STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS

by

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DECLARATION

I declare that **STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

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STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS

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ABSTRACT

The purpose of this study was to develop strategies to overcome the challenges in the management of large intensive care units (ICUs). Qualitative, research was conducted to explore and describe the challenges and needs experienced by the ICU managers and critical care nurses in the management of large ICUs. Data was collected through interviews. The study was conducted in two phases, that is, Phases I and II which involved compilation of evidence in preparation for development of the strategies and development of the strategies respectively. Two groups of critical care nurses participated in the steps of data collection in Phase I of the study. The unit managers participated in Phase I step 1 which was individual interviews and the critical care nurses not in the management role participated in Phase I, step 2 which was focus group interviews. Data was analysed using the descriptive analysis method of Tesch (1990). The study has highlighted the challenges and needs in the management of large ICUs, through seven themes that emerged from the findings. Ten strategies were developed to overcome the challenges and address the identified needs. The strategies have been presented as a contribution to literature.

KEY CONCEPTS

Challenges; critical care unit; management; strategies.

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AACN	American Association of Critical-Care Nurses
ACLS	Advanced Cardiac Life Support
BACCN	British Association of Critical Care Nurses
CCU	Coronary Care Unit
CC3N	Critical Care Networks National Nurse Leads
CCSSA	Critical Care Society of Southern Africa
CDC	Center for Disease Control and Prevention
DHHS	Department of Health and Human Services
DNR	Do not resuscitate
EN	Enrolled nurse
ENA	Enrolled nursing assistant
HCA	Health Care Assistant
HC	High care
ICN	International Council of Nurses
ICU	Intensive Care Unit
KZN	KwaZulu-Natal
NNIS	National Nosocomial Infections Surveillance
RCN	Royal College of Nursing
RN	Registered nurse
RNP	Registered Nurse-Participant
SA	South Africa
SANC	South African Nursing Council
UK	United Kingdom
UMP	Unit Manger-Participant
US	United States
USA	United States of America

List of abbreviations

WC	Western Cape
WFCCN	World Federation of Critical Care Nurses
WHO	World Health Organization

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

An intensive care unit (ICU) is a specialised section of the hospital that provides comprehensive and continuous care for persons who are critically ill and who can benefit from treatment (http://www.adobe.com). According to Lee (2002:3), intensive care units (ICUs) are specialised hospital wards that provide care for patients suffering from life threatening conditions. The same author further states that the intensive care units (ICUs) provide monitoring, treatment and nursing services generally for short periods. These units are also called critical care units (Lee 2002:5).

Critical care nursing is defined as the care of seriously ill patients from the point of injury or illness until discharge from the intensive care unit. Essentially, this care is given in a special unit in which an increased concentration of specially trained staff and monitoring equipment allow for more detailed and frequent monitoring and interventions in the seriously ill patients (Monahan, Sands, Neighbors, Marek & Green 2007:192). On the other hand, the American Association of Critical-Care Nurses' (AACN) Scope of Practice Statement states that 'critical care nursing is a dynamic process, the scope of which is defined in terms of

- critically ill patients
- the critical care nurse
- the environment in which critical care nursing is derived

All these three components are essential elements for the practice of critical care nursing (http://www.aacn.org/wd/pressroom/content/aboutcriticalcarenursing).

The environment of critical care is an area with one of the largest concentrations of sophisticated biomedical equipment in the hospital. Nurses in the ICU are regularly exposed to huge demands in terms of filling many roles that are placed upon them.

They are bedside clinicians, nurse educators, nurse researchers, nurse managers, and nurse practitioners. In addition, they provide direct patient care, including assessing, diagnosing, planning and executing pharmacological and non-pharmacological treatment of health problems. They also focus on making clinical decisions related to complex patient care problems; and unit managers' activities include management of the unit (http://www.nursesource.org/critcal-care.html).

Management refers both to a set of functions and activities as well as to the people carrying them out (Muller 2002:103). Management is further explained as a continuous process involving different individuals of whom some are engaged in management activities on an ongoing basis while others are involved only at particular stages of the management process. Nursing management, according to Swansburg and Swansburg (2002:27), refers to performing the functions of planning, organising, leading (directing) and controlling (evaluating) activities of a nursing unit. These authors further indicate that a nurse manager in the unit performs all these activities to deliver quality health care to the patients (Swansburg & Swansburg 2002:27). This study discusses an ICU with regards to the challenges experienced by the unit manager and the needs of the critical care nurses in the management of a large ICU.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

The provision of intensive care is generally administered in a specialised unit of a hospital called the ICU or critical care unit. Accordingly, the ICU in a hospital facility is for care of critically ill patients at a more intensive and advanced level than is needed by other patients in the general wards. The purpose of the ICU is simple even though the practice is complex. It is staffed by specialised personnel and equipped with a variety of monitors and life-support equipment that can sustain life in once-fatal situations, including trauma, adult respiratory distress syndrome, cardiac failure, kidney failure, multiple organ failure, and sepsis. Many hospitals have designated intensive care areas for certain specialties of medicine, such as the Coronary Care Unit (CCU) specifically for heart disease, Medical Intensive Care Unit for general intensive care excluding surgical cases and Pulmonary Critical Care unit for lung conditions (http://www. intensive-care-unit).

1.2.1 The evolution of Intensive Care Units (ICUs)

Critical care has evolved over time. The ICU's roots can be traced back to Florence Nightingale's Monitoring Unit for critically ill patients during the 1854 Crimean War. Because of the lack of intensive specialised care and the high rate of infection, there was a high mortality rate of hospitalised soldiers, reaching up to 40% of the deaths recorded during the war. Nightingale and other volunteers used their 'critical care protocol' and on practicing it; the mortality rate dropped to 2% (Munro 2010:316).

In 1947-1948, the polio epidemic raged through Europe and the United States, resulting in a breakthrough in the treatment of patients dying from respiratory paralysis. In Denmark, manual ventilation was accomplished through a tube placed in the trachea of polio patients. Patients with respiratory paralysis and/or suffering from acute circulatory failure required intensive nursing care (Szmuk, Ezri, Evron, Roth & Katz 2008:225).

During the 1950s, the development of mechanical ventilation led to the organisation of respiratory intensive care units (ICUs) in many European and American hospitals. The care and monitoring of mechanically ventilated patients proved to be more efficient when patients were grouped in a single location. Monahan, Sands, Neighbors, Marek and Green (2007:193) report that the first ICUs emerged in the 1950s as a means to provide care to very sick patients, especially during the polio epidemic when one to one care from a nurse was needed. General ICUs for very sick patients, including postoperative patients, were developed for the similar reasons (Szmuk et al 2008:226).

According to Crocker (2007:324), the epidemics such as the outbreak of polio of 1952 in Copenhagen resulted in an increased number of patients requiring ventilation and necessitated the opening of respiratory units. Furthermore, Crocker (2007:323) indicates that there are several factors that contributed to the development of intensive care units in America, such as grouping together the sick patients so that they could be cared for by skilled nurses, and the pressure that forced the government in England to review the provision of critical care services. Critical care evolved from a historical recognition that the needs of patients with acute, life-threatening illness or injury could be better treated if they were grouped into specific areas of the hospital (http://www.sccm.org/).

Before that, critical care nursing was practiced wherever there were critically ill patients or patients at high risk such as in the operating theatre recovery room and trauma or casualty departments. Monahan et al (2007:193) indicate that many critical care units were small designated areas carved out of existing recovery rooms or other areas such as a trauma unit in the hospital area. However, today, the critical care units have emerged as specialised areas apart, for care of complex patients different from the recovery room in that patients are also admitted from outside the hospital and from other units within the hospital such as theatre, general wards and casualty department.

From these environments mentioned, the speciality of critical or intensive care nursing started. According to Urden, Stacy and Lough (2006:3), critical care nursing was organised into a speciality less than 40 years ago. In 1997, more than 5,000 ICUs were operational across the United States. In South Africa, critical care was established in the early 1990 (Bhagwanjee 2006:433).

1.2.2 Management of the intensive care unit

Roussel (2002:10) mentions that all health care organisations need effective management, including hospitals. The nursing unit is a sub-system of the health service such as a hospital and a nurse appointed to manage this nursing unit is called a unit manager (Muller 2002:103). According to Muller (2002:104), nursing unit management is the achievement of the objectives of the unit by means of utilising the management activities of planning, organising, leading and controlling within the context of a specific nursing unit.

There are different types of nursing units within a hospital context. Each of the units has a unique nursing programme being implemented; and the management of the unit requires certain management skills regardless of the nature of the nursing unit (Muller 2002:103). Certainly, effective management and safe health care delivery are essential in the critical care unit as in any other unit, if patient care goals are to be met.

The unit manager in the ICU is an operational or first level manager who facilitates the achievement of the objectives within the ICU and the health service by means of management activities pertaining to all the daily activities in the unit. These activities are

performed in an integrated manner. The management activities are discussed in detail in Chapter 2.

1.2.3 The demand for intensive care services

As the health care scenario changes due to a number of factors such as an increased incidence of violence, greater numbers of accidents and the advent of managed care, the demand for intensive care services is changing and continues to grow (Monahan et al 2007:192), thus calling for the creation of larger intensive care units. The growing number of serious diseases and trauma incidents in South Africa increases the demand for intensive care nursing services (researcher's observation) which are often provided in the units with 12 and more beds.

The average size of an intensive care unit in the United States (US) is between 6-10 beds (Lee 2002:5). According to the Audit Commission (1999), in the United Kingdom (UK) the average size of a critical care unit in the late 1990s was six (6) beds. It has however been suggested that the optimum working number of critical care unit beds be eight (8) based on the judgement that this is the number that can be successfully managed by one consultant and a team (Adam & Osborne 1999:21).

In an American study conducted in 1992 by the Society of Critical Care Medicine in collaboration with the American Hospital Association, it was found that approximately 8% of all licensed hospital beds in the United States were designated for intensive care. The average size of an adult or paediatric ICU averaged 10–12 beds per unit. Historically, small hospitals with fewer than 100 beds usually had one ICU, whereas larger hospitals with more than 300 beds usually had several ICUs designated for medical, surgical, and coronary patients (Brilli, Spevetz & Branson 2001:2007). However, Halpern, Pastores, Thaler and Greenstein (2006:2105) mention that in the United States, the number of critical care unit beds is increasing across hospitals of all sizes.

In a study conducted in 2006 for the national audit of critical care resources for unit and bed distribution in South Africa (SA), for both public and private hospitals, it was found that 23% of public and 84% of private hospitals have ICU/High Care (HC) units/beds. The majority of the units/beds for both public and private hospitals were located in the

three Provinces, namely Gauteng, KwaZulu-Natal (KZN) and the Western Cape (WC) (Scribante & Bhagwanjee 2007:1311).

According to the researcher's observation, the demand for intensive care services in both public and private sector hospitals in Gauteng Province, South Africa, is such that intensive care units are currently operating at between 80-100% occupancy rates. Several hospitals (both public and private) strive to meet the high demand for intensive care services through the provision of larger intensive care units with a capacity of between 12-20 and more beds (researcher's observation). These larger ICUs provide care for patients with a variety of conditions where smaller ones frequently focus on patients with specific conditions within a specific discipline. The creation of large ICUs is brought about by factors such as the

- disproportionate spread of hospitals across the Provinces (Scribante & Bhagwanjee 2007:1323)
- referral and transfer of patients from public and private hospitals with no ICU/HC facilities (Scribante & Bhagwanjee 2007:1323)
- referral and transfer of patients from private hospitals to public hospitals due to lack of, or, exhaustion of medical aid funds (researcher' s observation)
- referral and transfer of patients from public to private hospitals due to personal preferences or choices, availability of medical aid funds and the desire for better care (researcher' s observation)

The evolution of larger ICUs in private hospitals may also be an economic factor. Evidently, the ICUs are seen to generate more money for the hospitals because of the specialised care provided in these units. The positive outcomes of larger ICUs are the availability for beds to admit patients and also to generate funds for the hospitals. The British Association of Critical-Care Nurses' (BACCN 2010:3) standards for nurse staffing indicate that a large ICU is one that is geographically diverse and has more than 6 beds. A large ICU can thus be regarded as one with twelve beds and more. The staffing levels and equipment should be commensurate with the number of beds available in the unit.

1.2.4 The demand for nurses and equipment in ICUs

Lee (2002:3) indicates that patients requiring intensive care nursing in the United States (US) occupy 5-10% of hospital beds nationwide. Coupled with this, is the need for larger intensive care units and it is expected that they should be well equipped both with human and material resources to meet the patients' needs and improve the quality of performance and care.

Zondagh ([S.a.]) indicates that there are about 42 000 vacant positions in the public health service in South Africa. This situation with vacant posts is further compounded by the migration of nurses who leave the country. According to the author, there are only about 2500 ICU trained registered nurses in the country, of which an estimated 50% of them might have migrated, or are inactive (Zondagh [S.a.]).

In a survey conducted in the South African private hospitals in 2004, Zondagh ([S.a.]) indicates that 16% of the nurses planned to go overseas in the next 2 years, whilst more than 25 000 nurses had requested the SANC to verify their qualifications between 1994 and 2004 in preparation to leave the country. The shortage of ICU trained nurses results in the inadequate provision of quality health care. Hamilton and Yau ([S.a.]), in a WHO report, found that 60% of South African institutions had trouble replacing nurses who had emigrated (http://www.migrationinformation.org).

According to Scribante and Bhagwanjee (2007:1315), there are approximately 4584 registered nurses working in the ICUs of SA. These authors further note that of the 4584 registered nurses working in the ICUs, only 25.6% are ICU trained nurses. In addition, the mentioned authors' report indicate that with the decline in the number of trained critical care nurses, there are severe challenges in providing quality intensive care nursing as the number of appropriately trained staff is largely insufficient (Scribante & Bhagwanjee 2007:1315).

The observation of the researcher is that hospitals in the Gauteng Province of South Africa tend to create larger intensive care units (ICUs) who have to deal with a rapid turnover of patients and which are unfortunately mostly understaffed. With these large units, there is a need for more equipment and a greater demand for critical care nurses who are already in short supply (Gillespie 2006:38). These ICUs may thus be

functioning outside the designated norms of critical care. The norms of critical care nursing and standards for nurse staffing in critical care units are explained in terms of staffing, nurse to patient ratio, skill mix and acuity levels of patients (http://www.baccn.org.uk;http://www.rcn.org.uk/downloads/research/setting/staffinglevels-summary.pdy).

The difficulties associated with large ICUs relate to the size of the units, and their encompassing characteristics such as the physical layout and environment, which then leads to several management challenges such as with planning due to staffing shortage, insufficient provision of equipment and supplies and difficulties in organising and coordinating processes of care. The complexities of patient care and expectations from colleagues, hospital management and doctors as well as patients and their families also contribute to the challenges of managing ICUs, and thus the ICUs are functioning below the norm as indicated by the BACCN (2010:3).

1.3 STATEMENT OF THE RESEARCH PROBLEM

Approximately 15 years ago, the majority of the intensive care units had about 6-8 beds depending on the size of the hospital as stated in the background of the study. With the current disease profile, high levels of trauma, the HIV and AIDS epidemic and chronic diseases such as cardiovascular diseases and the increased access to medical aid funds, the need for more intensive care beds and consequently larger critical care units with more than 8 beds, arose. Accordingly, the large units are created in order to concentrate the specialty of intensive care in one area (researcher's observation) and to accommodate the increasing numbers of patients needing intensive care services.

Currently, most of the units have 10 and more beds. In Gauteng Province, in both the public and private sectors, some hospitals have ICUs with a capacity of more than 12 beds per unit (researcher's observation). However, in view of human resources, there is a severe shortage of nurses in the country, primarily due to the emigration of nurses to developed countries which is attributed mainly to the poor working conditions in South Africa (Oosthuizen & Ehlers 2008:22) .

Critical care nurses are responsible for clinical assessment, making diagnoses and designing individualised care plans for critically ill patients in order to reach the

expected outcomes for each patient. Unit managers are responsible for effective and efficient management of the unit, but in addition, are often required to do functional nursing and fulfil other roles in relation to care of patients. The roles and functions of registered nurses working in critical care units are regulated by the South African Nursing Council (SANC) according to the scope of practice for registered nurses (SANC 1978:R2598, as amended).

Despite all their competencies, expertise and experience, there seems to be unique problems facing critical care unit managers which are brought about by the challenges they encounter on a daily basis in the management of the intensive care units. Some of the challenges are for example the changing environment related to sudden changes in patients' conditions in the unit. The environment suddenly changes when the condition of a patient changes in cases of unexpected emergencies such as respiratory and cardio-respiratory arrests, where patients have to be resuscitated. Resuscitation calls for the team to work together and the unit manager sometimes has to stop doing the management activities and also help with such an emergency.

There are also other unexpected tasks where the unit manager has to switch to patient care, such as when having emergency admissions, transfers in and out of the unit and discharges. Also, complex procedures that need to be done on the patients such as insertion of indwelling catheters and invasive instrumentation, and transporting patients for special diagnostic studies and tests such as CT scans; which call for more staff participation and the provision of more equipment and supplies. Inevitably, the unit manager may often have to assist in these tasks. On top of the factors mentioned, there is a shortage of staff resulting in compromised quality of care, especially if the nurse to patient ratio is one nurse to more than one patient. When attending to one patient, the other patient's care will be compromised.

Some other challenges could be related to the size of the ICU and those challenges could then be more severe in large intensive care units. These challenges are brought about by factors such as shortage of supplies, stock and equipment such as cardiac hemodynamic monitors and mechanical ventilators. Consequently, cost pressures for equipment and supplies, and understaffing related to the general shortage of nurses contribute to the challenges encountered. Problems of this kind call for multiple

strategies in helping critical care nurses to manage large units efficiently and simultaneously ensuring positive patient outcomes.

The availability of intensive care unit beds in relation to the shortage of staff and unavailability of adequately trained ICU staff numbers lead to challenges with staff allocation and nurse to patient ratio. According to the BACCN (2010:3), standards for safe nurse staffing in critical care, every patient in a critical care unit must have immediate access to a registered nurse with a post registration qualification in this specific specialty. However, the shortfall in the critical care nursing staff availability is currently addressed through overtime work by permanent staff members who are off duty or by the use of agency staff, including the utilisation of other categories of nurses such as enrolled nurses (researcher's observation).

It is unfortunate that most of the intensive care units are overburdened, and therefore utilised in terms of bed occupancy, beyond what would be regarded as a safe capacity in view of staffing numbers. The BACCN (2010:3) advocates that nurse patient ratio within any critical care unit should not go below one nurse to two patients. When the nurse to patient ratio is not managed according to the acuity level of the patients, problems with the quality of patient care inevitably arises. All these factors subsequently lead to problems in the management of the critical care units and also pose serious challenges for ICU nurses who desire to provide quality patient care and ensure positive patient outcomes.

The problem is that unit managers in the larger intensive care units experience challenges in effectively managing their units due to the concerns noted above; and also due to the fact that their role often changes from that of a manager to being a functional nurse responsible for direct patient care. In some situations, in the larger critical care units, the critical care nurses' role also changes from nurses who only manage their assigned patients, to nurses who must plan, organise, direct and control care by others as part of the unit management function and vice versa. These problems have however not been explored in the South African context. This study sought to answer the following research questions:

- What are the challenges experienced by critical care unit managers in the management of the large intensive care units?

- What are the needs of the critical care nurses in these large intensive care units, in relation to the management of the units?
- What strategies can be developed to overcome the challenges in the management of large critical care units?

1.4 PURPOSE OF THE STUDY

The purpose of the study was to develop strategies to overcome the challenges and address the needs experienced in the management of large ICUs.

1.4.1 Research objectives

The objectives of the study were to

- explore and describe the challenges experienced by critical care unit managers in the management of large intensive care units
- identify and describe the needs of critical care nurses working in large ICUs in relation to management
- develop strategies to overcome the challenges in the management of large critical care units and address the needs

1.4.2 The hypothetical basis of the study

A hypothesis is a formal statement of the expected relationship between two or more variables in a specific situation (Burns & Grove 2005:738). A hypothesis translates the problem and purpose of the research into a clear explanation of prediction of the expected outcomes or results of the study (Burns & Grove 2005:159). This study was based on fact finding, that is, the challenges and needs of the critical care nurses in the management of large ICUs were described as facts. Thus, there was no hypothesis since there were no predictions of the results in this study. However, assumptions formed the basis for this study.

1.4.3 Assumptions underlying the study

Assumptions are basic principles assumed to be true without proof or verification (Polit & Beck 2008:14; Burns & Grove 2005:738). Sources of assumptions include universally accepted truths, theories, previous research and nursing practice. Assumptions are embedded in the philosophical base of the framework, study design and interpretation of findings. Assumptions influence the logic of the study, and their recognition leads to a more rigorous study development (Burns & Grove 2005:39). The assumptions of this study were as follows:

1.4.3.1 Meta-theoretical assumptions

The meta-theoretical assumptions are assumptions regarding reality underlying the study. In this study the assumptions relating to management of ICU were that

- critical care nurse managers with a clear and realistic job description should be able to manage a unit effectively
- adequate structure and processes should contribute to the effective management of a larger unit

1.4.3.2 Methodological assumptions

Methodological assumptions are the views of the researcher about the nature of science and research in a study. These assumptions guide the researcher in the selection of the most appropriate methods to be used in a study. Methodological assumptions focus on analysis of the methods used for gaining the data. According to Streubert Speziale and Carpenter (2003:186), a qualitative study assumes the following:

- Qualitative research supports narrative data collection, in order to capture the life-world of people from an emic or insider perspective.
- The researcher has a role as a co-participant in the discovery and understanding of realities of the phenomenon studied by being an interviewer and interpreter of data.
- The qualitative interview methods start with the details of the experience and move to a more general picture of the phenomenon. In-depth interviews were used to gain insight and understanding of the challenges in the management of larger ICUs. The

researcher immersed herself in the data, verified information and collected data from multiple sources as in Phase I, steps 1 and 2 to gain an understanding of the phenomenon studied.

- The researcher conveys an understanding of the phenomenon by reporting the realities in detail, through identification of themes and extensive quotations that reflect the descriptions by the participants.
- The authenticity of the findings is by verification through member checking as was done through validation of the strategies by expert nurses in this study.

1.4.3.3 Theoretical assumptions

In this study, theoretical assumptions serve to do the following:

- To understand people's experiences and the meanings they assign to the experiences, as it is necessary to generate narrative data
- To provide a supportive environment that may improve the quality of management of a unit, through the development of strategies
- To provide quality nursing care through efficient management of the unit
- To understand that the ability to manage a unit effectively depends on the structure, process and outcome standards

1.5 SIGNIFICANCE OF THE STUDY

In South Africa, there has been a rapid change in the political and social arena since 1994 which led to new policies from the Department of Health regarding redistribution and redirection of health services (Mathivha 2002:22-23). In some instances in the public sector, there has been a reduction of beds, combination of units and closure of certain units within the hospitals due to cost pressures and duplication of services. This is referred to as downsising, merging or restructuring. Following this downsising, merging or restructuring, the critical care unit managers are expected to supervise, organise and direct the work of this newly formed nursing units. The unit manager is expected to also coordinate the staff to ensure that effective nursing care is provided and quality standards are met through efficient management of the unit.

Apart from providing patient care, unit managers and ICU nurses need to manage the critical care units effectively. With this in mind, managing larger critical care units can become an immense challenge. In the larger ICUs, deficiencies in the structure and layout of ICUs, the severe shortage of appropriately trained staff and insufficient equipment and supplies all contribute to the difficult management of those units. Consequently, this in turn leads to an unrealistic workload expectation of critical care nurses, which limit their ability to manage the units effectively resulting in them just attending to the basic management activities.

The significance of this study lies in identifying the needs and problems of the critical care nurses regarding management of the larger critical care units based on their experiences in the units so that management teams of the specific hospitals can be made conscious of the challenges facing their critical care units. Strategies were developed to overcome the challenges identified. Following this study, the strategies will be presented in the form of a workshop to other critical care nurses, in order to sensitise them of the challenges and to enhance capacity building on the management of large ICUs. The developed strategies could be used as a basis to be adapted to facilitate in-service education for other intensive care units experiencing the same problems.

The findings of this study may also trigger interest in the development of norms for the ICUs in the country; which can be done following the same process as the researcher followed. This will be so that the stakeholders can be involved in the democratic process and encouraged to own the product. The strategies are developed as a reference for nursing staff in critical care, managers, clinical educators and other stakeholders associated with critical care, in order to provide and support safe unit management, focused upon quality and the desired patient outcomes. The strategies could be used as guidelines to help inform the education development programme necessary for the continued evolution of critical care. Further research could be conducted on the effectiveness of the implemented strategies in the critical care units.

1.6 DEFINITION OF KEY CONCEPTS

Concepts are linguistic labels assigned to objects or events (Brink, Van Der Walt & Van Rensburg 2006:25). In De Vos (2002:29), concepts are defined as ‘the terms designating the things about which a science tries to make sense’. De Vos further

explains that a concept is thus a category of perceptions or experiences. The process of categorising and labelling concepts is called conceptualisation (De Vos 2002:29) and the labelling of concepts with words allows the researcher to think about them and communicate them to other people.

A conceptual definition of a variable is thus the general theoretical meaning of the concepts being studied (Polit & Beck 2008:59; Brink et al 2006:86) and an operational definition specifies the operations that the researcher must perform to collect the required information (Polit & Beck 2008:77; De Vos 2002:35). On the other hand, Brink et al (2006:87) state that operational definitions assign meaning to a construct or a variable by specifying the activities or operations necessary to measure it. In addition, Mouton (1996a:189-190 in De Vos 2002:35) summarises the definition of concepts as follows; 'theoretical definitions specify the connotation of concepts and operational definitions make the denotations of a concept explicit'.

The following concepts have been identified and are described in order to get an interpretation of their theoretical and operational meanings and to allow consistency in the way the terms are used and understood in this study (Brink et al 2006:25; Burns & Grove 2003:201):

- **Challenges.** A challenge is a demanding or stimulating situation, the general state of things; the combination of circumstances at a given time (Collins 2002:1). The challenges in this study relate to those problems that affect the management of a large ICU.

- **Critical care nurse.** Is a professional/registered nurse who was trained at a recognised/accredited institution under the South African Nursing Council (SANC) Regulation (R212), as amended and who has successfully completed and registered for an additional qualification (post basic/graduate) for Medical and Surgical Nursing Science (Critical Care Nursing).

  In this study, a critical care nurse is a registered (professional) nurse who is responsible for ensuring that critically ill patients and their families receive optimal care within ICUs. There are two types of critical care nurses, meaning the registered nurse who has successfully undergone special training in critical care nursing

(according to SANC R212, as amended) (*ICU trained*), and one who is experienced to care for the critically ill patients in the intensive care unit, but who is not ICU trained (*non-ICU trained*). These nurses are also knowledgeable, skilled and experienced in the functions and operation of highly sophisticated equipment used in the unit to care for the critically ill patients. The concept critical care nurse is often used interchangeably with intensive care nurse.

- **Experience.** An experience is 'the knowledge or skill acquired over time; an event or occurrence that leaves an impression on one' (Webster [S.a.]). Experience in this context is involvement in an activity or exposure to events or people over a period of time that leads to an increase in knowledge or skill. It is the experience of working in an ICU and the management of an ICU over time.

- **Intensive care unit.** An intensive care unit (ICU) is a specialised section of the hospital that provides comprehensive and continuous care for persons who are critically ill and who can benefit from highly specialised treatment (http://www.adobe.com). In the context of this study, it is a specialist unit where critically ill patients are treated and nursed. It can also be referred to as a critical care unit.

- **Large intensive care unit.** A large ICU will be regarded as one which has 12 and more beds. In order to be considered a large ICU in this study, the ICU should be a level I or II unit. A level I ICU is one that is found in university affiliated tertiary referral hospitals. The unit could be run on an open or closed unit principle, have sophisticated equipment, manage a variety of critical illnesses and have 24 hour dedicated medical and nursing staff coverage. The ratio of nurse to patient should be typically one nurse to one patient (1:1) for critically ill patients and one nurse to two patients (1:2) for high care patients. Level II units describe those with a specific purpose, such as a coronary care unit, are similar to level I ICUs and are found in both public and private health care sectors.

- **Management.** Is the process of influencing others but with the specific intention of getting them to perform effectively and to contribute to meeting the organisations' goals (Tappen & Davis 2001:5). Kotter (1992 in Tappen & Davis 2001:7) states that management is coping with complexity and emphasises control. Tappen, Weiss and

Whitehead (2004:6) define management as planning, organising, commanding, leading and controlling the work of a given set of employees. Huber (2006:35) defines management as 'the process of working with and through individuals and groups; and other resources (such as equipment, capital and technology) to accomplish organisational goals'.

In the context of this study, management encompasses the planning, organising, leading and controlling of all activities within an ICU and also creating a therapeutic environment for the patients and their families, and nursing staff in the critical care unit. Management applies to facilities, equipment and supplies, finances, human resources and service delivery.

- **Strategies.** A strategy is a long term plan of action designed to achieve a particular goal, most often 'winning' (http://www.oxforddictionaries.com/). According to Muller, Bezuidenhout and Jooste (2011:569), a strategy is a plan of action that prescribes resource allocation and other activities for dealing with the environment and helping the organisation to attain its goals. A strategy is 'a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem' (http://www.managementstudyguide.com/swot-analysis.htm).

  In the context of this study, strategies are proposed solutions to the challenges encountered by critical care nurses in the management of larger critical care units. Strategies are written guidelines to empower the critical care unit manager to effectively manage the unit in order to create a climate conducive to providing quality care.

- **Unit manager.** The nurse unit manager is a professional nurse that has been formally authorised to manage a nursing unit by virtue of the post description and designated lines of authority within a nursing service or hospital (Muller 2002:45). In this study, it is a critical care nurse who is responsible for the overall management of the unit; in the form of carrying out all the activities of the management process.

Terms that are ***used interchangeably*** in this study are:

- Critical care nurse: Intensive care nurse
- Critical care unit: Intensive care unit
- Challenges: Problems

1.7 THEORETICAL FRAMEWORK

The theoretical framework of a research study helps the researcher to organise the study and provides a context in which a problem is examined and how data is gathered and analysed (Brink et al 2006:24). These authors further mention that the framework interrelate concepts to create a specific way of looking at a particular phenomenon (Brink et al 2006:24). From the two types of frameworks, a theoretical framework is based on propositional statements resulting from an existing theory whilst a conceptual framework is rooted in a specific conceptual model (Polit & Beck 2006:500). Furthermore, Polit and Beck (2008:141) posit that a conceptual framework provides a perspective regarding interrelated phenomena. In contrast, Burns and Grove (2005:731) indicate that a conceptual model refers to 'a set of highly abstract, related constructs that broadly explains a phenomenon of interest, expresses assumptions, and reflects a philosophical stance'.

There are various models that are applicable to studies and which can be used as frameworks. This study used Donabedian's (1969:1833-1836) model for evaluating the quality of health care in view of the management activities (Muller 2002:105) as the theoretical framework. Donabedian's model was appropriate for this study as it encompasses the structure, processes and outcome standards of quality care which can be applied to the management process. Donabedian's quality framework (1969, 1988 & 1992) is based on the following three standards, in the quality of care dimensions:

Structure includes the skills of the staff, the buildings, equipment and supplies, and the policies and procedures that the organisation makes available. In the ICU, the structure means the environment in which care is delivered; the size of the unit, the physical layout, and resources required for delivering care; the facilities made available such as

the human and material resources; and the procedures and policies to carry out efficient and quality management of the unit.

Process is the method adopted by the organisation to provide its services, or in its production process. Process is also the conduit through which management conforms to the standards and expectations of the unit (Donabedian 1969:3). In the ICU context, the process includes the actual procedures and practices implemented by staff in their prescription and delivery of care, and the management of the unit.

Outcome is the combined results of the structure and process of the organisation in the delivery and management of its services. The outcomes of this study pertain to the desired effective management of large ICUs (Donabedian 1969:24). Donabedian's model and the four components of the management process are used to guide this study.

According to Swansburg and Swansburg (2002:22), to manage is to forecast and plan, to organise, to command, to coordinate and to control. Muller (2002:105) presents the management process as follows:

Planning. Involves assessment of the unit, where the needs of the patients in the unit are determined and the resources are identified. The external forces impacting on the functioning of the unit such as policy changes within the nursing service and new legislation are identified (Muller 2002:115). Also, the internal environmental analysis of personnel for competency (knowledge, skills and attitudes) to perform the expected job, motivation of the staff, equipment and supplies, policies and authorisation are assessed, in order to design the strategies to address the needs.

Organising. This is the orderly structuring of the various functions to ensure smooth running of the unit (Muller 2002:107). It includes the organisation of work such as routine activities in the unit and personnel allocation.

Leading. This is also referred to as directing and it involves how the unit manager influences staff to follow a direction (Huber 2006:40; Muller 2002:107).

Controlling. Is the responsibility to promote quality nursing care, cost effectiveness and efficiency in the unit. Standards are set to promote quality within the unit (Muller 2002:107).

Donabedian's framework and the activities of the management process are discussed in detail in Chapter 2.

1.8 INTRODUCTION TO METHODOLOGY

Methodology is a blue print for conducting the study that guides the researcher in planning and implementing the study in order to achieve an intended goal (Burns & Grove 2005:211). The steps, procedures, and strategies used for gathering and analysing data for this study (Polit & Beck 2006:504) are introduced.

1.8.1 Methodological approach and design

A mixed method sequential design was followed (Morse & Niehaus 2009:17), where a qualitative approach, with an exploratory and descriptive design (as a core component) was used, supplemented with a quantitative component (consensus acquisition) after the qualitative component had been completed (Morse & Niehaus 2009:17; Polit & Beck 2006:245). The study was conducted in two phases in which Phase I was divided into two (2) steps (1 and 2), and entailed qualitative data collection and analysis (Creswell 2003:215). Phase II entailed quantitative data collection and analysis; and the development of strategies to overcome the challenges in the management of a large ICU. Phase II also portrays the outcome of the research, in that the strategies are presented. A detailed description of the phases is discussed in Chapter 3. Table 1.1 highlights phases I and II of the research process.

Table 1.1 Phases I and II of research process

<table>
<tr><th colspan="2">Phase I</th><th>Phase II</th></tr>
<tr><td colspan="2">Compilation of evidence in preparation for the development of strategies to overcome challenges in the management of large ICUs</td><td rowspan="2">Development of the strategies</td></tr>
<tr><td>Step 1</td><td>Step 2</td></tr>
<tr><td>Explore and describe the challenges experienced by the critical care unit managers in the management of large ICUs</td><td>Explore and describe the challenges experienced by critical care nurses in the management of the large ICUs</td><td rowspan="3">Develop strategies to overcome the challenges and meet the needs of the critical care unit managers in the management of large ICUs</td></tr>
<tr><td>Identify and describe the needs of the critical care unit managers, in relation to the management of the large ICUs</td><td>Identify and describe the needs of the critical care nurses, in relation to the management of the large ICUs</td></tr>
<tr><td colspan="2">Explore and describe other research studies regarding the management of ICUs</td></tr>
</table>

1.8.2 Population and setting

A population is the entire set of individuals or subjects who have common characteristics pertaining to a field of study and the target population is the population in which a researcher is interested and to which the results of the study will be generalised (Polit & Beck 2008:761, 767). The target population for this study was critical care nurses (registered nurses) working in large critical care units of the selected hospitals in Gauteng Province.

1.8.2.1 Sample and sampling

A sample is a subset of the population elements, and sampling is the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made (Polit & Beck 2008:339). Non-probability, purposive sampling was used (Polit & Beck 2008:340). The sample and sampling method for the different steps are discussed in detail in Chapter 3.

1.8.2.2 Data collection

Data collection is the process of acquiring the participants and collecting data for the study (Polit & Beck 2006:498; Burns & Grove 2003:298). Individual and focus group interviews were used to collect data in the different steps of Phase I. An interview involves verbal communication between the researcher and the participant during which information is provided to the researcher (Burns & Grove 2003:284, 376). The collection of data was conducted in the two steps of Phase I, related to the objectives of the study. The steps together with their purpose and objectives are explained in detail in Chapter 3 where the research methodology is further described.

1.8.2.3 Data analysis

Qualitative data analysis methods were used through the descriptive methods of analysis by Tesch (1990:135 in Creswell 2003:192). Data was transcribed and coded. The researcher and independent coders analysed the results. A consensus meeting was held to agree on the themes and categories. Data analysis is explained in detail under the different phases in Chapter 3.

1.8.2.4 Phase II

This phase included synthesis and integration of the evidence from Phase I and literature review was used to validate the findings in order to develop strategies. Preliminary strategies were developed from the findings of Phase I and literature support. The preliminary strategies were operationalised, evaluated according to adopted criteria and then presented to a group of external evaluators as interim strategies, for review and validation. For Phase II, quantitative data was collected and analysed in the form of consensus acquisition. Final strategies were then developed following validation of the interim strategies and expert opinion by external evaluators. Table 1.2 summarises and outlines the research methods for the different phases.

Table 1.2 Research methods for the different phases

Phase I Compilation of evidence in preparation for the development of strategies to overcome the challenges in the management of larger ICUs					
Objectives	**Steps to compile evidence**	**Data collection**	**Population and sample**	**Data analysis**	**Methods detailed in**
1. To explore and describe the challenges experienced by the critical care unit managers in the large ICUs in relation to management 2. To identify and describe the needs of the critical care nurses, in relation to the management of the large units	Exploring and describing the challenges experienced by the critical care unit managers and nurses working in the large ICUs	Qualitative: in-depth interviews and focus group interviews	Level I and II hospital ICUs in Gauteng Province: Critical care unit managers and critical care nurses working in the ICUs of the selected hospitals in Gauteng Province	Open coding of interviews	Chapters 3 and 4
	Identifying and describing the needs of the critical care nurses, in relation to the management of the larger units	Qualitative: in-depth interviews and focus group interviews	Critical care unit managers and nurses working in the ICUs of the selected hospitals in Gauteng Province	Open coding for interviews	Chapter 3
	Reviewing research reports and literature regarding the management of ICUs	Retrieval of information using electronic data-bases and hard copy search	Qualitative and quantitative research reports and books	Critical appraisal of documents regarding strength of evidence and relevance in context	Chapters 2 and 4
Phase II Development of the strategies					
3. To develop strategies to overcome the challenges and meet the needs of the critical care unit managers and nurses in the management of large ICUs	Integrating and synthesising results from Phase I: steps 1 and 2	Quantitative: evidence from Phase I Literature support Preliminary strategies	Critical care nurses: expert group Interim strategies	Recommendations from evaluators Inductive and deductive reasoning, integrating and synthesising Development of final strategies	Chapters 5 and 6

1.9 ETHICAL CONSIDERATIONS

Research ethics compels health professionals to comply with the ethical guidelines when conducting research. Ethical considerations were adhered to by obtaining ethical clearance from the academic institution, permission to conduct the study from the relevant authorities, and adhering to the ethical principles that guided the researcher. The fundamental ethical principles as outlined by Burns and Grove (2005 in Brink et al 2006:32) were adhered to in order to protect the participants in this study. Ethical considerations are described in detail in Chapter 3.

1.10 STRUCTURE OF THE THESIS

Chapter 1 : Orientation to the study

Chapter 2 : Contextualising the study theme

Chapter 3 : Research methodology

Chapter 4 : Descriptive data analysis (Phase I)

Chapter 5 : Discussion of data and development of the strategies (Phase II)

Chapter 6 : Conclusions and recommendations

1.11 CONCLUSION

In this Chapter the introduction, the background and problem statement, and the purpose of the study were discussed. The objectives and significance of the study were also outlined. Also the research methodology was introduced. The next chapter will describe the literature background, the conceptual framework for the study and the activities of the management process in more detail.

CHAPTER 2

CONTEXTUALISING THE STUDY THEME

2.1 INTRODUCTION

According to Hart (2003:13), a literature review is the selection of available documentation (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain views on the nature of the topic and how it is to be investigated; and the effective evaluation of these documents in relation to the research being proposed.

There are arguments against using a literature review in qualitative studies. The researcher acknowledges the critics' views about doing a literature review in a qualitative study, therefore bracketing was necessary. In the context of this study, the researcher is aware of the threats of the literature review and thus, only used the literature background to contextualise the study theme. The purpose of contextualising the study theme was to orientate the reader on the context of the setting. As a result, the literature background in this study helped to identify gaps in the knowledge and understanding of the context and functioning of large ICUs, and to focus the study (Streubert Speziale & Carpenter 2003:21).

The literature background described Donabedian's model as the theoretical framework for the study and explained the activities of the management process. The literature background also examined the functioning of intensive/critical care units and the management of these units, substantiated by the researcher's observations in the clinical field. In addition, the review critically analysed the literature on critical care nurses and nursing care in an ICU; the nature of management of ICUs, and challenges encountered with the management of ICUs. The review included literature from sources from the library, internet and journals. Materials were selected from multiple databases such as Pub med, Cochrane library and search engines such as CINAHL and MEDLINE.

2.2 THE THEORETICAL FRAMEWORK

Brink et al (2006:23) assert that a model is described as 'a symbolic depiction of reality'. It provides schematic representation of certain relationships among phenomena, and it uses symbols or diagrams to represent an idea'. To add, Polit and Beck (2008:141) argue that a framework provides a perspective regarding interrelated phenomena. Donabedian's model of quality care was used as the theoretical framework for this study. Donabedian's approach consists of the interdependence between the structure, process and outcomes standards; and can well be applied to the quality of the management process. Although the literature focuses on the provision of quality nursing care when applying Donabedian's model, in the context of this study the application will be on the management of large ICUs.

2.2.1 Donabedian's model of quality of care

Donabedian's three standards of quality are discussed; namely, structure, process and outcome standards. These standards are related to the management activities which will be discussed later in this chapter. Figure 2.1 depicts a schematic representation of standards of quality in the management of an ICU adapted from Donabedian's Model (1988:1746).

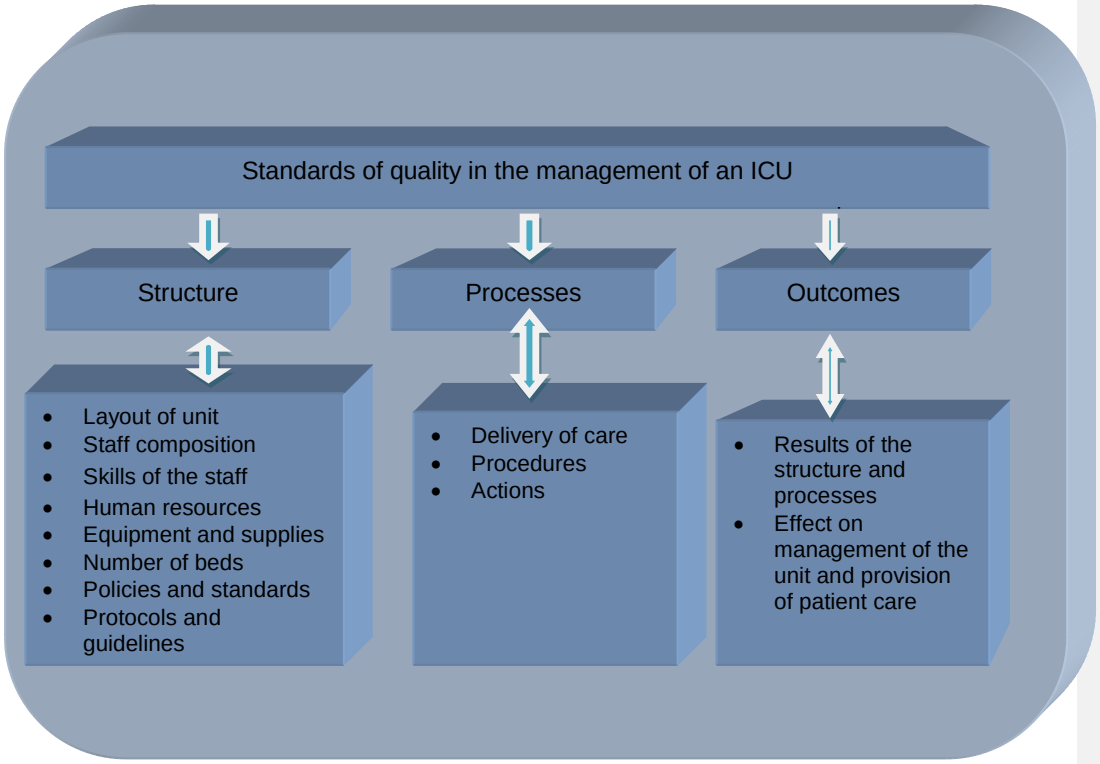

Figure 2.1 Standards of quality in the management of an ICU

(Adapted from Donabedian 1988:1746)

2.2.1.1 Structure

Kartz and Green (1997:92) mention that the structure of the nursing unit and the activity that makes the delivery of care possible is called the structural standards. The structure includes the physical layout of the unit, the environment in the unit, philosophy and goals, and staffing levels. It is worth noting that these are things that cannot be changed or altered at will without affecting the process and outputs of a system. According to Swansburg and Swansburg (2002:526), structure standards describe the environment in which care is delivered. As a result, the structure standards influence the planning function in the management process. Donabedian's model identifies the structure dimension as encompassing the facility, staff; their knowledge and attributes; and equipment and supplies.

Dikmen ([S.a.]) notes that structure entails the attributes of settings where care is delivered. Dikmen ([S.a.]) further indicates that the structure characteristics include the

size, and type of facility and the qualification of providers in the unit. The physical environment, layout and characteristics, finances, budget, human resources, equipment and supplies, vision, mission, policy and procedures, and management style in the intensive care units are included as structure in the context of this study. Large ICUs are highlighted in the discussion that follows.

2.2.1.1.1 The physical environment of the critical care unit

According to Donabedian's Model, the physical environment of a unit refers to the structural standards. In addition, Monahan et al (2007:193) indicate that the physical environment of a critical care unit is different from that of the other units and ordinary wards. The unit is designed, equipped and staffed to meet the anticipated needs of patients in life-threatening situations. Furthermore, the layout is frequently a modified circle that allows for direct visualisation of all patients at all times (for example, in a specific private hospital observed by researcher).

Patients may be separated into cubicles with glass windows or situated in a large open area with curtains for partition (e.g. a specific public hospital ICU observed has a bed capacity of 20, divided into three (3) cubicles with six (6) beds in each cubicle and two side wards. In each cubicle, the patients were separated from each other with curtains); or a combination of cubicles and open plan in cases of very large critical care units with more than twenty beds (for example, in another private hospital ICU observed, the unit has a bed capacity of twenty three, of which fifteen beds were each contained in separate glass cubicles and eight beds were situated in an open plan area, separated from each other by curtains). Each bed should have its own equipment and supplies including a nurse responsible for providing nursing care to the patient as a standard norm in the unit.

There may be one or several nurses' stations, with the central nurses' station, or all the stations containing sophisticated central monitoring and even video equipment that enables nurses to continuously monitor vital data of each patient. Most importantly, this central monitor helps the nurses to recognise changes in the individual patient's conditions whilst doing other administrative duties at the nurses' station; such as when answering the phone, receiving stock or addressing visitors. This is evident in most of the intensive care units in Gauteng Province, in both public and private sector hospitals.

Thus, in the context of this study, the size of the unit should contain 12 and more beds to be regarded as large. The physical layout usually has the same characteristics as previously mentioned in the general physical layout of an ICU. The different ICU structures are developed to enable easy accessibility to view the patients, maintain privacy and ease workflow.

Design literature refers to layout of a unit as linear, cluster or radial depending on the space and size of the unit. These types of layout are commonly used in ICUs because of the larger number of beds available in the unit. In *linear layout*, patient rooms may be clustered in groups of six to eight, with a centralised nursing station at the centre of each group. The central station is where charts, orders, medications and supplies are concentrated. The nursing station functions as the heart of patient care activities and allows responsive access to all patient rooms and good visibility to the patient rooms in close vicinity to the nursing station. The advantage of linear layout is that there is physical proximity and visual accessibility to people and other areas of the unit. The disadvantage of linear layout include amongst others, long walking distances for nurses and restricted visual control over patient rooms further away from the nursing station (Morelli 2007:14; Shepley 2002:238).

In the *cluster designs* patient rooms are organised around the nursing station, dedicating one station as a main nursing location or entry reception station. Clustered unit designs are aimed to eliminate centrally located nursing stations, to place the provision of drugs closer to patients and to take full advantage of visibility. Patient support services are decentralised with each room consisting of six to twelve beds and one decentralised nursing station with amenities for charting data and preparing medication (Morelli 2007:15; Wade 2006:35).

The *radial nursing unit design* is organised around nursing sub-stations within each unit and maximises visualisation of patient rooms. Nurses have an unobstructed view of each patient room from each decentralised nursing station (Morelli 2007:16). Radial units are space consuming and tend to be smaller in bed numbers which increases construction and staffing costs. Radial unit design cannot accommodate an adequate number of private rooms without a waste of central core space (Wade 2006:37).

2.2.1.1.2 The staffing models of an intensive care unit

Lee (2002:1-2) indicates that some hospitals may devote separate units to the care of patients with specific critical care needs based on disciplines such as those mentioned by Monahan et al (2007:192), namely, cardiothoracic, pulmonary, general and surgical ICUs**.** Evidently, this is the case in both public and private hospitals in Gauteng Province, South Africa. Notably, some hospitals have a single critical care unit which is said to be multidisciplinary or general in terms of the different patients they admit. Lee (2002:2) further explains that the characteristics of the intensive care units vary in organisation and structure; however, three commonly used staffing models are the following:

- **Open model:** is used mainly in the United States, and it is where any physician with privileges to admit patients into a specific hospital oversees the care of his or her patients in the ICU (also used in some private hospitals in Gauteng Province, South Africa). Different doctors have consulting rooms in a specific hospital or around the hospital. They consult with their patients and if need be, admit them to the specific hospital. Each of the doctors who admit a patient to the intensive care unit is responsible for the care and treatment of that patient until the patient is discharged from the unit or is referred to another doctor. Significantly, the advantage is that the patient is seen by one doctor and as such there is only one line of authority to deal with the patient. However, the disadvantage is that one unit has to deal with a number of different doctors for different patients. As such, there will be many different protocols of care for the patients in one unit (Lee 2002:2).

- **Closed model:** patients requiring intensive care are transferred to the care of a critical care specialist (intensivist) or a team of intensivists who assume full responsibility for the patient while she or he is in ICU (used in public hospitals and also some private hospitals in South Africa, Gauteng Province). There are doctors who are called intensivist, because they specialise in intensive care. These doctors work mainly in the critical care units and oversee the care of the patients admitted in the critical care unit for the rest of the patient's stay. The advantage is that there is always a doctor available to attend to the patients' problems; however, the same doctor may not be able to prescribe specialised treatments. It is pivotal that there should always be consultation with the primary doctor who admitted the patient in

the unit for other specialised forms of treatment. Nevertheless, this may prolong a patient's stay in the unit whilst waiting for the primary doctor. The intensivist is also not given full authority to decide when the patient can be transferred out of the unit, but has to wait for the doctor in charge of the patient (Lee 2002:2).

- **Semi closed model:** this model is similar to the closed model except that the admitting physician maintains close contact with the patient in the ICU even though the onsite intensivist manages the patient's care (used in some of the public and private hospitals in Gauteng Province, South Africa). In this case, the intensive care unit has got a resident doctor (onsite intensivist) who is consulted before admission of the patient. The resident doctor oversees the patient during his or her stay in the unit, and the referring doctor simultaneously comes to see the patient and directs the care and treatment together with the resident doctor until the patient is discharged from the unit. This model also has its own advantages and disadvantages which may cause some of the problems in the management of larger ICUs. The problems will be explored from the participants' point of view (Lee 2002:2).

The BACCN (2010) indicates that the staffing and the nursing team in a critical care unit typically comprise of registered nurses, advanced critical care practitioners, critical care outreach nurses, and practice development nurses, who are supported by assistant critical care practitioners and health care assistants.

2.2.1.1.3 Human resources: categories of nurses and the management team

Nurses are the key players in critical care units. The level of care needs required by each patient should equate to the skills and knowledge of the registered nurse delivering and/or supervising that care (BACCN 2010:4). In South Africa, different categories of nurses, namely, registered nurses, ICU trained as well as those without an ICU qualification but experienced in ICU care, plus enrolled nurses take care of the patients.

However, the enrolled nurses fulfil their function under the supervision of the registered nurses. More often, registered nurses without critical care experience and enrolled nurses would also work in these areas. This situation is brought about mainly by the shortage of staff as the registered nurses without an ICU qualification and the enrolled

nurses are not specially trained to work in the specialised units such as ICUs (researcher's observation). In addition, there is a tendency to also add auxiliary nurses and care workers in ICUs. As a result, the experiences, attitudes and commitment of these nurses contribute to the challenges in the effective and efficient management of the unit.

The management team in the ICU consists of physicians, surgeons, ICU nursing manager and critical care nurses, and also the collaborative multidisciplinary health team. The multidisciplinary health team includes representatives from pharmacy, physiotherapy, nutrition, radiology, infection control, social and support services. According to the BACCN (2010:4), a supernumerary clinical co-coordinator, who is a senior critical care qualified nurse, will be required for larger and geographically diverse units of more than 6 beds. The clinical co-coordinator's role is to ensure that effective, safe and appropriate care is delivered during each shift, by managing and supporting staff and patients, and acting as a communicator and liaison person between the rest of the multidisciplinary team.

2.2.1.1.4 Equipment and supplies

Equipment and supplies should be readily available for each bed including cardiac and respiratory monitoring systems. The types of equipment and supplies required will be dependent on each patient's condition.

2.2.1.1.5 Large intensive care units

McKee and Healy (2002:19) indicate that the 15 countries of the former Soviet Union have by far the most hospitals with some very large and others with small units. In contrast, in Central and Eastern Europe countries, they have fewer but very large hospitals with a bed capacity of about 1000 beds. With the challenges related to the provision of hospital beds, Western Europe has experienced a decline (steady but gradual) in the number of acute beds (McKee & Healy 2002:19) which is referred to as downsising. In the United States hospitals have undergone structural changes due to mergers between hospitals that occurred in the 1990s (Furnholmen & Magnussen 2000:29).

Mathivha (2002:22-23) indicates that in South Africa, ICU beds account for 1 to 2% of acute care beds. Acute care beds are those that are meant for patients in ICUs that are from casualty, operating theatre and high care, and from the general wards as emergencies. The same acute care beds are basically the available ICU beds. However, in the private sector, acute care depends on the availability of a bed in ICU. All the beds are guaranteed to admit patients as this is not dependent on the number of nurses on duty. Consequently, this also brings about problems with admission criteria for the doctors. Patients have to be admitted according to their acuity levels but are dependent upon the availability of a bed, equipment and a specifically trained nurse. If a bed is not available in one public hospital in Gauteng Province, a patient may be transferred to another public hospital where a bed is available, within the same province.

The intensive care beds demand depend on the activity of the hospital with additional beds required for specific specialties. According to the researcher's observation, large units in Gauteng Province have been established to meet the increasing demand for intensive care nursing. The nature of hospitals differs amongst countries but there is a common problem with the concept of a 'bed'. For instance, in the European context, a 'bed' is said to be shorthand for an entire package that includes the nurse, supporting staff and advanced monitoring equipment (McKee & Healy 2002:18). In an ICU, structure focuses on the setting in which care takes place, including facilities, equipment, critical care nurses as care providers, policies, procedures, records, and the nurses' knowledge and expertise.

2.2.1.1.6 Policies and standards

A list of the current policy and standards used in each ICU should be available in the unit and within the hospital. The ICU should continually update the policies and standards in use. These documents should also be available for viewing. The policies should include the job descriptions of various categories of staff, clinical procedures, administrative policies and procedures, infection control policies and criteria for admission to the ICU.

2.2.1.1.7 Protocols and guidelines

Protocols and guidelines for nursing care such as nursing procedures (including care bundles), nursing practice guidelines, standing order sheets and management of staff in ICU are also essential to serve as information to standardise activities and ensure delivery of quality care.

In conclusion, as the structure influences the planning function in the management process, the structural unit input dimensions of nurse staffing, the knowledge and attributes of the nurses and supervision, and equipment and supplies will be discussed under planning in the management process. The vision, mission, philosophy, policies and goals of each unit vary according to the individual hospital and will be discussed under the management activities of planning.

2.2.1.2 Process

Process is the manner in which activities or interventions take place in the unit (Muller 2002:102). Process standards are related to organising in the management process. According to Dikmen ([S.a.]), process standards indicate whether or not good practices are followed. This author further mentions that the process dimension includes services offered, technical quality of service, counselling, and quality of interpersonal relationships, access and safety (Dikmen [S.a.]). In an ICU, the process standards involve all the management activities that are performed in managing the unit and caring for the patients. Notably, process standards are indicators for measuring nursing management activities to determine whether the standards are met including planning and organising, delegation and supervision. The management activities will be discussed following outcomes standards.

2.2.1.2.1 Delivery of care

The delivery of care should include defining clinical roles and best practice models. Critical care units should employ flexible working patterns as determined by the unit size, activity, case mix and the fluctuating levels of care for each patient, to ensure patient safety and care delivery.

2.2.1.2.2 Procedures

Procedures, protocols, and standards of the unit, designed in line with the hospital policies should be designed that will help in the delivery of processes in the unit.

2.2.1.2.3 Actions

Critical care nurses should be proactive in the development of multi-professional team working to optimise quality patient care (BACCN 2010:3).

2.2.1.3 Outcomes

Outcomes are the results obtained through implementation and completion of the process standards (Muller 2002:102). Outcomes relate to the results of the management and care processes. They are influenced by planning, organising and controlling of the management process. To add, Dikmen ([S.a.]) indicates that service outcome dimensions include client satisfaction and perceptions of quality and efficiency. Noteworthy is that, outcome standards refer to the impact the management process has on a large unit in the provision of patient care, or the results to be achieved. Effective intensive care unit management is viewed in relation to the outcome standards.

2.2.1.3.1 Results of the structure and the process

Structure and process standards can be measured; for example, measure if equipment and staff are readily available, and if the nurses are competent. A particular outcome is chosen to measure a particular performance, in which case structure and process can be manipulated if the outcome is not satisfactory. Thus, the strategies developed will help in the management of larger ICUs.

2.2.1.3.2 Effect on management of the unit

The structure as the context in which health care is delivered affects the process and outcomes of ICU patient care and management of the unit. For example in this study, if the unit is big, there may be a shortage of nurses, equipment and supplies; and patients

may not receive optimal care. Outcome standards indicate the combined effects of structure and process standards, thus promoting up to date management in the unit.

2.2.2 Management process

Muller et al (2011:562) define management as the process by which human, financial, physical and information resources are deployed to facilitate attainment of the organisational goals, objectives and outcomes, by applying the management activities of planning, organising, leading and controlling. Huber (2006:37) indicates that the management process is a rational and logical process based on problem solving principles.

Management is working with people and their actions in order to achieve a specific goal (Muller 2002:107). In addition, Muller (2002:107) is of the opinion that management consists of various processes for which the same manager or different managers assume responsibility. Huber (2006:35, 888) posits that management is the process of coordination and integration of resources through planning, organising, leading and controlling to accomplish specific institutional goals and objectives. As a result, organisational goals are met through the application of skills, the use of resources, leadership and manipulation of the environment in which the inputs are represented by human resources and physical and technical resources whilst the outputs are the realisation of the goals.

Contextually, management can also be applied to nursing organisations. For example, Huber (2006:35) defines nursing management as 'the coordination and integration of nursing resources by applying the management process to accomplish nursing care and service goals and objectives. On the other hand, Swansburg and Swansburg (2002:28) indicate that nursing management is the process by which nurse managers practice their profession. The management activities will be discussed in relation to the ICU as a nursing unit.

In an intensive care unit context, patient care management refers to the functions and activities within the unit and the critical care nurses are the people carrying out these activities. Even so, there is a unit manager who takes the final accountability for the management activities in the unit and the critical care nurses who are not managers are

solely responsible for patient care only and some of the activities of the management process in relation to their allocated patients. For example, when the unit manager is engaged in organising equipment and supplies for the whole unit, the critical care nurse responsible for patient care is responsible for organising equipment and supplies for the specific patient/s under his/her care. However, these activities are sometimes difficult to achieve, owing to the problems encountered in relation to the daily management of the units. Figure 2.2 depicts a schematic representation of the four basic management components and their sub-functions.

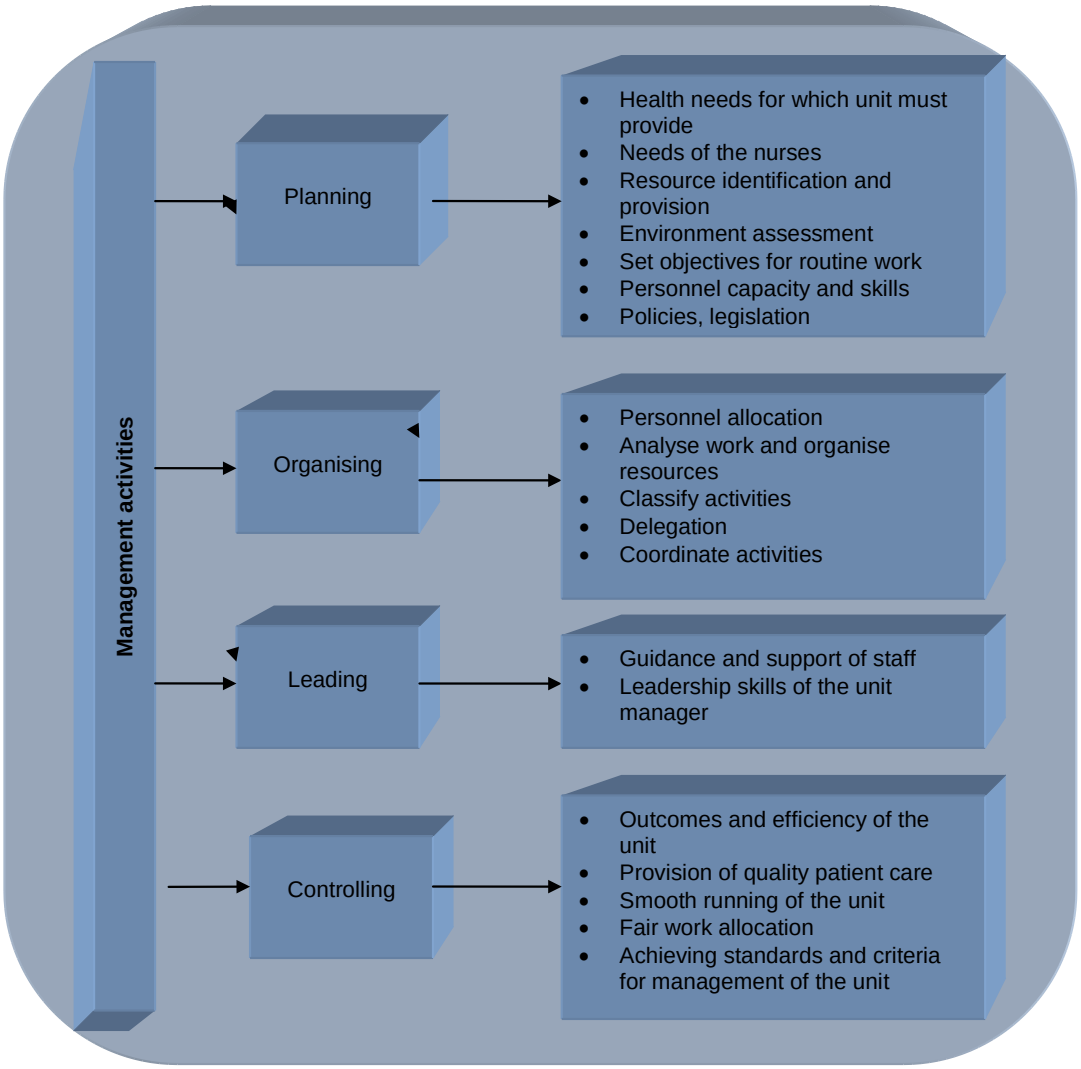

Figure 2.2 The management process

(Adapted from Muller 2002:105)

2.2.2.1 Planning

Planning is the first phase of the management process. Roussel (2006:225), and Swansburg and Swansburg (2002:58) define planning as developing a plan of action to provide for the foreseeable future. Similarly, Meyer, Naude and Van Niekerk (2004:131) explain planning as a process of setting goals and deciding how to achieve them, driven by a strategic plan of the unit. Moreover, Huber (2006:35) indicates that planning is determining long and short-term objectives and the corresponding actions that must be taken to achieve the goals. To add, Roussel (2006:244-225) indicates that planning includes selecting missions and the objectives to achieve them; and what should be done on a daily, weekly or long-term basis.

Planning involves having a clear vision about current and future activities which should be executed in a nursing environment, particularly in the ICU. As Swansburg and Swansburg (2002:58) mention, the planning process is a systematic process that requires knowledgeable activity based on sound management theory. According to Booyens (2001:64), planning as the first phase of the management process involves deciding in advance what to do, how and when to do, and who will do it. Booyens (2001:70) further state that planning enhances communication and teamwork, measures performance and should be done in steps.

Steps in the planning process are

- identifying the objectives of the unit and expected outcomes
- determining realistic actions in view of the availability of personnel, time and equipment
- allocation of resources such as equipment and supplies
- providing policies and procedures to specify how the work should be done
- logical planning sequence of activities
- identifying the environmental factors that will influence the unit in order to anticipate problems accurately
- identifying strategies to handle problems in the unit (Booyens 2001:70)

Muller et al (2011:25) indicate that there are levels of management in the planning process; namely, top management, middle management and first-line or operational management. Furthermore, Roussel (2006:226) and Swansburg and Swansburg (2002:58) explain that in the process of strategic planning for a unit, written statements of the purpose, vision and values, mission, philosophy and objectives of the unit are formulated. Strategic planning looks ahead 4-5 years and is done by top management. The internal and external environments are analysed to identify the strengths, weaknesses, threats or challenges that may arise. The planning phase should thus include:

- Identifying the mission of the unit.
- Conducting an environmental analysis.
- Analysing the situation to identify the strengths, weaknesses, opportunities and threats (SWOT) in the ICU.
- Establishing the goals, identifying the strategies to reach the goals, and setting objectives to achieve the goals in the management of a large ICU.

The following concepts related to planning are explained in the context of the ICU:

- Vision: provides the image/dream of the future the ICU seeks to create. Vision is a practical tool offering goals to be achieved (Roussel 2006:215).
- Mission: describes the purpose for which the ICU exists. The mission provides information or inspiration that clearly and explicitly outlines the way ahead for the unit (Swansburg & Swansburg 2002:81). It should contain the principles and standards understood by the critical care nurses including the culture of the unit. It motivates the critical care nurses to accomplish simple tasks in a relatively complex working environment.
- The philosophy: is a guide or framework for action and states the values and beliefs (Swansburg & Swansburg 2002:84) pertaining to nursing management and practice within the ICU. Values give meaning to the right way to do things, thus the right way to manage a large ICU.
- Goal: is the broad statement of what should be achieved in the ICU.
- Objectives: are specific statements derived from the goals and clearly state how activities should be accomplished. According to Roussel (2006:221), goals are

concrete statements that become the standards against which performance can be measured. They can be applied to all resources such as physical, financial and human resources.

All these concepts explained in the context of an ICU will provide a conceptual description of an ICU, describe the services in the specific context in which the ICU functions and provide information on the large ICU's desired future, intentions and convictions. It is further mentioned that as planning is put into action, other management functions of organising, leading and controlling are implemented; making management functions interdependent (Roussel 2006:226; Swansburg & Swansburg 2002:58). However, Levenstein (1985 in Huber 2006:38) identifies three errors that can create planning flaws as:

- Errors of fact: the plan is based on misinformation.
- Errors in assumptions: the plan is based on incorrect assumptions.
- Errors of logic: the plan is based on faulty reasoning.

These planning flaws can be identified as the factors that will influence the management of the unit and can affect the organising, leading and controlling activities.

In the context of an ICU, planning involves collection, analysis and organisation of data that will be used to determine the nursing care needs of patients and the management plans that will provide resources/processes to meet the needs. In an ICU, the kinds of data that can be collected and analysed for the purpose of planning are:

- Daily average patient census in order to anticipate the workload for the day.
- Bed capacity and percentage of occupancy in order to plan for human and material resources.
- Average length of stay of the patients in the unit to determine the average use of the resources and establish outcome standards.
- Acuity of illnesses and dependency to plan for staffing.
- Diagnostic and therapeutic procedures to be done in order to acquire the different and necessary equipment and supplies.

- Environmental analysis of forces impacting on nursing from within the unit; such as, availability of nurses, their level of training and competency.

According to Huber (2006:39), planning activities include the laying out of work to be done, determining the use of the resources and establishing the standards for evaluation. Some factors to determine staffing needs include the following:

- The type of service (critical care), levels of care provided by the unit (ICU, High Care or combined).
- Patient admissions, types and indications.
- Demand for intensive care nursing, the profile of an ICU patient, severity of illness and demand from within/outside hospital admissions/refusals/unmet demands.
- Acceptable staffing norms and availability of support staff.
- Actual number of staff currently available and potential new recruits.
- Mortality and length of stay of patients in ICU (Gillespie et al 2006:52).

For efficient planning in the ICUs, it should be well-equipped with human resources in the form of both trained (qualified) and experienced critical care nurses. The skill mix of staff should be applied in consideration of the competency of the staff. Furthermore, equipment should be in effective working order and the supplies should be available and sufficient to meet the requirement of a 'bed'. Policies and procedures should also be in place to ensure efficient management of the unit and provision of quality patient care.

2.2.2.2 Organising

Organising is concerned with the implementation of the plan (Muller et al 2011:27). According to Huber (2006:35), organising is mobilising the human and material resources of the institution to achieve organisational objectives. The author further indicates that organising is the management function related to allocating and configuring resources to accomplish the set goals and objectives (Huber 2006:39). To add, Roussel (2006:114) defines organising as 'the process of grouping the necessary responsibilities and activities into workable units, determining the lines of authority and communication, and developing patterns of coordination'.

During organising, resources are organised to sustain the philosophy, achieve the vision and accomplish the mission and objectives of the unit (Roussel 2006:114). Huber (2006:39) states that organising is building up material and human structures with a goal to get the human, equipment and material resources mobilised, organised and working. In this case, a relationship should be established between the workers and the environment, that is, the critical care nurses and the critical care unit.

Organising as a verb entails:

- Identifying and grouping activities, that is, division of work
- Prioritising activities
- Communication
- Delegation
- Coordinating activities (Huber 2006:40)

Organisation is the way in which the unit is 'formally structured in terms of division of labour, communication channel, operational units and management levels that work together to achieve the goals/objectives that have been planned' (Schermerhon 2008:237). There is authority and communication between departments and positions. Organisational principles such as unity of command, chain of command, span of control and division of work, responsibility, authority, accountability, power and delegation are also included in organising (Smit et al 2007:189).

- *Unity of command*: with unity of command, subordinates should only report to one supervisor.
- *Division of work:* division of work involves allocation of tasks or delegation of duties.
- *Chain of command:* chain of command links subordinate, supervisors and management with someone at the next level of command.
- *Span of control:* span of control refers to the number of subordinates that report to a manager or supervisor.
- *Responsibility, accountability and authority:* responsibility is the obligation to achieve goals (operational, tactical and strategic), make decisions and give instructions. Accountability implies being finally accountable for activities executed under command (Smit et al 2007:189).

Organising is work divided, resources arranged and activities coordinated. In the ICU, organising involves the type of work to be accomplished in terms of management of the unit, that is, direct patient care, the kind of nursing personnel needed to accomplish this work, the resources needed and the supervision needed (Swansburg & Swansburg 2002:297). Organising is coordinating the activities in order to attain the objectives of the unit (Booyens 2001:309). Organising also entails division of work where the workload is divided into activities that can be performed by different staff members, coordination of nursing care, nursing delivery systems, scheduling of staff, and requisition and control of stock and supplies. In any unit, delegation and accountability remains with the unit manager.

Staffing and nurse patient ratio are also important when dealing with the management activity of organising. According to the March 1996 report, 'The Registered Nurse Population', by the United States Department of Health and Human Services (DHHS), there were 273,850 nurses in the US who cared for critically ill patients in the hospital setting. Notably, critical care nurses account for an estimated 24 percent of the total number of nurses working in the hospital setting in the USA (http:www.nursesource .org). In South Africa, the shortage of nurses was confirmed in a study conducted by Gillespie (2006:50-56) in the Western Cape.

Because of the general decline in the number of trained nurses, including critical care nurses in South Africa (Subedar 2006:43), the staffing problems are managed by the use of other categories of nurses such as enrolled nurses and registered nurses without ICU experience (novice nurses) in these specialised units. However, Zondagh ([S.a.]) and the British Association of Critical Care Nurses (BACCN) (2001:59-63) are of the opinion that safety and quality of patient care are directly related to the skill mix and direct nursing care. Ideally, in an ICU, the nurse to patient ratio is supposed to be 1:1 for all ventilated patients and patients on ionotropic support. Several international studies revealed that insufficient staffing result in increased errors and patient risks. Several other researchers also found similar findings in this regard (Aiken, Clarke, Sloane, Sochalski & Silber 2002:1987-1939).

Changes in the workforce composition and availability contribute to the challenges in coping with health care delivery. Green and Owen (1995:48) mention that the changing population structures affect not only the demands for care but also have implications for

the pool of staff that can be recruited to a hospital. Certainly, the increasing immigration of the health care workforce with some countries actively recruiting health professionals from other countries (McKee & Healy 2002:48) also contribute to the changes in the workforce.

2.2.2.3 Leading

Leading, which is also referred to as directing, is the process of guiding the activities of the personnel in the unit in an appropriate direction. This will depend on the leadership style of the unit manager (Meyer et al 2004:132). Huber (2006:40) refers to leading as directing which is establishing a direction and influencing people to follow that direction. The function of directing involves actions of supervising and guiding others within their assigned duties. In the ICU, this is done through support and supervision by the unit manager.

Leading is a physical act of nursing management, the interpersonal process by which nursing personnel accomplish the objectives of nursing and it initiates and maintains action towards the desired objectives (Swansburg & Swansburg 2002:383). Similarly, Roussel (2006:175) defines leading as a process of influencing a group to set and achieve goals including empowering employees, improving quality which leads to motivation of staff. The unit manager in the ICU is responsible for leading the critical care nurses in their quest for delivering quality patient care.

2.2.2.4 Controlling

Controlling is also referred to as evaluating. Swansburg and Swansburg (2002:518) explains controlling as ‘seeing that everything is being carried out in accordance with the plan which has been adopted, the orders which have been given and the principles which have been laid down’. Muller et al (2011:39) declare that ‘control is the process by which management ensures that the organisation’s goals are accomplished and the actual performance compares favourably with the predetermined standards’. Roussel (2006:10) mentions that controlling is comparing performance with standards.

According to Booyens (2001:310), controlling is an ongoing process in which present performances are compared with the pre-established standards. Standards are agreed

upon levels of performance negotiated within available resources and quality care assurance is necessary through the standards (Booyens 2001:310), thus the use thereof. Huber (2006:35) mentions that controlling is comparing the results of work with predetermined standards of performance and taking corrective action when needed. Furthermore, controlling is monitoring and adjusting the plan, process and resources to effectively and efficiently achieve the goals (Huber 2006:41).

2.3 THE INTERDEPENDENCE BETWEEN DONABEDIAN'S MODEL AND THE MANAGEMENT PROCESS

The management process activities of planning, organising, leading and controlling are applied to Donabedian's model in terms of structure, process and outcomes of management. According to Donabedian's Model (1988:1746), processes are constrained by the structures in which they operate. In practice there appears to be several problems that make it impossible to meet the management objectives of the larger intensive care units. To overcome these problems, the unit needs measures that will drive the desired strategies into actions to improve the management of the unit continuously. The strategies will be based on the interdependence between Donabedian's model and the activities of the management process. Figure 2.3 summarises the interdependence of these two processes.

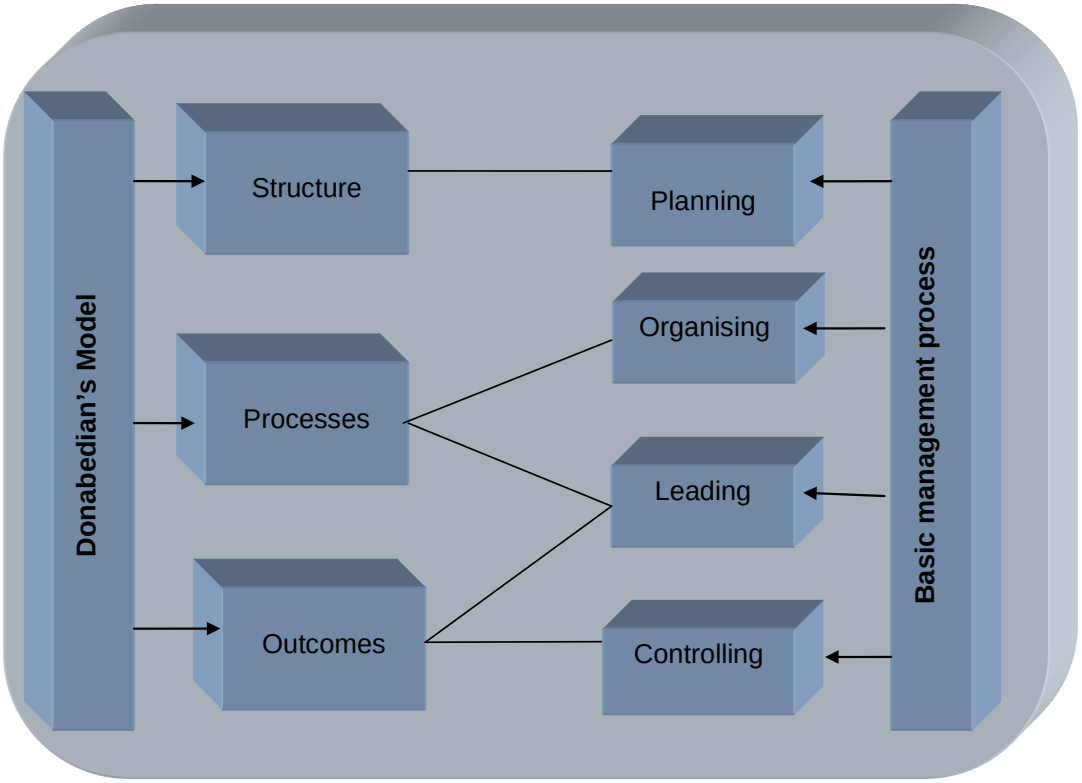

Figure 2.3 Schematic representation of the interdependence between Donabedian's model and the management process
(Adapted from Donabedian1988:1746; Muller 2002:105)

The diagram indicates the interdependence between Donabedian's model and the management process by relating structure to planning, process to organising and leading, and outcomes to leading and controlling**.**

2.4 CRITICAL (INTENSIVE) CARE UNITS

Critical care is health care provided to the critically ill patients during a health crisis, usually within a general multidisciplinary or in a specialised critical care unit. On the other hand, critical care patients are those who are at high risk of actual or potential life threatening problems (Urden et al 2006:4). Historically, the first intensive care units emerged in the 1950s as a means to provide care to very sick patients who needed one to one care from a nurse. It was from this environment that the speciality of critical care nursing emerged.

The delivery of critical care as it is today, originated from the need to centralise the specially trained personnel and equipment in a specialised area of the hospital, to optimise the care of the critically ill and injured patients (Monahan et al 2007:192). According to Monahan et al (2007:192), critical care units continue to be unique, high paced environments in which the most sophisticated medical, nursing and technical interventions are integrated to combat life threatening illnesses. These units are referred to by different names that identify the type and intensity of patient care offered such as, coronary, cardiac and neuro-critical care units.

Urden et al (2006:4) note that there are different types of, or a variety of settings for critical care, namely, adult, paediatric, neonatal intensive care units, step-down, and progressive or transitional care units. These names are also used to identify the types of critical care units in South Africa.

2.4.1 Levels of ICUs

Gillespie, Kyriacos and Mayers (2006:51-52) define an ICU as a designated hospital area specifically equipped to provide level I care for critically ill patients, capable of providing comprehensive critical care including complex multisystem life support such as mechanical ventilation, renal replacement therapy, ionotropic support and invasive cardiovascular monitoring. According to a report by the Department of Health in the United Kingdom (UK), Level I patients need advanced respiratory support such as endotracheal intubation and mechanical ventilation (BACCN 2001:59).

In a study on ICUs worldwide, Mathivha (2002:22-23) mentions in an overview of critical care medicine in South Africa, that South African ICUs are structured and graded according to the 1983 National Institute of Health Consensus Development Conference. The organisational structure is such that the units are graded from level I-IV as follows:

2.4.1.1 Level I units

Level I units care for the complicated, critically ill patients requiring the continuous availability of sophisticated equipment, specialised nurses and physicians with critical care training. These units are subdivided into Level 1A (academic) and Level IC (comprehensive) units. Both Level I units provide comprehensive critical care, but Level

IA units have an additional academic mission. Level I academic units require the additional commitment of the clinical staff to education and research in the field of critical care medicine (http://www.mihealthandsafety.org/icu/12.htm).

Level I units in South Africa are found in university affiliated tertiary referral hospitals, mostly public sector hospitals and increasingly in private hospitals. These hospitals have a bed capacity of about three hundred (300) or more with several ICUs or one big ICU with a bed capacity of between 12 and 20 (researcher's observation). They are run on the closed unit principle, have sophisticated equipment and manage a variety of critical illnesses. The units have dedicated Medical Directors and 24 hour dedicated medical and nursing staff coverage (which may not be the case in private hospitals, except only in the casualty/emergency department). Typically, the nurse to patient ratio is 1:1 (Mathivha 2002:22).

2.4.1.2 Level II units

Level II units are described as those with a specific purpose, such as a coronary care unit, cardiac care unit or a neuro ICU. They are similar to level I ICUs in that they admit patients who need intensive care. The type of treatment is more specific depending on the special conditions, such as in coronary ICU where only patients with cardiac conditions and operations will be admitted, and neuro ICU where in only those with conditions of the neurological system will be admitted and attended by the specialists in those system such as cardiologists, cardiothoracic surgeons, neurologists and neurosurgeons respectively (Mathivha 2002:22).

2.4.1.3 Level III units

Level III units are public community hospital ICUs with limited invasive monitoring. These hospitals have a bed capacity of fewer than hundred (100) and ICUs with between 6-8 beds. The hospitals are commonly referred to as referring hospitals; because they do not have the sophisticated equipment and specialised staff to manage the critically ill. They refer their patients to the hospitals with level I and II ICUs. The patients in these units are referred to as High Care (HC) patients (Mathivha 2002:23).

2.4.1.4 Levels IV units

Level IV units are high dependency units. These private units cater for a small percentage of patients with medical insurance plans such as medical aid cover. The level IV ICUs are mostly found in the private hospitals and are separate from the main ICU (Mathivha 2002:23). The patients in these units are also referred to as High Care (HC) patients. They receive ordinary treatment but may use invasive procedures and monitoring equipment for observation. The level IV units can also be created in an ordinary ward in a public hospital, as a special room for high dependency patients.

While level I academic ICUs are located in the public sector; the private health care sector runs profit-driven level II-IV ICUs that are staffed by non-intensivists. Patient eligibility in all these units include those with problems such as immediate post operative complications, long term post operative complications, patients with conditions that are too complex for the ordinary wards such as those with organophosphate poisoning, respiratory and cardio respiratory problems.

2.4.2 The critical care nurse

According to nurses for a healthier tomorrow (http://www.nursesource.org/critical-care.htm), the concept of critical care nurse is very modern, yet the principles of her/his practice have been there for long. The concept of critical care nurse emerged as advances have been made in technology and patient care became more complex. These include patients who have sustained severe trauma that need special care, monitoring and resuscitation. These nurses then needed more specialised skills and knowledge to provide appropriate care and use delivery mechanisms for continuous monitoring and equipment.

2.4.2.1 The critical care nurse defined

The World Federation of Critical Care Nurses (WFCCN) (2005:2) defines a critical care nurse as a registered practitioner who enhances the delivery of comprehensive patient centered care, for acutely ill patients who require complex interventions in a highly technical environment; bringing to the patient care team a unique combination of knowledge and skills. The roles of critical care nurses are essential to the

multidisciplinary team who are needed to provide their expertise when caring for patients and their relatives (http://www.en.wfccn.org/).

A critical care nurse is a professional/registered nurse who was trained at a recognised/accredited institution under the South African Nursing Council (SANC) Regulation R212 as amended and has successfully completed and registered for an additional qualification (post basic/graduate) for Medical and Surgical Nursing Science (Critical Care Nursing: formerly termed Intensive Nursing Science).

In this study, a critical care nurse is a registered (professional) nurse who is responsible for ensuring that critically ill patients and their families receive optimal care within ICUs. There are two types of critical care nurses, meaning the registered nurse who has successfully undergone special training in critical care nursing (according to SANC R212, as amended) (ICU trained), and one who is experienced to care for the critically ill patients in the intensive care unit but is not ICU trained (non-ICU trained). These nurses are also knowledgeable, skilled and experienced in the functions and operation of highly sophisticated equipment used in the unit to care for the critically ill patients. In most cases, the critical care unit manager is always an ICU trained (qualified) critical care nurse who may have an additional qualification in Health Services Management, formally known as Nursing Administration in South Africa, or a qualification in Nursing Management.

2.4.2.2 The roles and functions of the critical care nurse

The critical care nurse practices in settings where patients require complex assessment, high intensity therapies and interventions, and continuous vigilance. This takes place in a variety of settings such as neonatal ICU, adult ICU, casualty and trauma areas, and operating rooms. ICU nurses fill a variety of roles such as bedside clinicians, nurse educators, nurse researchers, nurse managers, clinical nurse specialists (not known as such in SA) and nurse practitioners.

Dawson (2006:313), in identifying the role of the critical care nurse, indicates that the WFCCN (2005) states that, 'the role of the critical care nurse is essential to the multidisciplinary team needed to provide specialist knowledge and skills when caring for critically ill patients. The critical care nurse, who enhances delivery of a holistic patient

centred approach in a high technological environment, brings to this team a unique combination of knowledge and caring. In order to fulfil their role, nurses require appropriate specialised knowledge and skill not typically included in the basic nursing programmes of most countries'.

According to Dawson (2006:313-314), 'critical care nurses work in an ever more autonomous manner, with their nursing role expanding to include the management of highly technical equipment and the resultant decision-making based on the data produced by these advances'. The role of the critical care nurse was also highlighted by Monahan et al (2007:192) who state that the intensive care unit (ICU) is a highly specialised area which requires the most advanced nursing skills and knowledge. Furthermore, these authors state that the nurses/staff in the intensive care unit (ICU) are specially trained in critical care and in the function and operation of highly sophisticated equipment. Essentially, these nurses should keep abreast of developing trends and technology through continuing education.

Although, there are competing demands and responsibilities experienced by ICU nurses, yet they still hold unique positions to influence the way in which care is delivered which seems simpler in the eyes of the onlookers. As Ashword (1992:129) points out, 'nursing is not just the tasks nurses do, and that those who look only the surface level at what is very obvious see some equipment and activities which are different from elsewhere. Instead, they completely miss the essence of what is really happening; the skills and knowledge in use, the joys of achievements and the actual or potential dangers'.

Urden et al (2006:3) indicate that in the past, physicians depended on nurses to monitor for critical changes in the conditions of their patients and sometimes in the physicians' absence, nurses have to initiate emergency medical treatment such as resuscitation. This is still practiced today as critical care nurses play an important role in caring for the patients in the critical care units. Yet with this responsibility, it is observed that large critical care units have more problems in the provision of care, because of the shortage of trained staff, business of the unit, severity of the patients' conditions cared for and the environmental changes in the ICUs. In addition to all these roles, the unit manager is responsible and accountable for management of the unit.

2.4.2.3 Training and experience of critical care nurses

Knowledge, skills and attitudes needed for this specialised level of care is the reason the critical care nurses undergo specialised training which leads to an additional qualification in critical care nursing. In South Africa, *registered* (professional) nurses also undergo special training according to regulation R212, as amended, and on successful completion of the training are registered with the SANC for an additional qualification in Critical Care Nursing (specialties are different). This is besides prior learning gained during experience of working in ICU. The experience or prior learning becomes a prerequisite for training. During training, a large amount of time is allocated for clinical learning practice, to ensure safe delivery of care to the critically ill patients and efficient management of the unit on completion of the course.

According to Scribante and Bhagwanjee (2007:68), nurses practising in the critical care are generally given high levels of responsibility with high expectations of accountability but in the absence of authority. A lot of responsibility is placed on nurses in the critical care units after training; exacerbated by the high expectations of critical care patients and other professions on them as critical care nurses. The bedside critical care nurse is faced with a variety of demands. They have to solve the dilemma of managing and coordinating the visible science of critical care technology and the invisible art of nursing care (Dawson 2006:314). The professional nurse in ICU has a responsibility for decisions taken through legal liability in the following four areas:

- Criminal: the nurse is accountable to the public.
- Civil: the nurse is accountable to the patient and relatives.
- Professional: the nurse is accountable to SANC through the code of conduct.
- Contractual: the nurse is accountable to the employer (Dawson 2006:314).

Dawson (2006:313-314) further states that ‘increased technical and patient complexity requires greater education in order to maintain and develop skills, with an increasing awareness that basic nurse education does not develop the requisite levels of specialised skills and knowledge to practice safely within critical care units’. Consequently, the skills deficiency is exacerbated by a shortage of nurses, resulting in many critical care units employing nursing staff who did not undergo the relevant

training and education to develop the skills required to practice effectively in the critical care milieu.

The British Association of Critical-Care Nurses (BACCN), Critical Care Networks National Nurse Leads (CC3N) and the Royal College of Nursing (RCN) Critical Care and In-flight Forum have worked together to produce contemporary standards for nurse staffing in critical care. The standards are a review of past recommendations and take into account changes in practice, which then include skill mix in the form of health care assistants (HCAs) who have a key role in assisting registered nurses in delivering direct patient care and in maintaining patient safety. However, the registered nurse remains responsible for the assessment, planning, delivery and evaluation of patient care (BACCN 2010:2).

The issue of skill mix also becomes a problem when the scope for substitution of staff is by people with different skills whom should have the competence if not the credentials (Green & Owen 1995:48). Problems with skill mix substitution have also been identified by McKee and Healy (2002:213), as the delegation of tasks requiring direct supervision is usually more unacceptable in an ICU. In the US, delegation of tasks to less intensively trained staff has harmed the quality of care. With cost containment in the US in the 1990s, many registered nurses were replaced by health care assistants. In addition, McKee and Healy (2002:231) indicate that there is limited research studies published that have examined the implications of substitution by less expensive care assistants or aides for more expensive nurses in the country (for cost and quality). This is similar in South Africa where enrolled nurses are used to substitute registered nurses because of shortage of staff and also due to cost containments.

2.4.2.4 Shortage of critical care nurses

An international survey by the ICN in 2001 reported a widespread shortage of critical care nurses (Gillespie et al 2006:52). On the other hand, the WFCCN ’s position statement on the provision of a critical care nursing workforce, states that careful planning is required to ensure an appropriate balance of staff skills and attributes to allow for safe effective care and learning environment for novice critical care nurses when developing a nursing workforce (Gillespie et al 2006:51).

In a study by Stone, Larson, Mooney-Kane, Smolowitz, Lin, Andrew and Dickson (2006:1907), there are concerns about the general shortage of qualified nurses to provide patient care in the United States (US) in general. Notably, nursing shortages are evident and related to both increased demand and decreased supply of qualified nurses. The mentioned authors further posit that the decreased supply of qualified registered nurses is related to an ageing workforce, problems with recruitment and retention of personnel, and difficulty in recruiting young people into the nursing profession (Stone et al 2006:1907). This scenario is also seen in South Africa, as evidenced by the statistics of registered nurses from the SANC roll and adversely affects ICUs.

In many instances, the shortage of registered nurses is concentrated in speciality care areas particularly intensive care units and operating rooms. According to Stone et al (2006:1908), improving the work environment of ICU nurses should help in the recruitment and retention of nurses.

The availability of critical care nurses in South Africa is currently crippled by the general shortage of nurses. In a descriptive survey on the critical care workforce in South Africa conducted in Western Cape hospitals, Gillespie et al (2006:50) report that there is a global shortage of nurses. In addition, the shortage of registered nurses was reported internationally and confirmed in South Africa by the National Audit of critical care nurses. The purpose of the study was to quantify the nursing workforce and compare it with the requirements of critical care units in the Western Cape Province in 2005. The results of the study showed that the Western Cape has a deficit of 72% and 80% registered nurses in the public and private sectors respectively. About seven (7) educational institutions graduated 300 undergraduates and 80 postgraduates critical care nurses in 2004.

In 2006, the supply of nurses did not meet the needs of critical care units in the Western Cape. The number of clinical educators and mentors were also found to be inadequate. A shortage of all categories of nurses within the global health services was recognised as a global crisis (Gillespie et al 2006:50).

Despite the shortage of nurses, the number of patient admissions in ICUs per month is mostly greater than the bed occupancy; that is, there are more ICU patients than the

beds. For example, in one private hospital, in the month of December 2006 the unit admitted and nursed 136 patients in a unit that has 23 beds, of which only 15 beds were functional. Because of the shortage of equipment and staff, according to the nurses' roll call about 8-11 staff members, comprising of trained and experienced critical care nurses were needed on duty as the unit was full to capacity every day. Other categories of staff such as the enrolled nurses were amongst those on duty. As such, the nurse to patient ratio was 1:2, for all the categories of nurses almost every day (researcher's observation). The nurse to patient ratio of 1:2 means that one nurse is caring for two patients at a time.

In this regard, the ratio of nurses to patients is often one nurse to more than one or two patients because of the shortage of staff in the units (researcher's observation). Due to the shortage of appropriately trained and/or experienced staff, other categories of nurses such as enrolled nurses (EN) are also allocated to nurse the patients in the critical care unit, under the supervision of the registered nurse (RN) in charge of the unit or in charge of the shift. As a contingency plan, these other categories of staff are placed to overcome the shortage of ICU nurses, despite the nature of specialised care required in ICUs, and the inadequate ICU training of these nurses. Thus, the quality of management of the unit and nursing care may be hampered.

2.4.3 The challenges currently facing critical care nursing

According to Andrew Argent, the president of the Critical Care Society of Southern Africa (CCSSA), the challenges of critical care provision are not unique to South Africa. Many countries including the USA are finding that trained staff is in short supply and the situation is likely to remain like this for the future (Argent 2006:3).

In a study aimed to estimate the incidence of intensive care nurses' intention to leave due to working conditions, Stone et al (2006:1907-1912) report that the factors predicting the intention to leave were identified as organisational climate, staffing and material resources inadequacy, nursing management, nursing process, nurse physician collaboration, nurse competence and negative scheduling climate. In South Africa, an increased workload and the burden of disease have led to nurses leaving to go and work in other countries (Subedar 2006:45).

In the UK though, British nurses were concerned about the use of non-registered nurses in critical care areas, in view of the task that they are undertaking (Gillespie et al 2006:51). According to the researcher's anecdotal evidence, the same scenario is happening in South Africa, though there is no literature to support that. The category of these non-registered staff in South Africa is called care workers. They are mainly the support staff for performing duties such as bathing and turning the patients' positions. The BACCN also indicates that the effectiveness of the role of the assistants in critical care units requires further evaluation and research.

However, care workers are not registered with the South African Nursing Council and have been trained by private institutions which do not provide a clear scope of practice for these care workers. Besides the shortage of nurses, the challenges stem partially from the high expectations; such as in the advanced knowledge and interpretation of the patho-physiology of all body systems, prompt observation and physical assessment skills, the ability to quickly prioritise and make decisions regarding patient care, proficiency in operating the highly sophisticated equipment and the complex ethical issues.

2.4.4 Problems in the critical care units

In a study by Williams, Chaboyer, Thorsteinottir, Fulbrook, Shelton, Chan and Wojner (2001:208) a survey was conducted to identify the major issues and concerns for critical care nurses in their countries. Common issues for the critical care nurses were identified which included concerns over staffing levels, working conditions and educational standards and wages. The following were other concerns mentioned by Williams et al (2001:212); formal practice guidelines/competencies, work activity roles, teamwork, and relationships with doctors, formal credentialing processes, the use of technology, and equipment and supplies.

The following are some of the problems identified in the critical care unit:

- ***Lack of control over the critical care nurses' practice***

The practice of deploying the 'floating' nurse from one unit to another, or the so called redeployment in South Africa, especially during shortage of staff in certain units is a big problem for the critical care nurses. In Los Angeles (LA) in 2011, more than a thousand nurses went on strike in protest against this practice (http://www.news.xinhuanet.com/). Nurses spent their time doing non nursing jobs and mentioned that 50% of the time was not spent on direct nursing care. This contributed to some of the nurses leaving the profession and exacerbated the shortage and the workloads. As a result, the redeployment of floating nurses in the current nursing shortage has made matters worse, with high workloads and many hospitals routinely requiring nurses to care for more patients per shift than what is considered safe. To add, other hospitals are using temporary staff, usually nurses from private agencies to fill the gap. Some of the problems experienced with these agency staff are such as not knowing anything about emergency management in ICU and also having to supervise young interns and residents who are rotating in the area.

According to Coleman (1990:236-242), most hospitals are frantically planning recruitment strategies to attract new nurses for intensive care units. There are costs involved which are associated with the orientation of new nurses to ICUs. Other problems observed by the researcher are the lack of continuity in management, working long hours for both normal and overtime duties due to low wages earned, rapid and high turnover of staff due to burnout, lack of experienced staff and making use of sub-professionals such as enrolled nurses and non-ICU trained nurses who do not have experience. In addition to the mentioned problems, Crofts (2006:362) identified teamwork, communication and individual actions as some of the problems encountered in ICU.

- ***Problems of working as a team***

Crofts (2006:363) mentions that there are different expectations from other members of the team (like doctors, dieticians, etc.) which are directed to the nurses. According to Crofts (2006:363), health professionals see themselves as part of their own professional group first and their multi-professional team secondly. This practice results in care

which is organised and coordinated along strictly hierarchical lines rather than around the patient. For example, a patient may be seen as a trauma case by many doctors and the critical care nurse later stays with the patient, of which he or she must facilitate team work around the patient as there are a lot of expectations of other team members' role.

- ***Communication***

Communication is also a problem between professional groups such as nurses, doctors, management staff and families, wards, departments and between different hospitals. For instance the language used to interpret certain situations may bring about a break in communication, such as no bed meaning no space, no equipment and/or no nurse. This can also happen between the doctor wanting to bring a patient to ICU and the critical care nurse. Crofts (2006:365) mentioned that communication is the heart of effective patient care delivery. Collier (2011:53) confirms that communication must be effective and consistent to ensure good will and mutual respect.

- ***Systems in the unit***

Lack of protocols and guidelines, and professional practice also contribute to the problems encountered. Errors not reported for fear of reprisal, delays in treatment due to pharmacy not having drugs to supply and risk management incident forms are also mentioned. Also lack of protocols and guidelines regarding clinical ethics in relation to how end of life decisions were reached or improvement of practice; such as 'do not resuscitate' (DNR) but transfuse blood, continue ionotropic support, give boluses, keep on mechanical ventilation and wait for nature to take its course add to the problems encountered.

- ***Other problems***

Crofts (2006:366) identifies the following as other problems:

- transferring of patients between the wards/departments/hospitals, because it is time consuming

- no services over weekends especially by speech and language therapists, and dentists which delays the stay of patients in ICU, then there are no beds for eligible patients who come as emergencies
- no services in the evening, such as those mentioned above. According to the researcher's observation, even the unavailability of doctors in the private sector during certain hours, contributes to problems
- unavailability of ICU and high care facilities when needed, and lack of appropriately trained workforce to run the facilities are some of the problems. Operating theatre recovery room or wards are sometimes used temporarily when ICU beds are not available

➢ ***Orientation and mentoring***

Monahan et al (2007:196) indicate that lack of orientation and mentoring of novice nurses placed in the critical care units in terms of the development of clinical expertise; and the lack of emotional maturity needed for handling stress in the critical care environment is also a problem. The newly qualified nurses who are allocated in the ICU settings experience stress related to the expectations from colleagues, management, doctors as well as patients regarding performance and delivery of quality care. These novice nurses still experience reality shock with regards to the ICU environment, despite the fact that they are registered nurses. Because of the business of the unit and staff shortage, it is sometimes not possible to put them on orientation till they are well conversant with the work in the unit.

As for mentoring, this is still a problem in some of the public hospitals in South Africa. Mentors are not fully recognised, and the buddy system is used to an extent, but often, due to the staff shortage they (the knowledgeable buddies) have to shift from their duty as buddies to patient care, or perhaps even do both being a buddy to the new nurse and patient care at the same time. This is seen when they have to nurse a patient and at the same time have to help a new nurse to care for another patient. Ultimately, one aspect suffers, depending on the condition of the patient or busyness of the unit. Mostly, the budding function is neglected and the focus is placed on patient care as this is the priority need (researcher‘s observation).

2.5 CONCLUSION

In this chapter, the conceptual framework for the study was discussed based on Donabedian's model of quality care and the activities of the management process. The literature background was used to outline the key elements, major issues and practical problems related to the focus of the study. The background and history of critical care nursing indicating the different arguments were highlighted. The literature review included a discussion on management in the ICU in relation to planning, organising, leading and controlling, the roles of the unit manager and other critical care nurses, the composition of the staff in the unit, the structure of the unit, the processes of care and the problems in the ICUs and larger ICUs. This literature will be used again to validate the findings following on data interpretation in Chapter 4. In the next chapter, the research methodology and design will be described in detail.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology refers to the procedures undertaken by the researcher during the investigation to solve the problem or answer the research question (Brink et al 2006:191). The quality of research findings is directly dependent on the methodological procedures followed in the study. Therefore, a complete account of the way in which this study was planned, structured and how it was executed is described in this Chapter. This Chapter focuses in detail on the research perspective, research methods for the different phases and the measures to ensure trustworthiness.

3.1.1 Purpose of the study

The purpose of the study was to develop strategies to overcome the challenges and address the needs experienced in the management of large ICUs.

3.1.2 Objectives of the study

The objectives of the study were to

- explore and describe the challenges experienced by critical care unit managers in the management of large intensive care units
- identify and describe the needs of the critical care nurses in the large ICUs in relation to management
- develop strategies to overcome the challenges in the management of the large critical care units and meet the needs

3.2 RESEARCH PERSPECTIVE

The study used a mixed method sequential approach, with a qualitative research core component and a supplemental component in the form of consensus development which was quantitative in nature (Morse & Niehaus 2009:17, 25). The core and supplemental components were conducted sequentially (Morse & Niehaus 2009:29). In this study, the phenomenon of interest was management of a large ICU. The challenges and needs of unit managers in the management of large ICUs were explored and described. Limited research on the topic is available and it was thus anticipated that the findings could help develop strategies to overcome the challenges in the management of large ICUs. Critical care unit managers are involved in the management of large ICUs and the researcher sought to understand how the critical care nurse managers and critical care nurses identify, experience and describe the challenges they encounter in the management of large ICUs. Furthermore a group of expert critical care nurses was requested to validate the strategies.

3.2.1 Mixed method research

Mixed method research is the type of research in which elements of qualitative and quantitative research approaches are combined for the broad purposes of breadth and depth of understanding and corroboration (Teddlie & Tashakkori 2009:285; Johnson, Onwugbuzie & Turner 2007:123). Furthermore, Morse and Niehaus (2009:17-18) indicate that mixed method design consist of a core component and a supplemental component that is not complete in itself, within which one or more strategies drawn from another method is used. The qualitative approach was the core component of the main study and is dominant in the mixed method (Morse & Niehaus 2009:23). Mixed method research was found to be suitable for his study because of its iterative cyclical approach to research. This study included both deductive and inductive logic.

3.2.2 Qualitative research

Qualitative research focuses on the phenomenon of interest, about which little is known or has to be identified/named, where the in-depth probing is to identify the phenomenon (Polit & Beck 2006:19). According to Brink et al (2006:113), this approach focuses on the qualitative aspects of meaning, experience and understanding of human actions

from the viewpoint of the research participant in the context in which the actions take place.

De Vos (2002:79) states that qualitative research is a method that elicits participants' accounts of meaning, experience and /or perceptions; whilst Burns and Grove (2007:71) mention that qualitative research is a systematic, subjective approach used to describe life experiences and give them meaning. The above-mentioned authors further state that qualitative methods focus on understanding the whole and provides a process through which nurses can examine a phenomenon outside of traditional views (Burns & Grove 2003:357, 359; De Vos 2002:79). In addition, Pope and Mays (2006:5) explain that qualitative research studies people in their natural settings and this is referred to as Naturalism. The authors further indicate that qualitative research focuses on talk and action (words) rather than numbers (Pope & Mays 2006:8).

The study was conducted in the ICUs and the critical care unit managers were requested to describe the challenges they experience in the management of large critical care units and identify their needs. Experiences referred to the responses, incidents, activities, challenges and the problems that the unit managers could express. From their experiences, the challenges encountered in the management of large ICUs were explored and the suggested strategies to overcome the challenges were identified.

The critical care nurses not involved in the management of the unit were also requested to describe the challenges in the management of large critical care units and their needs were identified and described. Their responses were used as validation in a triangulation process for data collection and compilation of evidence for development of strategies to overcome the challenges in the management of large ICUs (refer to Chapters 4 and 5).

3.2.3 Quantitative research

Quantitative design uses a formal, objective and systematic process which uses numerical data to obtain information about the phenomenon (Burns & Grove 2005:23). The data collected in this phase was statistical in nature. The developed strategies to overcome the problems in the management of larger units were presented to a group of

expert nurses for validation. The responses were in a form of a scoring system (refer to Chapter 5, section 5.4.4).

3.2.4 Sequential research

Sequential design is one in which the supplementary component is conducted after the core has been completed. In this study, the quantitative component which included phase II was conducted after data analysis of phase I (Morse & Niehaus 2009:17).

3.3 RESEARCH DESIGN

The term research design means a plan that describes how the research will be undertaken (Burns & Grove 2003:42). Creswell (1998:2 in De Vos 2002:271) define design in the qualitative context as 'the entire process of research from conceptualising a problem to writing the narrative'. An exploratory and descriptive design, sequential in nature was used (Creswell 2003:210; Polit & Beck 2006:244). This was conducted in two phases, with Phase I being qualitative data collection and analysis; followed by Phase II being quantitative data collection (Creswell 2003:215). Phase II is the outcome of the research, where the strategies were developed, validated and presented.

3.3.1 Exploratory research

Exploratory research is a study that explores the dimensions of a phenomenon (Polit & Beck 2006:500). In addition, Polit and Beck (2006:21) state that exploratory research investigates the full nature of a phenomenon and other factors to which it is related. Through the interviews, the researcher explored the challenges encountered by the critical care unit managers and nurses in the management of large intensive care units. Possible strategies to overcome the challenges were also explored.

3.3.2 Descriptive research

Burns and Grove (2005:26) state that descriptive research provides an accurate account of the characteristics of a particular individual, event or group in real life situations for the purposes of discovering new meaning, describing what exists and categorising information. Burns and Grove (2005:26) further indicate that a descriptive

design may be used to identify problems with current practice, which supports the objectives of this study. The critical care unit managers, as well as critical care nurses were requested to describe challenges experienced and their needs in the management of the large ICUs.

3.4 RESEARCH METHODS FOR THE DIFFERENT PHASES

The research method outlines a detailed discussion of the actual application of the design. The strength and weaknesses of the methods are discussed in this Chapter. The research was done in two phases which are interdependent. The phases were planned and conducted for compilation of evidence in preparation for and the development of the strategies.

3.5 PHASE I

Phase I was collection and interpretation of empirical data for this study. It was divided into steps 1 and 2 which had the same purpose, but different target groups and methods of data collection. The general purpose and objectives of Phase I was as follows:

3.5.1 Purpose of Phase I

The purpose of this phase was to explore and describe the challenges and needs experienced by the critical care unit managers in the management of larger ICUs in order to develop strategies to address the challenges encountered in the management of these ICUs.

3.5.2 Objectives of Phase I

The objective of Phase 1 were

- to explore and describe the challenges experienced by the critical care unit managers in the management of large ICUs
- to identify and describe the needs of the critical care nurses in the large ICUs in relation to management

3.5.3 The setting

The setting refers to the physical location and conditions in which the data collection takes place in the study (Polit & Beck 2006:510). This study was conducted in the critical care units of the selected hospitals of a specific city in Gauteng Province, South Africa. Rationally, Gauteng province was selected because it is one of the three Provinces that have the majority of ICU beds in South Africa (Scribante & Bhagwanjee 2007:1311). Besides that, it is the province and city where the researcher resides and was therefore ideally and conveniently situated for prolonged engagement during data collection.

The City of Tshwane (known as Pretoria) is divided into areas such as metropolitan, northern, eastern and western regions and has 42 hospitals from the public and private sector. However, some of the hospitals do not have ICUs. The city was also chosen because of the concentration of populations in this area and because an estimated 70% of the population in this city have access to critical care services in these hospitals at different ICU levels.

Amongst the hospitals were two distinct academic hospitals; attached to the medical schools in Pretoria and some were big private hospitals belonging to different medical groups. The selected hospitals (both public and private) also serve as referral hospitals for other Provinces such as Mpumalanga, Limpopo and North-West, together with other regions of Gauteng Province; and some neighbouring countries such as Swaziland and Botswana. Furthermore, the hospitals were selected based on their diversity profile, as they provide care for a variety of patients with regard to geographic population, race, age and ethnicity. The hospital sizes and nursing practice in those hospitals were also ideal. However, only the hospitals with ICUs were selected for the purpose of this study. From the hospitals that had ICUs, the units were graded from Level I to IV.

As already stated in Chapter 2 (section 2.4.1.1), a level I ICU is one that is found in university affiliated tertiary referral hospitals which are mostly public sector hospitals. These hospitals have several ICUs or one big ICU with a capacity of between 8 to 16 and more beds (researcher's observation). They are run on the closed unit principle, have sophisticated equipment and manage a variety of critical illnesses. The units have dedicated Medical Directors and 24 hour dedicated medical and nursing staff coverage.

The nurse to patient ratio is usually 1:1. Level II units are those with a specific purpose, such as a coronary care unit, cardiac care unit or a neuro ICU. They are similar to level I ICUs in terms of sophistication and are found in both public and private health care sectors in this province.

The selected units had a maximum permanent staff capacity of about fifteen (15) in private hospital ICUs, and fifty (50) in public hospitals with a minimum of two (2) unit managers at one given time. However, in the absence of the unit manager, a trained critical care nurse is appointed to manage the unit and act on behalf of the unit manager. The setting characteristics for the selected hospitals were that the ICUs in these hospitals had at least twelve (12) beds or more and were regarded as large units. The units were categorised as medical, medical and surgical, surgical, multi-specialty or other according to the Centre for Disease Control and Prevention (CDC) and National Nosocomial Infections Surveillance (NNIS) system's definition of ICU types (CDC 2003).

3.5.4 Population

According to various authors (Brink et al 2006:123; Babbie 2004:190; De Vos 2002:198), population is the entire group of persons, elements or subjects that is of interest to the researcher or that meets the criteria the researcher is interested in studying. As stated earlier, the population consisted of:

- Hospitals with Level I and II ICUs.
- Critical care nurses including unit managers and ICU nurses (ICU qualified and non-ICU qualified) working in large ICUs.

The target population is all the elements, individuals or members that meet certain criteria for inclusion in the study (Polit & Beck 2006:259; Burns & Grove 2003:43, 491). The target population was the critical care nurses working in the critical care units of the selected hospitals in Gauteng Province, city of Tshwane (Pretoria), both public and private hospitals with level I or II ICU, with twelve (12) beds and more. The target population included critical care unit managers who are ICU trained and appointed as such; with experience of one (1) and more years working in any ICU including private and public hospitals, together with the other critical care nurses (ICU qualified and non-ICU qualified) but working in the critical care units. From the selected hospitals in the

specific city in Gauteng Province, the population of the unit managers and the critical care nurses were as explained in the setting (refer to 3.5.3) for the study.

3.5.4.1 Sample and sampling technique

A sample is a subset of a larger population selected by the researcher to participate in a research study (Brink et al 2006:124; Burns & Grove 2005:750) or a portion of the population to represent the entire population (Polit & Beck 2006:260). A sample was selected from a large population of hospitals with level I and II ICUs and the critical care nurses.

Brink et al (2006:124) further indicate that sampling involves selecting a group of people (sample) from a population in order to obtain information regarding the phenomenon in a way that represents the population of interest. Sampling technique is the method of selecting the sample or the individuals to be included in the sample (Brink et al 2006:125); and it includes non-probability (non-random) sampling methods (Burns & Grove 2005:750). A non-probability sampling method, namely purposive sampling was used. A non-probability sampling method refers to that which is made up of subjects whose chances of selection are not known (Parahoo 2006:471). Sample size is defined as the number of elements to be included in the sample and is affected by the research approach applied, for example quantitative versus qualitative research (Brink et al 2006:125).

Sampling or eligibility criteria are the characteristics that delimit the population of interest (Polit & Beck 2006:259; Burns & Grove 2005:342). Polit and Beck (2008:752) add that eligibility criteria are the criteria designating the specific attributes of the target population. Burns and Grove (2005:343) further indicate that a study may have inclusion or exclusion sampling criteria (or both). The inclusion sampling criteria are those characteristics that a subject must possess to be part of the target group whilst the exclusion sampling criteria are those characteristics that can cause a person or subject to be excluded from the target population (Burns & Grove 2005:343; Brink et al 2006:124).

3.5.4.1.1 Sampling of the hospitals and ICUs

Non-probability purposive sampling was used to select the hospitals. According to Burns and Grove (2003:255), purposive sampling involves the conscious selection of certain elements by the researcher to include in the study. Furthermore, Polit and Beck (2006:264) state that purposive sampling is based on the assumption that a researcher's knowledge about the population can be used to handpick the cases to be included in the sample.

Purposive sampling was based on the judgement of the researcher regarding hospitals that were representative of the study phenomenon, or which especially had large ICUs (Levels I and II) that were related to the question at hand (Brink et al 2006:133). The participants in these ICUs would be able to yield information as required by the purpose of the study based on their criteria for inclusion. As this study is qualitative, data gathering needs to continue until data saturation is reached. Five (5) ICUs from the selected hospitals in the Gauteng Province, namely; one (1) public hospital and four (4) private hospitals were used. Each of these hospitals had an ICU which was either a level I or II unit. It is worth noting that seven (7) hospitals were initially recruited for the study, one (1) hospital was used for pretesting of data collection processes and data saturation was reached after five (5) hospitals were used.

The criteria used to select the sample of ICUs in this study were that the ICU had to:

- be in a hospital which was situated in the selected city in Gauteng Province
- be a level I or II ICU
- have 12 and more beds
- be either a general (multidisciplinary) or specialised unit where patients with actual and potential life threatening health conditions are nursed.

3.5.4.1.2 Sampling of critical care nurses

Purposive sampling with sub-populations was used to select the critical care nurses for steps 1 and 2 of Phase I of this study. This selection process was ideal for the study because the different ranks of critical care nurses were grouped together and included in the different steps of data collection. The samples were composed as follows:

- Phase I step 1: Unit managers
- Phase I step 2: Critical care nurses who are not unit managers

There were sometimes ICU trained nurses who were often acting as unit managers in the absence of the appointed unit managers as indicated earlier, such as during the night, on weekends and/or when the unit managers were on leave. The sample consisted of critical care unit managers (appointed or acting) working in the critical care units. Non-probability, purposive sampling was used to select the unit managers (Polit & Beck 2008:362). Brink et al (2006:133) are of the opinion that purposive sampling is based on the judgement of the researcher regarding participants that are typical or representative of the study phenomenon or who are especially knowledgeable about the question at hand.

Veal ([S.a.]) indicates that purposive sampling requires selecting participants who are knowledgeable about the topic and who are experts by virtue of their involvement in specific live events. The participants must have undergone or be undergoing the experience of the event being studied, be able to reflect on, and be willing to share detailed experiential information about the phenomena. The Unit managers were selected purposively because they had experience of managing the critical care units for one and more years. Critical care unit managers were knowledgeable about the management of the large ICUs.

The researcher selected the critical care nurses who were not involved in the management of the unit because they had knowledge and experience of working in critical care units; and some often had to take charge of managing the units as shift leaders, especially during the night and/or on weekends when the unit manager was off duty. These critical care nurses could reflect on the management of the unit.

The critical care unit managers and nurses were selected based on their experience in the ICUs to provide information about the challenges and their needs in the management of large ICUs. To be included in the study, the critical care nurses had to be:

- registered nurses
- working in the critical care units at the time

- having one (1) and more years of experience of working in an ICU
- unit managers (appointed or acting)
- ICU trained or non-ICU trained critical care nurses responsible for patient care

Some of the nurses were excluded from the study because they did not meet the inclusion criteria. Exclusion criteria are those characteristics that would prevent the person from being included in the target population. Other categories of nurses such as enrolled nurses were also allocated to work in ICUs because of shortage of staff. Arguably, the issue of allocating enrolled nurses to these specialist units is currently debatable, considering their scope of practice. The following nurses were not included in the study:

- Enrolled nurses (because of their scope of practice).
- Critical care nurses currently not working in the critical care units (due to anticipated loss of touch with the current situation in the critical care units).
- The critical care student nurses on training (due to lack of experience in management of that unit).

3.5.4.2 Sample size and the scope of the study

The sample size is the number of study participants in a sample (Polit & Beck 2006:509). Participants who meet the eligibility criteria were included according to their availability and willingness to participate. The minimum sample size depended on the data collection method for the different steps in Phase I and the saturation of data. The participants were from each of the five (5) selected hospital ICUs. According to Polit and Beck (2008:357), there are no rules for sampling size in qualitative research. Data saturation guides the number of participants to be included in the study. Therefore, the sample size was determined by the saturation of information during data collection (Brink et al 2006:134) because the scope of the study was limited to the challenges and the needs in the management of a large critical care unit.

Saturation refers to the repetition of discovered information and confirmation of previously collected data (Streubert & Carpenter 1999:22). The topic of the study was clearly outlined and could therefore easily be discussed by the participants (unit managers and critical care nurses). With regard to the sample size, Veal ([S.a.]) also

mentions that the data, not the sampling units must be representative and the number of participants cannot be predetermined in qualitative research.

3.5.5 Data collection

Qualitative data were collected and analysed first in Phase I from the ICU managers by means of in-depth interviews and also from the critical care nurses who were not involved in management of the unit by means of focus group interviews. The aim was to explore and describe the challenges experienced by the unit managers and identify the needs of the critical care nurses in the management of large ICUs; and the possible strategies to overcome these problems.

It was ideal for the interviews to be conducted in the specific ICUs on appointment. The researcher chose to do the interviews in the ICUs because it is where it was possible to meet the unit manager and the critical care nurses at one given time. The interviews took place in April, May and June 2010 on week days, per appointment with different unit managers. A prior appointment was made to arrange with the unit managers regarding the date, time and venue of the interview. The arrangement of the venue was made in consultation with the unit manager and the hospital manager.

The unit managers and critical care nurses, who were on duty on the days that the interviews were scheduled, were interviewed according to their availability and willingness to participate. The interviews were personally conducted by the researcher with the assistance of an expert in qualitative research, who took field notes. The interviews were conducted in English as it was the language that all nurses understand and communicate in. The critical care nurses and unit managers were all well conversant with English.

The data collection process for Phase I, steps 1 and 2 was as follows:

3.5.5.1 Phase I, step 1

Qualitative data were collected by means of in-depth interviews with the unit managers of the respective ICUs, during which the researcher sought to gain insight into how the critical care unit managers described the challenges and identified their needs in the

management of large ICUs. At least one (1) unit manager from each of the five (5) selected hospital ICUs, that is, private and public, were included in the study, thus making a sample size of five (5) participants for Phase I, step 1. However, as mentioned before, this size depended on the saturation of data.

The interviews took place in the specific hospitals where the unit managers were employed as it was a convenient place for the managers considering the time constraints and other work commitments. The researcher observed that each of the units had a private unit manager's office, where the unit manager was able to carry out her administrative duties and hold private meetings. However, some of the unit managers' offices were not used as a venue to conduct the interview because of the anticipated disturbances such as phone calls and consultations from the staff in the unit. A quiet and private area within the unit, but away from the unit activities, distraction by noise from unit monitors and bells, and other ward interruptions was identified by some unit managers to conduct the interviews. In some units, the interviews were conducted in the unit managers' offices despite the anticipated challenges of disturbances and distractions.

3.5.5.1.1 The in-depth interview

An in-depth interview is a method of data collection in which the interviewer obtains responses from a subject in a face to face encounter (Brink et al 2006:151). According to Burns and Grove (2005:396, 740), an interview is a structured or unstructured verbal communication process between the researcher and subject during which information is obtained for a study. For this study, the communication was between the researcher and the unit manager to explore the challenges in the management of a large ICU. Brink et al (2006:151) state that the purpose of the research interview is to obtain information about human beings' opinions, attitudes, values and perceptions towards their own environment. In this regard, the unit managers were requested to provide information about the challenges they encounter in the management of large ICUs and to identify their needs in this regard.

An in-depth unstructured interview with one central question was adopted to develop a conversation with a particular purpose. To capture the exact description of the challenges and needs; and preserve spontaneity of the participants, probing follow up

questions were used, based on the responses from the participants. Individuals who were unit managers (appointed or acting) from each of the selected hospital ICUs were interviewed separately. The interviews continued until saturation of data was reached and took up to 45 minutes (the time could not be extended, owing to the fact that the participants were on duty). The researcher served as the interviewer and facilitator who controlled the interview as data became saturated.

According to Pope and Mays (2006:12), in-depth interviews are those in which one or two issues are covered in detail, and the follow-up or probing questions are based on what the interviewee says. In addition, an in-depth interview allowed the participants greater latitude in the answers provided and also allowed the researcher to clarify the responses of the participants. The researcher started the interview with a broad opening statement as a central question which was as follows:

'What are the challenges and needs you encounter in the management of a large critical care unit?'

Clarity and probing through follow-up questions followed the initial response in order to invite the participant to add information or elaborate on the topic (Brink et al 2006:152). The researcher felt that by asking about the 'challenges', it was broad enough to allow the participants to speak about both the needs and the problems encountered. Probing questions, amongst others, included the identification of the needs if it was not mentioned and possible strategies to overcome the challenges and meet the needs of the critical care unit managers in relation to the management of a large ICU.

3.5.5.1.2 Recording the interviews

An audio recorder was utilised to record the interviews. The participants agreed and were willing to be put on record. Field notes were written during the interviews and used to support what was recorded. Pope and Mays (2006:18) indicate that recording interviews can be in the form of notes written at the time of the interview, notes written afterwards and/or audio recording.

3.5.5.1.3 Advantages and disadvantages of an in-depth interview

Several research text books (Burns & Grove 2005:397; Brink et al 2006:147; Polit & Beck 2006:296) mention advantages of in-depth unstructured interviews. The researcher experienced that some advantages as stated in literature, were found to be similar in this study. Advantages were as follows:

- In-depth interview allowed the researcher to explore greater depth of meaning.
- A higher response rate was achieved.
- The information provided is assumed to be accurate.
- Non verbal behaviour and mannerisms could be observed.
- Questions were clarified immediately if they were misunderstood.

On the other hand, the disadvantages of an interview were that:

- Interviewing required more time from the interviewer than it is the case with self administered questionnaires.
- It would be costly, as training programs are needed for interviewers if a very large sample was used.
- Arrangements for interviews were sometimes difficult owing to time constraints.
- Sample size was limited due to a shortage of nurses who meet the inclusion criteria.
- There was inconsistency in data collection, with regard to the duration, from one participant to another which became a limitation of the study (Burns & Grove 2005:397; Brink et al 2006:147; Polit & Beck 2006:296).

3.5.5.2 Phase I, step 2

In step 2, focus group interviews were conducted to collect data from the critical care nurses. The interviews took place in the unit as it was also a convenient place to have the critical care nurses at one given time. Five (5) focus group interviews were conducted with one focus group interview from each of the ICUs of the selected hospitals until data was saturated. The unit managers were excluded in this step as they had already participated in step 1.

3.5.5.2.1 The focus group interview

According to Pope and Mays (2006:21), a focus group is a form of group interview that capitalises on communication between research participants to generate data. The aim of the focus group was to encourage people to talk to each other rather than to address themselves to the researcher (Pope & Mays 2006:26). In addition, Streubert and Carpenter (2003:29) indicate that a focus group is a 'semi-structured group session, moderated by a group leader, held in an informal setting, with the purpose of collecting information on a designated topic'. Similarly, Berg (1998:100) defines a focus group as 'either guided or unguided discussions addressing a particular topic of interest or relevance to the group and the researcher'.

3.5.5.2.2 Conducting and recording the focus group interviews

The researcher was the facilitator of the focus group and also guided the discussion by asking questions. The composition of the groups was based on the topic under investigation and in terms of knowledge. The groups were homogenous in terms of nursing practice in that only the critical care nurses involved in patient care were included, not mixed with the unit managers. However, the groups were heterogeneous in terms of age, gender and years of experience in the unit. With regard to the size of the groups, the number of participants in each ICU was at least 5-6 participants (Pope & Mays 2006:26).

The size of the groups or the number of people involved in the focus groups were correlated with the amount and quality of data collected. Though the researcher initially recruited seven (7) groups, there was no new information provided after at least five (5) group interviews. Consequently, no more focus group interviews were held as saturation was reached. The focus group interviews were conducted in the tea rooms of the units because that was where the nurses would feel relaxed and they were conducted in English.

As the aim of the focus group was to encourage people to talk to each other rather than to address themselves to the researcher (Pope & Mays 2006:26), refreshments were served during the interview. The interviews lasted at least twenty five to forty minutes. The interviews were also audio-recorded, as the participants consented. In addition,

field notes were taken in the form of recording on paper. The recorded focus group interviews were transcribed verbatim.

The central question was the same as in step 1 followed by the probing questions such as:

- Kindly describe the types of problems/challenges you experience in this unit.
- Does the size and design of this unit have an impact on the management of the unit?
- Are there systems in place that guide the management of this unit?
- What are the challenges currently facing this unit with regard to management?
- What is the impact of the challenges on the provision of patient care?
- What are your needs with regard to management of this unit?
- What aspect of the management of this unit do you feel is the most in need of improvement?
- What strategies can you suggest to overcome the challenges in the management of this ICU?

The order of the questions depended on the initial opening statement in order to describe the meanings critical care nurses attached to their experiences of working in a large ICU and how they made sense of the management of the unit (Pope & Mays 2006:4). Even though the probing questions were predetermined, the researcher was still flexible and was guided by the progress of the focus group and the discussions that emerged from the groups. Furthermore, the researcher as the interviewer was initially inactive but later urged the debates to continue by way of interventionist style (Pope & Mays 2006:26). The researcher also asked probing questions by giving practical incidents related to management of the unit that provided important insights to the group (Pope & Mays 2006:27).

3.5.5.2.3 Advantages and disadvantages of focus group interviews

Some of the advantages of a focus group interview that were found to be similar to the views of different authors in the literature were the following:

- The researcher collected a large volume of data in a brief period of time.
- The focus group interviews enabled the researcher to compare various participants' perceptions/experiences which could in turn lead to conclusions in terms of consensus of opinions or disagreements that were shared on the topic that was being explored (http://www.qualres.org/HomeFocu-3647.html).
- Group processes helped the participants to explore and clarify their views in ways that were less easily accessible in one to one interview.
- Group discussions could generate more critical comments than individual interviews (Pope & Mays 2006:24).
- Smaller groups were more manageable (McLafferty 2004:189).
- Participants were able to maintain anonymity due to group conversation (Streubert & Carpenter 1999:24).

The disadvantages of a focus group interviews were as follows:

- It was difficult to clearly audio record members' inputs when many participants were talking at the same time (Streubert & Carpenter 2003:30).
- There was sometimes domination by one speaker and differing opinions (Litoselliti 2003:56).

3.5.5.3 Recruitment of the participants

The participants were recruited prior to the initiation of data collection because appointments had to be secured with them. A thorough explanation of the purpose of the study and the procedure for interview was explained to the participants before data collection. Letters confirming permission to conduct the study were presented to the participants to ensure adherence to ethical considerations. Informed consent was sought in the form of a signed consent form by the participants who were willing to be interviewed and recorded. Ethical considerations were adhered to as outlined later in this chapter and in Chapter 1.

Over-recruitment of participants was done proactively with a view that there was a possibility of recruited participants not being able to attend, especially in the case of focus group sessions, which could potentially result in groups that were too small to

provide sufficient data. There were incentives in the form of ink pens which were offered to the participants at the end of the interview sessions as a token of gratitude for participating.

3.5.5.4 Pretesting the data collection method

One individual in-depth interview and one focus group interview were conducted in one of the recruited hospital ICUs (a public hospital which granted permission to conduct the study). The data collection method was pretested on the critical care nurses who met the eligibility criteria. No changes were made on the methodology; and the findings of the pilot were included in the final discussion of the study findings.

3.5.6 Ethical considerations

Permission to conduct the study was requested from the relevant authorities (Annexure A and D) and ethical clearance (Annexure C) was sought from the academic institution through which this study was conducted. Following permission obtained to conduct the study from the UNISA Ethics Committee of the Department of Health, Gauteng Province and the individual hospitals' management, the permission letters were presented to each individual participants prior to conducting the interviews. A written consent form (Annexure B) was signed by some participants, whilst others gave verbal consent, following a thorough explanation of the purpose of the study. Ethical considerations related to research were adhered to through the following principles of the Belmont Report (Amdur 2003:23; Polit & Beck 2008:170):

Respect for persons: the participants were treated as autonomous agents by voluntarily participating in the research. Informed consent was enabled and their privacy and confidentiality was protected in that their names did not appear in the report (Polit & Beck 2008:174). Only code numbers and dates were used to identify the audio records. The participants were assured that they had the right to withdraw from participating in the study without penalty (Amdur 2003:24; Brink et al 2006:31). No person was coerced, or to some degree forced to participate in this research. The consent forms were kept separate from the research document.

Beneficence: this is described by several researchers as the obligation to secure the well being of the research participants (Amdur 2003:26; Brink et al 2006:32). The subjects were treated fairly and protected from discomfort. The researcher did this by carefully structuring the questions for qualitative data collection. The participants were monitored for any sign of distress during the interviews to allow for possible discontinuation where necessary (Brink et al 2006:33). No harm was inflicted on the participants (Polit & Beck 2008:170). As this study was solely for academic purposes, the participants were informed that there were no financial benefits or remuneration. However, the participants could benefit when the research is applied, that is, through the implementation of the developed strategies.

Justice: this principle includes the right to fair selection and treatment of the participants (Brink et al 2006:33; Polit & Beck 2008:173). This research did not systematically select the specific class of participants (critical care nurses) simply because of their availability as opposed to the reasons directly related to the problem being studied (Amdur 2003:27). The critical care nurses were selected based on their experiences in the ICU to provide information about the challenges and their needs in the management of large ICUs.

Privacy: the privacy of the critical care nurses was maintained through confidentiality and anonymity (Polit & Beck 2008:174).

Confidentiality was maintained in that all information was treated with strict confidence and used only for the purposes of this study. According to Babbie (2004:65), confidentiality is guaranteed when the researcher can identify a given person's responses but essentially promises not to do so publicly. The participants were, however, informed that publication of the results and presentation of the study in the hospitals and conferences would be done as a means to disseminate the results (Brink et al 2006:34).

Anonymity is guaranteed when the researcher, not just the people who read about the research, cannot identify a given response by a given responder. Pope and Mays (2006:54) indicate it is difficult to preserve anonymity in qualitative research and as such change of names will be insufficient as the voices from the audiotapes and transcriptions may be identified. When anonymity was impossible, the researcher

pledged confidentiality by promising that no personal information would be passed on (Polit & Beck 2008:180). In addition, it was explained to the participants that the outputs that might be expected from the study (Pope & Mays 2006:55), such as remarks during the interviews would not be reported to their immediate supervisors/managers. Assuredly, it was also explained that the verbatim quotes would appear in the final report (Pope & Mays 2006:55) with no names identified; and that the copies of the transcripts would be removed from the final report.

Informed consent: Polit and Beck (2008:175) state that informed consent means that the participants have adequate information regarding the research, understand the information, and that they can withdraw from, or, decline to participate in the study voluntarily. However, Pope and Mays (2006:58) indicate that it is difficult to specify in advance which data will be included when obtaining informed consent. The information is based on the response/answer; thus unexpected themes may arise during the analysis. Openly recording field notes and repeating information after the participants, enabled participants to gauge for themselves what they deemed appropriate to have on the record (Pope & Mays 2006:58).

3.5.7 Data analysis

Data are the information collected by the researcher during the course of the study (Streubert & Carpenter 2003:467). Data analysis took place after data collection (Burns & Grove 2003:378) and data management began immediately before data analysis. According to Burns and Grove (2003:287), data management is a process developed by the researcher as a means of storing data in an organised manner. Regarding data preparation, verbatim notes from audio tapes of in-depth interviews and focus group interviews were transcribed to provide a record of what was said (Pope & Mays 2006:63).

Open coding was used and information was organised according to topics. Themes emerged and categories were formulated, together with their meaning units. The researcher did manual analysis of data, where colour coding was used to identify and differentiate the categories and their meaning units from the two sets of data collected in the different steps of Phase I. Further data analysis methods followed were according to

the descriptive analysis method of Tesch (1990:135 in Creswell 2003:192) which includes transcription and description, analysis and interpretation.

Transcription and description: This was done by reading and rereading the field notes and listening to the audiotapes in order to gain the necessary background information (Tesch 1990:142). Tape recorded interviews were transcribed verbatim and the information was categorised (coded) into topics in relation to what was said, and filed (Burns & Grove 2003:380). The topics are discussed in Chapter 4.

Analysis: The researcher identified essential features, clustered together similar topics and described the interrelationships amongst them (Tesch 1990:143). Meaning units were described from what was said. The meaning units informed the topics, leading to categories and themes. Categories were subsequently formulated from unique topics that occurred. Similarly Burns and Grove (2003:383) identify these as themes and patterns in data. Common challenges, needs and suggested strategies by the critical care nurses and unit managers were identified as themes and categories which were grouped together. The researcher analysed the data and the supervisors of this study acted as the co-coders during data analysis. The researcher and two supervisors of this study held a consensus meeting to agree on the themes and categories identified.

Interpretation: The researcher identified and summarised the content of each category and the identified meaning unit in order to come to conclusions (Tesch 1990:144). The literature was used to support the conclusions. The strategies suggested from steps 1 and 2 were identified and merged, and are presented later in Phase II.

3.5.8 Establishing trustworthiness

There are different frameworks and guidelines about achieving rigor in qualitative research. Trustworthiness refers to the best way to judge the quality of qualitative research. It is a factor by which the quality of research can be evaluated and reflects the confidence the practitioners can safely have in the research findings. To ensure trustworthiness, the researcher used Guba's model (Lincoln & Guba 1985 in Brink et al 2006:118; Polit & Beck 2008:539-540) of trustworthiness in qualitative research. This model provides the four criteria to judge rigor in qualitative studies (Krefting 1991:214) namely, credibility, transferability, dependability and confirmability.

Credibility: In qualitative research, credibility refers to, and includes the activities that increase the probability that credible findings and interpretations will be produced (Lincoln & Guba 1985:301; Brink et al 2006:118; Polit & Beck 2008:539). This was achieved through the activities of prolonged engagement, persistent observation, triangulation and member checking. A pilot interview was conducted with one unit manager and one pilot focus group interview with four (4) critical care nurses.

Prolonged engagement includes the time taken to achieve certain purposes (Lincoln & Guba 1985:303), but is even more than just that. During data collection, the researcher took time to build trust with the participants and in doing so, make sure that there is no misinformation. The researcher made occasional visits to the units and clarified issues of concern with the participants during these brief sessions prior and during data collection (Lincoln & Guba 1985:303). The researcher conducted all the interviews herself in order to obtain first hand information. Since the researcher is a critical care nurse, this made it easy to be accepted by the participants as prolonged engagement allows the participants to be accustomed to the researcher.

Triangulation was achieved by means of multiple data collection methods and different samples as used in Phase I of this study (step1 individual interviews with critical care unit managers and step 2 focus group interviews with the critical care nurses not involved in management in the units). Several authors are of the opinion that triangulation will make the data believable (Lincoln & Guba 1985:304; Polit & Beck 2008:543). Literature was also used to validate the data.

Persistent observation is important to identify those elements in the situation that are most relevant to the issue being pursued; thus focusing on them in detail (Lincoln & Guba 1985:306). In the study, the researcher informally requested information from the critical care nurses with regard to the issues related to the management of a large ICU and the needs of the critical care nurses thereof. This information was obtained during casual visits to the ICUs on a regular basis.

Member check is the process whereby data interpretation and conclusions are verified with the members from whom data was originally collected (Lincoln & Guba 1985:314). The researcher asked the participants to reiterate their statements just to make sure if that was what they meant in order to verify the information. The data from the field notes

were also shared with the participants to verify the information collected during the interviews. This was done to confirm that the information captured and the meanings that the critical care nurses wished to impart regarding their challenges and needs in the management of large ICUs were indeed accurate. Krefting (1991:219) highlights that the strategy of revealing the research data to the participants will ensure that the researcher has accurately translated the participants' viewpoints into data.

Transferability: This is the extent to which the findings from data can be transferred to other settings or groups (Lincoln & Guba 1985:316; Polit & Beck 2008:539). This criterion refers to the probability that the findings will have similar meanings in similar situations. The findings of this study are limited to the critical care units from the hospitals that were included in this study; however, the developed strategies can be used in other ICU settings with similar problems.

Krefting (1991:216) indicates that transferability is more the responsibility of the person wanting to transfer the findings to another situation than that of the researcher of the original study. Krefting further mentions that it is critical for the researcher to provide background information about the participants, research context and the setting to allow others to assess how transferable the findings are (Krefting 1991:220). Transferability was further extended by presenting the originally formulated strategies to different evaluators who are critical care nurses responsible for the development of guidelines for critical care nursing in South Africa, whose input could be used by hospital managers and ICU managers to overcome the problems in managing large ICUs.

Dependability: This refers to the consistency of the findings (Lincoln & Guba 1985 in Brink et al 2006:119) or the stability of data over time and conditions (Polit & Beck 2008:539). Dependability can be achieved by the description of the exact methods of gathering, analysing and interpreting data in order to provide information on how repeatable the study might be (Lincoln & Guba 1985:317). Brink et al (2006:119) also indicate that this requires an audit, generally by a peer to determine whether the procedures used are acceptable and dependable. In this study, for audit purposes, experts in qualitative research were asked to review the methodology and the findings of Phase I (Polit & Beck 2006:335), and to verify the data analysis. It is thus possible to follow the methodology used by the researcher in this study in order to replicate the study.

Peer examination was also used to ensure dependability in that the supervisors of this study who are research experts were requested to check the research plan and implementation (Lincoln & Guba 1985:316).

Confirmability: This refers to objectivity or neutrality of data (Lincoln & Guba 1985:318, Polit & Beck 2006:336). Confirmability guarantees that the findings, consensus and recommendations are supported by data and that there is internal agreement between the researcher's interpretation and the actual evidence (Brink et al 2006:119). The co-supervisor of this study was involved during data collection process. The supervisors were used as co-coders and a consensus meeting was held between the supervisors and the researcher following coding of data, to verify the themes. The data were linked to their sources only. In this regard, the data were derived solely from critical care nurses working in large ICUs and as such linked to them only. Verification of the interpretation of data was done by the participants during data collection.

Authenticity: This refers to the extent to which the researcher fairly shows a range of different realities (Polit & Beck 2008:540). It is also referred to as undisputed credibility, the quality of genuineness, realness or truthfulness. The findings of this study were supported by unquestionable evidence and the researcher acknowledged and appreciated all the authors' viewpoints. The tape recorded interviews and focus group sessions are kept in a safe place.

3.6 PHASE II

Phase II entailed the development of the strategies. Strategy development refers to the process of choosing the appropriate course of action for the realisation of the unit goals (http://www.EzineArticles.com/). The overall aim of the strategies was to define the vision for sustainable management of the unit and compatible individual visions for the critical care nurses to address their needs.

3.6.1 Methodology for the development of the proposed strategies in ICU

The development of strategies formed part of Phase II of this study. The development process was based on the empirical data collected and theoretically confirmed in Phase I. It involved integrating and synthesising the results from Phase I (steps 1 and 2), to reach the outcome of this study which was to develop remedial strategies for better enabling the management of larger ICUs. The strategies will be discussed in detail in Chapter 5.

The challenges explored in Phase I and the needs identified by the participants in this phase included a range of suggestions and recommendations which were later transformed into themes. This led to the scope and objectives of the strategies being determined and clarified. Preliminary strategies were developed from the themes identified in this study. Strategy statements were formulated, provided with rationale to support their existence, and presented as preliminary strategies.

The preliminary strategies were summarised, operationalised and developed into interim strategies, which were submitted to a group of nurses for expert analysis and validation. According to Muller et al (2011:57), strategy development is based on a process of trustworthy consultation by drafting the strategy and refining it with the stakeholders involved. The interim strategies were validated by expert nurses before they were finalised. The researcher presented the strategies to some of the initial participants in Phase I and other experts in the field of critical care nursing. Final strategies were developed following recommendations on the validated interim strategies.

3.6.2 Criteria for evaluation of the proposed strategies

During the development of strategies, a set of criteria was used to evaluate the strategies. The criteria were adopted from the recognised features of a policy and were deemed desirable attributes for clinical guideline development. These criteria were contextualised for this study (refer to Chapter 5) and submitted for use by the expert nurses to evaluate the interim strategies.

According to the literature (http://www.EzineArticles.com/), strategies were found to work hand in hand with hospital policies, thus, the features or characteristics of a policy were assessed and found to be relevant to the development of strategies. The features of a policy were used, of which some were adopted to guide the development of the strategies. The features are that a policy should be:

Specific: should be specific and definite
Clear: must be unambiguous and should avoid the use of jargons and connotations
Reliable/uniform: must be uniform enough so that it can be followed by other stakeholders and subordinates
Appropriate: should be appropriate to the present organisational level
Simple: should be simple and understood by all in the organisation
Inclusive/comprehensive: should have a wider scope
Flexible: should be flexible in application to allow managers to use in repetitive or routine scenarios
Stable: should be stable to prevent indecisiveness and uncertainty to those who look into it for guidance (http://www.EzineArticles.com/)

Apart from the features or characteristics of a policy noted above, the guiding principles for developing strategies were adopted from Thomson and Dowding's (2002:150) desirable attributes of clinical guideline development. Guidelines are statements that are logically developed to contribute toward practitioners' decisions about appropriate health care under specific and appropriate circumstances (Gates 1995:35 in Peu 2008:47). The guiding principles, according to Thomson and Dowding (2002:150), are as follows:

- **Validity**: correct interpretation of available evidence (Evidence from Phase I, so that implementation can yield improvements. Refer to Chapter 4 for interpretation of data in Phase I.)
- **Cost effectiveness**: generating health improvements at acceptable cost
- **Reproducibility**: on the same evidence, another group would have made the same recommendations (The methodology applied for this study was explained in detail and the study can be reproduced in other ICUs that were not part of this study.)
- **Reliability**: in the same circumstances, another group of health professionals would apply the guidelines similarly (The strategies apply to management of large ICUs,

and can be adapted and applied to other ICUs which were not part of this study, but experiencing similar challenges.)

- **Representativity**: all key disciplines and interest groups contributed to the development of the guidelines (The interim strategies were presented to a group of expert nurses for validation before implementation.)
- **Clinical Applicability**: target population is defined in accordance with the evidence (The critical care nurses were the target population for this study, and thus, the strategies can be adapted and applied to large ICUs, however, this is more applicable in terms of the management of nursing units in the clinical situation.)
- **Clinical Flexibility**: exceptions are identified, as are patient preferences (This is not applicable in the context of this study.)
- **Clarity**: precise, unambiguous and user friendly (The strategies developed are simple and easily understandable.)
- **Meticulous**: recording of participants, documentation, assumptions and methods
- **Scheduled review**: when and how they will be reviewed
- **Utilisation review**: indications of ways in which adherence may be monitored

Table 3.1 that follows indicates a summary of the research methods for Phases I and II.

Table 3.1 Summary of the research methods for the different phases

Phase	Methodo-logy	Popula-tion	Sample	Sampling method	Data collection	Assessment of data	Data analysis
Phase I Step 1	Qualitative	Critical care nurses	Unit managers only	Purposive	In-depth interview	Measures to ensure trustworthi-ness	Open coding of interviews
Phase I Step 2	Qualitative	Critical care nurses	ICU trained and non-ICU trained ICU nurses not involved in management of the unit	Purposive	Focus group interview	Measures to ensure trustworthi-ness	Open coding of interviews
Phase II	Integrating and synthesising results from Phase I steps 1 and 2	Critical care nurses	Unit manager participants from Phase I Expert critical care nurses who served as evaluators	Purposive	Evidence from Phase I Literature support Preliminary and interim strategies	Validation by sample in Phase II	Recommen-dations from evaluators Inductive and deductive reasoning, integrating and synthesising Development of final strategies

3.7 CONCLUSION

The research methodology for Phase I (steps 1 and 2) was highlighted in detail focusing on the population, sample, sampling and sample size; and the data collection method was also discussed. Qualitative data collection and analysis was described for Phase I (steps 1 and steps 2) respectively. The ethical considerations for the study were also outlined. Phase II which is the outcome of the research was also introduced. In the next Chapter, descriptive analysis of the data acquired during the implementation of Phase I will be described.

CHAPTER 4

DESCRIPTIVE DATA ANALYSIS

4.1 INTRODUCTION

This chapter describes in detail the data collection process and the implementation of Phase I as described in Chapter 3 of this study. Qualitative methods of data collection and analysis were employed in Phase I.

4.2 PHASE I

Phase I encompassed the collection and interpretation of empirical data for this study. It was divided into steps 1 and 2 which had the same purpose and objectives. However, the two steps had different samples and methods for data collection. The general purpose and objectives of Phase I were as follows:

4.2.1 Purpose of Phase I

The purpose of this phase was to explore and describe the challenges experienced by the critical care unit managers and nurses, and identify their needs in the management of larger ICUs. The aim was to compile evidence in preparation for the development of strategies to overcome the challenges and address their identified needs.

4.2.2 Objectives of Phase I

The objectives of Phase I were to

- explore and describe the challenges experienced by the critical care unit managers in the management large ICUs
- identify and describe the needs of the critical care nurses in the large ICUs in relation to management

4.2.3 Data collection process

Data was personally collected by the researcher from two groups of participants, that is, the unit managers (step 1) and critical care registered nurses (step 2) working in the intensive care units through individual in-depth and focus group interviews respectively. The participants were included in the interviews according to pre-determined eligibility criteria and their willingness to participate in the study as explained in Chapter 3 of this study.

The two types of interviews took place in the ICUs of the different selected hospitals and were conducted on the same day for both groups of participants in each ICU, but on different dates for the different hospitals. Thus, the data are presented as a field visit for both individual and focus group interviews for each ICU. The interviews took place in the ICUs of the five (5) selected hospitals as it was a convenient location for the unit managers and the critical care nurses considering the time constraints and other work commitments. The hospitals consisted of four private and one public hospital which was an academic hospital, and they were all situated in the City of Tshwane in Gauteng Province, South Africa. The private hospitals belonged to the largest three groups of private hospitals in South Africa, namely, Netcare, Mediclinic and Life Health Care. One private hospital belonged to an independent group.

The units had between fourteen (14) and twenty three (23) beds and were referred to as multi ICU, Trauma ICU or General ICU according to the type of patients admitted. All five units were adult ICUs. However, in one of them, it was indicated that they had a neonatal ICU incorporated in the adult unit, and in the others it was mentioned that they were also nursing paediatric patients or neonates if admitted in the adult unit. The interview dates and times were arranged with the individual unit managers prior to the date of data collection. This was important as the unit managers were able to identify busy days and time schedules so that the interviews did not disrupt the unit routine. Considerably, the interviews were conducted either during tea or lunch breaks when the critical care nurses were gathered together at the same time without disrupting routine.

4.2.4 The steps in Phase I

Step 1 (Individual interviews including sample description)

- Four individual in-depth interviews were conducted. One interview was not conducted due to time constraints and other commitments of the unit manager.
- The participants were all unit managers.
- The venues were the unit managers' offices.
- The gender of the interviewees (unit managers) was two females and two males for the four different units.
- All of the four unit managers were ICU trained and had two or more years experience working in the units as unit managers.
- The interview time ranged from twenty to forty minutes.

Step 2 (Focus groups interviews including sample description)

- Four focus group interviews were conducted. One focus group was not conducted because of the limited number of participants who met the inclusion criteria.
- The participants were the critical care nurses, all of them registered nurses.
- The venue was either the nurses' station or tea room.
- The number of the participants in a group ranged from four to six members (this was acceptable, considering the fact that the registered nurses could not all be away from the patients at the same time).
- Regarding the composition of the focus groups, all were female registered nurses, with only one male in one particular focus group. With regard to the experience of these participants, they all had one or more years (up to twenty years) experience of working in ICUs. Also amongst these groups were both ICU trained and non-ICU trained, but experienced critical care nurses. Those who were non-ICU trained also had experience of one and more years working in the ICU.
- The interview time ranged from twenty five to forty minutes.

The participants of both groups gave written or verbal consent following a thorough explanation of the purpose of the study (refer to Annexure B for informed consent forms). The letters granted to the researcher for permission to conduct the study from

the Department of Health, Gauteng Province and the individual hospitals (refer to Annexure D), together with the research ethical clearance certificate from the academic institution (refer to Annexure C) were presented to the participants prior to data collection in order to demonstrate permission granted by the higher authorities. The participants agreed and were willing to be put on record. An audio tape was then utilised to record the interviews.

The researcher herself explained the purpose of the study, why the unit was chosen, why the registered nurses were chosen to participate in the focus group interviews over and above the individual in-depth interviews with the unit managers; and began the interview with a welcoming statement as follows:

'Welcome and thank you for availing yourself to this interview session. I appreciate the time and effort you made. My apology is that we need to do this interview in English for the sake of reporting the results to the whole broad South African community. If you feel like throwing in an Afrikaans/Vernacular word here and there for clarity that will be fine'.

One central question was asked (refer to page 73). Probing questions in relation to the responses from the participants then followed. The probing questions are included in the transcripts of interviews (see Annexure E). During the interviews, the unit managers were identified as Unit Manager-Participants (UMP), and in the focus group interviews, the individual participants were referred to as Registered Nurse-Participants (RNP) and were also assigned Arabic numbers in order to ensure anonymity. The audio tapes were identified by the dates on which the interviews were done rather than the names of the hospitals. Data from the audio tapes were transcribed verbatim after the interviews when the researcher had completed conducting the interviews. Field notes were also written during the interviews and were used to support the verbatim transcripts during data management.

4.3 DATA PRESENTATION

The verbatim transcripts of the individual in-depth and focus group interviews from the audiotapes were presented to provide a record of what was said. Samples of the transcripts are presented as Annexure E, data presentation.

4.3.1 Topic guide

In response to the central question, the following topic guide was used to probe the participants:

- The challenges in the management of a large critical care unit
- The size and design of the unit and its impact on the management of the unit
- The impact of the challenges on the management of the unit and the provision of quality nursing care
- The needs with regard to management of the unit
- Strategies to overcome the challenges in the management of a large ICU

The interviews were terminated when the participants kept on repeating information or discussing similar issues even at different venues. According to Streubert Speziale and Carpenter (2006:68), data saturation has occurred when no new information has emerged from the participants and the data being presented is a repetition.

4.3.2 Challenges encountered during the interviews

The following are the challenges that the researcher encountered during the interviews:

- Discomfort during the interview: Some of the participants seemed uncomfortable to continue with the interview. This was evidenced by constantly checking the time and the expression of not supporting facts such as just saying sentences to answer the question.
- Earning trust of the participants: It was mostly difficult especially in the focus group interviews for some of the participants to talk, until one of them breaks the silence.
- Clarity of the questions: Some of the participants in the focus groups did not understand the questions. The researcher had to paraphrase the questions and clarify some aspects again and again in the focus group. This was brought about by the idea that the questions were actually supposed to be directed to the unit managers (UMP), not the floor nurses (RNP). However, the questions were actually asked in order to validate the unit managers' responses.

- Not hearing all the voices: Sometimes if it was a burning issue, all the participants in the focus group would want to talk at the same time, such that the researcher could not hear what others were saying.
- Dominant participants: Discussions in the focus groups had dominant participants who always talked or jutted in when others were still talking. This led to participants not able to finish their sentences or even to explain further what they were talking about.
- Silent participants: In the focus group discussions there were participants who were quiet and reserved. They kept nodding their heads in agreement of what others were saying but refrained from speaking up. Most of the time they would just mumble or say *hmm, hmm* or only talk when requested or directed to respond.
- Focus group interview not conducted: In one particular ICU, a focus group interview was not conducted because there were a limited number of participants who met the inclusion criteria for the study. The enrolled nurses outnumbered the registered nurses. The registered nurses present were also only agency staff. There were no permanent staff members available. In the light of this, the researcher anticipated that it might not be appropriate to include these agency nurses as they might have been in the said unit for the first time and therefore did not know the challenges faced by staff in that particular unit, although they might have had experience of working in other ICUs.
- Individual interview not conducted: One individual interview was not conducted because the unit manager did not have enough time; the unit was always busy during the week. The unit manager indicated that she was too busy during the week for the interview, but allowed a focus group interview with the registered nurses during their lunch break. The researcher indicated that she would go back to this manager if data saturation was not reached. However, it was not necessary.
- Duration of the interviews: It was difficult to limit the interview times to the same amount of time for focus groups as some of the interviews were stopped when saturation of data was reached, some when the participants became uncomfortable, whilst others were continued as long as the participants were talking.
- Contradicting views: Sometimes the members of the focus group argued amongst themselves, but ended up reaching consensus about their final opinion about an issue discussed. The researcher allowed the participants time to debate and

deliberate freely amongst themselves. This was mostly related to issues regarding the suggested strategies.

- Disturbances: Phones ringing, cardiac monitor alarms, people entering the room and greeting and or visitors' enquiries prompted the participants to sometimes divert their attention from the interviews. In one case, a member of the focus group had to leave to attend to matters in the unit and then returned later. In some instances, the interviews had to stop for a while to attend to the distractions and then continued later. These disturbances happened despite the fact that the interviews were conducted on the days and times when the unit managers thought the routine would not be disrupted. However, the researcher understood that ICUs are unpredictable.

4.3.3 Positive aspects about the interviews

From the focus group interviews, the following positive aspects were noted:

- The participants found the interviews to be some kind of a debriefing session.
- The participants were happy to know that there was someone out there who was interested in them as critical care nurses and the challenges they encountered in the intensive care units.
- The participants enjoyed sharing their views with someone not known to them, but yet familiar with the critical care environment.

The positive reaction of the participants substantiated the researcher's premise that the critical care nurses were actually experiencing several challenges in the management of their units and therefore needed a platform and time to air their views and vent their frustrations about the challenges experienced in the ICUs.

4.4 DATA ANALYSIS

Data analysis took place after data collection. The data was analysed manually using the descriptive method of Tesch (1990 in Creswell 2003:192) as explained in Chapter 3 of this study.

Transcription and description: The audio tapes were listened to and the field notes were read and reread to gain the necessary background information. The verbal narratives were listened to from the audiotapes and were then transcribed verbatim.

Manual analysis: The three main topics related to the challenges and the needs in the management of a large ICU; and the possible strategies to overcome these challenges were identified. Several themes emerged from these topics. Colour coding was used to identify the themes and categories that emerged from this study.

Analysis: Data reduction was used in the data analysis process (Tesch 1990:138). During data reduction the researcher identified essential features and patterns of the data such as extracts from the interviews which represented other extracts of the same nature. The patterns of data were clustered together from similar topic themes and then organised into categories. Categories are meaningful compartments on which the analysis is based. Finally meaning units were attached to the categories.

Interpretation: The content of each category was summarised in order to come to conclusions. Literature was used to support the findings.

4.4.1 Data findings

Qualitative data analysis involved the integration and synthesis of narrative, non-numeric data that were reduced to themes and categories with the aid of a coding procedure (Brink et al 2006:55). Seven themes were identified from the data obtained. These themes emerged from the topics dealt with during the interviews, from both the individual and focus group interviews, related to the challenges and needs in the management of a large ICU.

The researcher worked inductively to identify the themes and categories from each group of participants. Inductive reasoning is the process of developing generalisations from specific observations (Brink et al 2006:6). Tables 4.1 and 4.2 present the themes and categories from the individual in-depth and focus group interviews (steps 1 and 2) respectively. The researcher used colour coding to identify the categories and their meaning units. Subsequently, the section that follows immediately presents the derived

themes separately, which will later be followed by the combined data from both steps 1 and 2.

Table 4.1 Individual interviews with unit manager participants

Theme	Category	Meaning unit
1. Layout and structure of the unit	1.1 Unit size	• 14-23 beds, the size of the units is too big
	1.2 Physical layout	• 360° view wanted to see all the beds • Functioning central monitors at the nurses' station to view the beds
	1.3 Facilities/structural requirements	• New unit to be erected if it is impossible to alter the structure • Proper rest rooms and offices needed for doctors and nurses • Adequate storage facilities needed
2. Human resources and staffing	2.1 Appointment of staff	• Shortage of nurses in South Africa and globally is a problem • There are no people to appoint • There is a demand for intensive care nursing • Relying on other categories of personnel such as enrolled nursing auxiliary and enrolled nurses • Substituting registered nurses with ENs and ENAs
	2.2 Qualification, experience and competence of staff	• There is a shortage of trained ICU nurses • Lack of or not enough competent and experienced staff • ACLS training and experience in ICU needed • Competent staff needed to run the unit
	2.3 Agency staff	• Commercialisation of nursing by agency staff • About 40% of ICU staff are from the agencies
	2.4 Permanent ICU resident or in-house doctor	• ICU doctors are an asset • No ICU resident doctor. ICU run by rotating doctors, or casualty officers for emergencies • Each ICU doctor is independent
	2.5 Nurse patient ratio	• Adequate ratio of nurse to patient for ventilated and non ventilated patients required • Calculation of the nurse patient ratio to be balanced

Theme	Category	Meaning unit
3. Material resources	3.1 Equipment	• State of the art equipment needed • Old or broken equipment to be fixed in time • It is difficult to admit patients without equipment in ICU • There is shortage of equipment
	3.2 Supplies	• Adequate medical supplies needed
	3.3 Medication supply	• Shortage of medication due to global demand • Shortage or unavailability of drugs and medication
4. Management of the unit	4.1 Roles and responsibilities of the unit manager	• Unit manager having to work with the patients and also doctors ward rounds, due to shortage of staff • Lot of responsibility is placed on the unit manager • The unit managers has to work overtime when there is no ICU trained person after hours • The responsibility given to one unit manager for the size of the unit and number of patients is too much
	4.2 Communication	• Night nurses have limited time to read the communication book • Communication is good • Event reporting is not satisfactory • Communication between nurses and doctors, and between nurses and management
	4.3 Recognition, autonomy and support issues	• Support from management • Requests not considered • Interference into ICU management by senior management • Lack of insight by management, into ICU related issues • Meetings to be held with management about staffing in ICU • Door to door managerial consultation needed to identify problems in the units
	4.4 Redeployment of staff	• Redeployment of staff to other units when ICU is not busy • Redeployment policies needed
	4.5 Multidisciplinary collaboration	• Working as team between departments and services is encouraged • Non nursing duties
5. Stressors in ICU	5.1 Workload and strenuous conditions	• Working very long hours • Working overtime to cover the shortage of staff

Theme	Category	Meaning unit
	5.2 Morale	• Low staff morale • Negative attitude of registered nurses
	5.3 Remuneration	• Too low salaries • Working for the money only, not dedicated • Poor remuneration and recognition
	5.4 Unpredictable working environment	• The unit manager works overtime for unplanned admissions and to cover the shortage of staff • Agency staff to be orientated to the unit
6. Visitors to ICU	6.1 Visiting policy	• Institutional visiting protocols are available • Patients family and relatives to be accommodated • Visitation rights to be enforced to allow patient burden sharing with the family
	6.2 Dispensing information	• Each visitor to have a family spokesperson to receive information • Maintaining confidentiality is the problem with many visitors
7. Problems impacting on the management of the unit	7.1 Shortage of staff	• Agency staff or hospital overtime is used • Adequate nurse patient ratio needed
	7.2 Infection control	• 20% of nosocomial infections is too much • Lots of patients with communicable diseases nursed • Screening for infectious organisms is necessary • There should be prompt diagnosis of infectious organisms • Infection control principles should be adhered to • Resistance to organisms experienced due to shortage of medications
	7.3 Protocols, standards and directives	• Protocols help to direct nursing care

Table 4.2 Focus group interviews with registered nurse participants

Theme	Category	Meaning unit
1. Layout and structure of the unit	1.1 Unit size	• Units are big • The standard or universal size (number of beds) of an ICU should be adhered to
	1.2 Busyness of the unit	• The unit is sometimes full, with every single bed having a ventilated patient • Admitting at any time because of the availability of beds • Functioning central monitors required
	1.3 Physical layout	• Open plan unit or cubicles of glass needed to view the patients • The big units should be divided into two sections • Clear view of the patients is necessary
2. Human resources and staffing	2.1 Qualification, experience and competence of nurses	• Trained nurses needed to cover the shortage at night • Competent nurses required to work overtime, but is not possible • Formal training and insight into ICU is needed for the nurses to work in the unit • High care patients also require expertise • Only ICU trained nurses should work in the ICU
	2.2 Nurse patient ratio and shift coverage	• The number of nurses should be equal to the number of patients • Nurse to patient ratio to be 1:1 for ventilated and high care patients on inotropic support and 1:2 for high care patients • Two high care patients for one nurse is a difficult ratio
	2.3 ICU resident doctors	• ICU resident doctors needed in the unit
	2.4 Other categories of nurses	• Other categories of nurses need constant supervision • Other categories of nurses cannot nurse ventilated patients • Acuity levels of patients are high
3. Material resources	3.1 Equipment amount and quality	• Equipment should be available for the number of patient bed • Appropriate, adequate and functioning equipment needed • All equipment should be in first class • Each room to have own equipment
	3.2 Control of equipment	• There is a problem with controlling equipment • There should not be any movement of equipment from one room to the other

Theme	Category	Meaning unit
4. Management of the unit	4.1 Roles and responsibilities of the unit manager	• There is a problem with supervision for the unit manager when there are too many nurses • Unit should be divided into two, or have two unit managers or shift leaders for effective supervision • The unit manager also do patient care due to shortage of staff and unpredictable working environment
	4.2 Communication	• There is no channel of communication between staff and management • A liaison officer is needed to communicate with management on behalf of staff
	4.3 Recognition, autonomy and support issues	• Management is only concentrating on running a business • The hospital managers must leave the unit managers to manage ICUs • Hospital management should understand what is happening in the unit, rather than judge the work on the records only • Management is not taking care of permanent staff • Management does not listen to staff problems
	4.4 Recruitment and redeployment of staff	• Management should try to recruit experienced and qualified agency staff if available • Redeployment policies are needed where not available
	4.5 Problems related to doctors	• Protocols for doctors' ward rounds are needed in the private hospitals • Doctors do the ward rounds late • Doctors discharge the patients prematurely to acquire beds for new patients • Delay in carrying out or implementation of doctors' orders • Poor criteria for admission and discharge of patients in the unit
	4.6 Multidisciplinary collaboration	• Support staff should understand the urgency of delivering to ICU
5. Stressors in ICU	5.1 Strenuous conditions	• The unit is always busy and nurses get exhausted
	5.2 Remuneration of staff	• Salaries should be improved to retain the staff in the hospital • There should be benefits for long term serving nurses

Theme	Category	Meaning unit
	5.3 Staff performance as a stressor	• Apathetic and incompetent staff • Lack of responsibility and accountability from agency staff • Lack of dedication from agency staff • The support staff should respond promptly to duties related to them
	5.4 Non-nursing duties	• Stock and medication credits to be done by the unit clerk on discharge of the patients or when no longer needed
	5.5 Record keeping	• The writing is too much for the nurse • There is a lot of paper records to be written, when having two patients or when admitting and discharging patients
6. Visitors to ICU	6.1 Problems with visitors	• Sometimes the visitors become a burden to the nurses • Some visitors do not appreciate • Visiting times sometimes interfere with nursing care • Visitors are more demanding
	6.2 Dispensing of information	• Visitors should not be given too much information that will stress them • Nurses have the differences of what and how much information to give to visitors
	6.3 Control of visitors	• Control of visitors is good, but sometimes difficult • Visiting protocols are available
	6.4 Visitors and patients' rights	• Visitors more knowledgeable of patients' rights
7. Problems impacting on the management of the unit	7.1 Staffing	• The unit cannot have the number of nurses equal to the number of patients • Agencies sent staff that are not competent to nurse ventilated patients • Directives for nursing care are needed
	7.2 Medication errors	• Medication errors and incomplete tasks always reported from agency staff • Medication errors are always reported to the unit manager by the doctors
	7.3 Infection control	• Isolated patients should be nursed separately on a ratio of 1:1 • Cleanliness of the unit should be enforced to limit nosocomial infections • Each room should have own equipment

4.4.2 Combined data of individual and focus group interviews

After inductively working on data analysis of the two sets of data, the researcher worked deductively to combine the two sets of data. Deductive reasoning is the process of developing specific observations from general principles (Brink et al 2006:6). In this section, the researcher moved from the general point as presented in Tables 4.1 and 4.2, to a conclusion which is the combined data.

The researcher deduced that both the unit managers and the critical care nurses encountered similar challenges and needs in the management of a large ICU and thus, combined the data. Colour coding was used to identify the categories similar in both sets of data. Each theme was given a specific colour, with each category in both data sets coloured the same as the theme. The similar categories were paired adjacent to each other in different columns. The un-paired categories in the two data sets are uncoloured (remained automatic in black), remain singular and are moved to the bottom of the adjacent similar categories. The un-paired categories are identified with an **a** or **b** in the two last columns. Table 4.3 displays the combined data of the individual and focus group interviews.

Table 4.3 Combined data of individual and focus group interviews

Theme	Individual interview	Focus group interview
1. Layout and structure of the unit	1.1 Unit size 1.2 Physical layout 1.3a Facilities and structural requirements	1.1 Unit size 1.2 Physical layout 1.3b Busyness of the unit
2. Human resources and staffing	2.1 Appointment of sufficient, qualified, experienced and competent staff 2.2 Permanent ICU resident or in-house doctor 2.3 Nurse patient ratio 2.4a Agency staff	2.1 Qualified, experienced and competent nurses 2.2 Resident doctors 2.3 Nurse patient ratio 2.4b Other categories of staff and agency nurses
3. Material resources	3.1 Equipment availability 3.2a Supplies 3.3 Medication supply	3.1 Equipment amount and quality 3.2b Control of equipment
4. Management of the unit	4.1 Roles and responsibility of unit manager 4.2 Communication 4.3 Recognition, autonomy and support issues 4.4 Redeployment of staff 4.5 Multidisciplinary collaboration	4.1 Roles and responsibility of unit manager 4.2 Communication 4.3 Recognition, autonomy and support issues 4.4 Redeployment of staff 4.5 Multidisciplinary collaboration 4.6 Problems related to doctors 4.7 Recruitment of staff
5. Stressors in ICU	5.1 Workload and strenuous conditions 5.2 Remuneration 5.3a Staff morale 5.4a Unpredictable working environment 5.5 Non nursing duties	5.1 Strenuous conditions 5.2 Remuneration 5.3b Staff performance 5.4b Record keeping
6. Visitors in ICU	6.1 Dispensing of information 6.2a Visiting policy 6.3a Visitors and patients' rights	6.1 Dispensing of information 6.2b Problems with visitors 6.3b Control of visitors
7. Problems impacting on the management of the unit	7.1 Shortage of staff 7.2 Protocols, standards and directives 7.3a Infection control	7.1 Staffing 7.2 Protocols, standards and directives 7.3b Medication errors

4.5 DESCRIPTION AND INTERPRETATION OF DATA

Deductive reasoning was used in the interpretation of data. From the questions, themes and categories arose and thus final conclusions were made from the interviews. In this

section on description and interpretation of data, the findings are discussed in view of the formulated objectives.

4.5.1 The challenges related to the management of a large unit

A nursing unit is an area in a hospital or other health care delivery setting where patients with similar needs are grouped to facilitate the delivery of care by health care professionals in that specialty (AACN 2007:1). In the context of this study, a unit refers to an ICU. The themes that relate to the challenges (categories formulated) in the management of a large ICU were identified as presented in Tables 4.1 and 4.2; and the interpretation of the data is discussed together as presented in Table 4.3, because some categories relating to challenges were found to be similar for the two groups.

Theme 1: Layout and structure of the unit

On discussion about the layout or structure of the unit, the participants included the geographical location, the size of the unit, physical layout of the unit, facilities and structural requirements; and the busyness of the unit as categories that were encountered as challenges. With the geographical location, the participants said the units were closely encompassed by other buildings that prevented expansion of the unit.

Category 1.1: Unit size

The participants indicated that the sizes of the units were too big. The number of beds in the different ICUs ranged from fourteen (14) to twenty three (23) beds per adult unit. The reason for the increase in the number of beds was indicated to be related to the demand for ICU beds and/or intensive care services. Some participants indicated the following:

'It is too big. That is why patients end up saying we are noisy. It is because we are many.'

'It is the demand for ICU. There is a huge demand for beds'.

'This is a trauma ICU and beds are needed from casualty and the wards, together with surgical'.

It is worth noting that some participants highlighted that as the units were big, it led to admitting patients any time as they were never full, that is, there were always a few empty beds available. According to the literature on critical care delivery in ICUs, some of the reasons for increasing the number of beds in ICUs are the escalating demand for critical care services due to the high incidence of trauma and the ageing population. According to a survey done in the USA in 1991, it was indicated that in the USA, 8% of the hospital beds are ICU beds. The size of an ICU is 10-12 beds per unit of an adult ICU and 21 beds for a neonatal ICU. The occupancy rate of the units was found to be 84% (http://www.authorstream.com/).

On the other hand, Rashid (2006:286) indicates that according to the Guidelines for Intensive Care Unit Design, 8-12 beds per unit are considered best from a functional perspective. From the findings of the same author, some ICU experts agree with the guidelines by noting that the ideal number of patient beds in an ICU should be nine (9) or ten (10) and not less than six (6). Rashid (2006:286) further indicates that the number of patient beds in an ICU does not seem to depend on the total number of patient beds in a hospital. The size of the ICU may well be a factor of economy and patient volume, amongst other things.

Category 1.2: The physical layout of the unit

The findings indicated that there were different physical layouts for the different units. It is worth noting that the different physical layouts of the units were indicated to have both advantages and disadvantages. These were brought about by the infrastructure and the way the units were created. Some units had open plan areas with beds separated by curtains, single cubicles with glass doors, cubicles with six beds separated by walls, or a combination of single cubicles and an open plan. The following was mentioned by a unit manager participant from a unit with cubicles separated by concrete walls:

'Yes it becomes difficult especially for the, from the design point of view. As you can see isn't it we've got the walls between the cubicles, now you as a nursing manager, if you sat in this first cubicle you can't see what is happening in the next cubicle and what have you, neh. And so it really becomes a problem. Unlike if it was an open plan. An open plan or maybe if it was glasses in between you see; glasses of wall (the participant actually meant wall of glass) instead of concrete walls'.

Interestingly, it was also mentioned by another unit manager from a unit with single rooms; that the separate rooms were more advantageous in terms of infection control, customer care, and upgrading and downgrading patients' status in the unit. This meant that a patient could be nursed according to different classification levels on the same bed. The patient could start as an ICU patient and as his/her condition improves, be classified as a high care patient on the same bed without transferring the patient to a high care unit, and vice versa. One unit manager mentioned this:

'You know the infrastructure as it is outlined here; it makes it easy to be managed. For example, I will tell you it is divided into cubicles. Out of the twenty three beds, eh, seventeen of them are cubicle and for infection control purposes it works out quite excellent. And for customer care it works out better because patients that are critically ill are not being exposed to those who are awake, ja. And the system how we use it is, it's ICU and we downgrade and upgrade eh, on the same bed. By that I mean if I need to take a patient as a high care, I can do it on the same bed. Ja so, it makes management of this unit quite easier when it comes to that'.

These findings concur with the AACN (2007:15) who indicate that designs should be considered that streamline patient care processes and reduce moving patients from one area to another. The unit should have acuity-adaptable room designs. These room designs reduce labour costs and potential for medical errors that occur during patient transfers; and also increase patient and nurse satisfaction (AACN 2007:15).

According to Flaatten (2007:392), the impact of the design of an ICU affects the patients, relatives and ICU personnel. It is worth noting that the author further indicates that the design of an ICU can have an impact on the outcomes of care such as cross contamination and isolation of infectious patients are related to the layout of the unit. The same author further states that there is also a huge need for privacy in ICU which means there has to be single bed rooms available to allow patients and visitors privacy; and also to allow the staff to perform procedures (Flaatten 2007:392).

The physical layout of a unit seemingly impacted on the management of the unit and the quality of nursing care provided within a big unit. Problems arose when the unit manager or the shift leader (the supervisor of the shift at that time) could not see all the beds at the same time, thus negatively affecting his or her supervisory role. This structural deficiency could be overcome if there was a central monitor and the duty

station situated where it was possible to view all the beds in the unit. One of the unit manager participants indicated that:

'At this stage I am lucky; I have got an open unit, where the duty station is in the middle of the unit, and from the duty station you can observe everything around the unit. You have got a three sixty (360) view, which is, then makes it a bit easier because you have got contact with everyone most of the time. My new unit is gonna be the same manner, but all my office, the sluice, everything, everything is going to the middle of the unit which then means you've got beds that you cannot see. That makes it difficult especially when it comes to resuscitation, doctors' rounds; and you can't be at two places at one stage'.

It was indicated that the biggest problem was when the unit manager could not see all the staff or patients at the same time, because he/she had to supervise the staff and observe the patients. In this case, it was really a challenge for the unit manager to ensure efficient supervision. This implied that a clear view of all the patients is important in an ICU.

Category 1.3a: Facilities and structural requirements

In relation to the physical layout and structure of the unit, the findings revealed that of concern were the facilities and structural requirements within the unit. It was highlighted that in some units there were no proper rest rooms/tearooms for staff and there were also limited spaces for storage or in some cases no storage facilities at all. Because of the geographical location of the units, it would be difficult to expand the units in order to create storage facilities and or rest/tea rooms for staff. Some participants indicated that:

'*… but structurally or geographically unfortunately this unit, it is too central and it has been engulfed by other departments where there is no way it can ever extent or be expanded to wherever. Maybe we need to unless, maybe they, maybe they, they start a new unit, maybe somewhere else'.*

'We don't have proper tea room or rest room for the personnel in the unit'.

'I have structural problems, that is, the Neonatal ICU is inside the main ICU, High Care unit is outside on the second floor and paediatric unit is enclosed.'

According to Flaatten (2007:391), an ICU can be considered as the sum of all tools acquired to treat patients, which is the way it is physically combined, how it is planned, built rooms for the patients, observations and communication areas, storage areas, offices, rooms for relatives and communication channels with the rest of the hospital.

Flaatten (2007:391) further indicates that in many older hospitals, the ICU is situated in areas not originally intended to be used as an ICU. This justifies the opinion of the participants in this study that the structure or layout of the unit poses challenges in the management of the unit and there appears little that can be done about it within the existing structural contents.

Category 1.3b: Busyness of the unit

The findings revealed that the units were sometimes very busy. It was indicated that the units, in addition to being big could be full with very ill patients. It was also mentioned that at times the units were almost 100% full with critically ill patients that needed to be nursed in ICU because of their critical conditions or the types of medications they were receiving, that needed to be monitored in ICU. Some participants verbalised that:

'We had situations where we had fourteen patients, that's every single bed has a ventilated patient ….'

'At times you can have as much as eleven ventilated patients, or with three high care or three isolated patients or on ionotropes or isocare, or some other dangerous medication that can't be looked after elsewhere.'

'There is a cardiology ICU, but if there is no bed the patient is brought to this unit, also the paediatric patients are, even though I don't have trained ICU staff. If there is no bed in high care, the patient stays here in ICU.'

It is thus evident that units could be full to capacity because the patients in ICU were admitted from all areas of the hospital, and when there were no beds in the high care unit. Also because in some units, doctors did not book beds to bring the patients, but they admitted whenever a need arose, both in public and private hospitals. According to the researcher's observation, some of the ICUs in this study admitted patients from referral hospitals from other Provinces around the country and the nearby countries such as Swaziland, especially the academic hospital and some big private hospitals because of their expertise and availability of facilities. These factors then contributed to further busyness of the units.

Theme 2: Human resources and staffing

The participants reported that they were encountering problems with the provision of human resources and staffing in a large ICU. It follows that the biggest problem was to have sufficient and efficient nurses available to take care of the patients. However, it was indicated that it was not possible to acquire these nurses at this stage because shortage of nurses is a global problem.

There is a clear shortage of trained and registered critical care nurses in South Africa. According to the report presented by Dr Hasina Subedar, the former registrar of the South African Nursing Council (SANC) at the Forum of University Nursing Departments in South Africa (FUNDISA) held at the University of Pretoria on 26 May 2006, the statistics showed that in the past ten years; from 1996 to 2005 there had been a decline in the number of trained critical care nurses on the SANC register from 3100 in 1996 to 2537 in 2005 (Subedar 2006:43). Therefore, several categories related to the challenges of provision of human resources and staffing as related by the participants were as follows:

Category 2.1: Appointment of sufficient, qualified, experienced and competent staff

It was indicated that both trained and non-trained ICU nurses were not sufficient to cover the shortage of staff on day and night shifts. This was indicated by the unit managers and the critical care nurses when they mentioned that:

'I think my biggest challenge eh; on a daily basis is having enough competent staff on duty. Ehm, as most Unit managers you have got a small… (Silence) percentage permanent people, the rest we, are eh, what do you say? We rely on agency staff. Now, one of the biggest challenges is to find competent nursing staff or ICU trained or experiences'.

'It's a big unit, so obvious we don't have trained agency staff. The trained agency staff is employed elsewhere, so they work overtime here. Their shifts are irregular, so you can't bargain on them. Every day, eh, eh, everyday problems, is then that we don't have enough personnel, capable personnel to cover the wards, especially at night'.

'If you don't have competent staff, you don't have a unit'.

A shortage of all categories of nurses within worldwide health services is recognised as a global crisis (Gillespie, Kyriacos & Mayers 2006:50). An international survey by the ICN in 2001 reported a widespread shortage of critical care nurses (ICN 2006:52). The findings concur with the results of a survey by Oosthuizen and Ehlers (2008:22) on South African nurses' reasons for working in foreign countries, which also lead to shortage of nurses.

In a descriptive survey on the critical care workforce in Western Cape (WC) hospitals, Gillespie et al (2006:50) indicate that there is a global shortage of nurses especially registered nurses. The results of the study showed that WC has a deficit of 72% and 80% registered nurses in the public and private sectors respectively. The current supply of nurses does not meet the needs of critical care units in WC. The study was reported internationally and was confirmed in South Africa by the National Audit of critical care nurses (Gillespie et al 2006:50).

Category 2.2: Permanent ICU resident or in-house doctors

The provision of medical doctors was noted in line with the design of the unit. With regard to the design of the unit, there was quite a difference in the models of care amongst the units both in the public and private hospital ICUs. It was indicated that for the models of care, some units were open and others functioning as closed units (refer to Chapter 2, section 2.2.1.1.2), some had ICU resident doctors; others used rotating doctors; whilst in other units each doctor who admitted a patient to ICU was independent to take care of their own patients. The following were mentioned by different participants:

'We don't have a resident but we have four permanent physicians. So, all the surgeons know that when a patient comes to ICU he is referred to the physician. There is always a physician in charge of the patient; which makes it much easier'.

'As we have already said neh, we don't have resident doctors for now. We used to have eh, resident doctors but they both left, the doctors that we had. We are utilising rotating doctors on three monthly basis neh. And we've got ehm, what do they call it, consultants neh, ja, who are conducting ward rounds, taking care of the ward on weekly basis and they are changing, interchangeably. In the multidisciplinary we've got one consultant also, eh we don't have a professor per se'.

'We've got three, eh three ICU doctors. They are intensivists. So it's actually supposed to be closed unit because only the three of them can admit but since we are open, we've thirteen beds now and it's open for everyone'.

'No, unfortunately we don't have that. Eh, but eh, in our institution we have employed a casualty officer who is actually running the casualty with the unit manager, the nursing unit manager in casualty. So if we've got, eh, emergencies that eh, needs to be attended to, he responds. The reason why we can't have eh, an in-house resident as you said, eh, is because as a private institution, doctors are independent and you can imagine if he has to change certain treatments for the physicians that would be, it would be something else. They might not like it because that would be considered interference with their management…'

The findings indicate that ICU resident or in-house doctors are considered an asset by the participants. Their presence would enable easy cooperation with those doctors who admit patients to ICU, helping with directives regarding patient care and that the resident or in-house doctor would always be available for emergencies if and when needed in the unit.

In some ICUs that did not have a resident doctor, where each doctor independently cared for his/her patients, it was mentioned that the casualty officer responsible for emergencies in the hospital was consulted if there was an emergency that needed the attention of a doctor in the ICU. It was explained that the reason that the unit could not have an in-house resident or ICU resident doctor was because as a private institution, doctors were independent and one could imagine if the ICU resident doctor had to change certain treatments for the physicians/surgeons responsible for the patients admitted in ICU. The physicians/surgeons might not like it because that would be considered interference with the management of their patients.

The literature from a survey done in the USA indicates that during 1999, full time intensivists were still not common in the USA. According to literature on communication with the patients and their family in ICU, the consultant intensivist must communicate with the patients and or their family members, the nature and seriousness of the illness, the plan of management and the progress of the patient (Knaus, Draper & Wagner 1986:413). However, according to the narratives from this study, this did not seem to be the case in the ICUs which did not have ICU residents or in the ICUs where each doctor was independent and not available all the time, because the doctors were not always available to meet the patients' families.

The findings of this study justify the belief that a good-quality ICU is one with a full time intensivist, where rounds are done daily. The doctors should be available 24 hours a day (http://www.authosream.com/). It is worth noting that in the same literature it is stated that the doctors should have no competing clinical responsibilities during duty hours. A good-quality ICU is further advocated to be a closed unit if resources allow (http://www.authosream.com/).

Category 2.3: Nurse patient ratio

The findings revealed that for ICU patients, such as intubated and ventilated or on ionotropic support, the nurse to patient ratio should be one nurse to one patient (1:1) and for high care patients, such as those on masks or room air was one nurse to two patients (1:2). According to BACCN (2010:3), ventilated patients should have a minimum of one nurse to one patient.

The participants indicated that it was difficult to work with the staffing numbers as allocated by management, because management could not provide adequate nurses for the reality of nurse patient ratio in ICU. Management seemed to only depend on the number of patients that were admitted in the unit against the number of nurses on duty. However, in reality, the ratio of the nurses to the patients was sometimes difficult owing to the acuity levels of the patients.

It was mentioned that high care patients who were on high dosages of ionotropes or those bleeding should ideally be nursed one to one even if they were not ventilated. It was, however, indicated that it was not possible to achieve this ratio because the number of permanent staff members did not allow for what the unit manager needed in the ICU, in relation to the patients' conditions and numbers. The participants indicated the following:

'If it's a ventilated patient, always one to one. Or a patient on dialysis, anywhere two or more organs failures are present. All other patients are one to two. And that's sometimes, that is a difficult ratio because it's the unventilated patients that gives you the struggle. They are much more work than the ventilated patients'.

'I don't know how it always work but, your permanent staff structure is always not according to what you need. For example, on your planning there will be you need seven Registered Nurses, but you've got

fourteen beds. So, how they calculate that ratio is not right for me, because at this stage I think in this unit I need something like thirty, twenty eight or twenty nine permanent sisters, and I've got nine or ten at this stage'.

It was indicated that sometimes the ratio became one nurse to two ventilated patients with the help of a care worker. According to Buppert ([S.a.]), the question is how many patients can a nurse practitioner care for safely, in relation to the operational setup of the unit, acuity level of the patient and also keep the practice financially viable. It is important to note that the care workers are not trained nurses, yet they are required to assist with ICU patients. Some participants indicated that with the high care patients it was difficult to have two patients allocated to one staff member as these patients could be demanding. It was revealed that the patients were sometimes not happy with the nursing care when they realised that they were being cared for by a nurse who was also responsible for other patients. One participant indicated that:

'And here you are, the patient being a high care patient, you have another one. When you are out to that patient, you find the patient complaining that and being very angry and saying 'why are you leaving me alone, because I expect you to be in the room all the time? I expect you to leave this place when you are going for tea, for lunch and obviously to the confidence room'. They can't understand when you say you have another patient'

It was also revealed that the acuity level of the two high care patients was actually high for one nurse, because of the demands of the patients. Kiekkas, Sakellaropoulos, Brokalaki, Manolis, Samios, Skartsani and Baltopoulos (2008:388) revealed that compromised quality of care is expected to come as a consequence of an imbalance between the acuity level of the patients and the amount of care nurses are capable of providing. It is worth noting that from this study, the care workers are used only in the private hospitals. Interestingly, the findings indicated that with regard to nurse patient ratio in the public hospital it was always one nurse to one patient for ICU and high care patients.

According to the *Information Tool Kit on safe staffing saves lives* (International Nurses Day 2006), nurse to patient ratios in the US, State of California in the adult and Neonatal ICUs is 1:2; and for ICU patients in the emergency room is 1:2 (California Nurses Association 2005:51). In Victoria, Australia, the ideal nurse to patient ratio in post anesthesia care units or recovery rooms for all shifts are 1:1 for unconscious patients. According to their (Australia) norms and standards, the nurse to patient ratio

for ventilated patients and patients on ionotropic support is 1:1 and 1:2 for high care patients; and for unconscious patients in all the shifts in areas such as recovery room and post anesthesia care unit it is 1:1 (Canadian Federation of Nurses Union 2005:51). Scribante and Bhagwanjee (2007:1315) mention that the ideal ratio of nurses to patients in the ICUs in South Africa is also supposed to be 1:1. However, in practice and according to the findings of this study, it is often found that the ratio of nurses to patients is more than 1:1, requiring a nurse to care for more than one patient, not taking into consideration the acuity level of the patients. This is brought about by the present situation regarding the shortage of nurses in SA.

Category 2.4a: Agency staff

The participants indicated that complementary or extra staff needed was organised through agency providers. The findings indicated that there were challenges related to agency staff. With regard to booking the agency staff, it was indicated that there was a problem as it was time consuming to sit and organise staff from agencies. It was also highlighted that ICU did not get help with extra staff from other units within the hospital. The following was verbalised by one unit manager:

'…, the time wasting associated with getting competent staff is enormous. I mean the Unit manager has to sit and look for staff from seven o'clock to at least nine o'clock to select staff, to phone staff, to book staff via the agencies. So it is for me quite a time waster to sit down and book staff'.

With regard to booking agency staff for overtime, it was mentioned that it was sometimes difficult to get staff because agency staff would only avail themselves for work when it was like double pay or one and half because they needed better remuneration. Friday night, Saturday night, public holidays and Sunday day are days which pay better than weekdays. As a result, there were always nurses available on these days, but there was generally no staff on other days because all the nurses are looking for money. The agency staff can decide when they wanted to work and when they did not want to work. It was also highlighted that if they booked themselves for a Saturday and a Sunday, and realised that they would be cancelled for Sunday; they got very cross with permanent staff. The following was mentioned by one participant:

'Like on a Sunday night everyone will phone to say 'sorry I'm cancelling'. And then you've got big problems'.

There was also a general outcry about the lack of accountability and responsibility from the agency nurses. It was indicated that some of the nurses when booked for overtime through the agency, just did not turn up for duty and did not bother to phone. It was also mentioned that even when they did turn up for work, if allocated two patients, or were reminded by the shift leader/ supervisor to do their duties, they felt offended and would just take off and leave the unit.

'... and the minute we started cornering her about what she didn't do, because then it was half past twelve. I asked her how her patient's pressure parts is looking, she couldn't tell me because she didn't turn the patient. She didn't suction the patient; she didn't put the ET tube deeper. And then she just took her bag and she went out. She just now decided now she's going and she's not coping'.

The transcribed data supports the opinion that there was a problem with some agency nurses because they thought they were too independent and could just come in and go as they wished, forgetting their responsibility towards the patients and their professional ethics and accountability which is very important. This finding supports the opinions of some participants that nursing has become commercialised. This means that some of the nurses only want to work in ICU because they can make money through *moonlighting* (working through a nursing agency), and not because they are skilled or capable of working in ICU.

Category 2.4b: Other categories of nurses

From the participants' narratives, it was revealed that other categories of staff were used such as enrolled nurses, of which some were not adequately experienced to work in ICU. The scope of practice of this category of nurses also does not allow them to work in ICU. Some of the units even introduced enrolled nursing assistants (ENAs). With regard to basic care activities such as assisting in turnings, some units were using care workers. Care workers are non nurses who have a basic training of three to six months on basic care; they are not registered or enrolled with the South African Nursing Council (SANC) in any category. The participants explained that:

' ENs. The category that we don't use are the auxiliaries. Ja, those are the ones that we don't use'.

'Yes we do have enrolled nurses in the unit which is also a challenge. The challenge being that enrolled nurses are, I mean they have their scope of practice which does not qualify them to work in the intensive care unit. But now we are expected to work with them like professional nurses and really it is a challenge.'

'We use Enrolled nurses a lot and I've also tried to introduce ENA; seemingly I am the one who is calling them when they are stranded. I have three care workers that are permanent'.

It was indicated that regarding the allocation of patients in view of the available nursing staff, other categories of nurses such as enrolled nurses were allocated ventilated patients. It implies that the unit managers were taking risks to place the staff nurses or ENs with the critically ill patients knowing that they were not adequately trained and experienced in critical care nursing. It follows that because there was not sufficient ICU experienced staff; the unit managers had no choice but to allocate the ENs outside their scope of practice. However, this implies that there were major challenges and risks when matching the available nursing care skills to the patient acuity levels; when allocating enrolled nurses to ventilated patients. One unit manager indicated that:

'The categories of nursing, look, if it's a ventilated patient, we should have ICU trained sisters available. That is why we train, that is why certain people did certain diplomas and, and…. But because they are not available anymore in this country, you have to substitute to Enrolled nurses or even ENAs on ventilated patients. … But they haven't got the training and it's outside their scope of practice'.

In a study on matching the nursing skills to the patient acuity level in the intensive care unit, Rischbieth (2006:399) indicates that some of the contributing factors to inappropriate and potentially hazardous care delivery, include nurses working out of their scope of practice in the ICU, nurses receiving inadequate orientation and workplace training, lack of bedside supervision and lack of the underpinning knowledge of critical care nursing and therapies. This supports the observation that as agency staff members are working at different hospital ICUs on a daily basis, and because of the shortage of staff, it is not always possible to orientate new agency staff on a daily basis in the ICU. It further illustrates the fact that sometimes agency staff are the only staff placed in the unit especially during the night, and thus cannot teach or orientate each other as they all do not belong to the unit as permanent staff, especially if they are not regular in that unit.

Interestingly, some participants positively indicated that the use of the staff nurses in the unit did not have a negative impact on the quality of nursing care. On the other hand, it

was established that it was a challenge to have enrolled nurses in the ICU. It follows that the challenge was that enrolled nurses had their scope of practice which did not qualify them to work in the intensive care unit; and the registered nurses in ICU were expected to teach and work with them like professional nurses. Consequently, when the unit was busy, the registered nurse had to attend to patient care and still teach the staff nurse, the registered nurse would on the other hand then compromise the care of the patient allocated to him/her. One participant indicated the following:

'Yes these children are from school, they are trained but they are not critically care trained and it take some time, we are not the same; sometimes it takes a person the time to grasp what you are teaching. That is the challenge and sometimes when you are busy and I have attended to this staff nurses and teach her and I have to attend to the patient, so I am compromising the patient there'.

The participants indicated that using other categories of nurses such as enrolled nurses was found to be cheaper for the hospitals. However, according to Rischbieth (2006:399), the current staffing models may assist managers to contain costs, but nurse managers must also be sensitive from the risk management perspective. The findings of this study support the fact that the biggest challenges currently facing critical care nurses is the available skill mix in ICU. In the UK, British nurses were concerned about the use of non-registered staff in critical care areas, and the tasks that they were undertaking (Giellespie et al 2006:51). This concern is the same as in South Africa according to the findings of this study.

Skill mix becomes a concern when the problem is the substitution of critical care nurses by people with different skills which reflects an emphasis on competence if not credentials (Green & Owen 1995:48). However, in the US, delegation of tasks to less intensively trained staff has harmed the quality of care. With cost containment in the US in the 1990s, many registered nurses were replaced by health care assistants (McKee & Healy 2002:231). There are limited published studies that have examined the implications of substitution of less expensive staff such as enrolled nurses and enrolled nursing assistants or care workers for more expensive nurses, for cost and quality of nursing care in South Africa.

Theme 3: Material resources

It was indicated that there were challenges in a big unit with regard to the provision of material resources. Equipment, supplies, medication and scheduled drugs were mentioned as material resources. The participants indicated that while sometimes the shortage of drugs and supplies was a global problem; there was a need for ICU to be regarded as priority area when equipment and supplies were ordered and delivered. According to some participants:

'The second problem is, eh, eh, shortage of staff as well. That is, eh material and human resources in brief. That is our challenge'.

'I don't know whether to say they do or they don't because we submit requisition of forms to our clinical eh, eh, clinical directors, to the senior offices but you know sometimes it's as if you know these things are not important. We make follow up with the procurement, we make follow up with our superintendent, but really it is really a problem'.

The meaning units revealed that the critical care nurses were not satisfied with the provision of material resources in their units. In a documentary on Third Degree, that was presented by ETV (a South African television channel) on the 21st of September 2010, about illegal nursing training institutions, one of the discussants indicated that there are types of equipment that are 'nice to have' in an institution (ETV Third Degree 21/09/2010). However, in the findings of this study, all equipment in ICU is a 'must have'.

Category 3.1: Equipment

Specialised equipment is required for the delivery of care. It was revealed that there was either shortage of equipment, use of old equipment or the available equipment was not working. For the equipment that was not working, it was not repaired on time. The participants indicated the following:

'Central monitors are presently non functional. So probably if we could have functioning central monitors that could have been better'.

'I think with the equipment, we got less equipment than the number of patients. I think if I understood you well and most of the time equipment are being ordered and we don't receive them'.

'And we have problems with the ventilators. There is already not enough'.

'I would wish that all equipment would be in first class. For example, you nurse a patient, who really needs to be taken temperature. There is no temperature probe. We have to shake the thermometer as if we are in the ward'.

The findings establish the fact that there was a need for new and extra equipment to be ordered, old equipment to be updated and the support services should be available to repair equipment at the earliest convenience for the units. In addition, the findings from the meaning units of the participants further indicated that shortage of equipment was amongst the challenges that led to problems with the delivery of quality nursing care. It was indicated that equipment was not enough; as such there was a movement of equipment from one place to the other, which may actually have contributed to nosocomial infection. This was brought about by the problems encountered when admitting new patients and there was not sufficient equipment such as infusion (ivac) pumps and cables for cardiac monitor on the allocated bed. The equipment then had to be removed from one bed to another.

Category 3.2a: Supplies

It was mentioned that the shortage of medical supplies was becoming rife. Hence, the companies that were supposed to provide the medical supplies like surgical cloves could not cope with the general demand; resulting in shortage of supplies. Moreover, it was indicated that there was no space in ICU where the supplies could be stored, due to the structure of the unit. One participant indicated that:

'Worst of all we don't have a proper store room. Our store room is very small and our equipment … The day they come we end up sometimes not knowing where to stock them'.

Also, the delay in delivery of stock and supplies contributed to poor quality of nursing care because nurses had to wait for a long time before performing essential procedures due lack of supplies.

Category 3.2b: Control of equipment

The amount of equipment and the quality of equipment was found to be of concern to the participants. In other units, it was indicated that stock and supplies were controlled by enrolled nurses, the unit clerk or even the care worker, especially over the weekends. With regard to equipment not functioning well, this was reported to be the result of having non-nurses working in ICUs. These non-nurses were not knowledgeable about dealing with duties that they were not trained for, such as taking care of equipment in the unit. In addition, equipment seemed to be handled by these people who were not educated and trained in this regard, as well as they should be. This was evidenced from the following:

Comment [MC1]: ? some

'Ja, ehm, just to give an example like now this weekend when I was working the whole hospital is having SITAS eh? That is doing the ventilators, the setting up, they clean the whole equipment. And they have all these other that come and clean the ivacs when the patient is gone and stuff like that. Now they come in to clean the ivacs, they roll up all the electric cords and then they leave it next to the ivac. They don't plug it in. If the battery is rundown you can maar throw away the ivac. What does an ivac cost? What does a ventilator cost? They go, they take the ventilator that side, now this patient is not on the ventilator anymore, and they remove it from the power. Now it's standing there, she is not taking it at the back so that they can clean it. So by the time the ventilator is gone out at the back, the battery is like … gone'.

It follows that while the unit manager had to supervise nurses, he/she also had to supervise the work of others and also keep an eye on care of the material resources in the unit.

Category 3.3: Medications

Occasional unavailability of drugs was mentioned to be one of the factors contributing to resistance to drugs and thus, leading to nosocomial infections. It was revealed that sometimes the pharmacy reported that they did not have medication and would actually give written proof from a supplier confirming that they did not have the medication or drug that was required, not even in their warehouse. It follows that if a situation like that arose, the unit would end up having a problem that would push towards an unstable position of having patients becoming resistant to drugs. Some unit managers indicated the following:

'Ja, you would find for example somebody tells you that they don't have medication. They give you actually proof, written proof from a supplier confirming that they don't have whatever eh, medical supply, or medication, or drug that you need. They don't have it in their warehouse. So if the situation like that arises, you end up having a problem'.

'You can imagine if it's an antibiotic. For example, right now it was said that, eh, we don't have anti TB, Rifampicin. And, there are patients who have been on Rifampicin and they must be on Rifampicin for a stipulated period. So it's a problem. At the end of the day many might end up having resistance'.

According to Siegele (2009:69), the sometimes hazardous environment of the ICU may be due to an increased prevalence of chronic diseases, high acuity levels of the patients and advances in technology and pharmaceutical agents.

The findings support the fact that the challenge of shortage of drugs and medication would have an impact on the quality of nursing care and it makes life difficult for the critical care nurses to deliver the quality of nursing care desired. According to Dawson (2006:314), the bedside nurses are faced with a variety of demands and they constantly have to manage and coordinate the visible science of critical care technology and the invisible art of nursing care.

Theme 4: Management of the unit

The findings from the meaning units revealed that there were challenges with regard to the management of the unit. The roles and responsibilities of the unit manager, communication, recognition, autonomy and support issues, recruitment and redeployment of staff from ICU and multidisciplinary collaboration were mentioned as some of the challenges encountered during management of the unit. Interestingly, of concern was the size of the unit in relation to noise control and supervision of staff. One participant indicated the following:

'It's too big. That is why patients end up saying we are noisy. It's because we are many. Everybody is talking from their own corner. Maybe they if it was one surgical and one medical ICU. They could have made two ICUs out of this. I think it's too big. Imagine if you are a shift leader. If you are a shift leader I do feel for you. How do you supervise so many people? It's too big. I think it's too big. They must do the bed limit frankly, how many beds must an ICU have?'

Category 4.1: Roles and responsibilities of the Unit manager

The findings indicated that there was great concern with the responsibilities allocated to the unit manager. The participants advocated that there should actually be a shared responsibility between the unit manager and the other nurses in the unit. The major problem highlighted was with being in charge, either as the unit manager or as the shift leader. It was revealed that the unit manager or shift leader had to constantly supervise if orders were carried out and medications were in fact given at the prescribed times. It was indicated that there were several times when the unit manager or shift leader did the afternoon rounds; it was found that there were things that were supposed to have been done that had not been done.

It follows that sometimes the unit manager or shift leader would be the only ICU trained person on the floor and then had to take charge, supervise others, do doctors' rounds, attend to the visitors, attend to other multidisciplinary team members, and so on. Consequently, the responsibilities became enormous because of the supervision that is needed on top of the general management of the unit such as ordering stocks and supplies, and organising staff. At the end of the day, everything became the unit manager's responsibility and the unit manager also had to prove that he/she is capable of running the unit. One participant indicated the following:

'And it's usually the Unit manager that stays because it's your responsibility. So, you know sometimes it can be an easiest scapegoat for management by saying 'it's your responsibility, you decide'. You know, you need to prove that you are a manager and to get this things resolved and it can be used in a bad way'.

However, the unit manager is still regarded as the person responsible in ICU; not only for patient care but also for staffing and patient care. The unit manager is responsible for all the activities in the unit because it is the unit manager's responsibility. It was indicated that sometimes the unit manager could not perform the duties related to unit management because he/she had to be allocated a patient, especially in cases of shortage of staff. Sometimes because the unit manager or shift leader had to do doctors' ward rounds and supervise the work of others, the administrative work was left behind.

Thus the unit manager had to work overtime, if not take the work home. With regard to taking the doctors' rounds, it was revealed that it was not the nurse looking after the patient that went around with the doctor or received the orders, but it was the unit manager or the shift leaders because the nurses taking care of the patients would most of the time just disappear when the doctor arrived, because they did not want to answer questions to the doctors. The unit manager is left to be the one doing the rounds with the doctor.

According to Admi and Moshe-Eilon (2010a:152), the responsibilities of the charge nurse include ensuring proper functioning of the unit during the shift and also maintaining appropriate standards of care, and professional and patient interactions. On the other hand, Castledine (2001 in Admi and Moshe-Eilon 2010a:153) indicates that the charge nurse is expected to always be available and in control of all activities taking place in the unit. Interestingly, Endacott (1999 in Admi and Moshe-Eilona 2010:153) posits that the charge nurse is not expected to supervise the bedside work of nurses in providing patient care but to give advice and support when his/her expertise is required.

The findings emphasised that the doctors should take responsibility for their patients, and that it was not ideal for them to be in the unit for a short period during ward rounds and then to disappear for the rest of the day. One participant indicated that

'Actually it's their patients (doctors). They should take responsibility'.

The findings serve to confirm that the responsibilities placed on nurses and nursing in critical care are huge. There are competing demands and responsibilities experienced by unit managers yet they hold unique positions to influence the way in which care is delivered which seems simple in the eyes of the onlookers. Ashword (1992:129) mentions in a study on nursing that it is not just the tasks nurses do, but that 'those who look at only the surface level at what is very obvious see some equipment and activities which are different from elsewhere. But they competently miss the essence of what is really happening, the skills and knowledge in use, the joys of achievement and the actual or potential dangers'.

Category 4.2: Communication

With regard to communication the participants indicated that in a large ICU, there were several factors where communication was ineffective, such as communication problems between staff in the unit (amongst the nurses themselves), nurses and the doctors; and the unit and management of the hospital. Communication was related to the protocols of the unit, communication with management of the hospital regarding the challenges in the unit and also problems related to patient care as in taking and implementing the doctors' orders. According to one participant:

'Once is a big, not one unit, communication falls back. In a big unit, the other problem is communication. We are now moving from this 14 bed to 23 beds and that makes it even worse'

Communication between day and night staff included report giving between day and night staff. It was indicated that there was a communication book in the unit. However, due to the busyness of the unit, it was not always possible to sit and read the communication book. With regard to agency staff, it follows that they were not aware of the importance of things such as the protocols in the unit. This implies that they did not understand the functions or the working process of the specific hospitals. It was thus important for them to know the basic principles on which the units function in order to adhere to the unit policies and procedures. A participant explained that:

'*I think it is between day and night shift. Especially we do have a communication book in place. But again back to staffing, we've got a huge agency competent, and there isn't always time from the shift leader's side to sit down at night and read what is in the communication book. And also, sometimes I have experienced where the agency supply you with two or three registered nurses in one day that has never worked in ICU. But because there are no hands available, you are desperate and you take that one'.*

Communication with the doctors became difficult especially when they needed a bed for a patient. It was revealed that it was sometimes difficult to explain to the doctors that the bed was available but there was no nurse and, or equipment to admit the patient. The participants indicated that the doctors sometimes misunderstood them when they tried to explain their reasons for not being able to admit the patients in the unit. According to one participant:

'… sometimes there is this label of 'You refuse the patient', if you try to come with your reasons why you don't want to take the patient. They will come and say the beds are twenty or something. So you can't say you are not admitting the patient'.

No bed can mean no space, no equipment or no nurse. According to trends in hospital activity, the nature of hospitals differs amongst countries but there are problems with the concept of a 'bed'. Even in Europe, a 'bed' is said to be shorthand for an entire package that includes the nurse, supporting staff and advanced monitoring equipment (McKee & Healy 2002:18). It was revealed that there was not effective communication between staff in ICU and management. As such, staff felt that management was not taking care of staff because there was no effective communication means through which their concerns could be transmitted. A participant indicated that:

'There is no channel, there is nothing. So I think that somebody should be specifically for that. There must be somebody to liaise with. Somebody who would be able to go up to find out if the personnel has problems. Somebody who would be like a bridge between staff members and management'.

Participants mentioned that they could discuss their problems with management but with little or no effect. There were forums where problems are addressed with management such as functional meetings and door-to-door managerial consultations; where functional managers could discuss their problems with senior management. However, the findings indicate that even if problems were communicated, management was not giving feedback.

On the contrary, other participants also revealed that staff did not hold meetings with management regarding staffing and other challenges they experienced in the management of the unit. The meetings were held at executive level by the hospital management and doctors; and shareholders were not even sure on how to communicate back to staff. It follows that nursing staff could communicate their concerns but there seemed to be no one who listened, especially when it came to requests for nursing salaries. The following was mentioned by a unit manager:

'But ehm, we have got no, we've got a say; we can say what we do but who listens? Where does the request go when it comes to nursing salaries and things like that, you know? You feel a bit frustrated because everybody knows the facts on the table, the facts are there, we can give it to the people, but there is always higher levels that disagree'.

In some instances, communication with management was done by email, event reporting system and verbally, however, implementation in some hospitals was reported to be very slow. It follows that sometimes management did not understand the real challenges as they judged every event on records. One participant explained that:

'They judge only the papers, statistics, so many patients coming in or, or so much personnel they don't know what is happening on the floor and problems. So you coped yesterday. Three people didn't turn up, you coped yesterday with this, a lot of patients, but they don't think the same people that worked yesterday at least there was three ICU trained. But today there is only one ICU trained and the rest are all ENs or agency staff. How you must cope with the same amount of work with lesser personnel'?

The meaning units revealed the concerns of the participants for the lack of or poor communication in the unit and with management. This could lead to stress and poor delivery of nursing care as their concerns and challenges were not taken heed of.

Category 4.3: Recognition, autonomy and support issues

The findings revealed that the critical care nurses were dissatisfied with the employer and support from management. With regard to the support from management, it was indicated that management was simply looking at the hospital as a business enterprise, where money should be generated and saved, especially when it came to issues of hiring extra staff and providing trained agency staff. Furthermore, the unit managers indicated that they did not get support from management with regard to the provision of staff, equipment and supplies as long as there was profit to be made at the end of the day. Some participants revealed the following:

'I think if you talk to the hospital manager or anybody they will tell you 'this is a business. You have to save money'.

'I would not say the doctors are much of a problem. The problem comes from the superintendent. They are the people who know the department much. They will say we are running a twenty bedded ICU, so in terms of nurses you do not have nurses is not their problem, the problem is from the nursing side. They must make a plan'.

The findings establish the fact that there is lack of hospital support for the critical care nurses. The lack of support was evidenced by management not attending to the staffing challenges encountered by the critical care unit managers. Management seemed not to consider the plea from the critical care nurses to hire more permanent staff or book

qualified registered nurses from the agencies. It implies that they failed to ensure adequate numbers of critical care nurses to meet the patients' needs. However, the reality is that there are no ICU nurses available to be hired. It was indicated that the unit manager was sometimes not recognised, as there was interference from other senior nursing managers in the management of the unit. One participant indicated the following:

'Anyway, the other point that really we would like to have in our unit is complete independence. I mean complete dependency, empowerment, because in our institution, a person, if a person is in charge we don't get empowerment, hundred percent empowerment that we must run our unit independently. Our senior managers have a tendency of interfering in other wards of which we really feel that really, we end up not knowing whether I am a Unit manager in the unit or not. Because there is somebody always who is coming to give me instructions in my own unit, which I am supposed to be running'.

It can be inferred that the unit manager was not given full autonomy over management of the unit.

Category 4.4: Redeployment of staff

Redeployment of ICU staff to other units was reported as one of the challenges experienced in the utilisation of human resources. With regard to redeployment of ICU staff to other units, it was noted from the findings that the unit manager and critical care nurses shared the same feelings. The participants indicated that they did sometimes have quiet days on which they could do administrative duties such as update documents, clean the unit, get the opportunity to clean the ventilators, check some of the stock and equipment; compile repair requisitions and so on. However, sometimes when the days were quiet, then staff from ICU were posted to various departments which the staff members did not consider to be fair to those being deployed.

'*Well we know that we are generally trained and we know that we are here to work but sometimes we are even posted to areas where we are not eh, eh let me say where we have long forgotten to function in a unit like that. For instance neonatal ICU is a specialty on its own as compared to general ICU'.*

On the other hand, in some units it was revealed that it was indicated in the job agreement that the critical care nurses must be able and willing to go and work in other units, which to the nurses affected was not a problem as long as it was not the same nurses every time. In contrast, it was mentioned that unfortunately when the ICU was

full, there was no help from other units; to an extent that even the unit managers in ICU had to neglect the management of the unit in order to nurse patients.

Short term redeployment is temporary placement in a ward or other unit for a period of 12 hours for the purpose of curbing staff shortage. Short term redeployment of nurses is usually used within the hospital units in order to 'balance the numbers' or to cover the shortage of staff in the different units. Often, nurses in the ICU are asked to go and help out in other units, if there is not enough staff or their own unit is not busy. Nevertheless, critical care nurses felt that they were improperly utilised because they were regarded as intensivists, but then situations arose where they were sent out to the different units all over the hospital. It was not even taken into consideration whether they were experienced in those units where they were deployed. Some participants revealed the following:

'Improper utilisation of staff. For *instance, we were regarded as intensivists neh, but then you will find a situation where (disturbance, somebody enters and greets), like being sent out to the entire hospital. They don't take into consideration whether I am experienced in that unit. For the mere fact that we are from ICU, they redeploy us. You can be taken to any department, neonatal unit'.*

'Not even in neonatal ICU where you do not have the skill in that department, any department'.

It follows that often management did not consider the patients' needs and staff expertise before implementing short term staff redeployment. Short term redeployment may impact negatively on the staff expertise and the patients' needs. The participants acknowledged the risks of being placed in the units where they had lost touch with current practice. Hass, Coyer and Theobald (2006:9) posit that familiarity with the environment will contribute to a more balanced approach to care.

The participants further indicated that with regard to the redeployment of ICU nurses the unit managers lacked the power and autonomy when it came to management of the unit, because they were directed by senior management on how to utilise the ICU nurses. In some units there were no policies regarding redeployment of staff. With regard to short term redeployment of staff, management seemed to take advantage of the implied duty that the employee was under the control of the employer. As a result, the participants indicated that they felt they were improperly utilised. However, there is limited literature regarding redeployment of staff in South Africa.

Category 4.5: Multidisciplinary collaboration

The other challenge that was mentioned in relation to management of the unit was support from other services. It was revealed that it was difficult for other people to understand what is actually done in ICU, such that there was no urgency when it came to ICU regarding things such as assisting with equipment, running errands for ICU or delivering supplies and medications. Of concern was that intensive care is a critical area which really needed cooperation from all the multidisciplinary team members. However, the ICU encountered serious problems due to poor services from support staff and other departments were very poor. The following was mentioned by one unit manager:

'… We have blood; we have prescriptions charts that have to go to pharmacy and very urgently, bloods that have to be dispatched very urgently and other eh, items that really need to be attended to eh, speedily. But now we have this problem from the multidisciplinary; the messengers of our hospital don't know the need and the, the necessity and the importance of messanging. You call a person she will give you excuses or she will say I am coming and she will take her own time to come'.

It follows that the nurses ended up doing errands and other non-nursing duties in order to get the work done and to have progress with the work. The participants were of the opinion that some of the support staff sometimes did not understand why they were at work, and thought they worked independently, yet it is not like that.

Category 4.6: Problems related to doctors

The findings from some participants indicated that there were challenges related to the doctors who had patients in ICU, especially in the private sector and in the units where there were no permanent ICU resident or in-house doctors. The doctors were not always available in the unit, especially when they were needed. It was reported that the doctors especially in the private hospitals had no time to stay in the unit. They only came in to do their ward rounds, because they had patients all over the hospital wards and in their private consulting rooms. Thus, they were not always available in the ICU and that made it difficult for the ICU nurses when they needed them in cases of consultation or emergencies. For example, one participant said:

'… Sixty patients in the whole hospital, so when he is finished the ward rounds here, he goes to the next ward. They don't stay here all the time. So, it is very, very difficult'.

Doctors were also doing their rounds late and that contributed to the disorganisation when the nurses had to complete their duties for the day. It was noted with interest that there were protocols for doctors' rounds in the public hospital, meaning that there were specific designated times for doctors to come and assess the patients together with the nurses, but not in the private hospitals because the doctors in private practice were independent. It was revealed that in the private hospitals the doctors did the rounds late because they started at the provincial hospitals, moved on to their private rooms to see patients, then later on see the rest of the patients in the private wards before reaching ICU. This then coupled with the lack of protocols led to delay in implementation of doctors' orders and then disrupted the delivery of nursing care.

On the other hand, it was mentioned that the other problem with doctors was premature discharge of patients from the ICU because they needed a bed or a nurse for a new patient that should be admitted in the unit. One participant stated that:

'Sometimes they are using the strategy 'Okay, I am discharging this patient and I am bringing another one'.

It means at that stage, the patient might not even have been ready to go to the ward, and if complications arose, the blame would be on the poor quality of nursing care provided in ICU, rather that premature discharge of the patient.

Category 4.7: Recruitment of staff

With regard to recruitment of staff, it was further indicated that the problem was that even if management were informed about competent agency nurses that came to do overtime, they did not try to recruit them to come and work permanently for the hospital. This was evidenced from the following narrative when one participant was responding to a question as to whether management was aware of the problems the unit manager was encountering with regard to staffing in the unit:

'And that is the other problem they are having with management because if you can see you've got a good agency nurse, why don't you try and get her to come and work here permanently for the hospital? They don't do it; they don't recruit the people because they know it's actually cheaper. They don't have to pay for leave, they don't have to pay for sick leave, they don't have to pay for the pension'.

The findings seem to indicate that management did not recruit the nurses because they knew it was actually cheaper to use agency nurses because they did not have to pay for annual leave, sick leave or even the pension fund. They were saving a lot of money on agency nurses as they did not require paying them any employment benefits as with permanent staff.

Theme 5: Stressors in ICU

The findings indicated that stress was one of the biggest issues in critical care nursing. It was highlighted that the stress emanated from several factors such as the different roles and responsibilities of the critical care nurse, the workload in the unit, shortage of staff and poor remuneration. This finding corroborates with findings from literature by Admi and Moshe-Eilon (2010a:151) who mention that the most frequently identified stressors are workload, role conflict, ambiguity and lack of support.

Admi and Moshe-Eilon (2010a:153) further indicate that changes in the health care systems including the international shortage of nursing staff have implications on role stress felt by nurses, especially nursing managers. It follows that also the responsibilities of the unit managers brought about stress. A unit manager indicated that:

'But you are responsible; you are responsible for this patient'. I am responsible for the unit. It's difficult (tone of voice high pitched) to be responsible. If you go and look at the meaning of the word responsible, eehm … it's a huge thing to put on one person's shoulder. And you know, if there is something we can change in nursing is the meaning of responsible. It's not possible to give one person twenty, responsibility for twenty three patients.

According to Admi and Moshe-Eilon (2010a:151), stress leads to job dissatisfaction which impacts negatively on patient care. Notably, Hays, All, Mannahan, Cauderes and Wallace (2006:188) mention that some of the problems for registered nurses within ICU reported as most stressful are apathetic and incompetent staff, critical and unstable patients, feelings of inadequacy, issues concerning relatives, physicians not arriving quickly enough in times of crisis, responsibility and decision-making and shortage of staff. Similarly, these stressors have also been indicated by the participants in this study as the challenges encountered in the management of large ICUs.

Category 5.1: Workload and strenuous conditions

The findings revealed that there was too much workload, especially when the unit was full, and there was shortage of staff such that one nurse had to take care of more than one patient at a time. One participant mentioned the following:

'They look at four patients at a time, but they get tired and it's stressful for them too because it's a lot of administrative work that must be done before we leave'.

'Sometimes like I say you start with two patients, you discharge and you admit two other patients. So and, so and one of them you might even, eh discharge later and admit another one. So it's stressful'.

With the pool of agency staff available, it was mentioned that they also got tired when the unit was extremely busy and there were extremely ill patients. Hence, the agency staff would cancel for work. It follows that the permanent staff as well, because they were the staff that is actually knowledgeable with the very ill patients, and if the unit was full and all of the patients were ill, they would get tired and exhausted.

According to a television documentary on the shortage of nurses in South Africa, presented by Special Assignment on SABC3 on the 21st of September 2010, one of the panel discussants mentioned that 'because of the shortage of staff, nurses stretch and stretch until they break' (SABC3 Special Assignment 21/09/2010).

Category 5.2: Remuneration

Remuneration was highlighted as one of the stressors for ICU nurses. The participants indicated that they were working very hard, however the remuneration was not equal to the services they provided. It was indicated that the salaries were very low and there were limited or no benefits for working in ICU**.** The findings further revealed that the nurses that were ICU qualified have migrated to other countries because of the need for money. One participant indicated that:

'Because all the people that are actually ICU qualified, they all go overseas. They are running out of South Africa for the money and then you are left with the five thousand that is registered, ICU trained and you are lucky if you have five hundred in South Africa. So how many is in Pretoria?'

The finding implies that the reason for emigration to other countries is remuneration. This finding concurs with a study by Oosthuizen and Ehlers (2007:18) on factors that may influence South African nurses' decision to emigrate. Evidently, it is for this reason that indicates that until hospital management all over, public and private sectors realise people want better payment and act accordingly to address the problem, the situation with shortage of staff will not be changed.

Category 5.3a: Staff morale

The findings from the meaning units revealed that there was generally a low morale and less interest from the critical care nurses because of the stress related to shortage of staff, equipment and supplies and the other challenges that were discussed in this study. It was indicated that besides the low staff morale, some nurses developed a negative attitude towards work.

'People just work to get the day past and the money in. They are stressed because of the staff shortages'.

'Even the attitude of the registered nurses, the nurses that I have are still on the old type of nursing'.

Category 5.3b: Staff performance

Staff performance was found to be related to the competence of the nurses. It was clear from the narratives that problems were experienced with the knowledge and competence of agency nurses. It was mentioned that the proficiency of staff that was presently allocated in the ICU was a challenge.

Levels of expertise in relation to lack of ACLS training and lack of experience in ICU were highlighted as some of the challenges related to the competence of nurses that were booked for overtime by the agencies. Most of the agency nurses were indicated not to have insight into the dynamics behind intensive care nursing such as ventilation or even simple things like manipulating a cardiac monitor despite their years of experience of working in the ICUs as they claimed to have. It implies that some of the agency nurses were not truthful about their experience of working in ICU simply to get a job in ICU. One participant indicated that:

'There is a big difference between somebody that works in ICU and the one that is, wants to learn about working in ICU. Because you can work in ICU for twenty years and still not have insight into ventilation.

And I see a lot of people don't understand the dynamics behind the ventilation, or even, eh simple thing like how to manipulate cardiac monitor output'.

It follows that the challenges with the nurses also stemmed from the poor selection criteria for appointments by management. In addition, appointment of staff was said to be a problem as sometimes candidates looked good on their curriculum vitae. It can be inferred from the participants' narratives that these were the nurses who lacked clinical judgement. According to the American Association of Critical-Care Nurses Certification Corporation (2005 as cited by McKinley 2007:61), clinical judgement is the use of clinical reasoning including decision-making, critical thinking and nursing skills acquired through a process of integrating education, experience, knowledge and evidence based guidelines. Some of the agency nurses referred to in this study were not even ICU trained.

Mckinley (2007:63) further states that clinical judgement is anchored in extensive clinical expertise, experience and available data where there is a need to relate aspects such as comparing patient assessment data with normative assessment data. It did not seem to be the case in this study. Some participants indicated the following:

'And I've seen the blood pressure of forty, forty-five being charted but not reported'.

'The alarms set, besides noise control in the unit. I know we've got noise control but noise control like that is dangerous practice'.

'The people don't know about time management, what to do first and what to do last. They just know routine. They know in the morning that a patient has to be bathed. If patient is desaturating or having low blood pressure, who is busy bleeding, just bath because it is time to bath'.

According to the meaning units from the participants' narratives, the nurses lacked insight into what they were doing. This demonstrates that the nurses appeared to lack perceptual acuity. According to McKinley (2007:63), perceptual acuity is the ability to recognise important clinical problems. It implies that this lead to poor quality of nursing care. McKinley (2007:63) further states that health care consumers demand quality care and many are quick to complain, report or sue if their expectations are not met. The critical care nurses mentioned that they needed the people with the heart for working in ICU, not just working for the money.

It follows that if the ICU does not have an informed staff member, and the staff does not work according to policies and procedures of the unit, then the lives of the patients are put in danger because the quality of patient care is compromised.

Category 5.4a: Unpredictable working environment

It was indicated that the unit would sometimes be very busy such that one nurse had to nurse two to three patients in a day. This would occur when there were unexpected admissions. It implies that the same nurse who had a patient might be instructed to discharge a patient, and therefore quickly transfer the patient and prepare for the new admission. This then contributed to the work overload and the stress level increased.

'Admitting at any time, because the unit is big, it's never full, so anytime we admit'.

'Sometimes like I say you start with two patients, you discharge and you admit two other patients. So and, so and one of them you might even, eh discharge later and admit another one'.

Because the ICU is the only unit equipped to care for critically ill patients, it meant that if there were patients from theatre who needed emergency intensive care or who had complicated conditions, they would be brought to ICU without prior booking of the beds. Changes in patients' conditions such as the need for resuscitation and other advanced procedures also contributed to the unpredictability of the environment in ICU.

'It's very disorganising, especially when you have to go home. You have to give medicines, to check on your patient and to evaluate sometimes even putting up new lines'.

'*Ja, but what she is saying is reality. You have two patients, get another; you sent to the ward, credits are here, you haven't written the chart, you have to push this patient out because two patients are very difficult'.*

Category 5.4b: Record-keeping

The critical care nurses indicated that there were a lot of records to be written for ICU patients.

'The chart, the chart man! Clerical job. The writing is too much for the nurse'.

'It's true Ma… (name of nurse withheld in confidence), this writing is too much'

On the other hand, the participants acknowledged that the records were necessary because they were legal documents related to the care of the patients; however, the problem was that there was a lot of repetition of the same information on different records.

'Ja, and these are documents, they need to be thoroughly written with consciousness. Not just to write anything'.

'So it's five patients' documentation you have to keep up to date and legally. It's legal document so it must be complete'.

' And what frustrates me more and I think that's another flow sheet, is this clinical round form and but for us is a duplication of something that you have already written.

'Extra, extra work. It is duplication'.

The findings also indicated that there were too many records to be written which became overwhelming when nurses had to admit or transfer patients; and also following resuscitation of patients.

'Sometimes like I say you start with two patients, you discharge and you admit two other patients'.

'So then I can remain with a chart of the patient whose is not here. I just write the charts because I've seen the patient'.

Category 5.5: Non-nursing duties

The participants mentioned that they sometimes had to do non-nursing duties, owing to problems with multidisciplinary collaboration. It was indicated that the nurses sometimes had to run errands when the support staff were not efficient in executing their tasks or were not available. This was mainly because of shortage of support staff.

'But usually there must be a ward clerk and the one for stock. These credits we would give to the one doing stock to credit. But then the same clerk is doing stock again. Maybe it's because of money they can't employ'.

The BACCN, CC3N and RCN (2010) in the standards for nurse staffing in critical care advocate that administrative staff should be employed to ensure registered nurses are free to give direct patient care, and to support the critical care units and staff with essential services.

Theme 6: Visitors in ICU

Regarding the challenges experienced with the visitors, it was indicated that the major problems were the unit visiting policy and the policy on dispensing information to visitors. Also, the control of visitors and patients' rights were of concern to the participants.

6.1 Dispensing of information

It was revealed that there was a policy on dispensing information to visitors. However, it was difficult to measure the amount of information that should be given to the family and relatives regarding the patients' conditions and progress because of the diversity of individual backgrounds. Some participants mentioned the following:

'Everyone is eh, eh, background is very different. What is important for me to tell you is not important for her to tell you. What I think is not important she will tell you'.

'Sometimes I feel that visitors get too many, much information. Useless information that only stresses them more and then they look at the monitors and things instead of spending their time touching their, their family member or wife, talking to them. So they are watching that big thing changing, building of stress level'.

The protocol for dispensing of information was especially about those patients who could not give consent or talk for themselves. The policy stated that information could only be given to the closest family members such as spouse, parents or children, that is, especially about the critically ill patients who were ventilated. However, some visitors or relatives would like always to bypass the system by falsely identifying themselves as the patients' closest family members in order to receive information about the patient. It follows that the nursing staff was trying very hard to ensure confidentiality. Some participants verbalised the following:

'*eh, dispensing of information to the relatives or to the visitors. More especially those who can't give consent or cannot talk for themselves. More especially the critically ill patients that are ventilated. But you know, people would like always to bypass the system'*.

'… but the very same family members, they don't understand it when you tell them that you know I cannot discuss certain information with you about somebody that didn't give me consent to discuss about him'.

The findings above is in contrasts with a study on providing patient centred care in an intensive care unit, Kellener (2006:36) indicates that family involvement in ICU is important because the patients in ICU are critically ill and often unconscious or sedated. Owing to this, the traditional nurse patient relationship is then often replaced by nurse family member patient relationship.

Category 6.2a: Visiting policy

The participants' narratives indicated that there was a unit or institutional visiting policy/protocol that explained amongst other things, the time and number of visitors per patient at a time; and the measures to reduce infection control such as spraying or washing hands. However, there were still several challenges experienced with visitors. The visiting protocol was found to be similar in all the units. The following narrative supports the finding:

'We have got a protocol like any other institution regarding information...'

The other issue mentioned was visiting hours. It was highlighted that in the critical care units, there was a stipulated time for visiting and nursing staff tend to become strict with the hours allocated for reasons such as that patients need to have their care and patients need to have a rest. It was indicated that the routine of the unit also leads to restriction of visiting time in order to have the work done. One unit manager mentioned that:

'And the routine before eleven o' clock is so congested and is massive in such a way that you would not be able to cope. So we end up now having to move it out after visiting hour. So if somebody comes in between eleven and seven o' clock; it's very difficult. But I'm telling you they just visit anytime because this is their family and they don't care. Now, when they come in, they realise that the patient now is missing one, two three, four and now they come again and complain that, 'you know my relative didn't get adequate care for one, two three, four'. So, it's problems that we've got.'

Farell (2005:19) indicates that policies and decisions regarding visitation rights are comfort driven and can be unpredictable and perilous. However, the findings of this study indicate that the visitors may be restricted in time for a good reason. Allowing visitors when it is not yet visiting time may lead to interruption in providing proper nursing care to the patient, which may be unacceptable to the visitors. On the contrary,

a study by Langley and Schmollgruber (2006:60) indicates that the family needs should be taken into consideration.

Category 6.2b: Problems with visitors

Some of the problems experienced with visitors were for instance, that families expected the patients to recover quickly, and would therefore blame the staff for any adverse change in conditions that they would notice when they visited the patients. It was also difficult to explain to the relatives changes in the condition of the patients in relation to the disease process. . Some of the meaning units indicated the following:

'When you work in the ICU actually the patient is most of the time one percent of your problem. The family is ninety nine point nine percent'.

'Visitors always give us problems'.

'… and they ask you … not in a friendly manner. As if they are fighting, they are blaming the hospital for something wrong to the patient. For example, I'll give you an example with Mr, eh…'

Some visitors were not honest. Whilst the visitors knew that only close next of kin should visit the patients, they would come to falsely identify themselves as relatives to the patients, so that they could obtain information about the patients' conditions. This evidently brought about problems with dispensing of patients confidential information.

Category 6.3a: Visitors and patients' rights

It was indicated that patients and visitors were now more knowledgeable about their rights. The ethical principle of fidelity refers to the duty to be faithful to another person and to that individual's best interests. Included in the idea is holding information about that person in confidence. Some of the visitors were said to expect to see a doctor every day and every time they came to visit, whilst others would want to stay with the patient even when the visiting hour had past. It follows that the presence of the family in the unit when it is not visiting time interferes with the provision of nursing care. Hence, when the visitors were sent out of the unit, they were quick to report the nurses at management level. The participants mentioned the following:

'Ja, and now you are supposed to do hourly neuro obs. But with the wife sitting next to the bed the whole time, the personnel don't have ehm, wat is dit (what is it)? The freedom'.

'Like the wife yesterday, she went to the matron and asked who the hell is sister X (name removed for confidentiality), that's the unit manager to tell her not to be in the unit if it's not visiting time? Ja, they usually, the first thing they do is they phone the hospital manager and tell them'.

The participants acknowledged that during visiting hours the nurses had to be with visitors and it was good to be with them, to reassure them but sometimes the visitors became a burden. According to Kellener (2006:36), citing the literature from a study that describe the nurses' experiences of interactions with family members, the findings from the participants suggested that the family members sometimes showed mistrust in their professional competence or disliked them as people. In that way, the nurses adopted a defensive position and did not become involved anymore than necessary with the patients and or their family members during visiting times. One of the participants indicated that sometimes it was better to leave the visitors alone with the patient, because when they asked questions they seemed angry, and sometimes it was uncomfortable for the nurses to answer. A participant revealed the following:

'As if they are fighting, they are blaming the hospital for something wrong to the patient'.

It follows that the problem with visitors was brought by the fact that over the past seven years, patients and visitors have become more knowledgeable about patients' rights, which is not wrong. The attitudes of many visitors appear to have changed over the years in that they have become much more demanding. Interestingly, it was mentioned that there were other visitors who were much more understanding. A participant mentioned the following:

'Ehm, they will look at things in a different way. Especially visitors where there is direct family. If it's a direct mother, father, brother, sister, they are much more difficult. But they are also more informed and, we do have cases where we have visitors that just complain every day, every time you see them they complain. But I must say the opposite as well. But visitors are much more demanding'.

Category 6.3b: Control of visitors

It was mentioned that the visitors would still come on in numbers, yet the restricted number was indicated to be two only or two at a time. Some would bring friends even

when it was explained to them that only close family members were allowed to visit. One participant indicated that:

'So sometimes it's really a big problem for us because its, especially if the patient say like if it's the father or mother that is lying here and they are having six or eight children. Then we try and explain to them like say, four must come in the morning and four in the afternoon. They have to be eight in one day for infection control reasons. And the patient is getting a lot of contact ehm, with all these visitors. But it stays a problem. It stays a massive problem'.

Control of visitors was sometimes found to be difficult because the nurses could not police visitors, nor could they argue with a person who claims to be a closest relative to the patient. For high care patients, it was easy to ask the patient if he/she would like to have visitors, whilst identifying the visitors before they see the patient. However, with ventilated and unconscious patients, it was difficult as the patient could not consent to having visitors. Thus, the nurse had to intercede for the patient with the aim of doing good. The nurses always had to adhere to principle of paternalism which is acting or making decisions for another, by way of advocating for the patients. There was usually a presumption that the nurses as decision makers were acting in the best interest of other patients and were doing so without patient's consent. The participants indicated that:

'You do get visitors that are quite and very appreciative, grateful for everything that you do'.

'They can't say thank you enough and then you get people who nothing satisfy them. They never. Nothing you say will ever satisfy them, satisfy them'.

According to Farell (2005:26), when a patient is critically ill in ICU, the family members are often in crises, dealing with hard emotions associated with the treatment of serious illness, and try to make sense of the frightening ICU environment. One participant verbalised the following:

'No, because when they come in they expect to see the patient well, you see today. But tomorrow they expect to see the patient well, miracles to happen. They ask 'why is today my patient on ventilator, cos yesterday it was not'? You see, but even if you try to explain but this and this happened, just say this happened then say you didn't look well at this patient. That is why this and this happened, so then the...'

Worth noting is that some participants confessed that the visitors were important and it was necessary to have them for burden sharing. A participant indicated that:

'Visitors always give us problems. But they are there to be taken care of. We need to share the, the, you know, the difficult times with them. They don't need to be closed outside. You need to address that because it comes from frustration that this person might be a breadwinner and is not well and, and or this person might be somebody in the family that is actually giving more input.'

Kellener (2006:36) indicate that family members experience high levels of stress when relatives are admitted in ICU. The stress experienced can compromise the ability of the family to interact with and support the patient (Kellener 2006:36). According to the AACN (2007:32), sources of stress include fear of death, uncertain outcomes about illness, emotional turmoil, financial concerns, role changes, disruption of personal routine by visitations and the unfamiliar hospital environment. Additionally, the stress can manifest itself as visitors distrust of hospital staff (AACN 2007:32). However, visitors and family members are important during patient care and should thus also be cared for.

Theme 7: Problems impacting on the management of the unit

The findings revealed that the participants were aware of and concerned about the management of the unit and the compromised quality of nursing care provided to the patients in ICU, despite the amount of money patients pay to be nursed in ICU. Furthermore, the participants revealed that they sometimes found that they were not giving the quality of nursing care that they would love to. They indicated that sometimes they were just getting the work done especially when it comes to nurse-patient ratio challenges, where the ratio was more than expected. A participant indicated this about giving quality of nursing care when one member of the staff was allocated two or more patients:

'The best that you can do at the stage, not the best that you are able to do if you are one to one'.

Several categories emerged from the theme of problems impacting on the management of the unit and were as follows:

Category 7.1: Shortage of staff

Shortage of staff was highlighted as one of the problems impacting on the management of the unit in relation to the provision of quality of nursing care. The narrative from one

of the participants revealed that, because the unit was big, patients could be admitted at any time because of the availability of the beds, despite the unavailability of a nurse and/or equipment to care for the patient. Another participant indicated that they were aware of the fact that they were compromising the lives of other patients by admitting new patients even if there were no nurses available to care for the patients. Sometimes the admitting nurse had to leave her own patient and attend to the new patient. Some participants' narratives revealed their concern for the quality of nursing care in relation to the shortage of staff. According to one participant:

'We stretch. As such there is no quality nursing. It's quantity eh, eh, nursing care'.

The transcribed data implies that it is quantity in terms of the number of patients nursed rather than the quality of nursing care given. The use of agency staff was highlighted in relation to shortage of staff. It established the fact that covering shortage of staff was a problem which was overcome by the use of agency nurses. Several other factors relating to staffing such as the knowledge and skills of critical care nurses, and skill mix by using other categories of nurses other than the registered nurses were amongst those mentioned as the challenges relating to the shortage of staff and problems impacting on the management of the unit.

It was indicated that several risks were taken with regard to the provision of quality nursing care, especially with the use of agency staff and non-ICU trained nurses. The participants indicated the following:

'*I realise that we are compromising patient care by lack of trained staff*'.

'The interesting thing in the night is if they can say the patient survived the sister'.

From the transcribed data above, it implies that it was for this reason other categories of nurses such as enrolled nurses (EN) and enrolled nursing assistants (ENA) had to be relied on in the ICUs.

As there is a global shortage of nurses, it implies that there is also not enough nurses in South Africa, and obviously in Gauteng Province, especially in the ICUs. It follows that the emigration of nurses to other countries results in a lesser number of registered ICU trained nurses in South Africa including Pretoria, Gauteng Province (where the study

was conducted). To cover the shortage of staff, the available critical care nurses should work extended hours.

According to Kiekkas et al (2008:385), compromised quality of care is expected to come as a consequence of imbalance between patient acuity and the amount of care nurses are capable of providing. Zondagh ([S.a.]) and BACCN (2001:59-63) posit that safety and quality of patient care is directly related to the number and skill mix of nursing categories. Several international studies revealed that insufficient staffing result in increased errors and patient risks. Penoyer (2010:1521) reports that there is a correlation between nurse staffing and patient outcomes. The author further indicates that critically ill patients demand increased nurse staffing resources and nurses who have specialised knowledge and skills.

Category 7.2: Protocols, standards and directives

The findings indicate that one of the other challenges related to the structure of the unit was not having systems in place that guided the critical care nurses in the management of the unit, especially policies and protocols. It was noted that in some units, there were no such protocols or policies. It thus implies that this had a negative impact on the management of the unit in relation to the delivery of quality nursing care. One of the unit managers indicated that in their unit they had only health care standard protocols, but there were no doctors' protocols; such as inotrope administration or hypertensive crisis management protocols. A participant also acknowledged that the lack of doctors' protocols had a negative impact on the provision of quality of nursing care. A participant revealed that

'There are no doctors' protocols. I only have health care standard protocols. Well, we just pray that nothing serious happen'.

In an ICU where there were two units in one, that is two speciality areas in one unit such as cardiothoracic and general surgery in one unit, it was indicated that it was difficult to use the protocols from one speciality department in the other one as these are two totally different departments, different patients and obviously for different doctors. It was also mentioned that in some units they were utilising protocols that were written by

doctors or professors who had long left the units or even the hospitals. One participant explained that:

'We have got two departments on the same unit under one doctor. This one they want us to manage like this, one they want us to manage like this. On top of that there are no protocols. Sometimes even the doctor is not happy that you manage the patient using the protocols from this side when they come, eish they are not happy'.

It proves to say that this became a challenge to the critical care nurses as the protocols might no longer be applicable to the current doctors. This implies that this made it difficult for the critical care nurses to deliver efficient and quality nursing care with directives from outdated doctors or, no protocols at all. However, not all the units lacked protocols.

Literature highlights that lack of protocols and guidelines contribute to the problems encountered in the intensive care units because nurses do not have directives to manage the patients in the absence of the doctors and errors are likely to occur (Crofts 2006:362). The findings of this study support the opinion that in a good quality ICU there should be protocols and policies (http://www.authosream.com).

Category 7.3a: Infection control

The findings revealed that there were a number of infection control challenges. This was related to the number of patients that had to be isolated which was about forty percent as indicated by one unit manager. Nosocomial infections and communicable diseases were mentioned as infection control challenges. Together with infection was the shortage of staff and unavailability of drugs and supplies. It follows that companies that were supposed to do research and laboratories were very slow in highlighting information related to infection control. To add, it was revealed that it seemed these companies and laboratories had commercialised the industry so much that they were concentrating on making profits and not actually addressing the problems of infection as they come. One unit manager indicated that:

'… challenge that is actually putting more strain also is the issue of, eh communicable diseases. We do, we do admit a lot of patients here and some of them present with the communicable disease that I wouldn't mention on record. But eh, you have to end up now isolating these patients and the minute you isolate these patients, you now experience a problem of shortage of staff. Usually we, we, for high care

patients we take six hour and plus one nurse would be allocated to an ICU patient and for high care, for twelve hours to ICU patients and then for high care patients we talk about six hours, then at times you can nurse two high care patients. But the minute you isolate the very same patient, or one of those patients, then you have to separate those patient, so you give that patient twelve hours. And it's really a problem. And, eh, also, while you're still on that, you end up now because of this shortage of staff, you end up now having to, to take all these bugs (stressed) from the other patient to the other side because if you are you are short staffed, you just have to, to make a way that you will nurse these patients. So the cross infection eh, principles, the basic principles of cross infection at times, we battle with them.

With regard to nursing two patients at a time, some participants mentioned that they did not encounter any problems related to infection control because precautions were being taken. However, it was mentioned that there was a problem when it came to shortage of staff and one nurse had to be allocated such that he/she had to take care of a 'clean' patient and an infectious patient. It was advocated that infection control departments needed to be active and should come up with new inventions as to what could be done with regard to the problems of infection control.

It was indicated that some of the contributing factors to nosocomial infections might actually be due to a lack of cleanliness of the unit as the ancillary staff did not perform their duties satisfactorily. It was also mentioned that this probably had an impact on the quality of nursing care as high rates of nosocomial infections were encountered. Of concern was the nosocomial infection rate of about twenty percent of the total number of patients in the unit at a given time was too high and worrying for one unit. The problem seemed to be a general concern to different units as some participants stated the following:

'The challenge that we've got as a unit neh and eh, as institutions, not referring only to … hospital but as a unit, if you've got more than forty percent or between forty and fifty percent of our patients having to be isolated and to control the nososcomial infections, it's, it's a bit worrying, and it's a challenge. Because to be honest with like, eh, the staffing problems, shortages at times you are forced to say that even isolated patients should be nursed by those eh, people that are nursing patients with nosocomial infections. So it's, it's a bit worrying. To us it's challenging us as a country, it's challenging us as individuals as to what to do'.

'The ward is not clean. If it is cleaned, it's just the floors that are. Windows, curtains, what have you, the shelves are not properly taken care of'.

According to Blot (2007:5), in a study on limiting attributable mortality of nosocomial infection and multidrug resistance in the intensive care unit, a high incidence of nosocomial infections among ICU patients is caused by factors such as invasive techniques used for diagnosis and treatment. The author further indicates that the number of patients receiving immunosuppressive therapy also increases the risk of infection (Blot 2007:6).

Category 7.3b: Medication errors

The competence of nurses had an impact on the quality of nursing care. It follows that medication errors, doctors' orders not followed and deviations in patients' conditions not reported were some of the factors that contributed to compromised quality of nursing care, which came as a consequence of poor nursing care by agency nurses. Delays in the implementation of doctors' orders also contributed to medication errors which were not to the advantage of patients.

' They are not aware of the importance of things, the protocols of the unit, that they must check with their neighbour and the sister in charge, make sure the doctor signed the medication. Make sure they listen to what the doctor say when they give orders, so that she knows what is going on. But still things happen'.

And eh, lots of time is because the sisters or sometimes the staff nurse does not have the insight to realise why it was important to give it immediately. And eh, sometimes you are just too busy to stand there and explain why she must give the medication'.

4.5.2 The needs in the management of a large unit

As part of the probing questions, the participants were asked to identify their needs in the management of the large ICUs. The participants' narratives indicated that they had several needs regarding the management of the large ICUs. From all the themes that emerged; various needs were identified from the two different groups of participants. Similar needs from the two groups were as follows:

Theme 1: Layout and structure of the unit

Reflecting on the data related to theme 1, which was layout and structure of the unit, the following needs were derived from the categories as presented in Table 4.3:

- Facilities and restrooms, and adequate furniture for doctors and nurses
- Enough space for storage of equipment and supplies

Theme 2: Human resources and staffing

With regards to the theme of human resources, the following needs were identified:

- Enough staff capacity to cover all the shifts, to match the size of the unit and cover the ideal nurse to patient ratio
- Trained, qualified and experienced critical care nurses who should work within their scope of practice
- Orientation and workshops for session nurses (agency staff)
- Building own agency pool of staff to cover the shortage of staff
- Permanent ICU resident doctors
- Involvement of ICU manager in recruitment and selection of staff to be appointed in ICU
- Training of more staff in the country (SA) as there were no people to appoint

Theme 3: Material resources

In relation to the theme of material resources, the needs were as follows:

- Central monitors, which are also functional to be available at the central nurses station
- Adequate equipment and supplies
- Properly functioning equipment such as central and individual patient monitors, and prompt repair of equipment when requested
- Adequate stock and medical supplies
- State-of-the-art equipment that matches the technology in ICU

Theme 4: Management of the unit

With regards to the categories from the theme of management of the unit, the following needs were identified:

- Adequate support from senior management
- Autonomy, empowerment and complete independence for the unit manager to run the ICU within the institutional guidelines
- Recognition of ICU nurses as specialists in their own units
- Redeployment policies
- Measures to recruit and ensure retention of staff
- Communication in the unit and with hospital management

Theme 5: Stressors in ICU

With regards to the theme of stressors in the unit, the following needs were identified:

- Adequate remuneration to improve salaries for staff and provision of benefits
- Permanent staff capacity to match the size of the unit
- Commitment of support staff such as ancillary workers, clerks, messengers (patient management executives) to their work
- Good collaboration between nurses and doctors; and pharmacy and other multidisciplinary team members

Theme 6: Visitors in ICU

With regards to theme of visitors in ICU, the following needs were identified:

- Cooperation from visitors and family members of the patients
- Enforced visitation protocols
- Adherence of visitors to visiting hours
- Families to select and introduce a spokesperson
- Policy on dispensing information to visitors

Theme 7: Problems impacting on the management of the unit

In relation to the theme of problems impacting on the management of the unit, the following needs were identified:

- Policies and protocols for care of patients to be available
- Adequate provision of human resources such as sufficient, efficient, experienced, competent, trained and dedicated nurses
- Prevention of nosocomial infections and prompt diagnosis and treatment of communicable diseases
- Adequate nurse patient ratio for isolated patients
- Adherence to principles of prevention of cross infection in the unit

It was interesting to note that there were differences in the needs between the unit managers and the critical care nurses. Some of the needs expressed to overcome the challenges encountered by the unit managers in the management of a large ICU were found to be different from those expressed by the critical care nurses not in the management role and these are presented in Table 4.4. Only those themes that were found to have different needs are presented in Table 4.4.

Table 4.4 The needs of the unit managers and the critical care nurses in the management of a large ICU

Theme	Needs	
	Unit managers	**Critical care nurses**
1. Layout and structure of the unit	• Open unit with duty station in the middle in order to provide a view of all the beds in the unit • Single rooms for patients to provide privacy	• Big units should be divided into two sections to provide efficient supervision and control • Units should have a bed limit of up to 12 per unit • Glass cubicles instead of walls, for better view
2. Human resources and staffing	• Informed staff members who should work according to the policies and procedures of the unit and hospital • ACLS training for all the critical care nurses working in ICU	• Dedicated nursing personnel who do not just work for money • Only ICU trained nurses to be allocated in the unit
3. Material resources	• Prompt repair of equipment when requested • Equipment and supplies should be readily available and supplied when requested • Adequate medication and medical supplies	• Each bed to have own equipment • Control of equipment on each bed should be done by each nurse on a daily basis • Provision of equipment that is appropriate to ICU
4. Management of the unit	• Shared responsibility between the Unit manager, nurses in the unit, doctors, and patients and their families • Acceptable and controlled working hours for staff, including overtime work • Consultation meetings for hospital management with staff regarding issues of staffing and equipment in ICU	• Recognition of ICU nurses as specialists in their own units • Liaison officer to facilitate communication between staff and hospital management

4.5.3 Identified strategies for the management of a large unit

The narratives from the participants revealed that it was difficult to suggest the strategies to overcome the challenges in the management of a large ICU. The critical care nurses and the unit managers had opinions about their needs in the management of the units which were suggested as the strategies. The preliminary strategies were developed from the challenges and needs identified as the needs were derived based on the challenges, and are presented in the next chapter.

4.6 CONCLUSION

This chapter described in detail the implementation of Phase I. The data collection process, data presentation, analysis and interpretation were outlined. The next chapter will present the implementation of Phase II which is the development of the strategies to overcome the challenges in the management of a large ICU.

CHAPTER 5

DISCUSSION OF DATA AND DEVELOPMENT OF THE STRATEGIES

5.1 INTRODUCTION

In Chapter 4, the findings of the study were presented. This Chapter presents the discussion of the findings and development of the strategies as the implementation of Phase II. Phase II is guided by the findings from Phase I and the literature background, based on the conceptual framework and the management process. Strategies were developed based on the findings of this study and presented to expert nurses for review and validation.

5.2 DISCUSSION OF THE FINDINGS

The findings are discussed in relation to Donabedian's model of quality care and the management process. Donabedian's model of quality care encompasses structure, process and outcome standards, whilst the management process contains the activities of planning, organising, leading and controlling. The literature background was used to support the findings.

5.2.1 Donabedian' model of quality of care

According to Donabedian (1992:4), the quality of technical care is defined not by what is done but by what is accomplished. In this study, in an ICU, efficient management of the unit is what should be accomplished. From the findings of this study the themes identified could be correlated with the three types of standards from Donabedian's model. Figure 5.1 depicts how the seven themes fit into Donabedian's model.

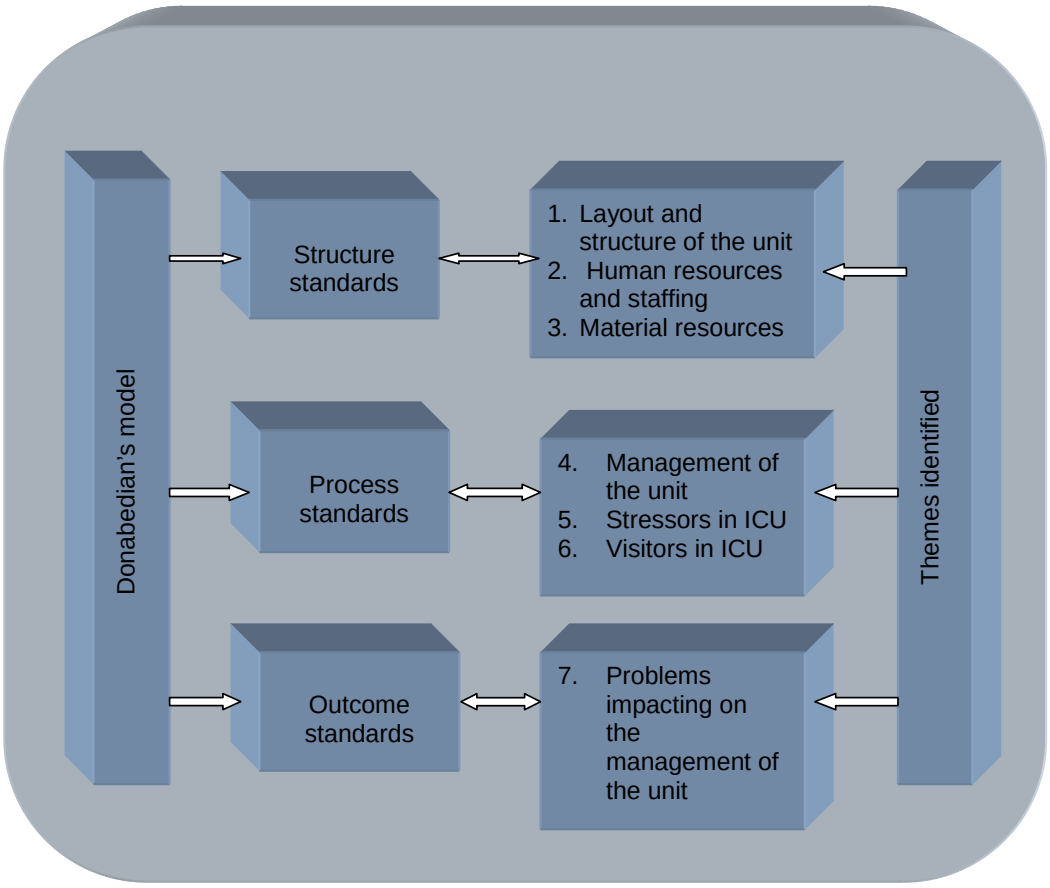

Figure 5.1 Themes identified imposed on Donabedian's model

Donabedian's model was developed with the aim of improving the quality of care. However, it can be applied to any process which seeks quality outcomes. As a result, it was applied to the management process of larger ICUs in this study, which then assisted in the development of strategies to overcome challenges in the management of a large ICU.

Donabedian's (1969:1833) model of quality aims at achieving the standards of care. In this study, Donabedian's model was used to create a framework to link the standards of management of large ICUs. The model defines interlinked standards which are addressed in this study to develop comprehensive and sustainable strategies for the management of larger ICUs.

According to Booyens (2001:310), a standard of care is 'a description of the desired level of performance for judging the quality of outcomes'. To add, Swansburg and

Swansburg (2002:595) indicate that a standard 'is a unit of measurement that can serve as a reference point for evaluating results'. Furthermore, the mentioned authors state that performance is measured and corrective action is taken to ensure the accomplishment of organisational goals.

Donabedian's standards of quality care were used as point of reference to investigate challenges and needs of management in the units. The challenges related to the standards of quality management pertaining to ICUs are discussed in the section that follows.

5.2.1.1 The challenges related to structure standards

Structure standards are the buildings, the premises and the equipment that the organisation makes available and include the number and skills of the staff as explained by Donabedian (1988:1746). In an ICU context, structure means the environment in which care is delivered, namely; the size of the unit, the physical layout, and resources required for the delivery of care; the facilities made available such as the human and material resources, and the documentation of procedures, policies and protocols used to guide the staff to manage the units efficiently and provide quality of nursing care.

- **Layout and structure of the unit**

The findings of this study indicate that the participants encountered problems because the units were large. It implies that the sizes of the units contributed to the busyness, and workload within units as the units are large and almost full to capacity at all times.

The physical layout of some units was such that it was not possible to view all the beds, because the units were divided by concrete wall cubicles. In other units central monitors were not functioning; or were placed far away from the duty station such that it was not possible to view all the patients. For example, in one unit, the central monitor was placed in the secretary's office. Though some units had open plan designs, other units had single rooms only, which facilitated privacy for the patients and assisted with individualised nursing care.

According to Monahan et al (2007:193), the physical environment of a critical care unit is different from that of other units and ordinary wards. An ICU is frequently a modified circle that allows for direct visualisation of all patients at all times. Adequate storage facilities, proper rest rooms for doctors and nurses were not adequate in these units.

- **Human resources**

With regard to human resources, there was a shortage of staff and a lack of competent, trained and experienced ICU nurses because of the global shortage of nurses. This finding concurs with a study by Stone et al (2006:1907), who argue that the decreased supply of qualified registered nurses is related to an ageing workforce, problems with recruitment and retention of personnel, and difficulty in recruiting young people into the nursing profession. This scenario is also seen in South Africa as indicated by Scribante and Bhagwanjee (2007:1316) and Oosthuizen and Ehlers (2007:18), who affirm that the majority of critical care units are staffed by agency nurses; and in the Western Cape province it was indicated that critical nurses are in short supply (Gillespie 2006:50-56).

The findings of this study concur with the literature as was highlighted in relation to staffing numbers in large ICUs. As a consequence, this led to a nurse patient ratio which is not in line with the acuity levels of the patients; that is, sometimes the ratio was 1 nurse to 2 patients for both ventilated and high care patients. Other categories of nurses such as enrolled nurses and care workers had to be relied on in order to cover the shortage of staff. However, in the South African context, in relation to the scope of practice, enrolled nurses are not trained to work in ICUs.

Agency nurses were used to complement the shortage of staff despite them being reported not to be competent enough to work in ICU or were working outside their scope of practice because they were not registered nurses. Moreover, the registered nurses from the agencies were often not ICU trained or experienced. However, in view of the staff shortage, it was indicated that there are no appropriately trained registered nurses to appoint as many nurses emigrated to other countries for several reasons. Wildschutte and Mqolozana (2008 in Collier 2011:18) indicate that poor working conditions and unbearable pressure contributed immensely to nurses leaving South Africa. The findings concur with a study by Oosthuizen and Ehlers (2008:24).

According to Argent (2006:3), the then president of the Critical Care Society of Southern Africa (CCSSA), the challenges of critical care provision are not unique to South Africa. The author states that many countries including the USA are also finding that trained staff is in short supply and the situation is likely to remain like this for the foreseeable future. The findings of this study concur with Lindemann and McAthie's (1990:53) view that hospitals are using temporary staff, usually nurses from private agencies to fill the gap. Another concern was that some units did not have ICU resident doctors or intensivists, and this lead to challenges in providing care to patients in times of emergencies.

- **Material resources**

Regarding material resources, the challenges were brought about by a shortage of equipment and supplies. In some instances, old equipment had to be used or even equipment that is not compatible with modern technology in ICU. Control of equipment was also found to be a problem as there were no systems in place to count equipment per bed, and where monitoring systems were available; these were not adhered to due to a lack of time.

Drugs and medications are amongst the material resources that were in short supply. It was evident that the shortage of drugs was sometimes not the fault of pharmacy, but due to insufficient provision by the supplier such as the company that provides the said drugs to the hospital pharmacy. This meant that pharmacy delayed with the issuing of medication and supplies which then delayed the administration of medication and performance of certain procedures which needed surgical supplies such as bandages and wound dressing swabs. This then resulted in errors or omissions in treatment of the patients.

Regarding protocols and policies, some units had problems because of the use of old protocols for patient care, while other units had no protocols at all. Only nursing care standards were available. Systems such as protocols and directives that are not available to guide the staff in carrying out efficient and quality nursing care in the absence of doctors in the units, also led to errors and delays in commencement of treatment.

5.2.1.2 The challenges relating to the process standards

Process standards are the methods that are adopted by the organisation to provide its services, or in its production process. This is also referred to as the degree to which management conforms to the standards and expectations of the unit (Donabedian 1969:3). In an ICU context, the process standards include the actual procedures and practices implemented by staff in their management of the unit and delivery of nursing care. Several aspects such as management of the unit, stressors in ICU and visitors in ICU were included in the process standards of ICUs, as illustrated in Figure 5.1.

- **Management of the unit**

The process standards are related to the management activities of organising and leading (refer to Figure 2.3). The participants were of the opinion that the unit managers were given a great deal of responsibility with regard to management of their units. It is of concern that the roles and responsibilities of the unit managers were found to be too much for one person.

On the other hand, both the unit managers and the critical care nurses mentioned that the unit managers were not given full autonomy to run the units, despite the responsibility given to them. Disappointingly, there was also an indication that hospital management did not fully support the unit managers, but there was rather interference with the management of the unit as the unit managers were always instructed on how to manage the units. It is evident that critical care unit managers were not given autonomy to manage their units. This finding supports Finn's (2001 in Collier 2011:4) argument that autonomy is one of the most important job components that increase job satisfaction and retention.

According to Scribante and Bhagwanjee (2007:68), nurses practising in the critical care units are generally given high levels of responsibility with high expectations of accountability but in the absence of authority. Too much responsibility is placed on managers in the critical care units; therefore, the nurses are often dissatisfied with the working conditions and lack of autonomy in decision-making.

Seemingly, there was a disjuncture between expectations of hospital management and ICU staff regarding redeployment to other departments when the ICU is not busy. For instance, hospital management was reported to have a lack of sufficient insight into issues related to staffing in ICUs, such that the participants were concerned about redeployment of staff to other units and also the lack of redeployment policies in some units.

The indication was that in some units there were no redeployment policies. However, in other units it was mentioned that the issues of redeployment had been highlighted in the conditions of service. The critical care nurses already knew that when ICU is not busy they would be deployed to other units. Interestingly, besides knowing about the redeployment possibilities, the nurses indicated that it was acceptable, as long as they were not deployed to areas which are not related to adult ICUs, such as neonatal units, because they were competent to nurse adult patients only.

When it comes to the issue of redeployment, critical care nurses acknowledged the risks of being placed in the units where they had lost touch with current practice. Some indicated that redeployment should not be of the same nurse all the time, but rather should rotate amongst other staff members. It seemed that it was unfair to redeploy ICU nurses as these nurses were prepared to work in ICU and it came as a surprise to be sent to other units. According to Collier (2011:51), with redeployment, the nurse is compelled to work in an environment that creates a feeling of insecurity and weariness. This finding is acknowledged by Hass et al (2006:149) who indicate that the inappropriateness of ward allocation has a profound effect on the demeanour and confidence of the nurse.

It appears that the unit manager could not make use of an extra nurse that is usually referred to as a '*floating'* nurse who is on standby for unplanned emergencies and/or admissions, as this nurse would be relocated from the unit and be transferred to another unit temporarily. According to Lindemann and McAthie (1990:52), there is a lack of control over the critical care nurses' practice. The practice of moving the *'floating'* nurse from one unit to the other, or the so called short term redeployment in South Africa, especially during shortage of staff in certain units, is a big problem for critical care nurses. It is mentioned earlier that in Los Angeles (LA) nurses went on strike in protest of this practice.

A non-formal relationship develops between the manager and the subordinates and it includes actions such as giving instructions (Bezuidenhout, Garbers & Potgieter 2007:12). The instructions are mostly influenced by the many facets of the work environment and can include short-term redeployment of staff. Collier (2011:51) posits that a nurse may not refuse delegation due to service level agreement. Bezuidenhout et al (2007:6) further indicate that the specific duties of the employees towards management or the employer are to perform diligently and competently and to obey all lawful and reasonable instructions of the employer. However, with regard to short term redeployment of staff, management seemed to take advantage of this implied duty that the employee is under the control of the employer.

Communication between day and night staff in the units was found to be poor due to lack of time to read the communication book and because agency staff did not find it necessary to be involved in the unit issues as they were not part of the permanent staff in the unit. On the other hand, the critical care nurses were concerned about the lack of, or poor communication systems between staff in ICUs and the managers of the hospitals, and communication between nurses and doctors. This finding concurs with Collier (2011:53) asserts that communication must be effective and consistent to ensure goodwill and mutual respect. The participants confirmed a need for a liaison person to bridge the communication gap between staff and management of the hospitals. On the other hand, the registered nurse participants indicated that agency nurses were of the opinion that it is necessary to hold meetings with the unit manager on a regular basis to discuss issues of concern to agency staff. It implies that agency nurses did not see themselves as part of the team, but rather as separate from permanent staff; because they would like to be addressed separately by the unit manager, without involvement of permanent staff.

Communication was also a problem between professional groups such as nurses, doctors, management staff and families, wards, departments and between different hospitals. For instance, the language used to interpret certain situations can bring about a break-down in communication, such as no bed meaning no space, no equipment and/or no nurse. This could also happen between the doctor wanting to bring a patient to ICU and the critical care nurse. Crofts (2006:365) mention that communication is the heart of effective patient care delivery. But even then in the UK, the reason patients

complain about their care is because of lack of communication and language problems (http://www.healthcarecommision.org.uk).

- **Stressors in ICU**

The morale of the staff was found to be low, coupled with the negative attitude of the staff due to the increased workload and strenuous conditions which is part of the stressors in ICU. Low salaries and long working hours also contributed to the stressors in ICU. The majority of nurses had to work overtime to cover the shortage of staff and also to improve their salaries. These findings corroborates with Williams et al's (2001:212) findings that the common issues and concerns for critical care nurses in their countries include concerns over staffing levels, working conditions and educational standards and wages. Similarly, the participants in this study were of the opinion that remuneration of ICU nurses is very low considering the type of work they are doing and the general conditions in which they work. The environment in ICUs was reported to be very unpredictable, and as such affected the staff performance. Odendaal and Nel (2005 in Collier 2011:1) posit that nurses working in the ICUs are overburdened by heavy workloads; hence the environment in these units is marked with stress.

The participants indicated that they sometimes had to do non-nursing duties because of lack of commitment from support staff in view of their own duties. They were concerned that the support staff did not seem to understand the critical situation of the units and how urgent the activities should be co-ordinated in ICUs. In the same way, Collier (2011:61) indicates that the burden of non-nursing duties is a source of irritation to critical care nurses. Collier (2011) further affirms that non-nursing duties are a waste of time, limit the time available for patient care which then provokes feelings of dissatisfaction to the nurses.

Crofts (2006:362) mentions that other members of the team (like doctors, physiotherapist, radiographers, dieticians, and others) have different expectations from the nurses such as carrying orders as prescribed by them. According to Crofts (2006:363), health professionals see themselves as part of their own professional group first and secondly as part of the multi-professional team. This results in care which is organised and coordinated along strictly hierarchical lines rather than around the

patients. When non-nursing tasks were not performed, the nurses had to take over to facilitate continuity of care.

- **Visitors in ICU**

With regard to visitors in ICU, dealing with the critically ill patients, their families and relatives were found to be contributing to stressors in this unit. Visiting policies were available but often not adhered to because sometimes the visitors would want to overrule the visiting policy. Information giving about the patients' conditions was also not clear as to who should be giving the information, and how much information should be given to the relatives, considering the duty of the nurse to maintain confidentiality of patients' information.

Control of the visitors was reported to be difficult at times as the visitors were found to be knowledgeable about the patients' rights. The visitors sometimes interfered with, or delayed nursing care to the patients. According to Farell (2005:19), nurses tend to be the primary gatekeepers in ICU and have the power to oppress, to enable, to deny access, or to empower the patients' families. Despite the problems encountered with visitors, it was, however, acknowledged that it was important to have the family visit their relatives in ICU, and that it was necessary to provide support to both the patient and family.

5.2.1.3 The challenges with the outcome standards

Outcomes are the combined results of the structure and process standards of the organisation in the production of its services. Outcomes in this study refer to the problems impacting on management of the unit and the provision of quality nursing care, in view of the challenges experienced in the larger intensive care units (Donabedian 1969:24). Outcome standards were related to the management activity of controlling.

The section that follows discusses the findings in the context of the management process.

5.2.2 Management process

The management activities contained in the management process are necessary to manage any working unit, including a critical care unit. Individual critical care nurses had to manage the nursing care of their allocated patients, whilst the unit managers were responsible for managing the units. The themes identified from the findings could be applied to the activities of the management process. Conclusive statements could be made from the identified themes in relation to the challenges experienced by the critical care nurses in correlation with the activities of the management process. Table 5.1 illustrates the themes identified in this study in relation to the management activities.

Table 5.1 Themes identified in relation to activities of the management process

Activities of the management process	Themes identified
Planning • Set objectives and action plan for the unit : health needs for which the unit must provide • Assess environment: policies, legislation • Assess personnel capacity and skills • Identify and provide for the needs of the nurses • Identify and provide material resource	1. Layout and structure of the unit 2. Human resources and staffing 3. Material resources
Organising • Allocate personnel • Set objectives for routine work • Analyse work and organise resources • Classify activities • Delegate duties • Coordinate activities	4. Management of the unit
Leading • Guide and support staff • Apply leadership skills of the unit manager • Supervise staff effectively • Set standards and criteria for efficient management of the unit and provision of quality of nursing care	5. Stressors in ICU 6. Visitors in ICU
Controlling • Monitor and evaluate the work done: take corrective action • Evaluate outcomes and efficiency of the unit • Evaluate quality patient care • Evaluate smooth running of the unit • Evaluate work allocation for fairness • Achieve standards and criteria for management of the unit	7. Problems impacting on the management of the unit

5.2.2.1 Planning

According to Booyens (2001:64), planning as the first step of the management process involves deciding in advance what to do, how and when to do, and who will do it. Planning involves assessment of the unit, determining the needs for which the unit must

provide and identifying and providing the resources. The external forces impacting on the functioning of the unit such as policy changes within the nursing service and new legislation are identified (Muller 2002:115). Also, the internal environmental analysis of personnel for competency (knowledge, skills and attitudes) to perform the expected job, motivation of the staff, equipment, stocks and supplies, policies and authorisation are assessed, in order to put in place the processes to meet the needs of the units. The following themes are discussed in relation to planning:

- **Layout and structure of the unit**

According to the findings of this study, owing to the sizes of the units, it was difficult for the unit managers to carry out the management activity of planning. Planning for the number of patients available in the units on a daily basis was difficult because the units were too big, admissions arrived at any time, some doctors did not book post operative beds and ICUs were the only units where the hospitals sent patients for specialised care following operations and emergencies. Thus, ICUs admitted emergencies and critically ill patients who needed intensive care from the casualty department, theatre, and other wards within the hospitals and also from other hospitals as referrals. For those units with an open plan structure, it was difficult to plan for barrier nursing as there were no single rooms.

- **Human resources and staffing**

With regard to human resources, the findings confirmed that in large ICUs it was difficult to plan for human resource provision due to a shortage of staff and doctors. The bed availability and occupancy rate was unpredictable in relation to the available or needed staff capacity. It was also not possible to make use of services of a '*floating'* nurse in ICU because of the shortage of nurses elsewhere in the hospital and the possibility of redeployment to other units. Staffing matters were made more difficult by having to use other categories of staff whose competency and scope of practice was not in line with the ICU context and skill requirement.

In relation to the allocation of nurses to ICU patients, it was difficult to allocate enrolled nurses to ventilated patients as they were not trained to that advanced level of the

speciality. Whilst some agency nurses were registered nurses, they also did not have the competencies and experience of working in ICU, which consequently made delegation of tasks and matching the acuity level of patients to staff skills difficult because some were not competent enough to nurse ventilated patients. It is evident that due to the shortage of nursing staff, and especially experienced and ICU trained nurses in South Africa, it has become common practice to allocate available agency nurses in ICUs, regardless of whether they have the necessary qualifications or experience.

Some of the units did not have ICU resident doctors, which made it difficult to provide emergency medical care when needed. In the private sector, doctors were not always available when they were needed in the units, or they always came late for patients' rounds, which then delayed implementation of new orders for the patients. There was a lack of doctors' round policies; and a lack of doctors' protocols and directives for patient care. Protocols should be available in the unit to guide nursing care.

- **Material resources**

With regard to material resources, equipment and supplies were also not adequate, because the units' stock limits were exhausted when staff in the units was busy with admissions or other emergency procedures. The medications were limited due to the general demand and as such the pharmacy was not able to dispense certain drugs. Control of stock, equipment and supplies was not done properly as there were no good control measures in place, and some of the equipment were broken and not reported.

5.2.2.2 Organising

Organising is the orderly structuring of the various functions to ensure smooth running of the unit (Muller 2002:107). According to Muller, Bezuidenhout and Jooste (2011:27), organising is concerned with the implementation of the plan. It includes the organisation of work such as routine activities in the unit and personnel allocation. Muller et al (2011:27) further mention that organising is the logical and orderly structuring of teams and groups to perform activities to accomplish the planned goals. From the findings of this study, it was revealed that there were challenges related to the implementation of various functions in a large ICU such as organising staff from the agency. Personnel allocation to specific patients' tasks became difficult due to the shortage of qualified and

experienced staff. Management of the unit was identified with the activity of organising and is discussed in the section that follows:

- **Management of the unit**

There is a global shortage of nurses which resulted in the agencies being overwhelmed by requests for staff which is already in short supply**.** It was difficult to obtain staff because the agencies were using the same nurses for allocation to different hospitals. However, some hospitals were able to recruit agency nurses and build their own agency pool by making off duties for these nurses who then became semi-permanent session workers for those particular units. On the other hand, agencies would provide nurses who were not competent to work in ICUs.

According to Schermerhon (2008:237), organisation is the way in which the unit is 'formally structured in terms of division of labour, communication channel, operational units and management levels that work together to achieve the goals/objectives that have been planned'. There is authority and communication between departments and positions. Organisational principles such as unity of command, chain of command, and division of work, responsibility, authority, accountability, power and delegation are also included in organising (Smit et al 2007:189).

The findings indicated that there were challenges in relation to the following organisational principles:

Unity of command: with unity of command, subordinates should only report to one supervisor (Smit et al 2007:189). However, the findings revealed that personnel allocation became difficult with the shortage of staff, such that the unit manager would end up having an allocated patient. When the unit manager was having a patient, then he/she could no longer supervise others but had to concentrate on caring for his or her allocated patient. The subordinates thus had to report to any immediate person available for assistance, which meant the nurses might have had to consult with each other because the supervisor is not available.

Division of work: division of work involves allocation of tasks or delegation of duties (Smit et al 2007:189). Personnel allocation became difficult due to the shortage of

experienced staff and the use of other categories of staff whose scope of practice is not in line with intensive care skills and knowledge. The number of patients with communicable diseases nursed in ICU also brought about challenges with personnel allocation in view of isolation of these patients to adhere to barrier nursing principles. The nurse patient ratio became a challenge with the allocation of personnel to high care patients with infectious diseases, who were supposed to be nursed at a ratio of one nurse to two patients, especially if only one of the patients was required to be isolated from other patients. Assisting each other with tasks was difficult as a nurse caring for an isolated patient could not assist with 'clean' patients for fear of spread of infection.

Chain of command: chain of command links subordinate, supervisors and management with someone at the next level of command (Smit et al 2007:189). According to the findings, there were communication challenges within a big unit. The findings acknowledged that there was a problem communicating with management; and thus a liaison person was needed to bridge the distance between nurses on the floor and the management of the hospital. In addition, hospital management was reported not to hold meetings with staff and thus did not understand what was happening at the functional level in the units because they only judged the functioning of the unit on the reports and the numbers of patients nursed in the units, and worked from an operations level, meaning they were more concerned about quantity while quality of nursing care is being compromised, particularly in ICUs.

Responsibility, accountability and authority: responsibility is the obligation to achieve goals (operational, tactical and strategic), make decisions and give instructions (Smit et al 2007:189). The unit managers in ICUs were given a huge responsibility in relation to managing larger units and that was negatively affected by a large number of patients and a limited number of experienced nurses.

Accountability applies to activities executed under command. Organising is work divided, resources arranged, and activities coordinated. The unit managers were accountable for all the activities in the units, including the well being of patients and their families and that of the staff. Unfortunately, hospital management did not appear to assist in the management of the units, because the unit managers were responsible and accountable for the units, but were only seen as interfering with the management of the

units when necessary for them. Interestingly, the unit managers were not given authority over their nurses when it came to short-term redeployment.

The responsibility of the unit managers was further extended, such that there was stress related to nursing patients in addition to having to manage the unit. As a result, when the nurse patient ratio did not match the acuity levels of the patients, the unit manager had to take over nursing care, whilst also having to deal with issues related to shortage of equipment and supplies, and other related matters to meet the needs of the unit.

5.2.2.3 Leading

Leading includes activities such as monitoring and supervising subordinates' work and assignments, and implementing disciplinary action (Smit et al 2007:10-11). Components of leading include

- direction
- supervision and motivation
- mentorship and coaching.

Leading is also referred to as directing and it involves the leadership responsibility of the unit manager (Muller 2002:107). The identified stressors in ICU are discussed in relation to the leading function of the unit manager.

- **Stressors in ICU**

Supervision of work in the unit by the unit managers became stressful because of a large number of patients and staff that needed to be supervised in big units. The findings revealed that often when the unit manager did nursing rounds, some of the activities of patient care were not done such as prescriptions not carried out because the unit manager was too busy to observe that in time. The nurses displayed low morale because of poor remuneration, stress of working long hours and overtime, and increased workload, which consequently led to burnout and a high turnover rate.

In the large units, the span of control becomes too wide to carry out the supervisory function efficiently. *Span of control* refers to the number of subordinates that report to a

manager or supervisor (Smit et al 2007:189). The unit manager can only manage a certain number of people at a time. The span of control can be shorter or wider depending on the number of subordinates. The problems with the span of control in large ICUs emerged when the unit was fully admitted as there were then too many nurses to supervise effectively. Understandably, it was indicated that it was difficult for the unit manager to oversee all the nurses and patients in a large unit.

Providing guidance to staff became a challenge to the unit managers, especially because it was indicated that there was a lack of support from senior management in the management of the unit. The unit managers were left with the responsibility to run the units. On the contrary, they were not given full autonomy and independence to run the units as senior managers often interfered with the management of the units without helping with problems.

The units were always busy such that there was no time for orientation. Orientation and mentoring of agency staff who did not work consistently in one unit was essential to enhance functionality and quality patient care. Collier (2011:47) indicates orientation is important when placing agency nurses in a new environment. In addition, Collier (2011:47) confirms that lack of familiarity with the environment could lead to errors and incidents that could harm the patients. This is also a factor affecting agency nurses negatively, causing much stress for them.

The researcher is of the opinion that while some agency nurses were not responsible and accountable, it was difficult to deal with their offences as they are independent practitioners who are not accountable to the units. For example, there were reported cases of agency nurses who did not turn up for work, who refused delegation whilst at work and those who would when reprimanded decide to leave their patients and go home before time. Therefore, it was difficult to reprimand them because even if they were reported to their agencies, they would disappear and move on to other hospital ICUs. It seems as if these agency nurses are taking advantage of the general shortage of nurses such that they no longer adhered to the ethics and principles of nursing. However, strict measures should be put in place for proper control and management of these nurses.

- **Visitors in ICU**

Visiting protocols and policy on dispensing of patients' confidential information were regarded as challenges experienced by the nurses. It seemed that different opinions exist in terms of the type and amount of information to be given to the family of the patients. Some participants felt that what is important to report about the information may not be the same for another nurse. It is evident that conflicts did occur between visitors and the nurse with regard to the times of visitation.

5.2.2.4 Controlling

To control is to monitor progress in view of achieving the set objectives. Controlling is the responsibility to promote effective management and cost effectiveness in the unit. Standards are set to promote quality within the unit (Muller 2002:107). Controlling illustrates how successful the unit has been in measuring and maintaining performance, coordinating assignments and adhering to policies and procedures (Shermerhom 2008:454-464, Smit et al 2007:392). In this regard, it is related to the efficient management of the units.

- **Problems impacting on the management of the unit**

With regard to controlling there should be standards and criteria against which performance can be measured. In order to manage an ICU efficiently, control measures in view of structure, process and outcome standards are necessary. Structure standards represent the physical layout and size of the unit, and inventory of equipment and supplies. Process standards related to accomplishment of objectives through human resources and, classifying and co-coordinating activities. However, the shortage of trained and adequately experienced critical care nurses and unavailability of doctors in some units made it difficult to accomplish the objective of providing quality nursing care.

Outcomes focus on the results of direct association (Cleverly & Cameron 2007:334). Efficiency and effectiveness are to be achieved for best output in view of the set standards and attainment of objectives (Cleverly & Cameron 2007:6) in managing the unit. Meeting the management objectives of the units was unsatisfactory because of several challenges identified in the findings of this study. The researcher is of the view

that when management of the unit becomes inefficient, then quality of nursing care is compromised.

In summary, the findings of this study were discussed in relation to Donabedian's model and the management process. In the section that follows, Phase II is discussed.

5.3 PHASE II

Phase II is the presentation of the outcomes of this research. The purpose of Phase II was to develop strategies to overcome the challenges and address the identified needs of the unit managers in the management of large ICUs. The objectives of Phase II were to merge (combine) the data from Phase I (steps 1 and 2) and develop the strategies to overcome the challenges in the management of larger critical care units.

The evidence from Phase I was integrated and synthesised. Inductive reasoning was used to develop the preliminary strategies from the identified needs and those strategies suggested from the findings of Phase I (steps 1 and 2). Inductive reasoning means to move from the particular to the general (Brink et al 2006:104; Streubert & Carpenter 1999:8).

The researcher developed preliminary strategies that could be applicable to facilitating the management of a large ICU. The preliminary strategies were operationalised, and amended to become interim strategies; these were submitted to a group of expert nurses for review and opinion. Final strategies were then derived from the interim strategies following validation by expert nurses. Table 5.2 presents the merged (combined) data from Phase I, which was used as evidence for the activities of Phase II.

Table 5.2 Combined data of individual and focus group interviews

Theme	Individual interview	Focus group interview
1. Layout and structure of the unit	1.1 Unit size 1.2 Physical layout 1.3a Facilities and structural requirements	1.1 Unit size 1.2 Physical layout 1.3b Busyness of the unit
2. Human resources and staffing	2.1 Appointment of sufficient, qualified, experienced and competent staff 2.2 Permanent ICU resident or in-house doctor 2.3 Nurse patient ratio 2.4a Agency staff	2.1 Qualified, experienced and competent nurses 2.2 Resident doctors 2.3 Nurse patient ratio 2.4b Other categories of staff and agency nurses
3. Material resources	3.1 Equipment availability 3.2a Supplies 3.3 Medication supply	3.1 Equipment amount and quality 3.2b Control of equipment
4. Management of the unit	4.1 Roles and responsibility of unit manager 4.2 Communication 4.3 Recognition, autonomy and support issues 4.4 Redeployment of staff 4.5 Multidisciplinary collaboration	4.1 Roles and responsibility of unit manager 4.2 Communication 4.3 Recognition, autonomy and support issues 4.4 Redeployment of staff 4.5 Multidisciplinary collaboration 4.6 Problems related to doctors 4.7 Recruitment of staff
5. Stressors in ICU	5.1 Workload and strenuous conditions 5.2 Remuneration 5.3a Staff morale 5.4a Unpredictable working environment 5.5 Non nursing duties	5.1 Strenuous conditions 5.2 Remuneration 5.3b Staff performance 5.4b Record keeping
6. Visitors in ICU	6.1 Dispensing of information 6.2a Visiting policy 6.3a Visitors and patients' rights	6.1 Dispensing of information 6.2b Problems with visitors 6.3b Control of visitors
7. Problems impacting on the management of the unit	7.1 Shortage of staff 7.2 Protocols, standards and directives 7.3a Infection control	7.1 Staffing 7.2 Protocols, standards and directives 7.3b Medication errors

5.4 STRATEGIES TO OVERCOME THE CHALLENGES

A strategy is 'a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem' (http://www.managementstudyguide.com/swot-analysis.htm).

A strategy is regarded as an action plan for achieving the desired goals. The assumption in this study was that critical care nurse managers with a clear and fair job description should be able to manage a unit effectively. Strategies were developed to guide the unit managers to overcome the challenges in the management of large ICUs. Based on the findings of this study, it is believed that the proposed strategies will also address the needs of critical care nurses in the management of ICUs.

The strategies are recommendations that have been developed systematically in this study and their purpose is to assist the unit managers and critical care nurses to manage large ICUs efficiently. The strategies are meant to provide the necessary direction for realising specific goals.

5.4.1 Aims and objectives of the proposed strategies

The aims of the proposed strategies were to

- assist the unit managers to overcome the identified challenges in the management of larger ICUs
- assist the critical care nurses to address their needs in relation to the management of the units

The aim of developing strategies was to assist the unit managers to reach broad consensus on objectives and indicators for sustainable management of an ICU over time. It was further envisaged to provide mechanisms that would enable critical care nurses to express their needs and interact with hospital management on matters pertaining to the management of large ICUs. Some of the strategies may however not be easy to achieve.

5.4.2 The scope of the proposed strategies

A strategy is concerned with issues that have not been dealt with before in the same form (http://wwwEzineArticles.com/). The targeted professionals in view of the proposed strategies include the critical care nurses, unit managers, hospital management, doctors, agencies and agency staff, multidisciplinary team and support staff in ICUs as target users. The methodology for the development of the proposed strategies was

discussed in Chapter 3 (refer to section 3.6.1). Figure 5.2 that follows illustrates the schematic representation of the methodology followed for developing the strategies.

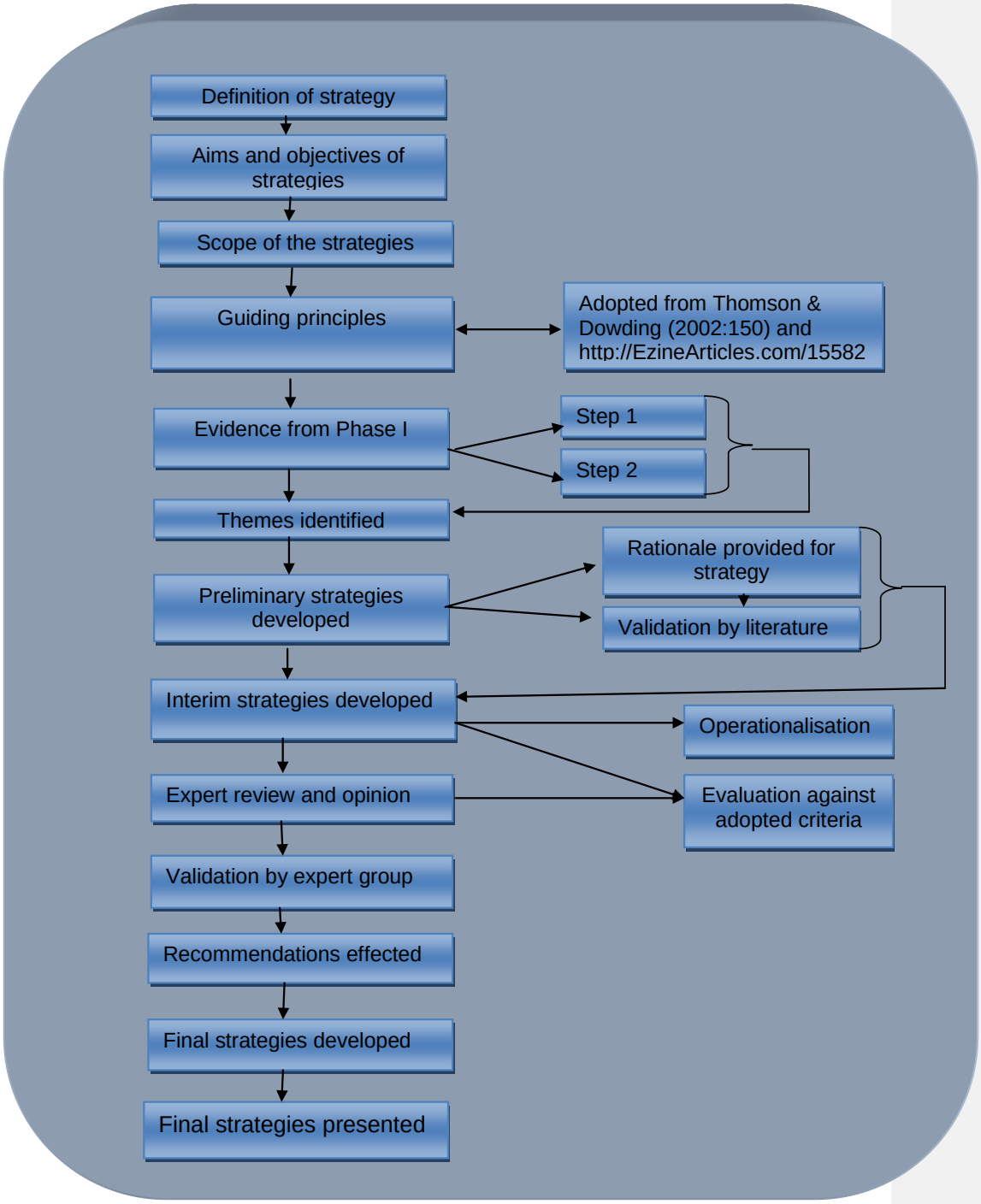

Figure 5.2 Diagram of methodology for development of strategies

5.4.3 Preliminary strategies

The preliminary strategies were developed from the findings of this study in relation to the challenges encountered, and the needs identified by ICU nurses in view of the management of large ICUs. The themes that emerged from the findings were used to present a framework of the findings for preliminary strategy development. Figure 5.3 illustrates the themes identified for which preliminary strategies had to be developed.

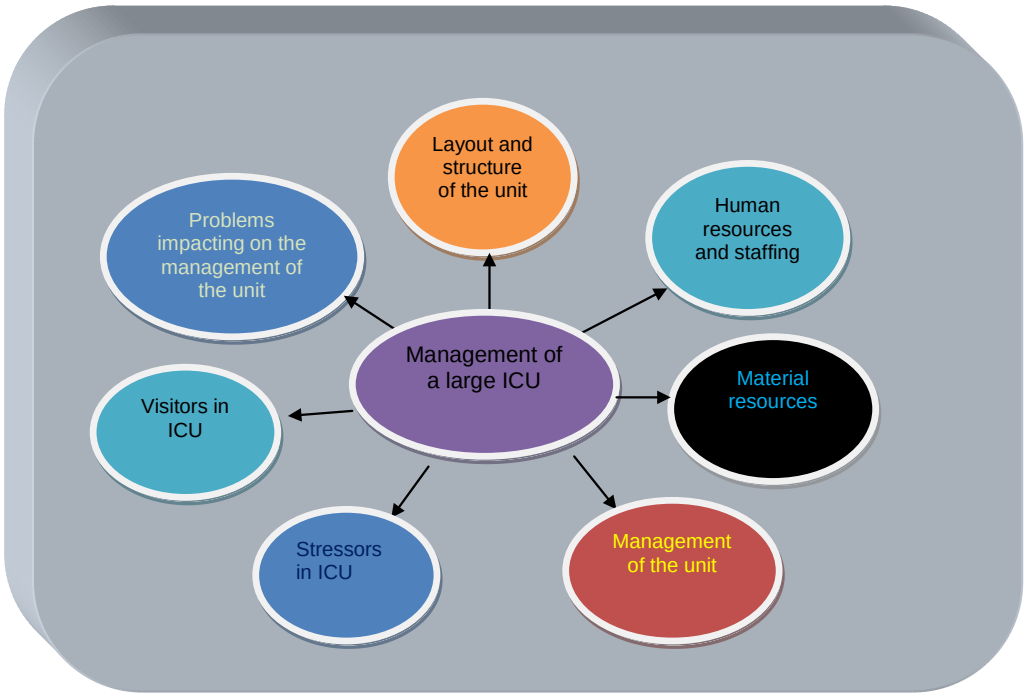

Figure 5.3 Framework of the themes for strategy development

As the preliminary strategies were developed from the identified themes, themes 1 to7 were tabulated and the categories from each theme were identified and presented with each strategy and rationale provided for the strategy. Tables 5.2.1 to 5.2.7 present the preliminary strategies and their rationale.

Strategy for Theme 1: Layout and structure of the unit

Strategies recommended in view of layout and structure of the unit may not be implemented immediately in view of the economic factors and need for physical

restructuring of the units. The strategies would apply to new ICUs or when ICUs are upgraded, as there are financial implications. In some instances, patients may have to be temporarily relocated to other units in order to restructure the units. To facilitate effective management and supervision of the units, strategies should consider the size and physical layout of the unit.

Table 5.2.1 Strategy for layout and structure of the unit

Strategy	Rationale and operationalisation
Unit size: Division of big units into sections	To facilitate supervision and reduce the span of control for the unit manager by having shift leaders for each section of the unit To adhere to the standard or universal size of an ideal ICU (Ferdinande 1997 in Adam & Osborne 1999:21; Rashid 2006:286) which is six to ten beds
Physical layout: Division of the cubicles with glass rather than concrete walls, and where there are glass partitions, provision of curtains against the glass Redesigning open plan units into single rooms	To promote privacy by nursing patients in closed rooms for privacy To promote infection control and privacy during patient care and to reduce patient movement and costs related to transfer of patients (upgrading and downgrading patients' status in the unit)

- **Unit size and structure**

The size and structure of the units are an important aspect that affects the management of the unit. Consultation with staff, especially the unit managers regarding the size and structure of new units is necessary. This promotes decision-making and buy-in of the unit managers on issues that affect their units. The involvement of staff facilitates sharing of knowledge, experience and ideas for an ideal ICU and also allows the nurses to express their needs with regard to the structure and layout of new units.

Larger units can also be divided into sections, where supervisors can be allocated a certain number of beds and nurses. If the units are divided into sections, each section must have its own central station and functioning monitor. A centralised nurses' station with a functioning central monitor for each unit is necessary to provide a better view of the patients, better visibility of the unit and to recognise problems when they arise. Facilities and structural requirements are necessary for provision of space for storage of equipment and supplies. Restrooms for visitors, staff and doctors should be provided. These will depend on the budget allocated to the hospital and units respectively. The unit manager should write a well substantiated motivation requesting the renovation of current ICU facilities.

- **Physical layout**

Concrete walls may be an obstacle to observing what is happening in the next cubicle. In this case, when problems arise, nurses may not be immediately aware of the need for assistance due to the obstruction by the walls. It may not be immediately possible to alter the layout of the units. However, single rooms in ICU provide and promote privacy and assist to downgrade and upgrade patients according to the acuity levels without moving or transferring them elsewhere. Single rooms are also cost effective as patients can pay according to their acuity levels whilst in the same room.

Strategy for Theme 2: Human resources and staffing

Due to the long standing shortage of qualified critical care nurses in South Africa, the ideal of adequate staffing and appointing qualified and competent nurses would not be feasible at this stage. A possible remedy might be to recruit interested novice registered nurses to ICU and train them as critical care nurses. However, there would be financial implications for the hospital.

Table 5.2.2 Strategy for human resources and staffing

Strategy	Rationale and operationalisation
Appointment of appropriate competent and experienced staff: Ensuring that training, experience and ACLS training is a prerequisite for all the nurses in the unit	To promote competency in attending to life threatening emergencies such as cardiopulmonary resuscitation competently whilst waiting for the doctor's assistance by providing in-service training opportunities
Agency staff: Building own pool of agency nurses and providing them with unit off duties Collaboration of the hospitals with agencies to have the same nurses working in the same hospitals at a regular basis	To ensure that the same agency staff is always available when needed by listing the agency nurses who work regularly and consistently in the unit To minimise time wasting by requesting and booking agency staff by building a relationship with the agency nurses To help familiarise them with the settings thus ensuring orientation to the unit and knowledge of protocols and procedures by providing training to the agency nurses
ICU resident doctors: Advocate for the availability of a doctor 24 hours a day and practice as a closed unit, if resources allow	To provide a full time ICU resident/in-house doctor (http://www.authosream.com accessed 16/8/2010) by negotiating with management and doctors to avail a doctor in the unit
Nurse patient ratio and other categories of nurses: Allocate the nurse patient ratio depending on the acuity level of the patients	To promote provision of quality patient care (Scribante & Bhagwanjee 2007:1315; Buppert ([sa] and California Nurses Association 2005:51) by monitoring acuity levels regularly in order to determine the number of nurses needed

- **Appointment of competent and experienced staff**

ICU nurses that undergo specialised training acquire knowledge, skills and attitudes needed for the specialised level of caring in critical care nursing. This is the reason critical care nurses undergo training which leads to an additional qualification in critical

care nursing. Training and development courses for ICU nurses promote competency and up to date knowledge. Therefore, critical care nurses should be constantly updated, to maintain the skills and competency for effectively performing the procedures in ICU.

- **Agency staff**

The units and hospitals should build their own agency pool of nurses and provide them with unit off-duties. Agency nurses work in the ICUs of many different hospitals depending on the availability of work. If agency nurses can be committed to only work in one hospital; and off-duties are made for the specific nurses, it will diminish the time spent by the unit managers phoning the agencies to request staff, because, the nurses have off-duties and already know when they should come to work. Agency nurses' availability helps the unit managers to plan staff in advance and might be able to balance the staff numbers by personally informing the nurses to be available for work.

- **ICU resident doctor**

A permanent ICU resident or in-house doctor is an asset. However, it is difficult to prescribe the staffing model of the unit (refer to Chapter 2, section 2.2.1.1.2) in relation to the provision of medical doctors because each ICU functions under the policies of the specific hospital. The hospitals are either private or public. Private hospitals are usually part of medical groups such as Netcare, Mediclinic, Lifecare, and others, where each has its own policies and regulations. In addition, Lee (2002:2) indicates that the characteristics of the intensive care units vary in organisation and structure, and different staffing models used. The recommendation is that each ICU should have a permanent resident/in-house doctor to oversee the patients in the unit.

- **Nurse patient ratio and other categories of nurses**

Acquiring the ideal nurse patient ratio is presently difficult due to the severe shortage of trained critical care nurses, the large unit sizes, the unpredictable environment in ICUs and the use of other categories of nurses such as Enrolled nurses. Other categories of nurses are relied on in the units due to the shortage of critical care nurses. Their scope of practice however, makes it impossible to condone their allocation to ICUs.

Nonetheless, there is no consistency in the use of other categories of staff in the different units of public and private service providers.

Doctors admit patients to ICUs despite the shortage of staff, thus nurses end up having to nurse more patients than they can handle safely. With regard to patient allocation, the ratio of patients to a nurse should take into account the acuity levels of the patients before considering assigning patients to a critical care nurse. Other categories of nurses should be allocated high care patients instead of ICU patients, whilst under the supervision of registered nurses. Accordingly, doctors should also understand the ICU protocol for admission of patients, so that they only admit patients when staff is available to care for those patients.

Strategy for Theme 3: Material resources

Availability of material resources will depend on the budget of the units and the turnover of patients if it is at private hospitals. Provision of equipment may be facilitated by a memorandum of agreement between the unit and the company that supplies the equipment in the form of leasing.

Table 5.2.3 Strategy for material resources

Strategy	Rationale and operationalisation
Equipment and supplies: Provide sufficient, well maintained and relevant equipment	To ensure the availability of sufficient and well functioning equipment for ICU by negotiating with management and companies on a continuous basis for appropriate budgeting and the provision of relevant and well functioning equipment
Allocate a knowledgeable person for stock ordering and taking	To ensure timely delivery of adequate supplies by properly orientating the allocated person on the policies and procedures to order equipment and supplies
Medication: Initiate negotiation for prescription of alternative generic drugs	To promote the adequate provision of drugs by issuing readily available generic drugs

- **Equipment and supplies**

Appropriate equipment and technology is essential in ICUs. The unit should design a means to control equipment regularly such as having a checklist for monitoring the availability and functioning of the equipment around each bed, at least twice a day. The checklist should be completed by the nurse (both day and night) who is working at that bed. For the empty beds, a nurse should be allocated to check all the equipment for these beds, and to identify those pieces of equipment that need repairs or replacement. Regular reporting should be given to the unit manager of the problems encountered in relation to equipment.

To ensure adequate supplies in the unit, stock should be controlled by a knowledgeable person allocated for stock taking, such as the unit clerk or a registered nurse. According to the researcher's observation, each nurse in the unit is delegated an extra duty besides nursing care. The extra duties include amongst others stock control, equipment control and drug control. The minimum and maximum stock levels for the units should be identified and adhered to when ordering supplies. Therefore, each patient should have a record of supplies used per day to assist the unit managers to account for the stock and supplies used. Emergency stock should be organised with the help of pharmacy and or central sterilising department if it is sterile packs.

- **Medication**

With regard to medication and drugs, there should be initiation of negotiation between management and pharmacy providers to issue generic and affordable drugs. The doctors should be notified telephonically by pharmacy of the unavailability of the prescribed medications so that alternative or generic alternatives can be prescribed. The unit supervisors should also monitor the administration of medication at prescribed intervals in order to prevent the risks of medical errors and of resistance to drugs.

Strategy for Theme 4: Management of the unit

Some strategies will be difficult to achieve if the role of the unit manager is not clarified.

Table 5.2.4 Strategy for management of the unit

Strategy	Rationale and operationalisation
Roles and responsibilities: Role clarification	To ensure clear expectations of the roles and responsibilities of the unit manager by providing the unit manager with a clear job description
Communication: Provide a liaison officer to liaise with management on issues related to the management of ICU Develop a policy on event reporting for the unit Provide time for report giving and taking Orientate agency staff about the policies and protocols of the unit	To facilitate and maintain open lines of communication between ICU staff and hospital management by electing a specific nurse to facilitate communication with senior hospital management By taking legal requirements into consideration, ensure a standardised procedure for reporting on incidents To facilitate communication amongst staff by having brief meetings and consulting the communication book during report-giving and hand-over sessions To familiarise agency nurses about the requirements in terms of procedures and to ensure more effective functioning by expecting policies and protocols to be followed in the unit
Recognition, autonomy and support issues: Afford the unit manager recognition and autonomy in the running of the unit	To recognise and acknowledge ICU managers as accountable experts in their units by providing them with the positional and power to make decisions in the units
Redeployment of staff: Develop a redeployment policy	To enhance cooperation from nurses when the need for deployment arises by orientating them on the policy and consulting with specific nurses before deploying them to other units
Multidisciplinary collaboration: Develop an orientation and in-service training programme for support staff	To emphasise the importance of other staff members' contribution to the unit's success by providing orientation and training on their job description and expectations

- **Roles and responsibilities**

Roles and responsibilities of the unit manager should be clarified to provide clear expectations of the unit manager to management and other stakeholders. The unit managers should be afforded the authority to run their units in line with hospital policies.

- **Communication**

Regular meetings for staff and management should be arranged on a monthly basis to enable management to gain insight into issues of concern related to ICUs, from the nurses themselves. A liaison officer, who will be either a nominated ICU nurse, is important to bridge the distance between staff and management and to facilitate open lines of communication.

An event reporting policy should be in place to facilitate communication in the unit and adhere to legal requirements. The unit manager should implement formal scheduled hand over times to read out the communication book and hand over report to all staff in the unit when resuming duty on day and night schedules. All staff members, including agency staff should be oriented about the policies and protocols of the unit in order to keep them up to date with matters pertaining to the unit.

- **Recognition, autonomy and support issues**

Recognition of unit managers in their own unit promotes independence. The unit managers should be involved in matters that pertain to ICU such as hiring staff to promote decision-making and identification of possible candidates for employment in the unit.

- **Redeployment of staff**

A redeployment policy should be developed, and it should be explicit and given to staff on appointment in ICU to orientate them about the possibility of short-term redeployment and the circumstances thereof. The policy will also promote co-operation between staff and management and the acceptance of delegation from the unit managers regarding short term deployment to other units.

Before management can order redeployment of staff from ICU, the needs of ICU should first be taken into account even if there are no patients. ICU staff without patients may have to do tasks such as infection control by cleaning up equipment and also in-service education.

- **Multidisciplinary collaboration**

Multidisciplinary collaboration between ICU staff and the multidisciplinary team should be facilitated by the unit manager in collaboration with their sectional managers to ensure cooperation in carrying out tasks promptly. The support staff should be orientated about the importance of their role and contribution to ICU and encouraged to carry out their duties willingly and efficiently.

Strategy for Theme 5: Stressors in the unit

Due to the unpredictable working environment in ICUs, it is not easy to strategise for the stressors in the units. There are different facets of stress experienced by the critical care nurses, which do not manifest the same for all the nurses. As a result, workload, remuneration and non-nursing duties are some of the identified stressors and the most common way of stress manifestation was found to be low staff morale and poor performance.

Table 5.2.5 Strategy for stressors in the unit

Strategy	Rationale and operationalisation
Workload and strenuous conditions: Encourage and allow staff to take vacation leave Allow nurses to rotate between day and night duty Enforce control over nurses working too many overtime shifts	To promote wellness and afford the nurses time to rest by empowering nurses on how to manage stress and their own energy
Remuneration: Improve nurses' salaries and provide incentives for exceptional performance	To grant acknowledgement for level, quality and amount of work delivered by ICU nurses by providing monetary rewards through negotiations with management assisted by union representation.
Staff morale and performance: Provide support to ICU nurses through acknowledgement and incentives Develop an orientation and training programme for agency staff	To improve the morale of the ICU nurses by showing appreciation for their commitment to their work and patients To ease their integration into the unit and to improve their performance by offering the relevant training
Non-nursing duties: Develop an orientation and in-service training programme for support staff	To emphasise the importance of their duties in the unit and their responsibility in being an effective team member

- **Workload and strenuous conditions**

With regard to workload, as the units are unpredictable in terms of admissions and discharge of the patients, it would be ideal to have doctors who book beds for patients. When doctors book the beds for admission of patients to ICU, the unit managers make provision for those patients in terms of human and material resources. Emergency admissions are always a problem even when anticipated because it is not possible to have an empty bed or a 'floating' nurse waiting for emergencies.

The nurses should get enough time from work to promote rest. Structured leave planning for staff is essential to facilitate staff vacation leave which will allow time off from work. All nurses should have the obligation to rotate between day and night shifts.

- **Remuneration**

It is difficult to strategise for remuneration as the financial needs of individuals vary. Hospitals have policies on remuneration, where nurses are offered different incentives and allowances for night duty, ICU, holiday and overtime allowances. Negotiations for better remuneration are usually entered into with the help of the labour unions. The hospital management should consider ICU to be a scarce skill unit and provide an occupation specific dispensation for working in these units.

- **Staff morale and performance**

Evidence of stress is low staff morale. Nurses working in the ICUs need to be acknowledged through incentives to improve their morale. In addition, orientation of agency staff in the unit relieves the stress of being in a new environment. Monahan et al (2007:196) indicate that lack of orientation and mentoring in terms of the development of clinical expertise and the emotional maturity needed for handling stress in the critical care environment is a problem. The agency nurses who are allocated in the ICU settings experience stress related to the expectations from colleagues, management, doctors as well as patients regarding performance and delivery of quality nursing care. Because of the busyness of the unit and staff shortage, it is sometimes not possible to put them on orientation till they are well conversant with the work in the units. A buddy system for agency staff will promote confidence of working in an unfamiliar environment. The buddy system includes allocating the agency nurse to a permanent staff member who will help and support the agency nurse where possible.

- **Record-keeping**

One of the stressors related to workload was found to be record keeping, especially when one nurse is, or has taken care of two patients. Records are legal documents kept about the patients' conditions. It is important for clear and complete records to be kept by the critical care nurse. Duplication of records can be overcome by using checklists

for procedures and writing only the nursing process and nursing care plans for the patient.

- **Non-nursing duties**

The support staff members need to be orientated about their job descriptions. It is necessary to emphasise to support staff the importance and urgency of their duties in ICUs to promote prompt delivery of tasks, and avoid nurses having to do the non-nursing duties.

Strategy for Theme 6: Visitors in ICU

The major source of social support for the patients whilst in ICU is the family and /or friends. Family visitation has a positive impact on critically ill patients as it instils a sense of hope and helps the patients to feel safe and belonging. There are a number of factors that influence nurses' perceptions, attitudes and behaviours towards family support in the ICU. This seems to influence the extent to which support is given by the nurses to the family of the critically ill patients. Examples of such factors include communication in ICU, information dispensing, circumstances and the environment in ICU.

Empathy enables the nurse to promote better family support. ICU nurses are aware of their duty to give support to patients and their families but the practical application poses a number of challenges. Some of these challenges emanate from the fact that that very little is known about which guidelines ICU nurses actually use to support the patient and family, or even the effectiveness of the guidelines if available.

Table 5.2.6 Strategy for visitors in ICU

Strategy	Rationale and operationalisation
Visiting policy: Develop and provide patients and families with information pamphlets regarding the visiting protocol	To prevent visitors from interfering with nursing care, but being lenient with visiting times and accommodating visitors where necessary
Dispensing of information: Develop a policy on information dispensing about patients in ICU	To maintain confidentiality of the patient's information, but to keep the significant others sufficiently informed about the patient's condition and progress
Advise the family to have a spokes-person for the patient, family and friends	To keep the family and friends informed of the patient's progress in ICU by continually liaising with the family representative To promote sound communication and information sharing in order to improve family satisfaction with the situation and care provided
Control of visitors: Provide training for nurses to develop good communication and listening skills and to show empathy in dealing with the family	To improve nurse-family interactions by attending training on nurse patient family interactions

- **Visiting policy**

According to Farell (2005:21), policies and decisions regarding visitation rights may be comfort driven to the nurses, but can be unpredictable and perilous to the patient and relatives. The scheduled visiting hours are set to accommodate visitors, routine unit activities, and patient care, but sometimes conflicts will occur. When this happens, the patient's best interest must be taken into consideration, so patient care and unit routine activities will take priority.

Visiting should be open to all family members. On the other hand, the nurses should be empathetic and also be firm on the need for care (Langley & Schmollgruber 2006:61). The presence of the family can sometimes delay treatment and thus be detrimental to the care of the patient. The units should develop and provide patients and families with

information pamphlets regarding the visiting protocol to allow visitation rights and prevent visiting times from interfering with nursing care.

- **Dispensing of information**

When a patient is admitted in ICU, the family becomes anxious and would like to know about issues such as quality of life, prognosis, permanent disability or dependency and loss of function of their relative following hospitalisation. In most instances in ICUs, critical care nurses are available to provide information to the families. A policy on information dispensing for patients in ICU should be developed to promote and maintain confidentiality of the patients' information.

Accurate and understandable information should be provided to help the patients and families understand the disease and make choices among treatment options. It is important to take into account the relevant ethical principles when providing information to significant others. The family can select a family spokesperson from the complex family structure, who will be provided with immediate and ongoing information, communication and support from team members. The selected person should have the capacity to understand, interpret and check information in order to prevent misinterpretation of information which may lead to false hopes.

- **Control of visitors**

Critical care nurses should be empathic advocates for their patients and also support the families of patients admitted in ICUs. The support they give to patients and families depends on the circumstances. There is no plan for dealing with the critically ill patient's family. Instead, they are aware of the usual pattern of situations and the families are dealt with as they come (Farell 2005:21). The number of visitors per patients should be limited according to the units' protocols. Not limiting visitors can be problematic due to space, privacy issues of other patients, and noise from the visitors. Competency in assessing and addressing the family needs will allay anxieties and help the family to deal with the stress related to their relative admitted in ICU.

Strategy for Theme 7: Problems impacting on the management of the unit

Well developed strategies to overcome the challenges in the management of a large ICU should promote efficient management of the unit, the provision of quality nursing care and achievement of the desired outcomes.

Table 5.2.7 Strategy for problems impacting on the management of the unit

Strategy	Rationale and operationalisation
Shortage of staff: Ensure proper criteria for admission and discharge of patients to and from ICU	To balance the staff numbers in relation to the number of patients and maintain the quality of nursing care by considering the acuity levels of patients when allocating patients
Infection control issues: Screen all patients for infectious conditions, prior to admission in ICU Maintain barrier nursing principles	To be alert and promptly practice barrier nursing of those who have infectious conditions by isolating these patients To minimise exposure to hospital acquired (nosocomial) infections and to prevent cross infection by treating every patient as a potential infection carrier
Protocols, standards and care directives: Develop nursing care standards for the patients in ICU Encourage the doctors to develop and regularly update medical patient protocols and directives where not available Develop a policy on doctors' rounds	To promote nursing care by using universal best practice standards to develop local standards To be able to immediately initiate treatment when doctors are not available to see the patients by having treatment protocols available To minimise medication errors and provide legal coverage for treatment in the absence of the doctor by following prescribed protocols and medical directives To ensure regular and timely assessment of patients, prompt prescription of treatments and implementation of doctors' orders, with consideration of unit routines

- **Shortage of staff**

It is not always easy to maintain the criteria for admission and discharge of patients in ICUs. Ideally the ICU nurses should only accept to admit a patient in ICU when there is a bed and a nurse available to properly care for the patient. The ICU resident doctor should ensure the patient really needs intensive care services by adhering to the criteria for admission of patients to ICU. In addition, patients should not be left in ICU at the comfort of the doctors such as during weekends or because the responsible doctor is on holiday. The doctors' wishes should however be considered.

- **Infection control issues**

Cleanliness of the units is essential to prevent and minimise exposure to hospital acquired infections. The ancillary staff should be encouraged to keep the units clean at all times. Patients may be screened for possible infectious diseases prior to admission in ICU. But this may have financial implications of sending investigations to the laboratories. Maintaining barrier nursing principles will help with adherence to infection control principles. Consistency and adherence should be maintained on administration of antibiotics in the units in order to prevent the development of resistance to infection.

- **Protocols, standards and care directives**

Well-developed nursing care standards for the patients in ICU will promote quality nursing care and allow for intervals in performing procedures on the patients, which then promotes patients' rest.

The doctors should be encouraged to develop and update patient care protocols and medical directives where not available, and sign them for legality. Formal protocols provide legal coverage for treatment in the absence of the doctors. These protocols and directives will help the nurses to initiate treatment when doctors are not immediately available to see the patients. The medical care directives will also help to minimise medication and treatment errors.

A policy on doctors' ward rounds is important and should be developed in consultation with the ICU nurses and should be observed to ensure timely assessment and

evaluation of patients, prompt prescription of treatments and implementation of doctors' orders.

5.4.4 Interim strategies

The purpose of developing the interim strategies was to decide on the most critical issues to be the objects of review and opinion by expert nurses in order to develop the final strategies. Focus has been on making the interim strategies as operational as possible. Noteworthy, to get to the strategies as outlined was still the work of the researcher before presenting the strategies to the experts for validation. A set of criteria, based on Thompson and Dowding's (2002:150) work was adopted (refer to Chapter 3, section 3.6.2) to evaluate the strategies. Criteria for the development of interim strategies were as follows:

- **Clarity and presentation**: each strategy is precise, simple and easily understandable
- **Specificity**: specific and focused on the critical care nurses
- **Reliability**: based on the evidence that led to the development, the strategy can be used consistently by other critical care nurses in similar circumstances
- **Clinical flexibility**: exceptions are identified, as are different ICU/hospital policies
- **Effectiveness**: the strategy is able to address the needs and overcome the challenges in the management of a large ICU
- **Validity**: based on evidence from correctly analysed and interpreted data as described in Chapter 4 of this study
- **Relevance**: strategy is appropriate for implementation in ICUs
- **Applicability**: the target users are clearly defined, as described in the scope of the strategies in this study
- **Acceptability**: realistic and ambitious, in line with the ICU and hospital policy
- **Achievability**: can be done by the target group as described in this study
- **Utilisation review**: indications of ways in which adherence may be monitored is explained as operationalisation of the strategies.

Ten (10) interim strategies were developed. Following each identified strategy, operationalisation was done with the information obtained from the preliminary

strategies. Two of the interim strategies were adapted from and developed in line with the AACN protocols for practice (AACN 2007), and modified to suit this study. The section that follows outlines the interim strategies. These strategies were submitted to expert nurses for review and validation.

Strategy 1: Divide the unit into sections to facilitate supervision and to reduce the span of control

- Divide a large unit into sections to have a bed capacity of 8-12 for each section. This size of a section becomes manageable in terms of supervision, facilities, planning and also reduces the noise levels as indicated.
- Provide shift leaders to manage the smaller sections in order to reduce the span of control.
- Consultation by hospital management with the unit manager and staff regarding the structure and layout of new units or upgrading of the old units. The unit preferably should be designed to have acuity-adaptable rooms to facilitate individualised nursing care. Acuity-adaptable rooms are rooms in which a patient's status can be upgraded or downgraded on the same be and vice versa.

Strategy 2: Develop a highly skilled, efficient and effective nursing workforce to ensure delivery of quality nursing care

- Induct all nurses within the unit about the policy and procedures of the hospital and the unit respectively.
- Monitor performance of staff as well as agency staff by the agencies that employ them is essential. Critical care nurses should manage their own performance and take responsibility for their own development in relation to ICU. The critical care nurses should attend critical care congresses and refresher courses on a regular basis.
- Recruit and train novice professional nurses to become ICU nurses. Registered nurses who have completed their community service year can be placed in ICUs on rotation, in order to interest them in ICUs and later to be trained for an additional qualification in ICU.

- Review competence and improved level of competence annually by means of performance appraisal. This includes the unit manager's ability to manage a diverse staff component in terms of other categories of staff.
- Utilise best practice recruitment procedures to appoint nurses with knowledge and skills related to ICU. The unit manager should be involved in the recruitment of staff. The unit manager should liaise with staff to identify those candidates that are competent to work in ICU and either head hunt or direct requests to the agency to recruit staff for the unit. Management should involve ICU managers in the selection criteria and interviews for appointment of staff in the unit.
- Strife to allocate only ICU trained and experienced registered nurses to work in ICU in order to adhere to the rules of the scope of practice and to promote the provision of quality nursing care.
- Advocate for attendance knowledge and skills update courses to be compulsory. Training such as ACLS training and training for the use of equipment should be a prerequisite for competency for all the nurses in the unit. The unit manager should together with the hospital staff development department, organise such courses for staff on a regular basis. Certification should be provided for course attendance to prove competency.

Strategy 3: Orientate sufficiently and effectively to the hospitals and the ICUs to assist the integration of agency nurses into their unknown environment

- Identify key staff members such as shift leaders or knowledgeable permanent staff members and introduce them to the agency staff at the beginning of the shift to help agency nurses, refer questions and seek assistance. This will ensure that clinical concerns are addressed while the unit manager is busy.
- Request agencies to place agency staff to regularly work in the same ICU rather than in numerous and different units. Once the agency staff members are used to the unit, they tend to prefer to work in that unit because they are well conversant with the systems of that unit, rather than be in a new unit altogether.
- Encourage the agency to help match the individual agency nurses' experience with the different case mix in each ICU. By case mix, it is meant that the acuity level of the patient is matched to the competency of the nurse allocated to care for the patient.

Strategy 4: Roster and allocate agency staff

- Develop own pool of agency nurses in each unit, by seeking commitment of these nurses.
- Design unit off duties for agency staff to ensure availability and retention of staff in the unit. Having off-duties will diminish the unit manager time spent on phoning the agencies to request for staff needed. When the nurses have off-duties they will already know when they should come to work and then avail themselves for the particular unit. Off-duties will help the unit managers to plan staff in advance and thus, enable to balance the staff numbers by personally informing the nurses to be available for work.

Strategy 5: Manage assets; monitor the amount and maintenance of equipment and stock

- Order and promote the use of appropriate equipment that is related to the technology in ICU to promote quality patient care.
- Develop a checklist and monitor the availability and quality of the equipment around each bed at least twice a day, by the nurse working at the bedside.
- Appoint a person to be responsible for monitoring all equipment in the unit.
- Control stock by allocating a knowledgeable person, such as the unit clerk or a registered nurse for stock taking, ordering and monitoring.
- Identify and adhere to the minimum and maximum stock levels for the unit when ordering supplies.
- Record each patient's supplies used per day, to assist the stock controller and the unit manager to account for the stock and supplies used.
- Organise emergency stock with the help of pharmacy and or the central sterilising department.
- Report to the unit manager the problems encountered in relation to equipment and supplies.

Strategy 6: Develop and clarify the roles and responsibilities of the support staff in creating best practice

- Actively encourage support staff members to participate in decision-making regarding issues in the unit and to assume responsibility and authority for their duties.
- Liaise with the multidisciplinary health team for provision of services to meet the needs of the unit. The supervisors of the support staff such as clerks, ancillary (cleaning) services and porters (patient management executives) should be consulted regularly through meetings to discuss issues related to the duties of the support staff.
- Disseminate information to all personnel and enforce measures to ensure effective communication.
- Liaise with all health care staff for the provision of services to meet the patients' needs.

Strategy 7: Develop and implement strategies to retain an effective ICU nursing team

- Negotiate with hospital management to improve salaries, increase remuneration for overtime work and provide benefits such as night duty, weekend and holiday allowances beyond those provided for by Labour Laws.
- Provide incentives for the completion of short and academic courses such as critical care nursing and unit management courses.
- Pursue one-to-one mentoring to assist and develop new managers. Unit managers also have a right to be on leave. To gain cooperation, the unit manager should prepare or have a succession plan.
- Put in place measures for retaining, appraisal, performance development and counselling of nursing staff.
- Ensure nurses in ICU work within their scope of practice.

Strategy 8: Enforce visiting hours and maintain confidentiality of patient information

- Set scheduled visiting hours to accommodate visitors and patient care activities. Sometimes exceptions do occur and when this happens, the patient's best interest must be taken into consideration. But , patient care and routine activities must take priority.
- Develop and provide patients and families with unit visiting protocol/policy. The use of information sheets will orientate and help improve familiarity of the family to the environment.
- Open visiting for family members should be allowed. However, the nurses should enforce the need for patient care.
- Advise that the family and relatives should select a family spokesperson from the complex family structure. The spokesperson for the patient will then be the person to whom the doctor will explain the condition of the patient, the procedures and management of the patient and request consent for treatment if the patient is not able to autonomously do so. The same spokesperson is the person who will explain the condition of the patient to the family.
- Develop a policy on information dispensing regarding patients in ICU and handing over of report to staff members. Ethical principles of confidentiality and privacy should be taken into account when providing information to family members.
- Develop nurses' competency in assessing family needs in relation to patient issues of concern. Good interview skills and empathy in dealing with the family is essential.

Strategy 9: Develop infection control policies to minimise nosocomial infections

- Effectively apply barrier nursing principles in the isolation of infectious patients.
- Develop an in-service training programme to sensitise nursing staff to proper cleaning of personal equipment such as stethoscopes, handling of linen, ensuring that each patient has his/her own equipment such as temperature probe, stethoscope, and saturation probe and avoid transfer of equipment from one patient to the other without proper cleaning procedures. This process reduces the rate of cross infection and development of nosocomial infections.

- Adhere to a nurse to patient ratio of 1:1 for isolated patients even for high care patients or patients having the same type of infectious disease.
- Promote and improve research in the unit, on infections and communicable diseases to ensure prompt diagnosis and treatment of diseases.
- Develop a procedure to facilitate the speedy receipt of investigation results from the laboratories. Laboratories should be requested to provide the results of the investigations at most within 24 hours of processing, or call to inform the doctor if the results cannot reach the unit on time. The doctor can be informed telephonically by the laboratory concerning the results that are indicative of the need for barrier nursing, or the results can be given telephonically to the nurse in charge of the patient to convey the message to the doctor, whilst immediately initiating barrier nursing.
- Provide prophylactic treatment for the nurses who come into contact with communicable diseases prior to diagnosis.
- Monitor cleaning services. Ancillary staff should be encouraged to clean the unit effectively and to dispose of waste according to the occupational health and safety policy.

Strategy 10: Development of doctors' protocols and nursing care directives

- Develop a policy on doctors' rounds to ensure timely assessment and evaluation of patients, prompt prescription of treatment and implementation of doctors' orders.
- Request the doctors to develop patient protocols and medical care directives to facilitate treatment in the absence of the doctor and to provide legal coverage for treatment according to the protocols.
- Develop nursing care standards and directives, where not available for patient care in ICU to facilitate continuity of care.

5.5 VALIDATION OF THE STRATEGIES

The purpose of validation of the strategies was to ensure that the strategies were of acceptable and achievable quality. The interim strategies as discussed in section 5.4.4 were sent to a group of expert nurses for external review and validation. The validation group was purposely selected to involve expert critical care nurses. The respondents

who were involved in the validation of the strategies were two critical care unit managers who were involved in Phase I step 1 of this study, two academic lecturers who are teaching critical care nursing and two critical care nurses who are members of the nurses' forum for the Critical Care Society of Southern Africa (CCSSA) involved in the development of guidelines for critical care nursing in SA.

The strategies were made available online to these experts for external review. The supervisors of this study who are experts in research, critical care nursing and health services (nursing) management were also involved in the external review and validation of the interim strategies. Consultation for the opinion and strategy validation was designed to secure broad representation from academic and clinical society.

The process of strategy validation assisted to improve the validity of the strategies. The six knowledgeable and skilled nurse experts were requested to evaluate the strategies and to rate them according to a criteria provided (refer to section 5.4.4.1). The abstract for the study was sent to the evaluators which included the topic, problem statement, objectives of the study, significance and methodology applied. Table 5.3 outlines the description of the expert evaluators' biographic information

Table 5.3 Expert evaluators' information

No	Qualification	Occupation	Professional experience
1	PhD	Lecturer	7 years
2	MA Cur	Lecturer	5 years
3	BA Cur I et A	Professional nurse and unit manager	10+ years
4	MA Cur	Professional nurse and Research assistant	10+ years
5	BA Cur I et A	Professional nurse and unit manager	10+ years
6	Diploma in critical care nursing	Professional nurse and unit manager	7 years

A Likert scale was used which had 4 assessment alternatives starting with *strongly disagree, disagree, agree and strongly agree*. The evaluators were requested to use the

key to evaluate, score and indicate if each of the strategies met the adopted criteria set to achieve each strategy. Where necessary, the evaluators were requested to provide a written narrative to give their opinion about each strategy. The key to the scale was as follows:

Key to evaluation

1 : Strongly disagree
2 : Disagree
3 : Agree
4 : Strongly agree

Table 5.4 presents the criteria and scoring that was sent to the expert nurses to evaluate the interim strategies, before they were finalised.

Table 5.4 Criteria for evaluation of the interim strategies

Criteria/Score	Strongly disagree	Disagree	Agree	Strongly Agree
	1	2	3	4
Clarity and presentation Strategy is precise, simple and easily understandable				
Specificity Specific and focused to the critical care nurses, reflecting the nurses' needs				
Reliability Based on the evidence that led to the development, the strategy can be used consistently by other critical care nurses in similar circumstances				
Clinical Flexibility Exceptions are identified, as in the case of different ICU/hospital policies				
Effectiveness The strategy is able to meet the needs and overcome the problems in the management of a large ICU				
Validity Based on evidence from correctly analysed and interpreted data as described in Chapter 4 of this study				
Relevance Strategy is appropriate for implementation in ICU				
Applicability The target users are clearly defined, as described in the scope of the strategies				
Acceptability Realistic and ambitious, in line with the ICU and hospital policy				
Achievability Can be executed by the critical care nurses and unit managers in ICU				
Utilisation review Indication of ways in which adherence may be monitored is explained as operationalisation of the strategies				

Only five of the expert nurses provided feedback. Annexure F displays the total score of the strategies by the validation group. There were consistent scores and some discrepancies in the scoring of the strategies by the individual evaluators. The total score for each strategy was 40. The researcher was of the opinion that a strategy that scored 30 and more points was regarded as acceptable for the management of the specific problem in a large unit, as it represented a 75% acceptance level. Those

strategies that were scored less than 30 points were reviewed in line with the remarks, and re-assessed. Following the scoring, specific comments were made by the evaluators for the areas in which they disagreed or strongly disagreed with the strategies. These strategies were not removed because some aspects that support the strategies were acceptable. Table 5.5 shows the scoring of each strategy by the five individual assessors as well as the mean score for each strategy.

Table 5.5 Description of the scores from the validation group

Strategy/Evaluator Total Score	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Evaluator 5	**Mean score**
Strategy 1	37	39	30	32	32	**34**
Strategy 2	30	37	30	33	33	**32.6**
Strategy 3	29	37	30	28	26	**30**
Strategy 4	30	37	30	31	31	**31.8**
Strategy 5	40	36	30	29	28	**32.6**
Strategy 6	40	35	30	30	28	**32.6**
Strategy 7	31	38	30	33	33	**33**
Strategy 8	31	34	30	31	31	**31.4**
Strategy 9	39	39	30	27	27	**32.2**
Strategy 10	31	35	30	28	26	**30**

Strategies 3, 5, 9 and 10 were indicated to have lower scores in the assessment criteria. The following are the comments made in the relation to the mentioned strategies:

Strategy 3

With regard to strategy 3, the evaluators did not agree with it on reliability and achievability because agency nurses are independent practitioners (not employed by any institution) who cannot be prescribed for on how, where and when to work. It will thus be difficult for the agencies to allocate the nurses to a limited number of ICUs, because the agency nurses will work anywhere, as long as there is work available.

Additionally, with regard to matching the different case mix with the agency nurses' experience, the strategy was not agreed with because that can only be done by the unit managers themselves, as agencies are not in the practice areas. However, the agencies can supply the different categories of nurses according to the unit manager's request.

The evaluators indicated that strategy 3 was not achievable as there is already a shortage of staff; and thus the agency staff is already shared and rotated amongst the different hospitals.

Strategy 5

With regard to achievability of strategy 5, the evaluators were of the opinion that there are financial implications for appointing a stock controller and also for ordering new equipment. For a stock controller, the norm in both private and public hospitals were that a nurse or a unit clerk was appointed to do the stock control as an extra duty that will be done only when the stock is issued rather than have an appointed person.

Strategy 9

Strategy 9 was indicated to have challenges with effectiveness due to the existing layout of the unit, where there is an open plan and no isolation room. Achievability would also be a problem due to shortage of staff and nurse to patient ratio.

Strategy 10

On strategy 10, the opinion was that achievability may be difficult due to a lack of ICU resident doctors, especially in the private hospital ICUs. The different doctors who have patients will be too many for a round at the same time, and the problem will be with one nurse who is caring for two patients that belong to different doctors. During the doctors' ward rounds; it would be difficult for one nurse to be at different patients at the same time. However, a doctor's round protocol is advocated for, in order to have rounds done at the same time to provide enough time for nursing care.

In view of the evaluation reports, the final strategies are presented in chapter 6 and as Annexure G.

5.6 CONCLUSION

This Chapter explained in detail the implementation of Phase II which was the development of strategies to overcome the challenges in the management of a large ICU. A preliminary strategy was developed for each of the seven (7) themes as challenge areas to management of a large unit. Thereafter ten interim strategies were developed from the seven preliminary strategies, which were validated by expert critical care nurses. In the next Chapter, the conclusions and recommendations will be discussed. The final strategies will also be presented.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The aim of this Chapter is to provide concluding remarks and recommendations about the findings of this study. The purpose of this study was to develop strategies to overcome the challenges and address the needs experienced by nurses in the management of larger ICUs.

6.2 RESEARCH DESIGN AND METHODS

A qualitative, exploratory and descriptive design was used. The study consisted of Phases I and II, related to the objectives of the study. The population was the critical care nurses currently working in large ICUs with 12 and more beds. Data was collected in Phase I from the critical care unit managers and critical care nurses in steps 1 and 2, through in-depth individual and focus group interviews respectively. The samples for steps 1 and 2 were purposively selected through adherence to inclusion criteria as described in Chapter 3 of this study. Data was analysed using the descriptive methods of Tesch (1990) as explained in Chapters 3 and 4.

From the findings of Phase I, the challenges, needs and possible strategies were identified and outlined as themes that emerged from the findings. Seven (7) themes emerged, with each theme having different categories and meaning units. Preliminary strategies were developed based on the identified themes and literature background was used to support these strategies. Thereafter, interim strategies were drafted as the implementation of Phase II. Ten (10) final strategies were developed following validation of the interim strategies by a group of expert nurses.

The following sections discuss the conclusions and recommendations.

6.3 CONCLUSIONS

The conclusions are discussed under the different themes and thus, acknowledge the responses from participants. The conclusions were arrived at through inductive and deductive reasoning following data analysis.

6.3.1 Biographic information

The respondents were mostly females, with only three males, that is, two were unit managers and one being a nurse who took part in the focus group interview. It appears if that even though there have recently been a large number of males training for nursing, the profession is still dominated by female nurses and also in the critical care units. According to Collier (2011:40) and SANC's geographical distribution report 2009, nursing is still characterised by a female dominated workforce. With regard to unit managers being only two males out of five, the finding supports the observation that most of the male nurses, on completion of the basic training prefer to work in trauma units and psychiatric institutions, whilst some change career after training, thus leaving nursing either to go and work in the corporate world, such as for medical supply companies; or they start medical training to become medical doctors.

All the participants who took part in Phase I step 1 were ICU trained nurses, whilst they indicated that they had five and more years of working experience in an ICU, it was also revealed that they had one or more years' experience of working in the same units as unit managers. For the participants who took part in Phase I step 2, some were ICU trained nurses and others were non-ICU trained nurses. However, they all had one and more years' experience of working in ICUs.

The general experience of working in ICU for all the participants was one to twenty years. From this background, it appears that most of the participants were mature adults who had been in the critical care nursing setting for more than a year such that they were able to provide valuable input for this study. Some of the participants in Phase I step 2 had been shift leaders in the absence of unit managers; that is, during weekends, on night duty and after hours when the unit managers were off-duty.

From this information, it is evident that critical care nurses had experience of managing large units in the absence of the unit managers. Under normal circumstances, they had less authority, but had been given the responsibility and accountability during the times when they were shift leaders; or acting on behalf of the unit managers. Furthermore, it is inferred that besides the unit managers, the majority of nurses in Phase I step 2 had experience of managing the units and thus, had management experience which means they also experienced the challenges in the management of the units. Those nurses who were not ICU trained also experienced the challenges as they had been part of the span of control of the unit managers and had experienced or observed the unit managers' challenges. Therefore, it is evident that the participants had some kind of experience of the challenges.

6.3.2 Themes that emerged from the findings

Seven themes emerged from the findings and were as follows:

Theme 1: Layout and structure of the unit

As the units were large, it supports the view that the size of the units could have been instrumental in the units being able to admit patients at any time due to the number of beds available. The size of the unit was found to be amongst the common problems to emerge; as the participants recommended dividing the units into sections as a means to relieve the size of the unit. It follows that the structural requirements such as storage facilities and rest rooms were either not available or inadequate.

Theme 2: Human resources and staffing

An ICU that lacks sufficient, knowledgeable and efficient staff faces a range of challenges with staffing. The lack of staff qualified to work in ICU seemed a major challenge. It follows that in many instances, the shortage of registered nurses was concentrated in speciality care areas particularly intensive care units. Consequently, the staff shortage was overcome by the use of agency staff and other categories of nurses such as enrolled nurses which brought about concerns such as with their lack of competency and scope of practice within an ICU. This supports the opinion that each unit should build its own pool of agency staff to cover the shortage of staff and ensure

continuity of care from nurses who are knowledgeable about the unit. The data demonstrate that another issue of concern in human resources and staffing is the lack of ICU resident doctors who are an asset in view of managing patients in ICU.

Theme 3: Material resources

A lack of, or insufficient equipment and supplies appeared to be the key challenge with regard to material resources. It follows that besides being available, equipment should be in good working order and appropriate for use in ICU. It also establishes the view that beside availability, the types of equipment will also be dependent on the patient's condition. The data indicate that another issue of concern was the unavailability of prescribed medication from pharmacy. It seemed that pharmacy was overwhelmed by the demand as the supplying companies could not issue drug requested.

Theme 4: Management of the unit

The complexities of patient care and unit management expectations from colleagues, hospital management and doctors as well as patients and their families have an impact on the management of the intensive care units. This information establishes the concern that the roles and responsibilities of the unit managers should be clarified and presented to all the stakeholders involved in ICU. In addition, the data showed that the critical care nurses needed recognition as specialists. It seemed that the unit managers were afforded responsibility but without autonomy and authority to run the units independently. Although redeployment policies were needed to enable management of staff numbers during shortage in other units, effective communication was also necessary for the smooth running of the units.

Theme 5: Stressors in ICU

Management of the unit could have been difficult owing to stress experienced by critical care nurses in terms of the workload and strenuous conditions, poor remuneration and the unpredictable working environment in ICU. It seemed that when the nurses were stressed, the morale became low, and some developed negative attitudes towards the work**.** Non-nursing duties also contributed to role stress as the nurses had to leave their patients and attend to the duties allocated to support staff.

Theme 6: Visitors in ICU

From the findings, it follows that the nurses should enforce visiting hour policies and dispensing of information to families and visitors in order to promote continuity of care without interruptions. The ethical principle of confidentiality should be adhered to when dispensing information about a patient. Confidentiality is 'keeping personal information about a client learnt both inside and outside of the practice situation. Information must be kept confidential unless the client gives consent, there is a legal justification for disclosure or where a real risk of serious harm, injury or damage to the family or public exists' (Brink et al 2006:34; Babbie 2004:65). The nurses should, however, maintain the ethical principle of non-maleficence when dealing with patients and their families. Non-maleficence is 'the obligation to avoid doing harm to another or to avoid creating a circumstance in which harm could occur to another' (Amdur 2003:27; Polit & Beck 2008:170). The existence of a visiting policy and policy on dispensing information was stated as a need.

Theme 7: Problems impacting on the management of the unit

Infection related problems, lack of protocols and shortage of staff were some of the factors identified as impacting on the management of the unit which resulted in poor quality of nursing care. Scribante and Bhagwanjee (2007:69) indicate that agency staff are unfamiliar with or may not adhere to unit practices and policies, of which non-adherence to infection control policies and medication protocol is the most significant. It seemed that the protocols were not available to guide the nurses in provision of care and as means of communication to agency staff. Scribante and Bhagwanjee (2007:69) further mention that agency staff is likely to bring with them resistant organisms from other units, putting already compromised patients at a further risk. It seemed that shortage of staff, high nurse to patient ratio, lack of protocols and directives for care and infection could have been the result of poor quality of nursing care.

6.3.3 Strategy development summary

Development of the strategies was based on the themes identified, and was supported by the literature. Methodology for strategy development included merging the findings from Phase I, to develop preliminary strategies. The preliminary strategies were

supported by the literature, evaluated by the adopted criteria and presented as interim strategies to expert nurses for review and validation (refer to Chapters 3 and 5). The interim strategies were formulated in such a way that in addressing the challenges, the needs of the ICU nurses would also be met. The criteria for the evaluation of the strategies were based on the adopted criteria for the development of guidelines and features of a policy (refer to Chapter 3, section 3.6.2). For the criteria used for evaluation of the strategies refer to Table 5.4. Following review and validation of the interim strategies, final strategies were developed based on the recommendations from the expert nurses, the rationale of the strategy and the evidence available.

6.3.4 Final strategies

According to Thomson and Dowding (2002:152), there are three broad methods of guideline development, namely; evidence linked to guideline development, informal consensus approaches and formal consensus methods. From these methods, the formal consensus method was selected, adapted and followed to develop the final strategies for this study. Formal consensus is a method in which a group of expert nurses were requested to evaluate the interim strategies, based on the criteria adopted by the researcher from the features of a policy and the desirable attributes of clinical guidelines. The final strategies emanated from expert review and the discussions between the researcher and the supervisors of the study. Based on the scoring in Table 5.5, recommendations were made by the expert reviewers with regard to four (3, 5, 9 and 10) strategies (refer to Chapter 5 section 5.5). The following are the final strategies that were developed following validation and adaptation of the interim strategies:

Strategy 1: Divide the unit into sections (6-12 beds) to facilitate supervision and to reduce the span of control

Strategy 2: Develop a highly skilled, efficient and effective nursing workforce to ensure delivery of quality nursing care

Strategy 3: Orientate agency staff to the hospitals and the ICUs to assist the integration of agency nurses into their unknown environment

Strategy 4: Roster and allocate agency staff in the unit

Strategy 5: Facilitate asset management by monitoring the amount and maintenance of equipment and stock

Strategy 6: Develop and clarify the roles and responsibilities of the support staff in creating best practice

Strategy 7: Develop and implement strategies to recruit and retain an effective ICU nursing team

Strategy 8: Enforce visiting hours according to unit policy and maintain confidentiality of patient information

Strategy 9: Develop and adhere to infection control policies

Strategy 10: Develop doctors' protocols and nursing care directives to facilitate safe and efficient patient care

6.3.5 General conclusions

The overall conclusion from this study is that the critical care unit managers and nurses encountered a number of challenges in the management of large ICUs. Certainly, when the unit is too big, it is difficult to apply the activities of the management process effectively and strategies are required to effectively and efficiently manage a large unit.

6.4 RECOMMENDATIONS

The following recommendations are made in relation to the findings of this study**.**

6.4.1 Recommendations for nursing management

The recommendations for nursing management are as follows:

- Adoption of ICU clinical protocols from the Critical Care Society of Southern Africa Nurses Forum and those designed by the specific units to ensure best practice in ICU (refer to strategies 1, 3 and 10)
- Nurses could influence practice through their involvement in policy development and decision-making in ICU (refer to strategies 6 and 7)
- The nurses could ensure to provide accurate and relevant information when reporting to the multidisciplinary health team (adhere to the ethical principle of veracity), including providing patients' information when dealing with visitors (refer to strategy 8)

- Nurses could practice according to their scope of practice, especially the scope of practice of the critical care nurse with respect to training and experience in critical care nursing (refer to strategy 2)
- Communication channels should be open between senior nursing management of the hospital and ICU staff to involve ICU managers in the utilisation of staff in their units (refer to strategy 6)
- The multidisciplinary health team members, and especially the doctors and nurses should adhere to the standards for maintaining quality of patient care through proper collaboration (refer to strategy 7)
- The unit managers in ICU could be awarded full authority, autonomy and independence to manage their units, of course in line with the hospital policies (refer to strategy 6)
- Agency staff should be orientated to become accountable and to adhere to the duty to achieve and continually maintain high standards of competence whilst working in ICU (refer to strategies 3 and 4)

6.4.2 Recommendations for education

This research recommends the following with respect to nursing education:

- Continuous professional development and education programmes for agency staff by the agencies that employ them should be enforced (refer to strategy 2)
- Nurses working in ICU should take responsibility for their own development and acquisition of up to date knowledge and skills (refer to strategy 2)
- Training, in-service education, refresher courses and workshops related to critical care nursing are needed and could be developed (refer to strategy 2)
- Different ICUs could develop nursing care standards which will guide them with management of patients in units that do not have doctors' protocols (refer to strategy 10)
- Registered nurses working in the ICU without the critical care qualification should be awarded the opportunity to undergo critical care nursing training (refer to strategy 2)

6.4.3 Recommendations for research

Based on this study, further research is recommended on the following:

- Further research on the applicability and efficiency of these strategies would be beneficial and could be researched in a post doctoral study (refer to strategies 1-10)
- Personal experience of permanent staff working with agency nurses should be researched to gain a perspective into the employment of agency nurses in the intensive care units (refer to strategy 3)
- The role of the nurse in reducing the rate of nosocomial infections, especially in large ICU should be explored (refer to strategy 9)
- The factors that increase the quality of nursing care in an ICU have to be analysed (refer to strategy 1)
- Factors affecting the provision of equipment in ICU should be investigated (refer to strategies 1 and 5)
- The perceptions of nursing agencies with the provision/supply of staff especially to ICUs could be researched in a quantitative study (refer to strategies 1, 2, 3 and 4)
- The views of the agency nurses with regard to working in the larger ICUs should be explored (refer to strategies 1, 3 and 10)
- The possibility for a joint programme for training critical care nurses between the nursing agencies, nursing education institutions and SANC needs to be explored (refer to strategy 2)

6.5 CONTRIBUTIONS OF THE STUDY

The challenges and needs experienced by the unit managers in the management of the units were explored and described. The major themes emerging from this study provided a framework for strategy development. It is hoped that the strategies will emphasise the best practice standards for management of larger ICUs. The findings will be used to make the management of the hospitals conscious of the challenges facing their critical care units; and also facilitate in-service education to other intensive care units experiencing the same problems.

It is believed that the findings of this study will contribute to a body of knowledge of nursing regarding the management of large ICUs. Presentation of the strategies will be done for the participating hospitals in the form of a workshop. All the unit managers who participated in the individual interviews (Phase I step 1) or their representatives and other stakeholders will be invited to attend a workshop that will be organised by the researcher together with the academic institution. The workshop will be organised at an accessible venue for the participants. The strategies will then be presented to the unit managers and later to the different ICUs as an interactive session. The final results will be disseminated in the form of a presentation at the critical care congress or refresher course in South Africa. Publication of the results will be done in an accredited critical care or intensive care journal.

6.6 LIMITATIONS OF THE STUDY

Burns and Grove (2005:39) state that limitations are restrictions or problems in a study that may decrease the transferability of the findings. The mentioned authors further state that there may be deficiencies or weaknesses in the research methods or design, thus creating problems that can limit the credibility of the findings or restrict the population to which the findings can be generalised (Burns & Grove 2005:40).

The participants in this study had a wealth of experience in view of working in ICUs, were able to provide rich information and were noted to have been ready to give out the information. However, the researcher acknowledges the following:

- The findings could have been different if the participants were from smaller ICUs.
- Because of the shortage of trained critical care nurses, the sampling criteria were narrow or restrictive, thus making it difficult to find participants who met the criteria as critical care nurses to participate in the focus group interviews.
- The time for the interviews was limited due to units' routine.
- This study was conducted in only five selected hospitals of a city in the Gauteng Province.

Finally the findings of this study are only applicable to the ICUs of the hospitals that took part in the study.

6.7 CONCLUDING REMARKS

Critical care nurses and unit managers described several challenges experienced by in the management of larger critical care units. The challenges were related to the structure and layout of the unit, human resources and staffing, material resources, management of the unit, stressors in ICU, visitors in ICU and problems impacting on the management of the unit. Donabedian's model and the management process were used effectively to contextualise and present the findings of this study.

Strategies were developed which suggest ways to overcome or manage the challenges identified in the management of larger ICUs. It is hoped that the proposed strategies will be effective in alleviating most of the challenges noted by the ICU nurses. Further research into the efficiency of the strategies as interventions for meeting the challenges encountered in the management of a larger ICU needs to be conducted.

PERSONAL REFLECTION

Undertaking this study has truly been an adventurous journey, with full rewards. Whilst there were numerous obstacles during studying, it has been a great journey, very enjoyable, especially during the time of data collection. I am grateful that I was able to interact with the participants and allow them to ventilate their frustrations as a form of debriefing. I believe the strategies are a contribution to new knowledge in critical care nursing by their own right. I also hope that the strategies developed are effective for management of a larger ICU based on the priority challenges.

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Annexure A

Requests for permission to conduct the study

PO Box 16092
Pretoria Noord
0116
02 March 2008

The Directorate: Policy, Planning and Research
Department of Health
Private Bag X805
Marshalltown
2017

Dear Sir/Madam

REQUEST TO CONDUCT A STUDY AT THE FOLLOWING HOSPITALS: (HOSPITAL NAMES WITHHELD FOR CONFIDENTIALITY PURPOSES)

TOPIC: STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS

I Mokgadi Matlakala am a registered student at UNISA, studying the degree D. Litt et Phil. I am conducting a research study as a requirement for the degree I registered for.

I hereby request permission to approach and conduct a study on the above-mentioned topic, at the mentioned hospitals. The purpose of the study is to explore the challenges and describe the needs of critical care nurses with regards to the management of larger critical care units. The results of the study will be used to develop strategies to overcome the challenges in the management of these units. Attached please find a copy of the proposal.
Yours truly,

Mokgadi Matlakala

Tel: 083 757 7633

Fax: (012) 429 6770

E-mail: mmatlakala@hotmail.com

PO Box 16092
Pretoria Noord
0116
30 May 2008

The Director: Nursing Services
Proposed Hospital

Dear Sir/ Madam

REQUEST TO CONDUCT A STUDY ON STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS

I Mokgadi Matlakala am a registered student at UNISA, studying the degree D. Litt et Phil. I am conducting a research study as a requirement for the degree I registered for.

I hereby request permission to conduct the study in the ICU of your hospital on the above-mentioned topic. The purpose of the study is to identify the challenges and describe the needs of critical care nurses with regards to the management of larger critical care units.

The results of the study will be used to develop strategies to overcome the challenges in the management of these units. Attached please find a copy of the proposal.

Yours truly

Mokgadi Matlakala
Tel: 083 757 7633
Fax: (012) 429 6770
E-mail: mmatlakala@hotmail.com

Annexure B

Informed consent form

TOPIC: STRATEGIES TO OVERCOME THE CHALLENGES IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS

I Mokgadi Matlakala am a registered student at UNISA, studying the degree D Litt et Phil. I am conducting a research study on the above-mentioned topic as a requirement for the degree I am registered for.

The purpose of the study is to explore the challenges and describe the needs of critical care nurses with regards to the management of large intensive care units.

You are requested to voluntarily participate in the study and therefore to take part in the individual interviews that will be conducted. Your name will only appear on the consent form. All information furnished will be treated with strict confidence.

Although there are no financial benefits for you in participating, the study results will be used to make the hospitals conscious of the challenges experienced by the critical care nurses in the management of large critical care units and their needs thereof. Strategies to overcome these challenges will then be developed.

Should you have any questions or desire further information please contact,

Mokgadi Matlakala
P.O Box 16092
Pretoria Noord
0116

Tel: 083 757 7633
Fax: (012) 429 6770
E-mail: mmatlakala@hotmail.com

Thank you for your co-operation and support.

CONSENT FOR PARTICIPATION IN THE STUDY

I…….. (Name and Surname) agree to participate in the above-mentioned study.

I understand

- the purpose of the study
- that participation in the study is voluntary
- that information shared will be confidential

Signature of participant……..

Signature of witness…….

Date…….

Annexure C

Ethical clearance letter

UNISA university of south africa

UNIVERSITY OF SOUTH AFRICA
Health Studies Research & Ethics Committee
(HSREC)
College of Human Sciences

CLEARANCE CERTIFICATE

Date of meeting: 5 November 2007.

Project Title: **STRATEGIES TO OVERCOME PROBLEMS IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS**

Researcher: **Ms M Matlakala**

Supervisor/Promoter: Prof M Bezuidenhout

Joint Supervisor/Joint Promoter: Dr A D H Botha

Department: Health Studies

Degree: D Litt et Phil

DECISION OF COMMITTEE

Approved [√] **Conditionally Approved** [ ]

Date: 5 November 2007

Prof L de Villiers

Prof L de Villiers
RESEARCH COORDINATOR: DEPARTMENT OF HEALTH STUDIES

Prof SM Mogotlane
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
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Annexure D

Permission letters from Department of Health and hospitals

DEPARTMENT OF HEALTH

DIRECTORATE: POLICY, PLANNING & RESEARCH
Enquiries: Dr Likibi
Tel: (011) 298 2319/2316
Fax: (011) 298 2396
Email: Mupata.Likibi@gauteng.gov.za

Attention: **Mokgadi Matlakala**

APPROVAL FOR RESEARCH CONDUCTED IN GAUTENG

Approval is hereby granted for the data collection within Gauteng Province for the above mentioned study by **Mokgadi Matlakala** (Researcher) from UNISA. The study is titled "**STRATEGIES TO OVERCOME PROBLEMS IN THE MANAGEMENT OF LARGER CRITICAL CARE UNITS**

This approval is limited/subject to:

- Extraction of data through interview of critical care nurses
- All ethical principles are observed and complied with during this study.
- Bi annual status reports to be submitted to GDoH
- A research report should be submitted electronically to the provincial research unit and the GDoH should be informed of the findings
- Details for publications of the findings to be communicated to the GDoH

Kindly note that it is also compulsory to request permission from the facility managers

Reviewer:

Dr Y Kolisa
Research and Epidemiology Technical Support

The Evaluator:

Dr ML Likibi
Specialist
Date: 15/05/08

Permission letters from the individual hospitals

NOTE:

The letters from the individual hospitals, which confirm permission granted to the researcher to conduct the study in their specific ICUs, have been removed for confidentiality and to maintain anonymity.

However, the permission letters are kept by the researcher in a safe place and are available on request should a need arise. The ethics committee of the academic institution has received the letters and acknowledged that the study can continue.

The researcher can be contacted as follows:

Mokgadi Matlakala
P.O Box 16092
Pretoria Noord
0116

Tel: 083 757 7633
Fax: (012) 429 6770
E-mail: mmatlakala@hotmail.com

Annexure E

Transcripts of interviews

Transcripts of interviews

NOTE:

The transcripts of the individual and focus group interviews which were conducted with the participants in this study have been removed for confidentiality and privacy of information; and to maintain anonymity.

However, the interview transcripts are kept by the researcher in a safe place and are available on request should a need arise.

The researcher can be contacted as follows:

Mokgadi Matlakala
P.O Box 16092
Pretoria Noord
0116

Tel: 083 757 7633
Fax: (012) 429 6770
E-mail: mmatlakala@hotmail.com

Annexure F

Description of the total score of the strategies by the validation group

Description of the total score of the strategies by the validation group

Table 5.4.1 Evaluator 1

Strategy/criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5	Strategy 6	Strategy 7	Strategy 8	Strategy 9	Strategy 10
Specificity	4	3	3	3	4	4	3	3	4	3
Reliability	4	3	3	3	4	4	3	3	4	3
Flexibility	4	3	3	3	4	4	3	4	4	3
Effectiveness	4	3	3	3	4	4	3	3	4	3
Validity	4	3	3	3	4	4	3	3	4	3
Relevance	4	3	3	3	4	4	3	3	4	3
Applicability	3	3	3	3	4	4	3	3	4	3
Acceptability	4	3	3	3	4	4	3	3	4	3
Achievability	3	3	2	3	4	4	3	3	4	4
Utilisation review	3	3	3	3	4	4	4	3	3	3
Total score /40	**37**	**30**	**29**	**30**	**40**	**40**	**31**	**31**	**39**	**31**

Table 5.4.2 Evaluator 2

Strategy/criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5	Strategy 6	Strategy 7	Strategy 8	Strategy 9	Strategy 10
Specificity	3	4	4	4	4	4	4	4	4	4
Reliability	4	4	4	4	3	3	4	3	4	4
Flexibility	4	3	4	4	4	3	4	3	4	3
Effectiveness	4	3	3	4	4	3	4	3	4	3
Validity	4	4	4	4	4	4	3	4	4	4
Relevance	4	4	4	4	4	4	4	4	4	4
Applicability	4	4	4	3	4	3	4	3	4	3
Acceptability	4	4	2	3	4	4	4	4	4	3
Achievability	4	3	4	3	3	3	3	2	3	3
Utilisation review	4	4	4	4	2	4	4	4	4	4
Total score /40	**39**	**37**	**37**	**37**	**36**	**35**	**38**	**34**	**39**	**35**

Table 5.4.3 Evaluator 3

Strategy/criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5	Strategy 6	Strategy 7	Strategy 8	Strategy 9	Strategy 10
Specificity	3	3	3	3	3	3	3	3	3	3
Reliability	3	3	3	3	3	3	3	3	3	3
Flexibility	3	3	3	3	3	3	3	3	3	3
Effectiveness	3	3	3	3	3	3	3	3	3	3
Validity	3	3	3	3	3	3	3	3	3	3
Relevance	3	3	3	3	3	3	3	3	3	3
Applicability	3	3	3	3	3	3	3	3	3	3
Acceptability	3	3	3	3	3	3	3	3	3	3
Achievability	3	3	3	3	3	3	3	3	3	3
Utilisation review	3	3	3	3	3	3	3	3	3	3
Total score /40	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**

Table 5.4.4 Evaluator 4

Strategy/criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5	Strategy 6	Strategy 7	Strategy 8	Strategy 9	Strategy 10
Specificity	3	3	3	3	3	3	4	4	4	3
Reliability	3	3	3	3	3	3	3	2	2	3
Flexibility	4	4	3	4	4	3	4	4	3	3
Effectiveness	3	3	3	3	3	3	4	3	2	2
Validity	3	3	3	3	3	3	3	3	2	3
Relevance	3	3	3	3	3	3	3	3	3	3
Applicability	3	3	2	3	2	3	3	3	2	3
Acceptability	4	4	3	3	3	3	3	2	4	3
Achievability	3	4	2	3	2	3	3	4	2	2
Utilisation review	3	3	3	3	3	3	3	3	3	3
Total score /40	**32**	**33**	**28**	**31**	**29**	**30**	**33**	**31**	**27**	**28**

Table 5.4.5 Evaluator 5

Strategy/criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5	Strategy 6	Strategy 7	Strategy 8	Strategy 9	Strategy 10
Specificity	3	3	3	3	3	3	4	4	4	3
Reliability	3	3	1	3	3	3	3	2	2	2
Flexibility	4	4	3	4	4	3	4	4	3	3
Effectiveness	3	3	3	3	3	3	4	3	2	2
Validity	3	3	3	3	3	3	3	3	2	3
Relevance	3	3	3	3	3	3	3	3	3	3
Applicability	3	3	2	3	2	2	3	3	2	2
Acceptability	4	4	3	3	3	3	3	2	4	3
Achievability	3	4	2	3	2	2	3	4	2	2
Utilisation review	3	3	3	3	2	3	3	3	3	3
Total score /40	**32**	**33**	**26**	**31**	**28**	**28**	**33**	**31**	**27**	**26**

Annexure G

Final strategies

Strategy 1: Divide the unit into sections (6-12 beds) to facilitate supervision and to reduce the span of control

Strategy 2: Develop a highly skilled, efficient and effective nursing workforce to ensure delivery of quality nursing care

Strategy 3: Orientate agency staff to the hospitals and the ICUs to assist the integration of agency nurses into their unknown environment

Strategy 4: Roster and allocate agency staff in the unit

Strategy 5: Facilitate asset management by monitoring the amount and maintenance of equipment and stock

Strategy 6: Develop and clarify the roles and responsibilities of the support staff in creating best practice

Strategy 7: Develop and implement strategies to recruit and retain an effective ICU nursing team

Strategy 8: Enforce visiting hours according to unit policy and maintain confidentiality of patient information

Strategy 9: Develop and adhere to infection control policies

Strategy 10: Develop doctors' protocols and nursing care directives to facilitate safe and efficient patient care