the understanding that families and caregivers are equals, although the latter has specialized skills to solve medical problems.

environment. Even at Children's, families' use of space poses a problem: a few years ago, they provided parental sleeping quarters, yet these rooms were misused to such an extent that they had to eliminate them.

Second, since the hospital is a "no-man's-land," families and the less educated staff members are commonly insensitive to protecting the facility. There is a concern that they may harm the equipment such as washers, dryers, and refrigerators if they have a right to use them, and even steal supplies. Finally, the provision of beneficial activities may not guarantee their proper use if families are unfamiliar with these activities. Therefore the "culture shift" in the Turkish model should be planned in carefully implemented stages. Particularly, the administration must decide regarding the extent of misuse they will accept to impact the total patient and family experience and empowerment in the hospital.

Provision of Educational Facilities for Families: The challenge to increase the educational level of families and the least credentialed healthcare workers, such as environmental and equipment technicians, is an urgent social requirement in the Turkish model for a transition to FCC. Currently, the only education parents receive regarding their child's care is in order to be able to care for their children at home after discharge, which is provided individually at the patient's bedside, depending on parents' willingness to receive this responsibility. The mother may fear being responsible particularly when the father is absent. This activity does not increase families' awareness for future health problems. However, family experience in the PICU should introduce long-term benefits.

Social Aspects of Resource Centers: In addition to the provision and beneficial location of a family resource center, and other lounges and social interaction spaces, accessibility of these spaces must support their functions. Patient family focus groups at Children's concluded that the family resource center must be accessible 24 hours per day, as many parents will feel most comfortable visiting the center late at night, while their child is asleep. The interior settings of a family waiting room or resource center can also support social interactions by creating a feeling of comfort and dwelling.

Social Interaction and Relationships

Research findings of this study support common sense: staying connected with others has very important health and healing benefits. Therefore, social interaction and harmonious relationships to social (and ecological) units are major healing functions. This study builds upon that notion that social ties and connectedness constitute a "higher" level in the hierarchy of human needs, which are satisfied naturally in more traditional societies, which yet suffer from the lack of satisfaction of lower level, practical and technological needs, such as lack of needed functions and spaces. Social cohesiveness also emerged to be a major cultural difference between Turkey and the United States, which often plays against the development of the "self" in Turkey. While the U.S. model provides more ideal and comfortable conditions for the emergence and actualization of the self, it introduces increased social and psychological problems, and reduced happiness and well-being. Social networks and interaction, in contrast to isolation, discourage the development of the self, but also tend to enable healing.

Findings suggest that social and parental support plays an important role in helping pediatric patients recover from a critical illness or operation. Being part of a network also benefits families physically and mentally. The strong link between quality of life and community involvement is a well-known fact: if families feel needed and as part of the ICU unit, they will have a better experience. Therefore the design of the PICU should contribute to harmonious social interactions among all participants. To do this, not only programmatic and functional (e.g., lower level) interventions, but also form, geometry, materiality, transparency, and interior settings of an ICU play an instrumental role. Table 8.5 indicates the social intervention model based on support, interaction and collaboration.

TABLE 8.5
Social Support – Healing as an Outcome of the Satisfaction of Social Needs,
Including Social Support, Social Interaction and Communication

5. SOCIAL – Healing as an outcome of social support, including organizational, social and cultural intervention																										
13	<p>SOCIAL & ORGANIZATIONAL SUPPORT (Social systems, requirements, services)</p> <table border="1"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Random family-physician meetings</td> <td></td> <td></td> <td></td> <td>Private family-physician meetings</td> </tr> <tr> <td>Inappropriate information exchange</td> <td></td> <td></td> <td></td> <td>Planned support group activities</td> </tr> <tr> <td>Informal social support</td> <td></td> <td></td> <td></td> <td>Organizational care and FCC Higher levels of staff satisfaction & dedication</td> </tr> </tbody> </table>	none	low	moderate	fair	high	1	2	3	4	5	Random family-physician meetings				Private family-physician meetings	Inappropriate information exchange				Planned support group activities	Informal social support				Organizational care and FCC Higher levels of staff satisfaction & dedication
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14	<p>SOCIAL INTERACTION (Social and professional relationships & communication)</p> <table border="1"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Mechanical and formal</td> <td></td> <td></td> <td></td> <td>Natural, unscheduled and informal</td> </tr> <tr> <td>Professional and distant</td> <td></td> <td></td> <td></td> <td>Intimate, private and cooperative</td> </tr> <tr> <td>Scheduled and institutional</td> <td></td> <td></td> <td></td> <td>In-depth and trustworthy</td> </tr> </tbody> </table>	none	low	moderate	fair	high	1	2	3	4	5	Mechanical and formal				Natural, unscheduled and informal	Professional and distant				Intimate, private and cooperative	Scheduled and institutional				In-depth and trustworthy
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15	<p>STAFF COLLABORATION (Professional and work-related relationships)</p> <table border="1"> <thead> <tr> <th>none</th> <th>low</th> <th>moderate</th> <th>fair</th> <th>high</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Cooperative relationships</td> <td></td> <td></td> <td></td> <td>Formal and professional relationships</td> </tr> <tr> <td>Fewer professional communication due to current state of knowledge</td> <td></td> <td></td> <td></td> <td>Intense collaboration as a result of increased knowledge sharing</td> </tr> </tbody> </table>	none	low	moderate	fair	high	1	2	3	4	5	Cooperative relationships				Formal and professional relationships	Fewer professional communication due to current state of knowledge				Intense collaboration as a result of increased knowledge sharing					
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8.2.6 Findings Associated with Psychological Intervention

Psychological intervention in this study refers to the recognition and satisfaction of private and individual needs of patients, families, and caregivers rather than the traditional counseling services, which aim to provide psychological support and a supportive relationship between two parties (e.g., social support intervention). It relates to the French principle of respect for “private life” and the German principle of respect for “personhood” (Table 8.6).

Privacy and Hiddenness

The comparison of case studies revealed two different approaches of Turkish and North American cultures regarding the participants’ need to have privacy and “hiddenness” in a public building. A Turkish physician criticized that Turkish caregivers tend to have privacy in their rooms for cultural reasons, and even the lowest level caregiver finds a room to himself to meet this need.

Privacy means to be distanced, protected or hidden from the surveillance and eavesdropping of third parties, when not desired. Forster (1992) notes “it is a serious thing to have been watched, we all radiate something curiously intimate when we believe ourselves to be alone.” Caregivers in both settings reported that they use the restroom when they need to stay alone for a while. The need for privacy and hiddenness seems to contradict the need for social interaction. While family members and caregivers have usually some degree of control over their privacy, the patient is the most vulnerable in the Turkish setting. The provision of individual patient rooms in the U.S. is linked with this need. The provision of separate shared spaces and lounges for different user groups (e.g., nurses, physicians, families) may support the need for privacy. Yet the balance between unit privacy and transparency must be maintained.

Emergence and Self-Expression

The second existential need relates to emergence or self-expression, which may be even more sophisticated than the need for privacy and hiddenness. The tension between hiddenness and emergence is well recognized by Gadamer (1977): “Hiddenness is not error but rather belongs to Being itself, which is not the emergence into the light but as much the hiding into the dark.”

The study analyzed the role of architecture to influence greater and more positive social interactions in shared spaces, and the need for providing “healing lounges” in hospitals. Exploring the differences between the North American and Turkish cultures in terms of their relation to space revealed the idea of the “emergence of the self.” In Turkey, there is a bigger difference between workplace and home, particularly if the former is a public building. People do not tend to personalize their workplace as much, or to publicly express their private lives. For instance, they do not bring family or home pictures to the staff lounge. While homes are very clean, orderly, and more comfortable, the workplace, which is often viewed as “no man’s land,” tends to be less “home-like,” familiar and comfortable, inhibiting chances to express one’s individuality. The lower level of hygiene, material and tectonic sophistication, and personalization also replace the concept of “home-like” workplace.

TABLE 8.6

Psychological Support – Healing as an Outcome of the Satisfaction of Psychological Needs, Including Privacy, Enclosure, Individuality, Self-Expression and Art

6. PSYCHOLOGICAL – Healing as an outcome of psychological support & satisfaction of psychological needs, including privacy, individuality and healing art

16 **PRIVACY, ENCLOSURE AND HIDDENNESS (The “uncanny” & unhomelike)**

none	low	moderate	fair	high
1	2	3	4	5
Privacy function not present in space, function and program No respect even during death & dying No chances for “hiddenness”			Privacy function present and influential in space function and program Respect for privacy & private life Respect for personhood & individual differences	

17 **INDIVIDUALITY, SELF-EXPRESSION & PERSONALIZATION (Making manifest against the “uncanny”)**

none	low	moderate	fair	high
1	2	3	4	5
Opaque, solid, hidden self Distinction of workplace & home; workplace tends to be no man’s land Impersonal & institutional language			Open, transparent, emerging self Personal, familiar, comfortable, “home-like” workplace/hospital Satisfaction of personal & individual needs	

18 **HEALING ART (Contradiction of hiddenness and emergence)**

monotonous	simple	moderate	ambiguous	sophisticated
1	2	3	4	5
Few chances for art & self-expression Art produced as a cultural function Simple & straightforward expression			Focus on self & self-expression Social display of artwork to reveal oneself Sophisticated & not totally concealed	

SPIRITUAL INTERVENTION (Material expressions of self-transformation, transcendence of the ego, and submittance to a higher will)

none	low	moderate	ambiguous	high
1	2	3	4	5
No provision of spiritual space functions No expression of a higher will Human control evident in design			Spiritual functions & activities present Expression of the belief in a higher will Expressions of the lack of human control	

Transparency and self-expression in the ICU may be encouraged by providing private and common spaces to respect the individuality of patients, families and caregivers, particularly through the provision of individual or shared patient rooms, waiting room, and staff lounge. Encouraging people to personalize and humanize their environment with family pictures, artwork, toys and flowers may also contribute to healing.

Healing Art

Producing or viewing (experiencing) artwork is both an ambient and psychological need for healing, which is linked with the previous two categories of healing: the conflict between emergence (making manifest) and hiddenness constitutes the work of art. “Its truth is not its simple manifestation of meaning, but rather the depth of its meaning.” To increase the chances for healing art opportunities in an ICU: 1) walls painted with creative murals and fantasy world images, 2) musicians playing healing music for the patients, and 3) the participation of children (that are healthy enough) at artwork, and the integration of their artwork in the decoration and symbolic intervention of the hospital may be beneficial.

8.3 The Meaning Of The Phenomenological Strategy

This section aims to summarize the role of the phenomenological approach in this study, indicating how some general phenomenological insights and analyses relate to the evaluation of pediatric intensive care units and other healthcare environments.

The definition and specific function of phenomenological approach in this study was based on deriving scientific knowledge from everyday activities and everyday experiences¹⁰⁶. This approach not only opened the study to the interpretation of everyday experiences but also of intuitive insights and emotional processes of the researcher to get beyond rational findings. The phenomenological approach was also linked with the choice for naturalistic methodology in that 1) it provided a detailed description of everyday activities in two pediatric intensive care units, and 2) the researcher aimed to describe and understand the meaning of participants’ lived experiences in those settings (Omery, 1983; Cresswell, 1998). The phenomenological standpoint of the study also impacted the stance the researcher took in relation to the interview (i.e., the kinds of questions she asked the participants and what she listened for in the interview) and how she interpreted the text of the interview.

In this study, by “experience,” the researcher referred to the ideas thought, the emotions felt, the sounds and conversations heard, the odors smelled, the events and behaviors seen, and the people touched in the two units. Experience in this sense refers to *all* that one can ever know because it encompasses both the knowledge known and the emotion felt. While referring to the “Turkish” or “North American” experience, she does not aim to express an idealized abstract object possessed by a group of individuals,

¹⁰⁶ Heidegger claimed, “our everyday relationship with the world is primarily practical rather than conceptual; therefore scientific knowledge should be derived from practice.”

rather to suggest that her experience was always socially and culturally constructed, yet can be shared across different groups and countries.

The main purpose of calling for a phenomenological strategy in this study was to show the function and meaning of phenomenological research in architecture for health. Although Martin Heidegger never intended to develop such a method, it was inevitable to use his philosophy to inform a phenomenological study of healing environments.

While Edmund Husserl's phenomenology has been the most influential in nursing (Beck, 1994; Cohen, 1987; Oiler, 1981; Omery, 1983; Pallikkathayil & Morgan, 1991), this study borrowed extensively from the philosophy of Heidegger as it relates to nursing as the foundation of phenomenological research, which is also recognized by Benner, 1984; Benner & Wrubel, 1989; Benner *et al.* 1996; Chesla, 1995; Diekelmann, 1992, 1993; Kellett, 1997; Kondora, 1993; and Rather, 1992. There are important differences between Husserl and Heidegger that render Heidegger's philosophy more beneficial and meaningful for phenomenological research in nursing and architecture for health. Heidegger deviated from Husserl on several important points, and their philosophies are distinct, particularly regarding the origin of meaning. Heidegger reminds us 1) that meaning is always in the context of something – one's humanity, culture, personal situation or practices adopted by a particular group (Rescher, 1996) and 2) that meaning arises not from consciousness, as Husserl claimed, but from the essential finitude of being human (Johnson, 2000).

This difference is important since meaning, experience, and reality are fundamental concepts of phenomenology. To understand the meaning of the PICU experience for the participants, i.e., what it means to be a critically ill patient, family or caregiver in a PICU was also a central focus in this study. To further clarify the function of the phenomenological approach in this study, we must identify what the word "phenomenology" does *not* mean in comparison to its academic usage. First, it is not based on Husserl's (1962) method of phenomenological reduction by bracketing one's preconceptions, which obscure the phenomenon in consciousness by judging and interpreting prior to a full understanding of it. Such an attempt in search for reality seems to be impossible in the practical world of experience. While transcending preconceptions would be beneficial for the meaningful sharing of experience and healthy social relations, experience is always the individual's experience and sharing is always partial. Therefore, as one can expect from the choice of naturalistic inquiry, which holds that ethnographic case studies are *always* a social construction, which are *never* neutral, objective, and dispassionate, this study offers the interpretation of the researcher's experience, and a projection of her consciousness as reality.

Unlike Husserl, who calls for the possibility of a transcendental standpoint when things become knowable, Heidegger (1927, 1962) rejects the possibility that grounds knowledge and experience absolutely (Howarth, 1998). Instead, the notion of interpretation replaces the Husserlian themes of consciousness and perception (Nicholson, 1997; p. 305). For Heidegger, the absolute standpoint of being human is to always be involved in the practical world, i.e., in the spatiality and temporality of experience. Therefore, the world of human beings can never be a presuppositionless (without preconceptions) world wherein one's consciousness confers meaning on the objects one encounters. The world of human beings

is always one of practical involvement where things take on meaning in relation to one's purposes (Nenon, 1997). More specifically, meaning emerges because of the unitary relation between human beings and other things/people that is possible only because of the unique structure of being human (*Dasein*). Heidegger calls this structure, *temporality*, and the way humans have of *relating to others* in the world, *being-in-the-world* (Heidegger, 1927/1962, 1957/1998). Therefore the fundamental quality of being human in the world is relating to others, both human and nonhuman. It follows that being-in is not a spatial relation, but rather indicates the way that human beings relate to other entities in a familiar world of involvement - a "profound intimacy of [one] with the world" (Richardson, 1963; p. 52). Therefore, the things humans encounter in the world do not simply exist "out there" in a detached manner, waiting to be investigated. They are all part of an *interconnected* world of human interest (Johnson, 2000).

In addition to its focus on the meaning of the PICU experience, this study brought forth many common concepts with general phenomenological analyses, which informed an in-depth exploration of healing design interventions of PICUs. The first fundamental concept is the concept of home, and feelings associated with home, such as comfort, control, family, familiarity and dwelling, which can bring forward the full capacity of social interaction and healing in the PICU. This concept is linked with the existential need for finding shelter, which differs both from place and space. The concept of home particularly relates to home-like design trends, and ambient research findings linked with comfort, familiarity, image and character, which were explained at Chapter 8.2.4.

The second phenomenological concept is the theme of materiality and spatiality of the world, enclosure, interiority, privacy and transparency, which were described as part of the research findings linked with symbolic intervention (Chapter 8.2.3). Particularly, the choice of materials, textures and the level of transparency can give meaning to the unit by signifying the particular culture or social practices. Materials can also symbolize the idea of healing through a sense of comfort and dwelling.

The third concept is linked with the psychological function of the PICU, particularly the tension between unconcealment and hiddenness, which is described as part of the findings associated with psychological intervention (Chapter 8.2.6).

The fourth concept relates to the conclusion of the study regarding the relationship between the "earth," the mundane, the everyday and the "sky," the sacred, or the ontological. Research findings indicated that the lower and practical needs of everyday life and higher level ontological human needs in a PICU are closely related. The study revealed particularly the strong connection between the lower level needs, such as the provision and functionality of common/shared spaces, and their higher psychological function. For instance, where you put the microwave in the staff lounge can impact the range of positive unscheduled face-to-face social interactions, thereby contributing to positive feelings and love among caregivers. Therefore, the phenomenological strategy to healing design revealed a highly deterministic approach viewing human product as completely determined by its environment.

The fifth concept is the theme of meaningful social interaction, which is probably the most difficult human function to achieve, yet leading most effectively to health and healing. It is linked with the

social function of the ICU environment, the nature and differences of human interactions, particularly the conflict between two fundamental types of social relations, i.e., the concept of *Gemeinschaft*, which defines an “organic life and community,” in opposition to *Gesellschaft*, the product of a “mechanical, abstract, ideal life,” and their relation to the meaning and purpose of a staff lounge in a PICU.

This study revealed the role of positive social interaction, particularly in the PICUs of developing countries, which have limited financial, technological, and human resources. While clinical and functional communication is more effective in developed countries such as the U.S. as a function of mechanical production and use of knowledge systems, the quality of social and organic bonds and emotions is independent of greater communication. In other words, the effective use of language and communication of a society does not bring an increased quality in social bonds and interactions, and cohesiveness of the community (i.e., sense of community), which need to be based on caring rather than knowledge.

Meaningful social interaction (and meaningful transfer of ideas thought and emotions felt) is a difficult goal to achieve: two people most alike can still misunderstand one another due to the significant destruction of meaning during sharing their experience. In the PICU, the nature of social relations between caregivers and families, families and patients, and patients and caregivers is particularly important. While social interaction is a healing function, there are problems associated with communication since families under great stress tend to judge and interpret what they hear before they understand it. Therefore what is expected to be a beneficial communication may create negative social relations¹⁰⁷. Yet, unlike communication, the absolute standpoint of healing is to always have social support and evidence of caring.

Finally, the relationship between social interaction and social life is noteworthy. First, caring is a universal experience, which always involves the “other” and social life. According to Berger (1999; pp. 21), the diverse acts by which one constitutes experience are radically social, informed by situated event and broader social contexts, actively deployed to achieve social ends, and potentially consequential for others and society as a whole. Therefore there is an intricate relationship between social interaction and the construction of society. In other words, the macro effects of societal and cultural change may be initiated from the micro relationships between individuals, particularly in the ICU.

“Is social interaction an everyday or ontological function? How important is it to contribute to a sense of dwelling and healing?” There is a distinction made in this study between everyday functions and the ontological meaning and purpose of everyday activities. Therefore, it is important to locate the meaning and position of social interaction within the ontological spectrum.

Other phenomenological insights relate to the impact of environmental conditions and culture on social relations, the changing nature of the meaning of social relations according to the context where they are located, and why and how meaningful social interaction contributes to healing and dwelling. According

¹⁰⁷ Future studies may focus on the family-caregiver relationship in the Turkish ICU and identify the risks and potential misunderstandings associated with this type of communication. Another area of research may focus on the improvement of the communication between families, which are more alike, and may learn more easily from one another. If there were evidence on the benefits of focusing on this relationship, architectural design would have knowledge-based objectives to intervene.

to phenomenology, healing through social interaction takes place due to the fundamental structure of being human (*Dasein* and *temporality*), which requires humans to *relate to others* to give meaning to their finite existence in the world.

The sixth concept informing the phenomenology of the experience of the PICU is the paradoxical relationship between social interaction and technology. The study revealed that technology on its own does not have any explicit meaning; it is social interactions and relationships that give meaning to technology. Therefore technology emerged to be a lower function, which needs to be socialized honoring social relationships in the PICU.

To conclude, the exploration of healing design interventions, which emerged in this study, revealed major phenomenological concepts, such as 1) the concept of home, and feelings associated with home, such as comfort, familiarity and dwelling, 2) the theme of materiality and spatiality of the world, and related concepts linked with materiality, such as enclosure, interiority, privacy and transparency, 3) the psychological function of the PICU, particularly the tension between unconcealment and hiddenness, 4) the relationship between the earth, the mundane, the everyday and the sky, the sacred, or the ontological, 5) the concept of social or relational interaction, which is the main structure of being human, and 6) the problematic relationship between social interaction and technology. Particularly the key insights that were brought forth in this study, which are the concept of social interaction and an organic sense of community, or *Gesellschaft*, may be the central finding of phenomenological research.

“From the smallest act of perception to the broadest historical movement, the scope of phenomenological research is the scope of the world” (Berger, 1999). By taking the notions of *experience* and *meaning* as guiding concepts of healing design, we can transcend those approaches that reduce man to a mechanical object, which is a mere product of his environment. By focusing on the lived experiences of the “subject,” health care research can provide unparalleled insights into the dynamics of phenomenology: in the experience of caring, relating and healing, and due to the possibility of death and dying, the subject, i.e., the patient, the family member, or the caregiver in the ICU engages with the world in extraordinarily meaningful ways for a short time. The participant not only constitutes meaning, but also engages in social life and practice and helps to constitute her or his society. Therefore, pediatric critical care experience can inform powerful new insights on the intimate relation of social life and architecture.

The unfinished nature of phenomenology and the inchoative atmosphere, which has surrounded it are not to be taken as a sign of failure, they were inevitable because phenomenology’s task was to reveal the mystery of the world and of reason. If phenomenology was a movement before becoming a doctrine or philosophical system, this was attributable neither to accident nor to fraudulent intent. It is as painstaking as the works of Balzac, Proust, Valery, or Cezanne – by reason of the same kind of attentiveness and wonder, the same demand for awareness, the same will to seize the meaning of the world or of history as that meaning comes into being. In this way, it merges into the general effort of modern thought.

Maurice Merleau-Ponty, *Phenomenology of Perception*

8.4 Limitations And Implications

This research provided a cross-cultural assessment of pediatric intensive care units with a focus on the United States and Turkey, which are practicing different approaches and philosophies of pediatric critical care. One major accomplishment of this study was to provide grounds for future research, which are likely to be more quantitative. The qualitative exploration has uncovered problematic areas in the physical and social environment of PICUs, and these conclusions may lead to excellent starting points for further exploration of PICU design. For instance, future studies may analyze social interaction made possible within the common areas, such as the patient room, family waiting room and staff lounge. The impact of the provision, scale and location of these spaces, their spatial configuration, and incorporation of other healing design interventions (such as function, flexibility, accessibility, unit ambience and symbolism, transparency, visibility, privacy, social, psychological and spiritual support) on social interaction, stress reduction, staff collaboration and healing should be addressed. Another focus may be measuring directly the health-related outcomes of patients, families and caregivers.

8.4.1 Limitations of the Study

Problems Linked with Measuring Outcomes

Patients' Medical Outcomes: This study was based on a purely qualitative methodology. While qualitative data is critical to the research process, quantitative data on medical outcomes would help to triangulate research findings. Another problem was the inability of the researcher to make close observations: In the U.S., she was not allowed in the ICU patient rooms in order to respect the privacy of patients and their families. Therefore observations were made of a distance from the staff station.

Problems Linked with Cross-cultural Approach

The cross-cultural comparison was limited by 1) the presence of one researcher, 2) the limited number of case studies, and 3) the lack of parallel information: While well-documented data was available from the U.S., it was difficult to gather similar data from the Turkish ICU. For instance, LOS days and mortality data were not available. Although staff in the Turkish ICU started to document their care more carefully and systematically, producing more complete information about patients' medical outcomes after 2003, this data could not be incorporated into this study. Instead, the researcher personally documented the LOS days of each patient, which indicated the slow pace of recovery. Although LOS days and mortality data was available from Children's, it was insufficient to show the impact of healing interventions on patients' medical outcomes. Another problem was the lack of suggested design interventions in the Turkish ICU.

While the differences in the level and availability of knowledge between observed countries will likely to remain as a generic research problem in future studies, it may be possible to indicate the impact of recommended interventions on patient outcomes measuring the ICU environment in the West.

Another problem results from the limitation of the study to the time frame of researcher's own era -- which also presented chances to produce a historical document. However, the lack of a historical perspective regarding the modernization and Westernization process of Turkey through the first half of the century may cause an incomplete understanding of the Turkish case as perceived by the Western eye. Particularly the development of modern hospitals is as a critical modernization process in the country. Finally, the fact that the researcher is from one of the observed cultures may have introduced some prejudices and other negative consequences.

8.4.2 Implications for Future Research

The researcher aims to focus on the theme of "social interaction" and its relation to healing in her future studies. Quantitative (behavioral) and interdisciplinary research directions as well as visual sciences may indicate and triangulate research findings more strongly.

Quantitative Research Directions

Patients' Medical Outcomes: Future studies may triangulate research findings with quantitative data such as LOS days and mortality rates of ICU patients to indicate the benefits of positive interventions of social interaction spaces. Fewer LOS days, better quality of recovery, and fewer use of drugs may indicate stronger evidence for healing. Future studies may also indicate how many days a patient stays on average for a certain disease in a specific PICU in order to relate the differences in LOS days to the impact of healing interventions in different ICU environments.

Staff Performance: The relationship between staff interaction and staff performance is the second behavioral research direction. This study claimed that an increased level and quality of social interaction among staff members would improve caregiving. Particularly, positive social interactions would increase staff collaboration, thereby improving patients' medical outcomes. Other outcomes would be lower attrition, fewer nursing errors, and increased morale, efficiency, and job performance. Therefore the impact of suggested interventions on staff behavior may be explored further.

This study indicated strongly the positive impact of the provision, scale, location, function, flexibility and transparency of a staff lounge on staff performance and patients' medical outcomes. In the future, more quantitative conclusions can be drawn. For instance, the impact of the lounge size and how much space is provided per caregiver can be explored comparing a number of children's hospitals to find an optimum size when an increase in the lounge size would not influence LOS. Similar studies can address the waiting room and patient's room.

This study was based on qualitative observation notes and interviews with staff members as the only means for evaluating staff performance. Future studies may collect more quantitative records regarding nursing errors and nurse quitting rates.

Interdisciplinary Research Directions

Other research directions for healthcare architecture may include: 1) A particular functional objective, such as comparing the performance of ceiling-mounted booms versus ICU headwalls, which may be an excellent topic with good ROI value (Easter, 2003; personal communication), and 2) studies synthesizing the outcomes of this cross-cultural analysis: the American Institute of Architects showed an interest in this subject, which may become the basis for an annual student design charrette in the future.

This study also indicated the potential of other disciplines for reinforcing research studies in healing architecture. In addition to a cross-cultural and phenomenological research strategy, which was used in this study, a feminist approach can explain cultural differences and diversity with gender and class sensitivity as an appropriate concern for healing design.

Material Manifestations: Visualization of Research Findings

This research was supported by a grant from the American Institute of Architects and the American Hospital Association in 2003-2004. As part of the grant requirements, the researcher aims to visually indicate research findings, particularly by proposing a navigation and social interaction model in a PICU, which includes: 1) Walking distance analysis (e.g., changing walking distances between spaces), 2) scale analysis (changing scale of shared spaces), 3) configurational and relational accessibility analysis (e.g., changing locations and relations of shared spaces and their resulting accessibility relations), and 4) visibility and transparency analysis (e.g., changing visibility and transparency ranges).

Quantitative methods, such as analytic and statistical tools and algorithms may be used for measuring characteristics and interrelationships (such as walking distances, configurational accessibility and visibility) between shared PICU spaces in future research studies. An integration of health research findings with the visualization and animation sciences may demonstrate more effectively the positive impact of spatial configuration and other healing interventions on face-to-face supportive social interactions, particularly staff interactions and collaborations, thereby leading to improved medical and healing outcomes in the PICU. A short video clip may highlight how, for instance, a caregiver's reduced walking distances as she or he moves around in a proposed PICU would affect the chances for positive social interactions with patients, families and other caregivers, which would in turn impact healing.

Finally, photography can be another effective means to further illustrate the role of positive social interaction, staff collaboration, love and caring on the healing process in a PICU.

8.5 Conclusion

This study explored the interplay of physical space and healing at two pediatric intensive care units in the U.S. and Turkey. It contributes to the specialty area of health facilities design and planning by generating social science based innovative information regarding the healing design principles of PICUs, emphasizing a holistic, qualitative, naturalistic, and phenomenological research approach. The pediatric population is chosen for two reasons: 1) Children have traditionally been ignored in the disciplines of

architecture and urban planning. However, children in healthcare settings represent one of the most vulnerable human conditions since they perceive reality in a distorted and more frightening way, and lack the ability to express their needs during hospitalization. 2) Young children, particularly those under 6, have fewer preconceptions than adults. On the contrary, they have specific thinking abilities, such as the ability “to wonder at the simple” (as recognized by Plato and Heidegger) and childhood anxieties (as described by Freud), which make them unique subjects for a phenomenological research, which deals with human consciousness, human perception, and the meaning of place. Therefore, this study suggested a phenomenological strategy to inform an in-depth study of pediatric intensive care units, which may be the most meaningful (or meaning-giving) places in contemporary society.

Being a Turkish student who spent several years in the U.S., the researcher’s trips back to Turkey every summer, and her observations between the Turkish culture, which is under the influence of the forces of modernization and capitalism, and the “postmodern” U.S. society was a peak motivation to compare the status of the PICU in these countries. This reflected back on her research material, creating new insights and delaying the completion of this work. In the end, the single most important difference of the Turkish self emerged to be the ability to chat and connect with others. In the PICU, which is a context of care, concern and love, the skills of “relational interaction” and “social attachment” were fundamental due to the presence of the deep female self and other caregivers. Therefore, gender sensitivity, particularly the capacity of the female self for social and relational interaction, became an important direction of this interpretation.

More specifically, the study examined how the physical layout of PICU space in a children’s hospital affects face-to-face social interactions and collaborative relationships among patients, families and the caregivers. Although children were the initial target population, staff interactions and collaborations and their interactions with the families emerged as being directly relevant to the healing process of children. That is, the more they interact (positively) and collaborate among themselves and with families, the better care (as well as love and touch) they will deliver.

Using a number of qualitative tools such as participant observations, behavioral maps and in-depth interviews for measuring characteristics of the observed PICUs, the study demonstrated that PICUs that are characterized by increased provision and scale of “social interaction spaces” (e.g., those spaces where social interactions take place naturally), increased “configurational and relational accessibility” and “functionality” of these spaces (e.g., physical and visual proximities, interrelationships and accessibility among related spaces and their multi-functionality or flexibility to bring different people together), provision of shorter walking distances for the caregivers and families, and higher visibility and transparency rates of common areas (such as family-staff interaction room or staff lounge) or work areas, which symbolize the “caring” function (such as team/meeting room), will exhibit higher rates of natural, unprogrammed (e.g., not scheduled) and supportive social interactions and collaborations among all participants, particularly caregivers. This, in turn, will directly increase staff performance, relaxation, happiness and well-being, thereby influencing patients’ medical outcomes and healing.

Designing for Social Interaction and Happiness: Layouts that Increase the Rate of Unscheduled Face-to-Face Social Interactions will Improve Healing

The findings indicated that lower (practical/mundane needs of everyday life) and higher-level (sacred and phenomenological) human needs in a PICU are closely related. Therefore a healing PICU design requires closer attention to its physical layout: right down to the provision and placement of the coffee pot or tea kettle, the refrigerator, the microwave, the copier, printer and fax machine, the shared computer workstations at the staff station, and all the other places and equipment that bring people together in a small unit. More social encounters will bring forward more supportive and therapeutic communications and interactions. These types of interactions, in turn, will improve well-being and the pace of recovery, whether measured by quantitative factors such as patients' LOS days or mortality rates, or by subjective and qualitative assessments such as "how much healing takes place in this ICU?"

Although researchers and architects tend to know the importance of positive social interaction, care, love and touch in healing, either researchers don't participate in the design process, or these insights are forgotten. Therefore it is not uncommon, even at Children's, one of the nation's best children's hospitals (*Child Magazine*, 2003), to have a PICU where the waiting room or staff lounge is two floors away from the unit. This layout is far less effective for social interaction, collaboration and healing than having all shared spaces and the PICU intermingled in a more compact arrangement. If designers understand how the spatial organization, walking distances, visibility, privacy and other characteristics of a PICU affect the person-to-person interaction, collaboration and flow of information, they can contribute to healing more effectively than popular design trends.

This study showed that the level of social interaction in a pediatric ICU is heavily influenced by physical factors such as walking distances and spatial, visual and intellectual proximities between spaces. That is, the closer it is between different functional units of the ICU and the easier it is to observe caregiving functions in the unit (e.g., in the patient room, team room) the more chances people will have to encounter with and trust one another as they move around in the PICU or stay in a shared space. The more often people encounter with and trust one another, the more often they may engage in a supportive, therapeutic, or intellectually meaningful conversation and collaboration. And having these types of conversations enables a more supportive and caring interaction. This, in turn, would influence healing.

The study also found that clustering shared social attractions and activities in a more compact and flexible (multi-used) arrangement in the open common areas of the PICU may increase the number of positive social interactions. All Turkish caregivers reported the benefits of their lounge in the past, which enabled them to have positive social interactions in a small common space, and also interact with families. Although compact spatial arrangements may not be preferred for more universal and generic ICU functions, such as the patient room, where the care is physically delivered, the "not so big" size and scale of a staff lounge and other common spaces may be more beneficial for a social interaction based care model.

Another potent conversation and interaction-enhancer, which is challenging for contemporary hospitals (due to their traditional focus on privacy) may be increasing the level of visibility and the range of

transparency. Particularly, making shared spaces such as family or staff lounges more visible can influence a socialization-based healing process. From a functional standpoint, spaces with increased transparency will lead to more eye contact and empathy, which means that people may sympathize with each other and help one another more often either during the formal caregiving process or by offering emotional or spiritual support to one another. From an ontological standpoint, on the other hand, the subject in the ICU may be in need of *dwelling in harmony*, and for a place where “being-in” is realized in a consciously designed continuity and harmony between interior and exterior functions, where comfort is not an outcome of the state-of-the-art furniture, equipment and material possessions, but of a tectonically shaped transparency, where the utopia of the harmony of relating to others is fulfilled by revealing itself.

The phenomenological interest of this study is particularly linked with the idea of transparency and openness. Phenomenology focuses on the fact that human interaction is always buried in preconceptions and prejudgments, which often inhibit the chances for a true understanding, meaningful flow of shared information, and the development of love, which is essential to healing.

In reality, increased visibility and transparency may create negative social interactions. For instance, in the Turkish ICU, the more visible the ICU team members were to the families, 1) the more threatened and uncomfortable they felt, and 2) the more negative behaviors and misunderstandings they received from the families (e.g., some caregivers reported that some family members threatened their lives). While the family-centered care (FCC) notion in the West is a social manifestation of the intention to make the PICU the most accessible, visible and transparent to families, traditional and “safe” design concepts continue. For instance, the staff lounge is usually located distant from the ICU, making it totally invisible and unperceivable to families, so they cannot see that staff members can also laugh, socialize and feel happy. This is considered necessary due to the fact that families’ perception during their child’s hospitalization is often far from reality, i.e., they can get offended very easily. However, it is worth of exploring if there may be any benefit in aiming for increased transparency and visibility in future PICUs to indicate the intention for an improved openness and meaningful sharing of human experience, possibly through an evolution in FCC and diversity.

In summary, if architects and hospital administrators want to propose healing PICUs in the future, they need to support both practical and existential human needs, such as providing comfortable waiting rooms and staff lounges. The ontological meaning of the staff lounge and waiting room in relation to the Heideggerian notion of “in view of oneself” that characterizes *Dasein*, care in situation, and the capacity of these rooms to bring people together and stimulate meaningful sharing of information and experience, beneficial communication, collaboration, and love among the temporary (families) and permanent (caregivers) ICU community is closely related with their practical and everyday functions. Particularly in the West, shared spaces in hospitals to exchange emotional care and concern may be designed as the incubators of a new social life resisting against the “destiny of the West,” which calls for the end of natural, organic and unscheduled social interactions.

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APPENDIX A

GLOSSARY OF TERMS

AcuScan: Wireless handheld computer that scan bar codes to verify all aspects of medication administration to enhance medication safety.

Advanced respiratory support: Patients receiving this are intubated and undergoing mechanical ventilation of the lungs. It may also include children who are intubated and receiving CPAP (Continuous Positive Airways Pressure).

Basic respiratory support: The administration of supplementary oxygen by face mask, head box, catheter, or prong. It does not include children who are intubated and ventilated. It may include the recently extubated child.

Biopsy: Removal of a small piece of tissue for examination.

Blood pressure monitor: Blood pressure is measured using a cuff placed on the child's arm or leg. Periodically, a blood pressure monitor pumps up the cuff and measures the blood pressure. Some children need continuous blood pressure monitoring. This can be done using a small catheter (small tube) in one of the child's arteries.

Bradycardia: Slow heart beat.

Cardiac catheter: A tube which is put into the heart via a vein to help diagnosis, by measuring pressures very accurately, or can treat a problem such as widening an artery, or closing a hole.

Cardiorespiratory or heart monitor: This monitor continuously displays child's heart and respiratory rate. Wires from the monitor are attached to adhesive patches on the skin of your child's chest and abdomen.

Cardiopulmonary Resuscitation (CPR): The mechanical pushing of the heart (hands pushing on rib cage) and breathing (through the mouth) done in a rhythmic pattern. These actions keep blood and oxygen circulating through the body until emergency help arrives.

Catheter: Thin tube used to administer fluids to the body or to drain fluids from the body.

Computerized Axial Tomography (CAT) scan: Pictures that give a 3-D view of the body's internal organs and structures.

CT scan: Scan of the brain.

Extracorporeal Membrane Oxygenation (ECMO) therapy: Procedure that consists of circulating the infant's blood to increase the amount of oxygen. A form of "cardiopulmonary bypass" in which blood is continuously drained from the patient and pumped through a heat exchanger, and an artificial lung, where oxygen is added and carbon dioxide removed. The oxygenated blood is then pumped back into the patient. This is a highly sophisticated invasive technique used in children where respiratory failure is so severe that the lungs are unable to oxygenate the blood, even with full mechanical ventilation.

Electroencephalogram (EEG): Test (graphical tracing) that measures the electrical activity (electrical impulses) of the brain.

Electrocardiogram (EKG or ECG): Test (graphical tracing) that measures the electrical activity (electrical impulses) of the heart by using high frequency sound waves.

Emergency Room (ER): Unit of the hospital that provides urgent or emergent healthcare.

Endotracheal intubation: The passage of a plastic tube through the mouth or nose into the trachea. The tube is usually connected to a ventilator (breathing machine) to allow mechanical ventilation of the lungs with humidified oxygen and air. The tube is also used to clear secretions from the lungs and airways, by the passage of small suction catheters.

External defibrillation: An electric shock given to the heart through paddles placed on the chest. External defibrillation is necessary to restart the electrical system of the heart.

Health Maintenance Organization (HMO): Insurance company that provides healthcare benefits through a prepaid payment arrangement.

High Dependency Unit (HDU): Unit where a child receives a lot of care. Children are sometimes transferred from Intensive Care Units once they are off the ventilator, but they need more care than can be given on the ward.

High Frequency Oscillation (HFO): A form of very advanced ventilatory support used in children who are in severe respiratory failure and not responding to conventional mechanical ventilation. A specially

designed and sophisticated ventilator (Oscillator) is used which ventilates the lungs at very high respiratory rates (500-3000 breaths per minute) and uses very small volumes.

Intubation: Insertion of a tube onto the trachea (windpipe) to allow air to reach the lungs.

IV/Intravenous: Tube or a needle placed into a vein to allow the infusion of fluids (food or medicine) into the blood stream.

Intravenous (IV) pumps: Intravenous (IV) pumps deliver fluids and medications in very accurate amounts, through catheters into the veins.

Kidney dialysis: Used to take impurities from the blood when the kidneys are not working properly.

Labor, Delivery, Recovery, and Postpartum (LDRP): Care delivered to most new mothers in a single room.

Neonate: Baby during the first month of life.

Neonatal Intensive Care Unit (NICU): Unit of a hospital with trained staff and special equipment to care for critically ill newborns.

NG tube: A naso-gastric tube for feeding the child through the nose directly into the stomach.

Pediatric Intensive Care Unit (PICU): Section of a hospital with trained doctors, nurses, and other health care specialists to care for critically ill children for the care of children from birth to 18 years of age, offering pediatric-specific equipment, medicines and treatments.

Pediatric critical care specialist: Medical doctor who has earned a medical degree and had three years of pediatric specialty residency training, and three or more years of fellowship training in pediatric critical care.

Pediatric critical care: Pediatric critical care specialists and other caregivers generally provide the following care to children who are critically ill: 1) Diagnosis of children, who have an unstable, life-threatening condition, 2) Thorough monitoring, medication, and treatment of children in a PICU, 3) Supervision of children on respirators, 4) Medical treatment for children with severe heart or lung disease, 5) Placement of special catheters in the blood vessels and heart, and 6) Management of medications and treatments for children with brain trauma.

Pulse oximeter: This machine measures the amount of oxygen in the child's blood through the skin. A tiny light is taped to the child's finger, ear, or toe. A wire connects the light to the monitor where it displays the percent of oxygen in the child's red blood cells.

Respiratory/mechanical ventilator: This machine helps children who are unable to breathe on their own due to anesthesia, or who need help taking bigger or more effective breaths due to illness. Ventilators can also deliver extra oxygen, if needed.

Respiratory care therapist: Person with special training for care and management of oxygen and breathing machine.

Sudden cardiac arrest: The condition, which happens when the heart's lower chambers (ventricles) suddenly develop a rapid, irregular rhythm (ventricular fibrillation) and the quivering ventricles cannot pump blood to the body. Within seconds, the patient will not have a pulse and will be unconscious. Without immediate treatment, the person almost always dies.

Tachycardia: Fast heart beat.

Tube feed: The baby's feed is given through a tube in the nose directly into the stomach - this is so that breathless babies can get enough food.

X-ray: Portable x-ray machines are brought to the child's bedside in the ICU. X-rays are taken for many reasons including checking placement of catheters and tubes, looking for signs of lung problems, and checking for signs of bowel abnormalities.

APPENDIX B

HOLISTIC MODELS OF PEDIATRIC CRITICAL CARE

Recognizing the importance of fulfilling the needs of all who play a role in the healing process of the critically ill child led to more humanistic care practices in the PICU. Especially, the emphasis has been on a family-centered care approach, which can be tied to the parental role as the financial manager, or the “client,” i.e., the employers of healthcare workers. The provision of a holistic mode of care for the child and family includes a number of modifications with an emphasis on family-centered and patient-focused care, and the concept of the “whole” child. The delivery of a holistic and patient-focused nursing care, family-focused home care, the development of therapeutic social and professional relationships between patients/families and care providers, and the focus on the relation between mind and body have emerged as more holistic (and postmodern) approaches in pediatric critical care.

Family-Centered Care Approach (Parental Presence and Participation in Care)

The family-centered care approach may be the most extensively researched area in the PICU literature. The role of the parent of a hospitalized child, including their relationships and interaction with caregivers, has changed considerably over the past 20-30 years in the West. Where previously they were expected to hand the responsibility for care over to their child’s nurse, parents now may be extensively involved. These changes in the perception of families are reflected in the literature: Young (1992) describes the changing attitudes towards families of hospitalized children between 1935 and 1975. Gill (1993) identifies the health professionals’ attitudes toward parent participation in hospitalized children’s care. Bruce and Ritchie (1997) explore nurses’ practices and perceptions regarding family centered care.

While modern and authoritarian hospital culture in the West has evolved toward Humanism as part of a “postmodern” era, which recognizes the rights of the “underprivileged,” i.e., the patients and families, no similar fundamental evolution in parental role took place in Eastern hospitals. However, the evolution of a humanist caring model may have been developed in response to the sophistication of capitalism and industrialism in the West, and for meeting the higher needs of the clientele to increase profits. Therefore, the meaning and role of humanism in the PICU regarding family centered care can also be offered to Turkish hospitals with emphasis on the financial benefits.

A holistic approach to pediatric critical care supports a family-centered care approach, which is a composition of 1) respect for families, 2) involvement of families in the care of their children, 3) negotiation of roles between nurses and parents, and 4) recognition of the integral role of the family in providing a comprehensive care. A holistic approach may also include the partnership model of nursing (partnership in caring for both the child and the family).

The concept of *respect for families* is closely linked with *visitation*, which has been central to family-centered care. Bru and colleagues (1993) looked at parental visitation patterns in the post-anesthesia care unit, suggesting parental presence as a means to reduce anxiety. Page and Boeing (1994), on the other hand, focus on the visitation routines in the PICU, which suggest controversy and compromise.

Although the improvement and humanization of visitation procedures in the PICU has been very important to the implementation of a family-centered care delivery model, the *participation of family members in the care* of their children is an even more meaningful and empowering role for both parents and the child. Palmer (1993) supports the idea of the care of sick children by parents, and the meaningful role it provides for parents. Chapman (1998) evaluates family-focused pediatric home care.

Callery and Smith (1991) conducted a study of *role negotiation* between nurses and the parents of hospitalized children, in which nurses described their responses when parents wanted to increase or decrease their involvement with the child. The idea of role-negotiation stems from possible conflicts between nurses and parents. It is argued that power is not evenly distributed between nurses and parents due to issues of territory, stress, anxiety, uncertainty, control and conflicts arising from parental competence. Therefore nurses may put parents in a weaker position, and hold the initiative in the decision about whether negotiation takes place. Nurse responses are categorized into encouragement, explanation/advice, and negotiation. Significant association was found between response category and the grade of staff.

Partnership in caring for both the child and the family has been the underlying concept of holistic care. In describing the holistic care of a critically ill child, Purcell (1993) compares and contrasts the “partnership” model of nursing to the traditional bio-medical model. She defines the bio-medical model as a disease-oriented approach to care, which views the physical care of the child as the main priority. Therefore, care is focused on standardized activities and getting through the work. The partnership model, on the other hand, developed by Casey in 1988, is based on self-care, and has evolved as an attempt to describe the reality of nursing children. This model views the child as a unique individual who is functioning and developing with physical, emotional, intellectual, social, and spiritual needs; and growing from total dependence as an infant to independence as an adult. Byers (1997) focuses on holistic acute care units, and the partnerships needed to meet the needs of the chronically ill and their families.

More specifically, the main elements of family-centered care can be summarized as follows: 1) Recognition that the family is the constant in the child’s life while the service systems and personnel within those systems fluctuate, 2) facilitation of parent/professional collaboration at all levels of health care, 3) sharing of unbiased and complete information with parents about their child’s care on an ongoing basis in an appropriate and supportive manner, 4) implementation of appropriate policies and programs that are comprehensive and provide emotional and financial support to meet the needs of families, 5) recognition of family strengths and individuality and respect for different methods of coping, 6) understanding and incorporating the developmental and emotional needs of infants, children, and adolescents and their families into health care delivery systems, 7) encouragement and facilitation of parent-to-parent support,

and 8) assurance that design of health care delivery systems is flexible, accessible, and responsive to family needs (Shelton, Jeppson & Johnson, 1987).

Finally, family-centered care practice may be expanded beyond parental presence and participation in care. Particularly, there is a recent debate if parents should be allowed during resuscitation. Shaner and Eckle (1997) call for implementing a program to allow their presence during resuscitation.

Family-Focused Home Care Model

Family-focused home care can be viewed as an extension of the ancient (shamanistic) self-responsibility concept. It is a care model that brings medically fragile children home to familiar surroundings, and provides them with quality medical care. To do this, the family unit has to make a number of adjustments. Advances in medical technology, portability of medical equipment, changes in financing, and acceptance that care can be safely provided in the home environment have advanced the growth of home care services for critically ill children (Chapman, 1998).

Caring for the child presents the family with emotional, physical, and financial demands. Pediatric home care is successful when it supports the multifaceted needs of the child and parents in a family-centered model of care. Family-focused care supports the parental role as the medical and financial managers of their child's care, educational advocates, resource specialists, and employers of health care workers. Family-focused home care promotes the child's normal growth and psychosocial development, encouraging assimilation into the home environment, including school and community based activities (Chapman, 1998).

Therapeutic Relationships and Interaction

Hupcey (1998) focuses on the nurse-family relationship in the ICU, which she perceives to be more important due to the patient's compromised state. This relationship can either benefit the patient or undermine her. She identifies strategies used by nurses and families to develop or inhibit a relationship with the other. She notes that both nurses and families perceive their positive behavior, and the inhibiting behavior of the other side. However, families don't want to alienate nurses because of their concern for their patient's care, to receive information, and participate in decisions.

McKlindon and Barnsteiner (1999) address the nature of relationships between nurses and children/families that result from the evolution of family-centered care practice. They define the therapeutic relationship as "an interactive relationship with a child and family that is caring, clear, boundaried, positive, professional, and which encompasses the philosophy of the institution, empowerment of the caregivers, and empowerment for families." Within this framework, "empowerment" is the ability of individuals to maintain control over their own decision-making and care, and the process of enabling families to enact their roles within the healthcare environment.

A therapeutic relationship implies a professional rather than social relationship. McKlindon and Barnsteiner (1999, pp. 238-239) suggest the following strategies for developing a therapeutic relationship:

maintaining interpersonal boundaries with families, self-disclosure, identifying family strengths, and neutrality. They propose the development of boundaries between staff and families since simultaneous personal, social, and professional relationships are difficult to maintain. They refer to the danger in developing friendly relationships with children and families, which is the loss of objectivity and the possibility that care delivery could be compromised. At Children's Hospital of Philadelphia (CHOP), if a staff member has become a close personal friend of a patient or family, she no longer provides care for that family but offers support as a friend. The identification of family strengths is important for nurses to maintain appropriate interpersonal relationships with them.

McKlindon and Barnsteiner (1999) identify the following nursing actions to *empower* children and families: 1) education for patients and families to support knowledge and success¹⁰⁸, 2) developing systems of care that meet the needs of staff and families (e.g., private, quiet areas where families can be together; areas designated for educational purposes), 3) designing systems to enhance communication (interpreter services, educational resources for the hearing and visually impaired, standardized educational resources), and 4) formulating systems that connect one aspect of care with the next (case managers who oversee the transition from inpatient care to home care).

In summary, a therapeutic relationship must include a system-wide approach across the continuum of care, development of standards of care, communication, education, support services, and self-assessment (McKlindon & Barnsteiner, 1999).

Planetree Model (Patient-centered Care Model)

Planetree is a holistic health care model established by Angelica Thieriot, an Argentinean, in 1978 in San Francisco. After what she felt was a lonely, confusing, and depersonalizing experience in a North American hospital, she set out her goal to "reintegrate the technological capabilities of modern medicine with the spiritual dimensions deemed equally important in healing by Hippocrates" (Weber, 1992). These dimensions were compassion, comfort, aesthetic beauty, dignity, shared knowledge, and the freedom of informed choice. In other words, her prescription was health care providers must give consumers access to medical information, and patients, family, and friends should be involved in treatment decisions and care.

Planetree started as an experimental model and occupied small units with 10-15 beds in hospitals during 1980's. However, the benefits of it, and the revolution it caused in healthcare were understood quickly, and it started to challenge the most fundamental tenets of modern hospitals (Weber, 1992).

Planetree aims to make the hospital experience as positive as possible by giving patients responsibility and control. In this model, patients read about their illness, decide on treatment options, review their records, and contribute their own progress notes to the chart. Nurses, on the other hand, look at the body language of their patients, listen to them, and watch for cues. They let go of their power, offer patients choices, give them information, and allow them a more active participation in their own care.

¹⁰⁸ The significance of education is recognized at Children's, however it is not as systemic, goal-driven, or conscious as the CHOP model, while education of families has not been introduced to the care context in the Turkish model, except for individual and informal attempts of nurses to educate the parents.

Spouses, parents, children, and friends are invited to visit the unit at any hour, to stay overnight if they wish, and to join as “care partners” in the healing process (Planetree Inc., 2003).

Planetree has developed a variety of components to implement an integrated model of patient-focused care. These include human interactions, family involvement, patient and family education (empowering patients through information and education), nutrition, arts, healing gardens, complementary therapies, massage and healing touch, pets, architecture (conducive to health and healing), and spirituality (i.e., focus on inner resources). The “caring” nature of human interactions is fundamental to Planetree, which is supposed to develop not only between patients and families and between patients and staff, but also among staff (Planetree Inc., 2003).

The involvement of family, friends, and social support networks is a vital component in this model for achieving good health outcomes. Therefore Planetree also enables the provision of education and training in order to encourage family participation in the child’s care, both in the PICU, the health care facility, and at home. Unrestricted visiting hours are a natural outcome of this model (Planetree Inc., 2003).

In Planetree, illness is seen as an educational and potentially transformative process, similar to other holistic philosophies such as shamanism and anthroposophy. Thus, an open chart policy encourages patients to read their medical records. In more advanced implementations of this model, patients can write in their charts and participate in a self-medication program, which enables them to keep their medications at the bedside and take responsibility for their administration. Additionally, a variety of educational materials are available in the health care facility to provide them with information and skills so that they may become actively involved in their health care. Hence, Planetree is based on empowering patients and families through education and information (Planetree Inc., 2003).

The importance of the nutritional and nurturing aspects of food is another key component of Planetree, since nutrition is an integral part of health and healing, and is not only essential for good health but also as a source of pleasure, comfort, and familiarity. The healthcare facility has the potential to act as a role model for delicious, healthy eating, with kitchens available to encourage families to prepare the patient’s favorite meals. Kitchens also create spontaneous support groups as gathering places for patients and families (Planetree Inc., 2003).

Complementary therapies such as aromatherapy, tai chi, yoga, meditation, relaxation, visual imagery, and lifestyle change programs may expand the choices offered to patients and families regarding their treatment. Especially, aromatherapy has been found to help calm agitated patients, and is now being used during MRI’s. Massage therapy, acupuncture, and naturopathic medicine are other alternatives.

Finally, the function of using healing arts such as music, storytellers, clowns, and funny movies in Planetree is to create an atmosphere of serenity and playfulness. Artwork in patient rooms adds to the ambience. Nature is another powerful healing force: Bringing nature inside through the use of plants, fountains, skylights, windows, or ceilings over the patients’ bed with a view to sky, and encouraging patients, families, and caregivers to go outside to interact with nature may help transform an institution into a healing environment. A water sculpture in the ICU at Griffin Hospital in Derby, Connecticut shows that

nature can also become an integral part of ICU design. This sculpture is located opposite the nurse station, and allows both nurses and patients to hear the sounds of nature, creating a therapeutic effect. The chances for including and increasing nature in the PICU should be explored.



Ambience Through Water Sculpture, Fish Tank, and Decentralized Nursing Station with a Conference Room in the ICU of Griffin Hospital, Derby, Connecticut, U.S.

The translation of Planetree into architecture may also take other forms. Examples include an atrium with a waterfall and a grand piano; a refrigerator or kitchenette in each room where patients and families could snack on food to their own taste at any hour; a homelike lounge with attractive furnishings and a large-screen TV and VCR; a nursing station open and welcoming to patients; the use of pastel colors for curtains and finishes rather than hospital white; the preference of incandescent rather than harsh fluorescent lighting; hand-painted room numbers; or an audio speaker in each patient's pillow for private tuning to music or relaxation tapes (Weber, 1992).

Werdel describes (2000, pp. 233-244) the organizational transformation at Griffin Hospital from a 1950's model ICU, which was a single room with 12 beds, separating curtains, lots of clutter, and without windows, to a model unit in 1992. The Planetree unit of Pacific Presbyterian Hospital in San Francisco, California (where they had carpet everywhere) was their model. To inform the design process, they listened to their patients' needs and provided not only individual rooms but also semiprivate rooms that allow privacy for those who do not want to stay alone in the hospital. They did major experimental changes in the physical environment, such as eliminating storage in the ICU, or introducing nursing pods rather than the conventional nurse station, which required nurses to adapt to the lack of socialization at nurse station.

Noting that nurses want to have privacy when they work, and are disturbed by visibility -which is expressed particularly by Turkish nurses- Werdel proposes that increasing staff exposure is a more sensitive approach to caring for patients and families. Staff exposure is not limited to nurses but also includes doctors, who were afraid in the beginning to allow patients to read their records, and disliked

patient care conferences with the patient and nurse. However, in time, they appreciated the merit of providing formal communication (Werdel, 2000). Griffin provides shower facilities for families so they can stay overnight and go to work in the morning. Twenty-four-hour visiting is allowed, including children. Extended numbers of visitors are managed through personal communication rather than harsh policies. There is a unit kitchen where volunteers or families cook, stimulating the smells of home. Noting the origin of the word “Planetree,” which is the name of a tree under which Hippocrates “taught”; and which is based on meeting people’s educational needs, Werdel underlines the role of self-responsibility and how it relates to more flexible and self-responsible eating habits encouraged by the kitchen.

Griffin has 299 art pieces, which are mostly calming scenes such as scenes of meadows and seascapes. Additionally, they have Bedscapes to reduce patients’ stress through the sounds of nature. A massage program is offered for families and staff, and a soft touch program, which does not require registered therapists, is offered for patients. “Overnight treat” is strongly encouraged for staff so they can empathize with patients. Griffin has fish tanks in all waiting rooms. Programs like pet therapy, and an art and entertainment program, which started as a volunteer program, are also offered. Werdel proposed to buy a piano rather than the EKG machine because healing sounds are more important for saving souls. All fluorescent lighting is cancelled in Griffin Hospital. In short, Planetree is adopted to make a difference in critical care (Werdel, 2000).

The benefits of comfort that result from the implementation of Planetree, and whether there is a benefit in being nice to patients and their families, are scientifically explored (Belkin, 1992): her study shows that Planetree patients are more satisfied with their hospital stay, understand their medical condition better, and are less likely to come back to the hospital.

Psychoneuroimmunology and the Placebo Effect

Psychoneuroimmunology is another holistic model of care, which describes a sophisticated communication system between mind and body. A complex system of interactions and feedback loops exist involving the center nervous system, the hypothalamic-pituitary-adrenal axis, and the immune system. This model seeks to understand the reaction of the immune system to stress, and to psychological states such as depression and anxiety. Ader (1996) notes, “there are probably no organ systems or homeostatic defense mechanisms that are not, in vivo, subject to the influence of interactions between behavioral and physiological event.”

The placebo effect is one of the best-known uses of psychoneuroimmunology. A placebo is an inert substance (like a lactose pill, or a sham surgical procedure) that has no specific physiological action. Yet well-controlled clinical studies show that placebos have physiological effects (Cerrato, 1998). Patients who received placebos experienced altered serum lipoproteins, less pain, and lower systolic blood pressure. On average, about a third of patients respond to placebos, some studies put the number as high as 70%. Cerrato questions what sort of mind/body connection accounts for such powerful healing effects, and how

we can understand the healing mechanism that underlies the placebo and related forms of mind/body medicine.

Although the applications of psychoneuroimmunology have been well researched for adult and elderly populations, during this literature review no data was found on the role of psychoneuroimmunology and placebo in the healing process of children.

Non-Western Design Philosophies: Feng-Shui

One of the most popular design trends during the last ten years in healthcare buildings and other healing environments has been to utilize an ancient Chinese philosophy and art of habitat selection to optimize the occupants' well being: "Feng-shui." The principles of feng shui are built on the belief that our external environment can affect the Qi, which is the vital life force pervasive throughout the universe and existing in all living things. Therefore a positive arrangement of our physical environment promotes better health because Qi is allowed to flow freely. Likewise, any environment blocking the flow of Qi negatively impacts both our physical and mental health. Ke-Tsung Han (1999) claims that feng-shui has been regarded as a superstition by many people due to a lack of comprehensive understanding and empirical examinations of this concept.

Feng shui also suggests that living beings should live harmoniously with each other as well as with elements in nature. Therefore, the elements used in decorating the interior spaces of hospitals have often been chosen to reflect this idea. For instance, soft, functional lighting with soothing sounds create organic compositions, as well as the auditory and visual input that aim to create a calming effect on all shared spaces or the entrance of a hospital.

One example of a facility designed totally according to feng-shui principles is the Continuum Center for Health and Healing (http://www.healthandhealingny.org/center/center_environ.html), where the construction and healing design principles optimized the use of the potential of the building. The Center based its interior layout on the "art of placement" specific to ancient Chinese beliefs to improve energy flow through the interior. The consultation, examination and therapy rooms have been placed north to promote patient healing and tranquility while staff areas located south will benefit from harmonious internal communication. East placement provides the waiting room pleasure and connectivity while obstetrics/gynecology rooms situated to the west represent new beginnings. Rooms and areas placed southwest and southeast as well as northwest and northeast symbolize inner growth and outer potential.

Feng-shui and other non-Western design philosophies may indicate the potential of having different approaches to healing design process and the production of healthcare environments.

APPENDIX C

HISTORICAL BACKGROUND OF CHILDREN'S HOSPITALS IN TURKEY

Although the first pediatric hospital in Turkey and Balkan region was founded in Istanbul in 1899, children's hospitals have remained a neglected area of healthcare in Turkey. Being the nation's capital, Ankara played a major role in the history of pediatric health care facilities in Turkey. Currently there are only a handful of children's hospitals in Turkey, three of which are in Ankara. Additionally, not every pediatric hospital has a PICU. Ankara has three PICUs.

Kiziltan (1951) notes that there were only 100 beds for ill children in 1950 in Ankara, and no children's hospitals. The idea of establishing a modern children's hospital in this city was introduced in 1938 by Dogramaci, M.D. In 1951, he circulated a "Proposal for the Establishment of a Children's Medical Center in Ankara, Turkey" to raise pediatric health care standards, both in the practice of medicine and in public health service. In addition to providing desperately needed children's medical facilities, this center would offer a modern pediatric training center in the country and serve as a medical referral center.

In 1954, Dogramaci established a new chair in child health with staff members consisting of a professor –himself-, an assistant physician, two nurses and a clerk. Under his direction, work began in two rented rooms in a slum house that served as a polyclinic for sick children. The basic shell of Turkish hospital Child Health Center was dedicated in June 1954 by the aid of national and international organizations. Young physicians for the new hospital were personally recruited by Dogramaci. International training was valued, and each promising young faculty (around seventeen) was sent abroad to pursue postgraduate training in the U.S. and elsewhere. The hospital grew rapidly along with its staff. In 1957 there were three inpatient units in the hospital, each for 20 to 30 patients.

The goal was to develop a pediatric center and program comparable with Boston Children's Medical Center. In 1958, the Research Institute of Child Health was established as an autonomous unit directed by Dogramaci, which was based on the Boston model and emphasized traditional public health, community health, and disease prevention. During the same year, construction was almost complete and the hospital was established with a capacity of 150 beds. In 1961 there were 25 physicians and 54 residents as house staff of the 150-bed hospital. The same year the Institute created a School of Health Sciences with divisions or high schools of nursing, medical technology, physical therapy, and nutrition.

The hospital and Research Institute were destroyed by fire in 1961. However, a new 250-bed Children's Hospital was completed in less than six months. The same year, in response to growing needs for medical teaching and health care, they decided to build a general teaching hospital with 1000 beds and expand the Children's Hospital to 350-beds. The Research Institute and its affiliates had grown to such an

extent that by early 1963 a proposal was made to transform it into a Faculty of Medicine, which was founded the same year as the fourth medical faculty in Turkey along with the general hospital. By 1967, the University was chartered, integrating the Faculty of Medicine into the larger university.

Proposal For Establishment Of A Children's Medical Center In Ankara, 1951

General Proposal

It is proposed that a modern Children's Medical Center be established in Ankara for the purpose of rapidly raising pediatric standards both in the practice of medicine and in the public health service. In addition to providing desperately needed children's medical facilities in Turkey, this Center would offer the most modern pediatric training, constitute a demonstrational technical assistance project, serve as a medical referral center and undertake research work in pediatrics. The center would be operated as a private non-profit institution supported by public subscription. Initially a Turkish Center, its scope might subsequently be widened to provide training and referral service for other Middle Eastern countries.

Reasons for Undertaking this Project

There is a genuine need for undertaking this project. While enormous strides have been in recent years in medicine and hospitalization in Turkey, much remains to be done. Improvement of child health is particularly urgent. Infant mortality (within the first year) is officially reported at 25 percent, but even government statisticians indicate these figures are probably much too low, because of the inadequacy of statistical reporting at the village level, where mortality is highest. There are only a handful of adequately trained pediatricians to serve a nation of 21 million people; of the 450 nurses of all kinds in Turkey, only a few have adequate training. Physiotherapists, trained medical technicians and/or dieticians are nonexistent in Turkey. Pediatric methods are seriously and in some areas dangerously antiquated. Of the few children's wards, none are adequately run by modern standards. There are not even any properly administered isolation wards for children. And, in the whole country there are no adequate facilities for premature births.

On the other hand, there is ample evidence that the Turkish people, with their dramatic production increases and steadily rising standard of living, are becoming progressively more aware of this problem. Everywhere there are demands for information, and even peasants offer high prices to get the services of pediatricians. In our judgment, this problem is susceptible to rapid improvement, if properly trained doctors and public health officials gave the people information and leadership. Unfortunately, however, as pointed out above, few Turkish doctors or public health officials are prepared for this role. Most doctors have been trained either in Turkey or briefly in Europe many years ago. In any case, they have had little opportunity to keep abreast of current progress in this field.

Furthermore, this project can eventually be expanded to include a large general medical center, research facilities, and schools of medicine, dentistry, physiotherapy, medical technology, dietetics and social work. After making substantial progress with respect to Turkey, provision might be made for a gradually expanding training program to include doctors; nurses and other health personnel from other

countries, the referral service might be extended and publication projects broadened. Turkey is perhaps the only country in the Middle East where this could be done, as she is the only country on good terms with all the rest. She occupies a unique position of leadership in this area, arising historically from her position in the Ottoman Empire. This position of leadership and respect has increased with Turkey's successful efforts to modernize and her astonishing production increases in recent years. In addition to the urgent and pressing need for a children's medical center, there are psychological reasons for starting this project with the construction of a children's hospital. Certainly, one of the outstanding problems understood and appreciated by even the humble is that of child health and welfare. "The hand that rocks the cradle rules the world." An attack on this problem might therefore, be used as a key for approaching the ultimate goal.

Why should this be a Private Institution?

In the United States and Europe many teaching hospitals are private or of a charity character, as the governments have insufficient funds to cover all the requirements of the people. Moreover, historically hospital and medical work have had strong support from charitable and eleemosynary institutions, which have pioneered in this field.

In Turkey, unfortunately, practically all medical institutions are State owned and controlled, the exceptions being primarily missionary institutions or those of the minority religious or racial groups such as Jews and Greeks, which have historical roots. Tremendous strides have been made during the past three decades in State hospitals and State medicine with benefits to the nation, and it is anticipated that in the future the bulk of medical hospital facilities will continue to be State supported. There is, however, an urgent need for private enterprise in this field which could be done in part by the establishment of a strong, outstanding example of a Turkish, non-profit private hospital with high standards.

State medicine tends to have the same faults in Turkey which have been so frequently observed in other countries, namely, too much red tape and burdensome regulations, overstaffing, the rule of seniority rather than promotion on merit, political meddling and too little of the experimental and pioneering attitude so necessary for progress in medical science. Moreover, State medicine in Turkey does not have the leavening effect of friendly competition from private medical institutions, which has done so much to keep the government-owned hospitals on their toes in the United States. It should be added that the Turkish Government and the Ministry of Health urgently feel the need, and believe there is ample room for private institutions to work side by side and in close collaboration with government institutions. It may be added that the Government recognizes this by making small subventions to those operating private institutions doing substantial charity work, including institutions run by minority groups.

Furthermore, in Turkey than in the United States the Government simply cannot afford to provide the medical service required for all of the people. It therefore seems appropriate to tap private funds, particularly in view of the Turkish tradition of charity, which is deeply embedded in religious feelings, and mores of the people. It is believed that an outstanding institution like this can do much toward channeling this feeling toward the support of modern medicine and that doctors trained there will act as pioneers in

spreading this idea through-out the country and in encouraging local communities to meet their own requirements rather than relying solely on assistance from the central government. It will be a major objective of this institution to instill in the medical profession a zeal for developing local initiative, both private and public, for supplying local needs.

Programs

The work of this Center would be aimed primarily at improving the practice of medicine and of public health work by training doctors, nurses, physiotherapists, social workers, technicians, and hopefully public health officials as well. It is believed that the program of the Center can, within a generation, basically improve the practice of medicine in Turkey. The relatively modest investment required by this project would in the long run, therefore, have a far greater and more permanent after effect than any attempt to improve public health by a program for the construction of other medical teaching centers throughout Turkey, a project requiring staggering sums of money. As personnel becomes trained, it is believed they will become the most effective agents to encourage local communities and the central government to establish other facilities throughout the country, which can then be adequately staffed and managed along modern lines.

Specifically, the first part of the project includes:

- Full time pediatric training for interns, resident physicians, nursing students and technicians. It is also hoped that physiotherapists, social workers, and public health officials may eventually be included.
- Professional improvement for specialists, general practitioners, nurses, and public health officials through clinical-pathological sessions, panel discussions on pediatric and other medical problems and interesting cases, evening lecture courses, and periodic medical conferences and conventions.
- Provisions of a referral services for other hospitals, clinics, specialists and general practitioners throughout Turkey.
- Publication of a professional pediatric journal and other scientific literature.
- Publication of popular literature for laymen.
- Research with special emphasis on adaptation of the most modern methods to Turkish conditions.
- Lecture courses for parents on child care.

Substantively the medical program would include activities such as care of sick children in outpatient department, in the wards, and in special clinics; following the health of children in the well baby clinics; following cases in homes by means of visiting nurses or social workers; and disseminating information about preventive pediatrics, particularly through well baby clinics and through campaigns for immunizations.

While privately operated, this institution is to work in close collaboration with government institutions and other teaching institutions including universities. Without such collaboration, there would be little hope of making a large impact on the basically important area of public health and preventive

medicine. It is also hoped that contractual arrangements can be made with the Ministry of Public Health for specialized training of pediatricians, nurses and public health officials and with the Ministry of Education for assisting in the development and execution of a parent training program. It is important to note, however, that since the institution will be under private control, the maintenance of highest professional standards and freedom from political influence can be assured.

Details of Project and Cost Estimates

A. Initial Installation

(Note: All conversions are calculated at TL 2.8 - \$1.00)

Land: An ideal plot of land in large public park centrally located between the poorest and well-to-do sections has already been promised by the city of Ankara. (Valued at a minimum of TL 1,500,000)

Building: A functionally designed, non-luxurious hospital of 180 beds, including:

- Wards: Observation, children's medical, infants, isolation, surgical and premature babies.
- Clinics: Outpatient and well baby.
- Operating theatre, X-ray department, hematology, bacteriology, chemistry and pathology laboratories, and a blood bank.
- Classrooms, 200-seat lecture room with projection facilities, library, and quarters for nurses, interns and resident physicians.
- Admission and administration rooms and other appropriate accommodations.

TL 4,500,000.

Equipment: Furnishings, appliance, and laboratory and medical equipment.

TL 2,800,000.

(Note: These estimates are based on construction and equipment costs of various state and private hospitals in Turkey.)

Operating Costs

Personnel: Total personnel expenditures per year TL 2,500,000. This includes salaries and other expenses for the following:

- Governing board of five outstanding lay men (only actual expenses paid)
- Superintendent and business manager
- Pediatrician in charge
- Two associate pediatricians
- Six assistant pediatricians
- Three senior surgeons
- One ear, nose and throat consultant
- One chief resident
- Twelve assistant residents

- Fifteen to twenty interns
- (Nominal salaries would be paid as is customary in the U.S.A.)
- One Dietician
- Three nursing teachers, who would also serve as head nurses
- Fifty nurses
- One bacteriologist
- One pathologist
- Two chemistry technicians
- Two X-ray technicians
- Administrative staff
- Orderlies, servants, technicians
- Secretarial staff
- Librarians
- Two social workers
- Five cooks
- Five miscellaneous
- Two ambulance drivers

Other Operating Costs:

This includes food, medication, light, heat, and other utilities. Since these vary according to the number of patients actually in the hospital from month-to-month, this is being estimated initially on a cost per patient per day TL 12.50

This estimate is derived from actual operating costs of a number of Turkish state and private hospitals and of the U.S. military dispensary at Ankara.

Note: No financial provision is made initially for publication and research, as these would be initiated after the institution got under way.

Financing Plans

The size and extent of the building project and medical program will depend of course on the success in raising the necessary funds. Appropriate adjustments can be made in either direction as the magnitude of the availability of funds becomes apparent. The financial program is divided into three parts: Initial installation costs - TL 7,300,000.

It is hoped that TL 2,800,000 (\$ 1,000,000) could be obtained from American sources for equipment. If this could be assured, it is believed that the program could be initiated with complete confidence of success. No action would be taken, however, until sufficient funds were pledged to assure such success. The remaining TL 4,500,000 would be raised by public subscription in Turkey.

Operating costs – personnel - TL 2,500,000.

It is proposed that a strenuous public subscription campaign be initiated in Turkey to raise an additional TL 25,000,000 to serve as an endowment. These funds would be invested primarily in real estate and rental properties. Annual returns are conservatively estimated at 8-10 percent. Currently, rentals net 10-15 percent. Any shortfall in returns would have to be made up either by increasing the endowment or by raising annual subscriptions. There is substantial reason to believe that such a campaign would be successful. Individual businessmen have already tentatively indicated willingness to make large contributions, and high government officials, including the Prime Minister and the Governor of Ankara have indicated their full support, which is necessary if such a drive is to be successful in Turkey.

Other operating costs – TL 12.50 per patient per day

Since food and medication, the largest components, would vary in accordance with the number of patients, it is proposed that these expenses be borne entirely by patients' fees. Patients are to be divided into three categories and the hospital run on a 3-class basis; a practice customary in Turkey. The first class would pay full fees; the second, about half; and the third, whatever they can afford, many paying nothing. The rates of the first class would have to be adjusted to cover the expenses of the third, while the second would carry itself.

There would be additional income from such sources as training contracts with the University of Ankara, the Ministry of Public Health, etc., but since these are not subject to exact estimation at present, no figure is indicated. Moreover, as research and publication are initiated, income from institutions endowing research and from publications could also be anticipated. Income might also be anticipated through the official sale of stamps, and after the hospital is a going institution with its strong charity emphasis, perhaps also subventions from the government.

APPENDIX D

IMPLICATIONS OF THE STUDY FOR FUTURE TURKISH PICUS

This study has important implications to inform the design and planning issues of future PICUs in Turkey. In Summer 2004, the researcher visited another PICU facility in Turkey and obtained their permission to use their existing and proposed floor plan of the PICU and NICU. She also learned about the struggles stemming from cultural boundaries, particularly the struggles with proposing a PICU waiting room, which played against adapting a universal PICU space.

While the ICU director was open to the design modifications suggested by the researcher, such as the incorporation of a waiting room in the unit and the provision of staff station in a central location, she was informed regarding their limitations impacting design: 1) Regarding the nursing station, which she suggested to locate centrally with strong visual access to all patient beds, the limitation was the presence of an existing wall, which sabotages visual access to patient beds. Yet the administrators would not be willing to eliminate this wall despite the lack of a better space for the staff station. 2) Regarding the medications storage room, they prefer to have a large space since medications and IVs are prepared by nurses within the unit. That is, medications do not arrive in their required dosage from the pharmacy department as in the U.S. Therefore they need to incorporate larger spaces than in the U.S. for medications storage and preparation function. 3) They were open to the idea of locating the physician director and nurse manager of the PICU and NICU in two adjacent rooms to symbolize the equality of their administrative capacity.

The ICU director rearranged the ICU space by enlarging isolation rooms and their anteroom, and by inserting new walls. While the head of the ICU department is against construction and structural modifications, this notion may change. The researcher's comments on the proposed floor plan was as follows: 1) Compared to the observed PICU, their PICU space is more appropriate: they have enough space and the spatial configuration within the unit reflects a certain level of sophistication. 2) NICU/PICU separation in close proximity is beneficial: it reduces complexity of the unit and is good for wayfinding. 3) Waiting room, staff lounge (relaxation room), and staff station are central functions to support social interaction and practices: therefore the most strategical and central spaces within an appropriate scale should be provided for those functions. 4) The separation of the unit into three zones, which are patient care, support/storage and office spaces, is well planned. 5) A radical modification may be to open the unit to maximum daylight and views of outside (nature if possible). Greenery located outside the immediate patient care areas may also support this ambient function: the provision of an aquarium and its central location is a good decision. Despite the ongoing challenges, they need to open more windows and eliminate walls (e.g., design for an optimum level of transparency and daylight). Yet staff privacy is

always accepted as a higher need in Turkish culture, where they prefer to hide within their rooms. To ensure privacy in the staff lounge and directors' offices, they may insert windows at a high level. Yet the corridor space must be transparent with floor-to-ceiling windows to allow daylight in the office zone, if windows are provided in these rooms. Clerestory lighting or skylight system may be other radical (and costly) alternatives for access to daylight in office spaces.

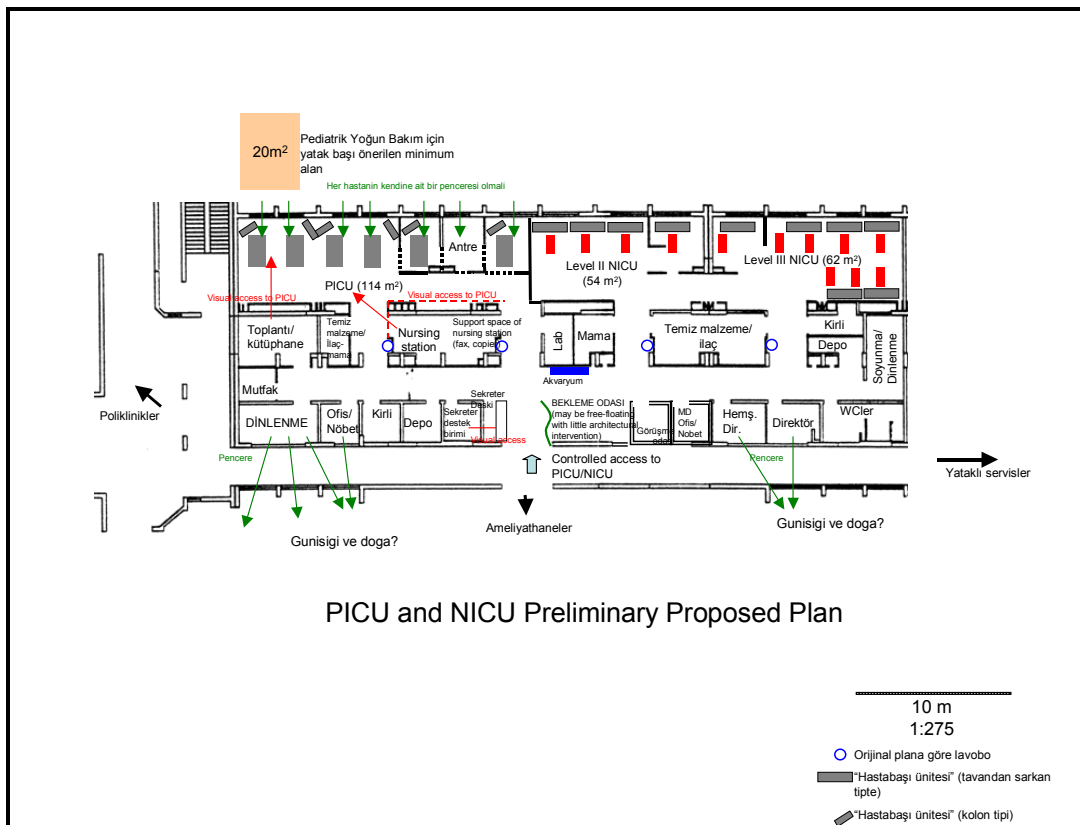
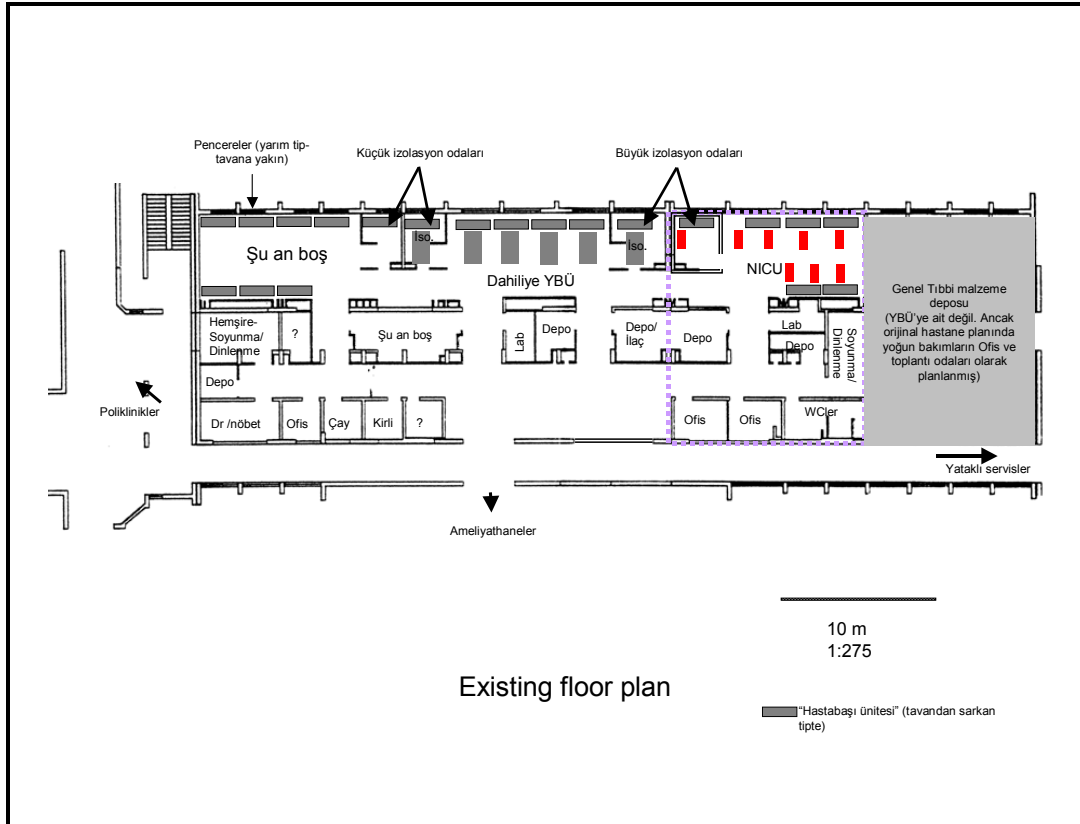
This example shows that cultural factors and struggles linked particularly with accepting the behavior and image of an ill-educated cultural group (e.g., families) in the hospital will play against the provision of humane architectural functions in the future.

Regarding the office spaces, the ICU director suggested the provision of a room for the PICU/NICU nurse director. If accepted, the current NICU nurse manager will be assigned a new room and administrative/educational function as the director of the PICU and NICU, which will be a first in Turkey. Yet if hospital administration prefers to have two different nurse managers for the NICU and PICU, the room will lose its meaning and function: both nurse managers will keep on their current role as the administrator of caregiving, withdrawing from an administrative and educational role. Unlike the nurse director, they need to have two different physician directors for the NICU and PICU since they are two different academic and administrative units (e.g., Critical Care and Neonatology). Therefore they need to have two different rooms for physician directors. In the PICU, they also need to provide at least one or two offices for (future) attending faculty: there is no other space in the hospital for this function (while the NICU department has additional offices for their faculty outside the unit).

The concept of family waiting room remains to be an "absurd" topic: they think due to cultural differences it will not be used appropriately. (Usual scenes from the hospital include families' dining on a carpet they put on the floor, changing their babies' diapers publicly, camping in the hospital garden, and sleeping everywhere in and around the building.) However, they may provide a waiting room in the future outside the unit: they have enough space inbetween two columns in the corridor towards the polyclinics.

Regarding the need to access nature and outside, their space is not feasible: each patient has a window at the back of her or his bed, which brings daylight, yet they are 2 meters above the floor level, preventing views to outside. Actually they are very small openings provided for daylight only, designed this way on purpose. While it may be possible to enlarge window size, administration will be strongly opposed to this idea due to the opposition of their labor force.

The concept of unit transparency remains to be an absurd design concept due to the Turkish customs in the ICU. The idea of inserting windows in the third zone (staff lounge and office spaces) for access to daylight was completely rejected because these spaces would be visible from the corridor between inpatient areas and cafeteria, which would be inappropriate. For similar reasons, the ICU director rejected the idea of providing a space for secretarial support function: in a cultural context where everybody, even custodial staff, tends to hide within their rooms, there is no need to increase hidden functions.



The Existing and Proposed Floor Plan of the PICU and NICU, Children's Hospital, Turkey

VITA

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