2006

Theories of aging as basis for assessment

Sheila Grossman
Fairfield University, sgrossman@fairfield.edu

Jean W. Lange
Fairfield University, jlange@fairfield.edu

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Jean Lange

Theories of Aging As Basis for Assessment

Based on biopsychosocial theories of aging, a tool was developed to assist nurses in conducting holistic adult admission assessments. The Adult Assessment Tool can facilitate comprehensive, best-practice decisions in caring for hospitalized middle-aged and older adults.

In order for theories to be useful in a practice discipline such as nursing, a direct application is needed to guide the nurse in caring for a specific population in a given setting (Dickoff, James, & Weidenbach, 1968). A decision for nursing care evolves from the nurse's assessment, which includes not only what the nurse observes but also the nurse's ability to perceive what might be actually "going on" in a person's life. If the nurse had more knowledge regarding the patient's circumstances and potential challenges, he or she would be able to ask questions that would be most valuable in performing a holistic assessment. Because adults greater than 65 years of age represent the largest population in health care (approximately 50% of all patients in hospitals, 85% of patients in home care, and greater than 90% of people living in long-term care facilities), the nurse needs to have as much knowledge as possible regarding this population in order to develop best-practice plans of care (Bednash, Fagin, & Mezey, 2003). The purpose of this article is to initiate the development of a framework to provide more holistic assessment and concomitantly guide care decisions with middle-aged adults, generally defined as 45-65 years, and older adults over 65 years.

Haight, Barba, Tesh, and Courts (2002) noted that the components of a "good theory must be holistic and take into account all that impacts a person throughout a lifetime of aging" (p. 14). Many agree that situation-specific theories regarding aging can assist in guiding practice (Bergland & Kirkevold, 2001; Haight et al., 2002; Miller, 1990; Putnam, 2002). Two theories of aging developed by nurses were located after reviewing CINAHL, National Library of Medicine, Web of Science, Psyc Info, and Sociological Abstracts.

Functional Consequence Theory asserts that aging adults experience environmental, sociocultural, and psycho-biological consequences that impact their functioning (Miller, 1990). The theory's focus is assessment of age-related changes as well as risk factors such as physical impairment and disability, and design of interventions directed toward reduction of risk and disability.

Theory of Thriving (Haight et al., 2002) is based on the concept of *failure to thrive*. Haight and colleagues view thriving in a holistic, life-span perspective that considers the impact of environment as people age. They assert that thriving is achieved when there is harmony among a

Sheila Grossman, PhD, APRN, BC, is Professor and Director, Family Nurse Practitioner Program, Fairfield University School of Nursing, Fairfield, CT.

Jean Lange, PhD, RN, is an Associate Professor and Director, Graduate Program, Fairfield University School of Nursing, Fairfield, CT.

person, the physical environment, and the person's relationships. The nurse can use this theory to assist in achieving harmony for older adults by identifying factors that may impede thriving, and then planning interventions to address these factors.

Both of these nursing theories contribute to an understanding of aging from the perspectives of thriving and functionality; however, neither encompasses all of the holistic elements (cultural, spiritual, geographic, psychosocio-economic, educational, environmental, and physical) of concern to nursing. Until nursing has a comprehensive theoretical framework to guide its practice, one that has been tested with diverse patients in varied settings, the nurse can use information from theories of other disciplines. Authors conducted a review of biopsychosocial theories of aging to determine how increased knowledge of aging could improve the nurse's assessment techniques.

Human beings have different sociologic, economic, genetic, behavioral, and biologic characteristics that impact their lives (Erikson, 1963). Nursing has always incorporated some psychosocial theories, such as Erikson's *Personality Development Theory* (1963), Havighurst's *Activity Theory* (1972), and Maslow's *Human Needs Theory* (1954), in care plans. Knowledge from biological aging theories, such as gene, free radicals, neuro-endocrine, and wear-and-tear theories, also can assist the nurse in performing more comprehensive and focused assessments. For example, the nurse can use these theories in assessment and planning for adults with changes in biochemical metabolism that cause nutritional deficiencies, neurological and endocrine imbalances, genetically induced chronic disease, or tissue injury from free radicals. Common examples of psychological, sociological, and biological theories of aging are presented in order to gain insight into how the *Adult Assessment Tool* was developed.

Psychological and Sociological Theories

Psychosocial theories provide insight into the behavior, personality, and attitudes exhibited during the aging process. These theories focus on ego development and the challenges associated with each life stage. They analyze how personality, mental processes, and attitudes influence a person's adaptation to these life changes. Role change, gender, image, and status within a culture also influence the adult's adaptation to aging and are the focus of sociological theories (Hagestad & Dannefer, 2002).

Psychological theories. Human Needs Theory (Maslow, 1954) suggests a hierarchy that initially requires fulfillment of physiologic needs, followed by safety and security, then love/belonging, self-esteem, and finally self-actualization needs. Some flexibility when interpreting the hierarchy is relevant for the nurse caring for adults who may have or need advance directives. The nurse can reprioritize either with the individual or with family to make love/belonging needs supercede fulfillment of physiologic and even safety and security needs in order to respect the person's wishes.

Although not specific to aging, Jung's *Theory of Individualism* focuses on a life span view of personality development versus achievement of basic needs (Jung, 1960). This theory suggests that older adults should review their accomplishments and search their inner beliefs. It proposes that successful aging includes the ability to accept the past and adjust to losses as individuals experience functional decline. Many older adults recognize that a spouse, self, or close friend may be ill enough to die or may actually die. Depending on their history of accomplishments and beliefs, older adults want the nurse to be realistic, to help them adapt to change and loss, and then continue their lives.

Erikson's *Stages of Personality Development* (1963) is a theory that focuses on individual development, with older adults experiencing the developmental stage known as "ego integrity versus despair." Erikson characterized this stage as the evaluation of a person's accomplishments. In a recent study of older adults by Neumann (2000), Erikson's theoretical framework was used to inquire about elders' perceptions of their lives' meaning. Older adults who expressed higher levels of energy and meaning felt a sense of connectedness, self-worth, love, and respect that was absent in those who felt little meaning for life. The nurse can assist patients in appreciating their accomplishments, finding meaning in life, adapting to physical changes, and even preparing for life's end in a realistic manner.

The central core of the *Lifespan Development Paradigm* includes a blending of key elements of psychological theories, such as life stages, tasks, and personality development with sociological concepts, such as role behavior and the relationship of individuals and society (Buhler, 1933). This theory suggests that life occurs in stages that are structured according to the person's roles, connections, internal values, and goals. Retirement poses significant changes in societal expectations and roles. Work relationships may be substituted by new acquaintances gained through community involvement.

Assessing social support resources of aging adults is an important nursing consideration when helping them cope with physical decline. Successful retirement is associated with satisfying relationships and the ability to accomplish individually determined goals. The nurse can facilitate the adjustment to retirement by helping the individual plan realistically and access needed resources. For example, the nurse can assess if the individual has any retirement plan or financial savings goals, if the plan appears realistic in terms of the person's functional abilities, and if the plan covers health insurance premiums. The nurse can determine if the person should be referred to a social worker.

Sociological theories. Activity

theory refers to the need for adults to remain active and involved in order to accomplish their goals and even to prolong their middle age (Havighurst & Albrecht, 1953). Schroots (1996) reinforced the idea that successful late-life goal accomplishment through maintaining activities is key even if the adult has limitations. Burbank (1992) concluded that the quality of relationships was most significant in determining the meaning of life. Likewise, meaning in life was viewed as closely related to health. Individuals who feel dependent on others may perceive that they are no longer useful and lose interest in continued living.

Havinghurst, Neugarten, and Tobin (1963) suggested that neither activity nor engagement theories fully explain successful aging. They developed *Continuity/Development Theory,* which indicates that personality is stable by the time an individual reaches old age. Personality patterns provide clues to how people adjust to changes in health, environment, or socioeconomic conditions, as well as what activities a person will pursue. This theory posits that individual differences produce varied responses to aging. By exploring how individuals have coped with past limitations and losses, the nurse can infer what strategies might be effective as new challenges are faced.

Riley (1994) suggested that historical context also may influence developing personality patterns, beliefs, and coping strategies. The *Age Stratification Theory* holds that individuals in different generations have varied experiences that cause them to age in different ways. For example, age cohorts are influenced by the significant events of their lives, such as 9/11, world wars, the Great Depression, and the women's movement. These life experiences may produce varying roles and societal expectations that influence role enactment and define acceptable ways of responding to stressors.

Age Stratification Theory also proposes that historical context and individuals' perception of their health may differ depending on their age cohort. From a nursing perspective, Leenerts, Teel, and Pendleton (2002) noted that perception of health shapes quality of life during the aging process more than in earlier life. They explained that if health can benefit from self-care, then nurses should incorporate more education about self-help strategies in their care of adults. Their model of self-care is based on the idea that health can be impacted positively as an individual ages by collaborating closely with health care providers. Leenerts and Magilvy (2002) suggested that beliefs about health are basic to health promotion self-care activity. For example, a patient with emphysema who is fearful that physical activity will exacerbate his symptoms may respond to education regarding the benefits of supervised exercise in a pulmonary rehabilitation program. Research in the last decade demonstrated that personal perceptions of health may have greater influence on some individuals' view of health than their medical diagnosis, other chronic illnesses, and functional limitations (Musil, 1998; Perry & Woods, 1995). No further study was done on these topics; however, researchers looking at age segregation versus age integration in residential settings found health outcomes less favorable among settings with single cohort groups (Hagestad & Dannefer, 2002).

Biological Theories

The biological theories explain aging with regard to the changing physiologic processes in the cell, tissues, and body systems. Generally, two perspectives exist regarding the biological theories of aging (Sozou & Kinkwood, 2001). The *stochastic perspective* identifies episodic events that occur throughout an individual's life, causing random damage and accumulating over time to cause aging. The *nonstochastic philosophy* views aging as a series of programmed events that happen to all organisms in a timed manner. Others believe aging is a result of both perspectives (Miquel, 1998). For example, some adults have severe osteoarthritis, osteoporosis, depression, and type 2 diabetes mellitus that damage multiple systems and impact their functional status as well as general well-being. Other adults seem to be very healthy into their 70s and then suddenly manifest acute neurological or musculoskeletal problems, suffer a cardiac event, or die from an infection or cancer.

Free radicals contain chaotic unpaired molecules that injure plasma membranes and deoxyribonucleic acid (DNA). The *Free Radical Theory* cites aging as a result of oxidative metabolism (Harman, 1956). These end products accelerate oxidative metabolism, and react with proteins, lipids, and ribonucleic acid (RNA) to cause cell damage leading to diseases such as diabetes and arthritis, gene modulation, lipid peroxidation, and accelerated aging. The nurse can teach people about lowering weight and maintaining a balanced diet rich in antioxidants to delay or attempt to prevent these harmful effects. Antioxidants are imperative to take daily in order to protect people from the damaging effects of free radical aging (Hayflick, 1996).

Over time, aged cells lose the ability to counteract mechanical, inflammatory, and other injuries due to their senescence (Aigner, Rose, Martin, & Buckwalter, 2003). The *Wear and Tear Theory* holds that the cell's inability to repair damaged DNA keeps cardiac muscle, neurons, striated muscle, and brain from regenerating after being destroyed by wear and tear. Van Cauter, Leproult, and Kupfer (1996) noted that lifelong physical and emotional stress affects adrenocorticotropic activity negatively during the aging process. Accordingly, all organs involved with the adrenal-pituitary feedback system appear to suffer some loss of function as an individual ages or experiences wear and tear. The Wear and Tear Theory combines the idea of aging as a random occurrence with the notion of aging as a programmed process. The nurse can

assist people by teaching about the benefits of calcium supplements and a balanced exercise routine with weights as well as aerobic activities to avoid excessive wear and tear. By avoiding strenuous exercise but still maintaining an aerobic and weight-bearing routine, adults can enjoy better health (Barber, 2003).

Programmed Aging Theory proposes that cells stop dividing as they age due to shortening of the telomere, the distal part of the chromosome arms (Hayflick, 1985; 1996; Sozou & Kirkwood, 2001). The cell's inability to divide triggers *apoptosis*, or death of the cell. This process, termed the *Hayflick phenomenon,* suggests that the telomeres become shorter in length with every cell division until they become too short to allow further division when the cell dies. This theory proposes occurrence of a definite predictable functional loss in all body systems due to shortening of the telomere. The nurse can use this information to teach patients about the aging process, wellness promotion, and disease prevention. If people understand the normal aging process and realize the changes that occur during aging, they may be more motivated toward health promotion.

The *Gene/Biological Clock Theory* posits that each cell has a programmed aging code stored in its DNA (Hayflick, 1984). Inborn genetic influences predict physical condition, cause and age of death, occurrence of disease, and other factors that affect longevity. The nurse should assist in screening for genetically linked conditions, such as hypertension, hearing loss, heart disease, and arthritis, and also be knowledgeable about conditions with genetic implications, such as hematochromatosis, Huntington's disease, or polycystic kidney disease.

More knowledge has been generated regarding the vast communication network between the neurologic and endocrine systems in the body. Changes in hormone secretion, specifically regarding the hypothalamus-releasing hormones and the pituitary-stimulating hormones, are believed to accelerate the aging process (Rodenbeck & Hajak, 2001). This theory, the *Neuroendocrine Control* or *Pacemaker Theory,* proposes that specific neurons have a pacemaker role that determines an individual's biological clock. Studies also indicate neuroendocrine changes with insulin-like growth factor 1 (I6F-1), estrogen, and melatonin cause aging (Cheng et al., 2006). The nurse can stress the importance of managing glucose control with diet and exercise, educate older adults about the risks and benefits of estrogen replacement, and instruct about the advantages of a healthy sleep-wake cycle. The ability to identify changes due to aging as well as manifestations of various diseases assists the nurse with interpreting signs and symptoms of acute and chronic illness. Additionally, knowledge gained from studying the human genome has ramifications regarding health promotion and disease prevention for the patient's family. Using biological theories of aging, the nurse can assist the person in better management of nutrition, incontinence, sleep rhythms, immunological response, catecholamine surges, hormonal and electrolyte balance, and drug efficacy of older adults with chronic illnesses.

Development of Assessment Framework for Use with Adults

Based upon the biopsychosocial theories of aging, the *Adult Assessment Tool* was developed as a guide for the nurse's holistic patient assessment (see Figure 1). This tool illustrates the multifaceted challenges faced by middle-aged and older adults. The following case study represents application of the tool during admission and reassessment of the older adult.

Case Study

Dr. Paul Horton, age 71 years, has had diabetes mellitus for about 40 years. He has used insulin, diet, and lifestyle changes to control his disease. He has no other significant health history and no previous hospitalizations. Significant family history includes his father's death in his 60s of a respiratory infection, a paternal uncle's death in his teens from cystic fibrosis, and his mother's death from heart failure in her 90s. He is an only child and has no other living relatives. He is a veteran of military service and a nonsmoker; a retired urologist, he attends church weekly. Dr. Horton is an avid golfer, clinic volunteer, and violinist in several bands. His wife succumbed to ovarian cancer approximately 10 months ago, and he feels it is time to get on with his life. He and his wife were unable to have children, although he has a devoted stepdaughter who lives nearby. Dr. Horton recently moved to a condominium where he has multiple friends, including a woman that he is considering marrying. The stepdaughter is pressuring him to move into her home; however, Dr. Horton fears he will lose his independence if he agrees to her request.

Recently, Dr. Horton sought a medical evaluation after experiencing severe shortness of breath and fatigue. His physician confirmed cardiovascular disease and Dr. Horton underwent a cardiac catheterization, which revealed significant blockages in three coronary vessels. A triple coronary artery bypass graft was performed but Dr. Horton had trouble weaning from the mechanical ventilator. One week postoperatively, *Pseudomonas aeruginosa*, a common pathogen associated with respiratory manifestations of cystic fibrosis (Gibson, Burns, & Ramsey, 2003), was identified and treated with antibiotics. Dr. Horton was weaned from the ventilator 2 weeks postoperatively, and is very involved in his recovery.

As a physician, Dr. Horton is concerned about how he acquired infection with a bacterium that usually is seen in people with cystic fibrosis. Dr. Horton is adamant that he should have genetic testing for the cystic fibrosis transmembrane conductance regulator (CFTR) gene. His

Figure 1.
Adult Assessment Tool

I. Psychological

Developmental Stage Adjustment
- Assess the relationship of chronological age to corresponding developmental tasks.
- Is person a good historian?

Perceive Need Prioritization/Optimization
- Assess person's perceived priority needs.
- Is family in agreement?

Role Relationship
- Identify changes in role with family, community, and other settings significant to patient. May need more time to assess.

II. Sociological

Activity Involvement
- Identify the older adult's typical daily routine. Is there a pattern indicating the person is starting to disengage?
- Does the degree of activity involvement match what the patient desires?
- What limits are imposed by disease?

Personality
- Describe the person's general coping ability.
- Is spirituality aiding coping?
- What pattern has the patient displayed previously in managing stress?

Generation Cohort
- Identify person's work ethic and hardiness or ability to cope with multiple problems.
- What is the person's history of life?
- What is the person's belief about caring for self?
- Is the person motivated to be independent?
- How is the diagnosis perceived?
- How do cohort experiences influence health perceptions and choices?

III. Biological

Normal Aging Changes
- Identify age-related changes from a comprehensive system assessment (sensory, cognitive, physical, functional).
- Are there accelerated or abnormal changes?
- Is communication affected?

Pathophysiological Changes
- Are abnormal changes compensated?
- Is referral for treatment needed? Is the patient's life threatened?
- Is wear and tear responsible? Attempt to determine the etiology of injury/disease.

Genetic Risk Factors
- Assess the family and individual for present and potential manifestations of genetic diseases.
- Are symptoms reflective of genetic mutations?
- Are there wellness/disease patterns emerging within the family?

Impact from Pharmacologic, Surgical, or Other Health Promotion/ Disease Prevention Treatments
- Assess over-the counter, herbal, and prescribed drugs, alternative therapy use, recent surgeries, and other treatments.
- Assimilate possible interactions and plan for prioritized needs.

stepdaughter feels "it is too expensive and the knowledge gained will not be helpful since he is so old." He finally decides to have genetic testing and is told his results are positive for a CFTR mutation.

Application of the Tool

Using the assessment tool described in Figure 1, the nurse has the following findings:

Psychological. Dr. H. is adjusting very positively to developmental tasks associated with his age. He has discussed with his stepdaughter his plans to remarry and to remain in his current condominium. He anticipates that he will be able to regain an independent lifestyle with his health care providers' support following discharge. He believes maintaining self-actualization continues to be his priority goal. To Dr. H., self-actualization means being independent and able to participate fully in his activities.

Sociological. Dr. H. is fully engaged in his community, has close relationships, attends church regularly, participates in recreational activities such as golf and bridge, and serves as a clinic volunteer. He has successfully coped with his wife's death and accomplished multiple life goals, and has no regrets about his past. Dr. H. accepts his current health status, and believes that his life has continued to be fulfilling in his retirement. He has come to terms with having had open-heart surgery and feels he is a "survivor." He is confident he will enjoy improved health with his grafted coronary arteries and more focused pulmonary management due to his CFTR mutation. He feels satisfied with his life and welcomes the idea of remarrying.

Dr. H. has a very hardy personality (copes well with problems and has a strong work ethic) that he attributes to his challenging work as a physician. He has lived through significant events (for example, the Depression, WW II combat) that also have strengthened his ability to cope. Dr. H. wants to know about his health in order to be involved in

promoting wellness and preventing further illness. He discusses his cardiac risk factors with the nurse and makes plans to meet with a dietitian. The nurse observes that Dr. H. is able to advocate for himself to meet his needs.

Biological. Dr. H. manifests normal changes of aging and a healthy weight. He has no difficulty with communication. He has coronary artery disease and other cardiovascular disease secondary to long-standing diabetes mellitus. He follows best practices for diabetes management and is now involved in cardiac rehabilitation after coronary artery bypass grafting.

The nurse knows that some people have less severe mutations of the CFTR gene and so are not identified as having cystic fibrosis until later in life even though they do have the cystic fibrosis genotype (Lashley, 2005). Dr. Horton reports having had a history of sinus infections and resistant respiratory infections (both common with cystic fibrosis). His father died due to a respiratory infection. Other CFTR indicators include Dr. H.'s inability to have children; males with a mutated CFTR gene tend to have an absent or malformed vas deferens (Lashley, 2005). His history of diabetes is also noticeable because some people with cystic fibrosis acquire insulin deficient diabetes after the age of 30. When the results of Dr. H.'s genetic testing arrive, he learns that he indeed carries a mutated CFTR gene.

Although this patient is a physician, the nurse should not presume that he does not require any teaching regarding his risk factors such as diabetes, CFTR gene mutation, and coronary artery disease. The nurse recognizes the need to promote frequent deep breathing/abdominal breathing and repositioning, as well as more careful monitoring of his diabetes mellitus. The physician refers Dr. H. to a cystic fibrosis specialist. A few weeks later, the nurse meets Dr. H. at the clinic. She learns that he is exercising, following dietary modifications for his coronary artery disease,

Table 1.
Summary of Selected Aging Theories

Psychological Theories	Description
Maslow Human Needs	Five basic needs motivate human behavior in a lifelong process toward need fulfillment.
Jung Individualism	Personality consists of an ego and personal and collective unconsciousness that view life from a personal or external perspective. Older adults search for life meaning and adapt.
Erikson Personality	Eight sequential life stages have corresponding life tasks.
Life Span/Life Course Development	Life stages are predictable and structured by roles, relationships, values, and goals. Age group norms are an important part of life course.
Sociological Theories	
Activity	Being occupied and involved are necessary for satisfaction late in life.
Disengagement	Gradual withdrawal from society and relationships serve to maintain equilibrium and promote reflection.
Continuity	Personality influences life satisfaction and remains consistent throughout life. Past coping patterns recur as older adults adjust to decline and contemplate death.
Age Stratification	Society is stratified by age groups that are the basis for resources, roles, status, and deference from others. Age cohorts share similar experiences, beliefs, attitudes, and expectations of life course transitions.
Biological Theories	
Stochastic	Aging is based on random events.
Free Radical	Membranes, DNA, RNA, and proteins are damaged by free radicals which cause cellular injury and aging.
Wear and Tear	Cells wear out and cannot function with increased aging.
Nonstochastic	Aging is based on genetically programmed events.
Programmed	Cells divide until they are no longer able due to shortening telomere which triggers apoptosis.
Gene	Cells have a genetic programmed aging code.
Neuro-endocrine	Problems with Hypothalamus-Pituitary-Endocrine Gland Feedback System cause disease; increased insulin growth factor increases aging.

and managing his new diagnosis of genetic mutation of CFTR gene. Dietary supplementation with omega-3 fatty acids will assist him with his coronary artery disease, as well as with the CFTR mutation (Lashley, 2005). The omega-3 fatty acids specifically increase leukotriene B5 which increases vital capacity (Terano, Salmon, & Moncada, 1984). It is important to conduct health teaching on Dr. H.'s increased susceptibility to mycobacteria, influenza, and other respiratory infections, as well as reinforce the importance of daily coughing and deep breathing, exercise, and maintaining good hydration status. He states he is being seen by a pulmonologist who has prescribed abdominal breathing exercises, weight training, and a complete pulmonary function screening.

Conclusion

The nurse can apply knowledge gained from the biological, psychological, and sociological theories of aging by using the *Adult Assessment Tool* to guide him or her in conducting appropriate screening activities, identifying health promotion needs, and providing health guidance and counseling regarding lifestyle, developmental, and environmental issues. The biopsychosocial perspective gained from reviewing theories of aging suggests new insight for planning nursing care for adults. The nurse often recognizes subtle clues but may not be sure how to use the data appropriately. This tool assists the nurse in organizing data during assessment. Using knowledge gained from aging theories (see Table 1), the nurse can facilitate best practices for managing chronic illnesses, maximize individuals' strengths relative to maintaining independence, use creative ways to overcome individuals' challenges, and promote cognitive and mental well-being in patients. ■

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