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Encyclopedia of Nursing Research, Second Edition
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This second edition of the *Encyclopedia of Nursing Research* (ENR), like the first, is a comprehensive, yet concise and authoritative guide to existing nursing research literature. It charts the course of nursing research since 1983 when the first edition of the *Annual Review of Nursing Research* (ARNR) was published.

The original edition of ENR, published in 1998, grew from a long-standing commitment of the publisher, Dr. Ursula Springer, to the field of nursing, and my commitment to nurse scholars around the globe. The original encyclopedia followed 15 years of publication of the ARNR series. This second edition of ENR follows publication of 22 volumes of ARNR and incorporates the research topics included in the ARNR series. Through these formative years of nursing science, I have had the privilege of serving as editor of the ARNR series and witnessing the rapid growth of knowledge and expertise in nursing research. Having served as editor for the first edition of ENR, I am joined in this edition by Meredith Wallace, the Associate Editor.

Nurse researchers and graduate students in nursing will be the primary audience for this edition of ENR. Yet, as with the first edition, nurses in all phases of education, from basic to doctoral, from formal university and college-based programs to continuing education offerings, within all health systems, will find this an important introduction to current nursing research topics. The alphabetical list of entries is provided to assist the reader in quickly finding the relevant term. While every effort was made to include the most comprehensive list of entries, based on both a literature review of key terms in journals and the ARNR series and the expert advice of the Advisory Board members, we are cognizant of the fact that some terms may have been overlooked. Thus, we encourage readers to advise us of new terms that should be added to the already extensive list.

This project has been one of the most rewarding endeavors of my professional career. It has been met with a great deal of professional interest and, most importantly, an extra measure of enthusiasm by students at all levels. The References section lists the most critical references on each topic. It is this attention to key references that may be of most use to graduate students who wish to pursue a topic in more depth.

This publication would not have been possible without the experts in nursing research who authored the hundreds of entries. Each author, some of whom have contributed multiple entries, deserves thanks for the written entries, for the willingness to respond to strict guidelines and page and reference limitations, and, of course, for adhering to a very demanding time line for publication. Distilling one’s life work into a few hundred words is often the most difficult accomplishment.

We also are indebted to the colleagues who served as members of the Advisory Board for both the first and second editions of ENR. I thank each of you for your input into the terms to be included here, the suggestions of potential contributors, and your willingness to plunge into yet another publishing project with me.
As with any large continuing project such as this, a true team effort is necessary for a quality project. First, my thanks to Dr. Ursula Springer for conceiving the project and asking me to undertake the editing at a time when my commitments were at a peak. I am glad that I did not hesitate. To the Springer staff who facilitated the production at the many levels, I owe a huge thank you, most especially to Ruth Chasek, Senior Nursing Editor, who saw the project through its many stages. I also acknowledge the endless energy, dedication, and expertise of Meredith Wallace, Associate Editor for this edition. There was never too daunting a task for Meredith as we worked tirelessly over the past 2 years to complete the project. A number of students assisted Meredith and me in our activities for this edition of ENR. I would like to thank Ali Salman and Yi-Hui Lee, PhD candidates at Case Western Reserve University, Frances Payne Bolton School of Nursing, and Kara Diffley, Lindsey Neptune, and Christine McGurk, undergraduate students at Fairfield University School of Nursing. I am certain that there are numerous other graduate students who assisted the authors in completing their entries. We hope that this edition of ENR will continue to be rewarding to them in their future academic and professional careers.

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Action science is an approach to generating knowledge for practice by engaging practitioners in that process through reflection on their own behavioral worlds of practice (Argyris, Putnam, & Smith, 1985; Schön, 1983). Schön contrasts action science as advanced by these authors with the traditional, positivistic science, which he calls technical rationality. Technical rationality for professional practice is concerned with “knowing that,” whereas action science is oriented to “knowing how” in practice. Although knowing how in practice contributes to the creation of knowledge that is not available from traditional research, what practitioners actually design in their practice may be limiting, routinized, and self-sealing. Hence, action science addresses generation of knowledge through reflection that fulfills the functions of discovery and change. Action science is primarily oriented to studying individual practitioners in their practice and generation of knowledge from individuals’ practice; however, it can be applied to organizational behaviors and organizational intervention.

R. Putnam (1992) suggests that action science is based on three philosophical premises: (a) human practice involves meaning making, intentionality in action, and normativity from the perspective of human agency; (b) human practice goes on in an interdependent milieu of behavioral norms and institutional politics; and (c) the epistemology of practice calls for the engagement of practitioners in generating knowledge. Action science thus is a method and philosophy for improving practice and generating knowledge. Argyris (1987) suggests further that action science is an interventionist approach in which three prerequisites must be established for the research to ensue: (a) a creation of normative models of rare universes that are free of defensive routines, (b) a theory of intervention that can move practitioners and organizations from the present to a new desirable universe, and (c) a theory of instruction that can be used to teach new skills and create new culture.

Action science holds that actions in professional practice are based on practitioners’ theories of action. Theories of action are learned and organized as repertoires of concepts, schemata, and propositions and are the basis on which practitioners’ behavioral worlds are created in specific situations of practice. Argyris, Putnam, and Smith (1985) identified espoused theories and theories-in-use as two types of theories of action. Espoused theories of action are the rationale expressed by practitioners as guiding their actions in a situation of practice, whereas theories-in-use refers to theories that are actually used in practice. Theories-in-use are only inferable from the actions themselves, and practitioners usually are not aware of or not able to articulate their theories-in-use except through careful reflection and self-dialogue.

Argyris and Schön (1974) and Argyris, Putnam, and Smith (1985) identified Model I theories-in-use as a type that seals practitioners from learning and produces routinization and ineffectiveness in practice. Model II theories-in-use are proposed within action science as an intervention for Model I theo-
ries-in-use. Model II theories-in-use encompass principles of valid information, free and informed choice in action, and internal commitment. Reflection and learning are the two key processes necessary for the transformation from Model I theories-in-use to Model II theories-in-use. Action science, then, aims to engage both practitioners and researchers in this process of transformation through the creation of a normative model of rare universe and application of theories of intervention and instruction.

Knowledge of practitioners’ theories-in-use and espoused theories provides a descriptive understanding about the patterns of inconsistencies between theories-in-use and espoused theories recalled in actual practice. Through action science, practitioners engaged in Model II theories-in-use produce practice knowledge that informs their approach to practice without routinization or the self-sealing mode. In addition, action science generates knowledge regarding the process involved in self-awareness and the learning of new theories-in-use through reflective practice and practice design.

Research process in action science calls for the cooperative participation of practitioner and researcher through the phases of description, discovery of theories-in-use, and intervention. Transcriptions of actual practice by the researcher or narratives of actual practice by the practitioner are analyzed together in order to describe and inform reflectively the nature of practice and theories-in-use. R. Putnam (1996) suggests the use of the ladder of inference as a tool to discover practitioners’ modes of thinking and action as revealed in transcripts or narratives. The research process is not oriented to the analysis of action transcripts or narratives by a researcher independent of the practitioner. It involves a post-practice face-to-face discussion (interview) between the researcher and the practitioner. Such session, are used to get at the reconstructed reasoning of practitioners regarding critical moments of the practice and to provide opportunities for reflection on the thinking and doing that were involved in the practice. Through such sessions, the researcher also acts as an interventionist by engaging the practitioner to move toward new learning.

Nursing practice is a human-to-human service that occurs in the context of health care. Nurses practice within on-line conditions that are complex not only with respect to client’s problems but also in terms of organizational elements of the health care environment. Nursing practice is not based simply on linear translations of relevant theoretical knowledge that governs the situation of practice but has to be derived and designed from the nurse’s knowledge of and responses to the competing and complex demands of the situation (Kim, 1994). In addition, as the action scientists suggest, nursing practice in general, as well as particular nursing actions, may be entrenched with routinization or frozen within Model I theories-in-use.

On the other hand, a great deal of nursing as practiced may be exemplary and creatively designed and enacted. The general aim of action science for nursing is then to improve nursing practice by freeing nurses from self-sealing practices and engaging them in the process of learning and participatory research.

HESOOK SUIZIE KIM

Activities of Daily Living

Ability to care for oneself and meet basic needs is fundamental to maintaining health and independence. The term “activities of daily living” (ADL) is used to refer to the set of skills that constitute these essential abilities. ADL are evaluated for many purposes, such as to assess current capabilities, to determine care requirements, to gauge progress or response to intervention, and to evaluate outcomes. Thus, ADL are useful to many health disciplines and professions across a wide range of health care settings and populations for addressing both clinical and research goals.

ADL are generally viewed hierarchically from the most basic of human skills (e.g., ability to feed oneself) to somewhat higher
Activities of Daily Living

ones (e.g., ability to bathe and dress oneself). Higher still are those more complex skills necessary to maintain independence in the community, such as using the telephone, doing household chores, and managing one’s finances. This higher level skill set is usually distinguished from the more basic ones by the term “instrumental activities of daily living” or IADL. ADL and IADL are also part of the broader concept of functional assessment, which generally encompasses more domains, such as cognitive and social functioning.

Many scales have been developed to measure ADL and IADL. Among the most widely used are the Katz Index of Activities of Daily Living, the Barthel Index, and the Functional Independence Measure, each of which addresses basic ADL. These and similar scales encompassing IADL can be used alone, together, or in combination with other measures of function, depending upon the purpose and breadth of the assessor’s goals.

ADL scales vary, not only in the range and complexity of skills they include, but also in the way skills are rated. Generally, each scale measures along one dimension, such as difficulty in performing a skill (e.g., performs with ease) or type of support (e.g., physical, cognitive) or level of assistance (e.g., single person assist) needed to perform a skill. Dichotomous and ordinal scaling approaches are most common. The scaling model is especially important in determining not only the dimension of ADL to be assessed, but also in determining the scale’s sensitivity to change. Although ADL and IADL assessments have been used for many years, the prevalence of dichotomous and broad ordinal scaling models has led to only a limited understanding of the pattern of ADL and IADL change over time for various patient populations.

ADL scales can be used to elicit information from various informants including the individual being assessed, a family member or informal caregiver, a health professional, or research staff. To obtain accurate ADL ratings it is essential to consider the informant’s knowledge of the individual’s abilities and any motivations of the informant that may color responses. Further, it is also important to distinguish between what the informant says the individual can do, what the individual actually can do, and what the individual is expected to do, all of which may or may not actually correspond with one another (Smith & Clark, 1995). Even when obtaining ratings of actual rather than reported performance, accuracy can be a problem. An evaluator should take care to note, or control when possible, both environmental factors (e.g., familiarity, glare, and noise), and personal factors (e.g., fatigue or depression), when conducting and interpreting assessments of ADL performance.

The application of ADL and IADL measures to particular clinical populations is a new approach that is beginning to gain notice, much as quality of life measures have been specified to various clinical populations. Such specific ADL measures may be applied best when the most commonly affected ADL and related performance limitations are known for a given population. In these situations, the assessment can be targeted toward the most relevant ADL and scaled more meaningfully to the nature of the difficulty encountered. For example, knowing that a person with dementia is unable to dress themselves independently is useful; but knowing that the person needs help with sequencing the steps involved in selecting and donning appropriate clothing is substantially more useful in supporting a higher level of independence for the individual. This approach to the assessment of ADL may be most beneficial in a clinical context where prescriptions for the kinds and levels of ADL assistance are made. One disadvantage of specifying ADL assessments to particular populations is that the narrowed view may result in a failure to identify uncommon areas of difficulty.

In sum, ADL and IADL are widely used concepts in nursing and health care practice and research because they are valuable in understanding the impact of illness or injury on a person’s everyday life and in determining their needs for assistance in support of continued independence. Particular approaches to assessing ADL and IADL should be selected
based on the purpose of the assessment and the quality of information available from informants. Careful consideration should be given to factors that may affect ADL and IADL ratings so that the most accurate assessment can be made. Tailored approaches for specific patient populations are emerging as the next advancement in ADL measurement.

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Acute Care of the Elderly

Older people have a greater prevalence of chronic diseases and disorders that lead to hospitalization. On average, people over 65 are hospitalized more than three times as often as younger individuals, and the length of their stay is estimated to be 50% longer than that of younger individuals. Nursing research that defines the evidence for practice interventions is needed for patients of all ages, and especially for the elderly (Fulmer & Mezey, 2002). Nursing research that provides the basis for best practice for hospitalized elders is often embedded in interdisciplinary studies. For example, in one study, 244 patients aged 70 years and older were enrolled in a geriatric care program which used a geriatric resource-nurse intervention to improve the quality of care received by the hospitalized elderly. The intervention decreased patients’ length of stay and improved quality indicators (Inouye et al., 1993a, 1993b). In another study, Palmer and colleagues were able to demonstrate improved care through the use of an ACE (Acute Care of the Elderly) unit, in which protocols for skin care, urinary-incontinence management, and pressure-ulcer prevention were used (Palmer, Landefeld, Kresevic, & Kowal, 1994).

ACE units have shown improved outcomes among older patients who have been hospitalized. A widely cited study conducted by Landefeld, Palmer, and Kresevic (1995) demonstrated that patients admitted to an ACE unit were more likely to improve in activities of daily living (ADL) and were less likely to be institutionalized. Asplund, Gustafson, and Jacobsson (2000) also demonstrated that ACE units reduce the institutionalization rate of hospitalized elders. Siegler, Glick, and Lee (2002) found that the commonality of the ACE unit was their interdisciplinary care and focus on functional improvement, patient and staff satisfaction, and reduction of length of stay. In a prospective study of 804 patients 80 years of age or older, 42% of the elderly patients with no baseline dependencies at admission had developed one or more limitations within 2 months (Hart, 2002). Individuals older than 65 years of age are more likely to be admitted to acute care from the emergency department than other age groups. The hospitalized elderly are at an increased risk for poor outcomes such as increased length of stay, readmissions, functional decline, and iatrogenic complications, as compared with other age groups. There is a 33% rate of readmission within 3 months and complications such as acute confusion and nosocomial infections, which are common among the elderly, resulting in increased morbidity and mortality. Fifty-eight percent of patients who are hospitalized will experience at least one iatrogenic complication (Hart).

Data for acute care are also found in research that looks at “nurse sensitive” indicators for patient outcomes. For example, hospital staff has been shown to make a difference in patient outcomes (Aiken, Sloane, Lake, Sochalski, & Weber, 1999; Kovner & Gergen, 1998). Nurse accountability and models of patient and nursing administration also have been examined (Mark, Salyer, Geddes, & Smith, 1998; Scherb, Rapp, Johnson, & Maas, 1998). These studies provide some information regarding outcomes for the elderly, but intensive effort needs to be focused on understanding the differences between outcomes for younger individuals versus older individuals in the case of hospital care. For example, do older adults have different cardiac output after coronary artery bypass surgery than younger individuals when other variables are held constant, such as premorbid conditions? Such parameters
Adherence is needed for the improvement of care for the elderly. A study conducted by Kleinpell and Ferrans (1998) explored functional status and quality of life outcomes for elderly patients after ICU hospitalization; survival rates 4 to 6 months after discharge were examined in patients aged 45 and older. In this study, the severity of the illness was a predictor of ICU outcome; age was not.

Historically, elders were not considered to be “suitable candidates” for surgeries and treatments that today are considered routine. In the early 1970s, individuals over the age of 65 were excluded from surgical intensive care units, as it was felt that the cost-benefit was not going to be in favor of the older patient. Today individuals in their 80s and 90s undergo open-heart surgery and require appropriate postoperative care that only a surgical intensive care unit can provide.

Ethical issues abound regarding elders during a hospitalization. For example, if there is an insufficient number of beds in an intensive care unit, should older individuals be sent out to the floor before younger individuals? Are scarce resources allocated to younger individuals before they are used to care for the elderly? Further, elder abuse, a serious and potentially fatal syndrome, is frequently overlooked when elders come into the hospital with severe symptoms, such as bilateral bruising, histories incompatible with injuries, and overt fear of caregivers. These issues are a part of acute care of the elderly and need to be addressed with rigorous research studies. Studies involving younger individuals need to be replicated among older adults to discern differences between the age cohorts.

Adherence is defined as the degree to which behavior corresponds to a recommended therapeutic regimen (Haynes, Taylor, & Sackett, 1979). Numerous terms have been used to describe this behavior, including compliance, therapeutic alliance, and patient cooperation. Although the literature is filled with discussion of the acceptability of these terms and the differences between them, most investigators view the terms as synonymous and independent of the decision to engage in a particular therapeutic regimen. The most complete literature can be obtained from structured databases with the term compliance.

Adherence to health care regimens has been discussed in the literature since the days of Plato. However, little systematic attention was given to this phenomenon until the 1970s, when there was a proliferation of research. One of the first reviews of the literature was published in Nursing Research (Marston, 1970). Since that time there has been a profusion of research from a variety of disciplines. The majority of the research has been focused on patient adherence, although there is a smaller body of literature on the adherence of research staff to clinical protocols and a growing body of literature on provider adherence to treatment guidelines.

One of the issues that continues to arise in discussions of patient adherence is patient autonomy. Is nonadherence a patient right or is adherence a patient responsibility? This argument presumes that the patient is aware of his or her own behavior and has consciously decided not to follow a treatment regimen. The literature suggests that fewer than 20% of patients with medication regimens consciously decide not to engage in a treatment program. Those patients who have decided to follow the regimen but do not carry it out are unaware of episodic lapses in behavior or have difficulty in integration of the health care regimen into their lives. The most common reasons given by patients for lapses in adherence are forgetting and being too busy. This group comprises on average 40% to 50% or more of patients in a treatment regimen.

The problem of nonadherence is costly in terms of dollars and lives. The national pharmacy council estimates that nonadherence to pharmacological therapies costs approximately $100 billion annually (Grahl, 1994).
Although the cost of nonadherence to nonpharmacological therapies has not been estimated, the contribution to morbidity and mortality is high. Failures to quit smoking, to lose and maintain weight, to exercise regularly, to engage in safe sex practices, to avoid excess alcohol, and to use seat belts contribute significantly to declines in functional ability as well as to early mortality. Further data suggest that nonadherence to pharmacological as well as nonpharmacological therapies contributes to excess hospitalization and complication rates (Dunbar-Jacob & Schlenk, 1996).

Poor adherence then is a significant problem of direct relevance to nursing. Nurse practitioners may prescribe or recommend therapies. Home health and community nurses provide education and assistance in carrying out health care advice. Hospital, clinic, and office nurses provide education regarding treatment plans. There is a need for intervention studies that will guide practice as nurses prepare and support patients in the conduct of treatment regimens.

Research on adherence has been focused heavily on the determination of the extent of the problem and on predictors or contributing factors. Recent reports by the Cochrane Collaboration suggested that just 36 randomized controlled studies have evaluated interventions to improve medication adherence and examine both adherence and clinical indicators as outcomes. Fewer still have examined adherence to lifestyle behaviors. Most of these used general educational or behavioral counseling interventions. Just 1/3 of the interventions were found to have an effect on both adherence and outcome. Strategies that showed effectiveness were those that included components of self-management and/or enhanced attention by health professionals.

One problem in evaluating interventions and identifying relevant predictors is that of measurement. Most clinical studies have relied on self-report of adherence. There is a growing body of evidence indicating that individuals do not report accurately and those reports are biased toward an overestimate of performance. Thus, alternative strategies are being used to obtain better information, such as electronic monitors, PDAs and other technologies.

Future research on adherence should address strategies by which nurses can improve adherence to treatment regimens with attention directed toward various age groups, clinical populations, and regimen behaviors. The research would benefit from theoretical approaches to the problem of patient adherence and the design of intervention strategies. Effective strategies delivered by nurses have considerable promise of a favorable impact on health outcomes and costs (Dunbar-Jacob & Schlenk, 1996).

Jacqueline Dunbar-Jacob

Adolescence

Adolescence is a developmental stage distinct from childhood and adulthood. At what age the label adolescence is appropriate depends on the data source. The Guide to Clinical Preventive Services (U.S. Preventive Services, 1996a) uses ages 11 to 24 years. The most meaningful approach to this stage is to separate adolescence into three periods: (a) early adolescence, ages 10 to 14; (b) middle adolescence, ages 15 to 19; and (c) late adolescence, ages 20 to 24. During this transitional period adolescents reach physical and sexual maturity, develop more sophisticated reasoning ability, and make important educational and occupational decisions that will shape their adult careers.

The actual number of adolescents and their proportion in the U.S. population is increasing. This group represented 14% of the population in 1990, 13.9% in 1993, and 14.2% in 2002. Of the adolescent population, those between ages 10 and 14 years represent 53% compared to 47% between ages 15 and 19 years (U.S. Bureau of the Census, 2003). As a result, the cohort of adolescents will likely continue to increase in size. According to Day (1996) reasons for this increase include the fact that “baby boomers” are having children later in life, non-White
Adolescence populations are experiencing high fertility rates, and a large number of immigrants are in their 20s. Also, the percentage of adolescents within the White population (12.8%) is lower than that within the Hispanic (17.5%) or Black populations (17.1%). In 2001, the adolescent population between the ages of 10 and 19 consisted of 63.2% Whites not of Hispanic origin, 14.7% Blacks, 15.6% Hispanics, 3.6% Asian/Pacific Islanders, and 1% American Indians, Eskimos, and Aleuts; therefore, it is crucial for nurses to be culturally competent in order to care for adolescents (Health Research Service Administration, 2001; American Medical Association, 1999).

Common concerns by adolescents and their parents have been documented (Neinstein, Radzik, & Sherer, 2002). Adolescents’ concerns include parental conflicts, peer interpersonal concerns, identity, school, social situations, depression, medical problems, psychosomatic issues, safety, and prospects for the future. Parents’ concerns include acting-out behaviors, risk-taking, emotional lability, drug and alcohol use, academic problems, sexual activity, eating disorders, safety issues, peer influences, psychosomatic problems, and “wasting time.” The authors concluded that any adolescent concern should lead to assessment. When problems involve high-risk violent or self-injurious behavior or a severe or chronic disorder, referral is required. Other issues can generally be handled by discussion and reassurance with family, health care providers, or other community resources.

Most adolescent mortality and morbidity results from behavior and lifestyle and therefore is preventable. Many behavior patterns developed during adolescence continue into adulthood, and most of the leading health problems of adults are those associated with behaviors initiated early in life (e.g., smoking). In the past 10 years, major advances have been made in understanding the health beliefs of adults and how these beliefs influence health-related behaviors. As our focus has turned to the early origins of health beliefs and behaviors, adolescence has increasingly become a focus of investigations. Researchers are making some progress in understanding how parental health attitudes and behaviors, social norms, peer pressures, and mass media affect teenagers; health-related beliefs and lifestyles. There is still much to learn regarding cognitive aspects (attitude, beliefs, perceptions), emotional aspects (feelings, concerns, moods, personality), social effects (norms, culture, environment, socioeconomic status), and biobehavioral (neurohormonal, psychoneuroimmunological) influences on the health practices of adolescents.

Before working with adolescents, nurses must understand how the egocentrism of this period influences behavior. Elkind (1984) described the “imaginary audience” as one consequence of adolescent egocentrism, that is, the assumption that everyone around them is watching them and is concerned about their appearance and behavior. Hence, they are very self-conscious and often go to extreme lengths to avoid what they are convinced will be mortifying experiences. Another consequence of the adolescent egocentrism and self-centeredness is the “personal fable,” which is a set of beliefs in the uniqueness of one’s feelings and one’s immortality. Others often describe this belief as “It won’t happen to me”—the story we tell ourselves, whether having sex without protection, driving fast, smoking, or drinking, that other people may experience the negative consequences but we will not.

Romer (2003) offered an excellent overview of research on risk reduction to promote the health of adolescents. Two important concepts related to adolescent lifestyles are (a) how adolescents organize their lives and pattern their behavior in ways that put them at lower or higher risk for serious health problems; and (b) how these patterns develop, persist, or cease at different times during the life span. Research topics included decision making, problem solving, peer and parental influence, personality, and specific risks: suicide, alcohol and other substance use, sexual activity, and gambling behaviors.

Most of the health problems of adolescents have their origins in environmental or behav-
A variety of factors. Reducing adolescent morbidity and mortality requires strategies that involve multiple approaches delivered through multiple settings, including schools, the mass media, communities, families, and health care settings. In addition, legislation that prevents adolescents’ access to cigarettes, alcohol, and guns can promote health. Regardless of the approach, it is essential that all nurses understand how to provide culturally competent health care for adolescents.

**Ann L. O’Sullivan**  
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### Adolescent Pregnancy and Parenting

The incidence of adolescent pregnancy has declined steadily in the U.S. since 1990 when rates peaked at 116.3 pregnancies per 1,000 teenage women (Ventura, Abma, Mosher, & Henshaw, 2003). The rate in 1999 was 86.7/1,000 (a decline of 25.4%). Similarly, the rate of births to adolescents has decreased. The 2002 rate of 42.9 births per 1,000 young women was 31% lower than the 1991 rate of 61.8 births/1,000. Adolescent birth rates have declined for all racial and ethnic groups and for all age subgroups: those under 15, those 15–17 years and those 18–19 years. Since 1990 the rate of decline in births has been slower for Hispanics than for non-Hispanic Whites or Blacks. In 1991, the Black teen birth rate at 118/1,000 young women was higher than that for Hispanics (105/1,000). By 2001 the Hispanic rate was 86/1,000 compared with the non-Hispanic Black rate of 74 births/1,000 or the non-Hispanic White rate of 30/1,000 adolescent women (Child Trends, 2003). Some of the declines in rates across all groups have been attributed to revisions in Census population estimates in 2000. This effect is greatest for Hispanic, Asian/Pacific Islander, and Native American adolescent girls (Arias, MacDorman, Strobino, & Gwyer, 2003).

Much research has been focused on understanding the impact of adolescent pregnancy and birth and on the development of programs to prevent pregnancy. Controversies remain about whether a single birth to an adolescent has negative effects on the life of that young woman or her infant (Geronimus, 2003). Also controversial is whether adolescent parenting prevention programs work (DeCenso, Guyatt, Willan, & Griffith, 2002; Kirby, 2002; Elfenbein & Felice, 2003). These programs have tended to focus broadly on issues ranging from abstinence, hormonal contraceptive and condom use, public policy change for welfare support for young mothers, and male-focused efforts.

In contrast, growing evidence suggests that parenting interventions may make a difference in outcomes for teens’ infants (Coren, Barlow, & Stewart-Brown, 2003). Successful programs have included both group and individual interventions, programs that are home-based and those that require participation at a center or institution, and programs that involve both majority and minority teens. Early Head Start programs funded by the National Institute on Child Health and Human Development have recently begun to show promising outcomes with respect to maternal school attendance as well as child development (Love et al., 2002). Programs have not yet begun to look at the processes within the programs that have correlated with success by the infants.

**Ann L. O’Sullivan**  
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### Adult Health

Human adulthood refers to the stages or phases of the life cycle after childhood and adolescence. It is the longest period of the life course. Physical, intellectual, educational, occupational, social, economic, spiritual, and health-related changes characterize the multiple stages of adulthood. The changes that take place in adulthood are of importance to nursing for two reasons. First is that adults, especially older adults, comprise the largest population served by nurses. Second is that
Adults are the parents or guardians of infants, children, and adolescents and the informal caregivers of elders. Adults make up the “family” that is the basic unit of nursing care; thus, they are the direct or indirect clients for essentially all of nursing care.

Ideally, nursing care and client education about self-care would be designed to produce the maximum positive benefit for clients. However, rarely are nursing actions designed to fit within the specific life stage, developmental stage, or personal contextual reality of adult clients.

The study of adult development is a 20th century phenomenon, ostensibly because people did not live long enough to merit inquiry in previous centuries. One notable exception was a treatise by Quellet published in 1842, entitled A Treatise on Man and the Development of His Faculties. G. Stanley Hall and E. L. Thorndike were two early 20th century scholars of the adult years. In mid-20th century, Erik Erikson (1959) published a set of life stages that expressed the middle-class norms of the 1940s and 1950s. Fortunately, he lived long enough to revise them and add additional stages as people lived longer. From 1960 through 1980, Neugarten (1968) and other investigators at the University of Chicago generated much of the work that serves as the foundation of extant theory on adult development.

The life-span perspective of adult development and aging is oriented to the scientific study of adult life stages and critical situations that most closely fits within the nursing goal to maximize quality of life for as much of the life span as possible. The life-span perspective focuses on change, continuity, and discontinuity over the life course. Each stage of adulthood has normative patterns, and as one stage folds into the next, personal changes occur and integration of these changes is necessitated. This process may produce anxiety, anger, frustration, and physiological stress responses during the transition while the conflicts between the old and the new self are resolved and the changes are integrated into the self-system. These stress responses frequently present to health care providers in the form of accidents, chemical abuse, violence, or acute or chronic illness. The conditions are rarely perceived or treated within the developmental context. Rather adults are decontextualized by health care professionals, who treat the immediate symptoms or condition while ignoring the adult context in which it occurs (Stevenson, 1993). Furthermore, health researchers, including nurse investigators, do not study health or care phenomena within the context of the adult life course.

One conception of the health of adults that has wide appeal in the medical community is attributable to Dubos (1965), who defined health as a state of equilibrium, adaptation, and harmony. Dunn (1980) went beyond mere equilibrium and devised the new concept of higher-level wellness. Dunn’s concept of higher-level wellness embodied the idea of actualizing and maximizing human potential through the pursuit of three sub-goals: making progress toward a higher level of functioning, having an open-ended expanding goal to seek a fuller potential, and progressing toward a more integrated and mature human existence through the entire life course. Pender (1996; 2002) attempted to incorporate both Dunn’s actualizing focus and Dubos’s concept of health as maintaining stability through adaptation to the environment. According to Pender’s thesis, health is the optimization of inherent and acquired human potential through goal-directed behavior, informed self-care, and satisfying relationships with others. Adjustments are made as needed to maintain structural integrity and harmony within the context of the environment. WHO representatives redefined health as a “resource” for everyday life, not an outcome or end product to be obtained at some definable point in time. According to the highly influential WHO Ottawa Charter (Kaplan, 1992), good health is viewed as a resource that goes hand in hand with social, economic, and personal development, and it is a critically important resource for attaining and maintaining a high-level quality of life for the entire life course. The goal is to “live long and die short;” this implies avoiding chronic dis-
Although much has been learned, there is great difficulty in trying to separate the impact of lifestyle from what is ultimately possible for adult health under ideal conditions. This is true not only for the biological possibilities but also for the socioemotional realm and for the development of intellect, creativity, and wisdom. Much of the extant research is plagued by the inability of researchers to disentangle the overlay of familial and cultural expectations, cohort-specific life experiences, the environment, and idiosyncratic tendencies. What is generally considered normal for men or women during the major stages of adult life is open to criticism as being tied to specific historical periods (e.g., studies done in the 1950s or the 1980s), to expectations within an age cohort (e.g., those whose childhood occurred during the early years of television versus the internet age), to gender differences that were influenced by prevailing values and expectations (e.g., prewomen’s liberation or sexual liberation), or to physical adult health status in light of varying mores about smoking, fat or carbohydrate intake, and exercise.

Cultural, cohort, and gender-expectation biases can be overcome to some extent with cross-cultural or cross-sequential designs. Nurse researchers were challenged to do more of their adult health research contextually tied to the specific adult ages and stages of their subjects (Stevenson, 1993). Even now, most nursing research either erroneously lumps three or more distinct adult stages into one group (e.g., 25 to 60) or makes up anti-developmental age categories (e.g., 25 to 45, 45 to 65, and 65 and above). Developmental and situational confounders abound in data categorized and analyzed in this anti-theoretical manner. Findings would be more valid and reliable, even about purely physiological phenomena, if scientifically based adult life stages were used as the grouping categories in research on adult health.

Joanne Sabol Stevenson

Advance Directives

Since the early 1970s, Americans have been encouraged to complete advance directives to
ensure that physicians and family members will know their end-of-life treatment wishes in the event that they become unable to participate in decision making. Many Americans fear becoming trapped in a dehumanizing medical system that ignores their personal goals and wishes, robs them of privacy and dignity, and prolongs their dying with painful and ineffective technological interventions. Health care providers, educators, and those involved in health care policy maintain that, in order to avoid unwanted end-of-life situations, decisionally capable adults can extend their current autonomy into the future by participating in advance care planning and completing advance directives (ADs).

There are two general forms that these legal documents take. The instructive directive (i.e., living will) aims to direct future medical interventions by stipulating in writing a preferred course of action such as the refusal of particular therapies, or less commonly, requesting that all life-extending measures be used, in the event that the patient loses the ability to directly participate in health care decisions. Although each state stipulates and defines the conditions under which ADs become operational, honoring the instructions in living wills is invariably contingent upon a clinician’s determination that the patient has lost decisional capacity and that he or she has a “terminal” or “incurable” condition. Both of these qualifying conditions require a medical judgment to be made.

The proxy directive (i.e., durable power of attorney for health care) designates a person to function as a surrogate decision maker and make all medical decisions in the event that the patient loses decision-making capacity. Treatment decisions made by the surrogate are expected to be consistent with those that would have been made by the now incompetent patient, a standard of decision making known as “substituted judgment.” Some state statutes combine written and appointment directions in one document. A decision not to attempt cardiopulmonary resuscitation is another form of ADs and is usually made by a surrogate following a physician recommendation, when the physician determines that a resuscitation attempt would either be medically futile or extraordinarily burdensome in light of the patient’s current condition.

Since 1976, when the first so-called “right-to-die” case involving Karen Ann Quinlan was decided, members of the public, religious groups, and health care professionals have engaged in a vigorous debate about the acceptability of stopping life-prolonging treatment and allowing death to occur. The individuals at the center of these early “right-to-die” cases were almost always young adults who had lost decisional capacity, often as a result of a traumatic injury, and left no written documentation or clear verbal instructions about their end-of-life treatment wishes. Their family members had to petition the courts in order to stop unwanted life-prolonging treatments. In 1990, the United States Supreme Court upheld Missouri’s evidentiary standard that required “clear and convincing evidence” of the then vegetative Nancy Cruzan’s wishes before permitting her family to discontinue the tube feedings that were sustaining her life.

In order to better inform the public about the expected benefits of advance directives and encourage their use, Congress passed the Patient Self-Determination Act of 1990. This Federal legislation requires all health care institutions to inform newly admitted patients about ADs and offer them assistance in completing a directive. Individual state legislatures have provided additional support for ADs; all 50 states have completed some form of statutory recognition of these documents. Despite a great deal of effort and subsequent publicity that included syndicated newspaper columns by Ann Landers and “Dear Abby” among other attempts to educate and motivate the public about these documents, completion rates for advance directives continue to range from 4% to 25% (Perkins, 2000). Even when patients have completed an AD, clinicians observe that they are often unavailable, or not applicable in many situations involving critically ill adults (Tonelli, 1996).

Researchers are now examining how ADs actually function in various clinical settings, and are exploring whether the presence of an AD ensures compliance with patients’ end-of-life treatment wishes. Others are questioning the very relevance of ADs to advance care
planning (Perkins, 2000; Drought & Koenig, 2002). Nonetheless, surveys of patients and health care professionals have consistently demonstrated widespread support for the idea of ADs as an effective means to ensure that end-of-life interventions conform with patients’ wishes. Studies have found that while ADs are reassuring to patients who complete them, they do not ensure that a patient’s end-of-life wishes will be followed. In a study by Tierney et al. (2001), investigators found that discussions about ADs improved the care satisfaction of elderly patients with chronic illnesses, but a second study found that having an ‘instructional’ AD did not increase the likelihood that family decision makers would make treatment choices that accurately reflected the patient’s end-of-life wishes as stipulated in the AD (Ditto et al., 2001). Ditto and colleagues also found that family members’ predictions of what the patient would want were correct less than 70% of the time, and families were two to three times as likely to make errors of over-treatment as under-treatment—e.g., approving life-sustaining treatments the patient would not have wanted under the circumstances.

In a study by geriatric nurse researchers that aimed to explore advance care planning (ACP) and end-of-life care for nursing home residents who were hospitalized during the last 6 weeks of life, Happ and colleagues (2002) found that the primary focus of ACP in the nursing home was on cardiopulmonary resuscitation preferences. By so limiting ACP discussions, end-of-life treatment choices were inappropriately constrained and oversimplified, with the result that the benefits of palliative or hospice end-of-life interventions were underutilized. In another study, researchers aimed to evaluate the effect of an ACP intervention on the completion of ADs and patient satisfaction among persons with HIV/AIDS. Although the rate of completion for ADs went from 16.4% to 40.7% following three face-to-face counseling sessions about ADs, it was subsequently noted that 23% of the completed ADs were deemed legally invalid (Ho, Thiel, Rubin, & Singer, 2000).

Another group of researchers compared the accuracy of substituted judgments made by primary care physicians, hospital-based physicians, and family surrogates on behalf of elderly outpatients, and explored the effectiveness of ADs in improving the accuracy of those judgments. Coppola, Ditto, Danks, and Smucker (2001) found that familiarity with the patient’s AD did not improve the accuracy of substituted judgments for primary care physicians or family surrogates; it did increase the accuracy of the judgments made by hospital-based physicians.

Drought and Koenig (2002), nurse ethicists, conducted an ethnographic, longitudinal study of terminally ill patients with solid tumor cancer or AIDS that explored the difficult medical decisions each patient faced in the course of their illness and treatment. These researchers concluded that shared decision making is illusory, terminal patients frequently resist advance care planning, and hold values other than autonomy as important. They cited substantial support for their observations that no studies to date have shown that ADs significantly facilitated end-of-life decision making, truly direct care, or saved resources at the end of life.

Many commentators noted the following difficulties associated with use of instructive directives: incomplete information, the inability to anticipate future medical conditions, and uncertainty regarding the meaning and intent of written instructions. These problems of interpretation require clinicians to seek information from others in the attempt to determine what the patient “really meant” (Tonelli, 1996). Tonelli and others concluded that, because of the limitations associated with the use of instructive directives, proxy directives are the preferred form of AD (Dexter, Wolinsky, Gramelspachar, Eckert, & Tierney, 2003; Perkins, 2000; Tonelli). Clearly, there is a need for further research to explore whether ADs facilitate good end-of-life care, and nurses are ideally situated to
direct and participate in furthering understanding of these documents.

JUDITH KENNEDY SCHWARZ

Advanced Practice Nurses

Advanced practice nursing is described as the application of an expanded range of practical, theoretical, and research-based therapeutics to phenomena experienced by patients within a specialized clinical area of the larger discipline of nursing (Hamric, Spross, & Hanson, 1996). The history and evolution of advanced practice nursing is a tapestry of patient care provided by expert nurses who have expanded the boundaries and scope of the practice of nursing.

Advanced practice nurses (APNs) need basic core competencies to fulfill the advanced practice nursing role. These competencies include skills in expert clinical practice, consultation, teaching and coaching, research, leadership, collaboration, change agency, and ethical decision making. APNs offer high levels of autonomous decision making in the assessment, diagnosis, and management of patients. Conceptually, the practice is nursing-based, with emphasis on health promotion, disease prevention, and education of patients and families.

Advanced practice nurses must have a graduate degree in nursing in a chosen specialty and are differentiated by the ability to carry out direct, expert clinical practice. Although advanced practice nursing is an evolving field, currently the role of the APN is limited to nurse practitioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists, who provide direct clinical care for patients.

One of the hallmarks of advanced practice nursing is the commitment to collaboration with other disciplines. Advanced practice nurses work within the designated scope of practice and collaborate with or refer to other professional colleagues those patients and problems that fall beyond the expertise of APNs.

Advanced practice nursing and the practice roles, issues, and evaluation of the four groups of APNs (nurse practitioners, certified nurse midwives, certified registered nurse anesthetists, and clinical nurse specialists) serve as a rich and comprehensive base for nursing research. Patient-centered outcomes research that explores outcomes of patients served by APNs is central to the health care system that is unfolding in the United States. The overused Office of Technology Assessment study of 1986, which evidenced the safety and satisfaction of using APNs to improve access to health care, can no longer be cited as the only research support for the education and practice of APNs.

Health policy–based nursing research that explores workforce demographics, cost, reimbursement, and privileging, as well as the credentialing and regulation of APNs, is an undisputed data need. Nursing research focused in the realm of managed care and interdisciplinary, collaborative approaches to care is a highly sought after commodity. Research into the education and evaluation of APNs is critical to health policy forecasting and workforce planning.

Advanced practice nurse researchers who engage in clinical practice are the key to most of the research topics outlined above. Clinically based research networks that allow for data generation on patient outcomes are the single most important research agenda for the decade. Advanced nursing practice research, as a part of nursing as a whole, offers researchers the ability to explore new and expanding areas that support the use of expert nurses as competent, sought-after providers of primary and specialty care for the American people.

CHARLENE M. HANSON

Ageism

Ageism is defined as a negative attitude or bias toward older people that can lead to a belief that older people cannot or should not participate in certain activities or be given the same opportunities as younger persons (Holohan-Bell & Brummel-Smith, 1999). Ageism, according to geriatrician Robert Butler in his book Why Survive, suggests that
there is a deep and profound prejudice against older people (Butler, 1975).

By 2030, it is projected that over 20% of the population will be 65 and older. Almost all health care personnel will find themselves at one time or another caring for the elderly. In fact, the majority of nurses will spend most of their career caring for older adults in a variety of settings. As these challenges are met, it is necessary to continually examine the development of attitudes and roles in the prevention of ageism. Older persons may be discriminated against because of the way they look, speak, or function in a society that values productivity, economic wealth, speed, youth, and beauty.

How to define aging and the aging process is a controversial topic. Prejudice and stereotyping may lead to policies for rationing health care: withholding treatment based on age alone, a lack of qualified personnel to care for older adults, the underrepresentation of older adults in clinical trials, and the under-recognition of geriatric problems and syndromes (Haight, Christ, & Dias, 1994; Bogardus, Yneh, & Shekelle, 2003; Alliance for Aging Research, 2003). Ageism may also be seen on a personal level when a nurse or other health care worker has low expectations of an older person's ability to perform a task. Ageism may lead staff to perceive that an older adult does not “know what is going on” and individuals may be excluded from decision making during hospitalization and care. Ageism may exist on a population level when older adults are excluded from disease screening or primary prevention programs.

Nursing research in ageism has centered on several main areas including education, student and practicing nurse's attitudes, socio-political issues, clinical care, and biological issues such as the differentiation of normal aging and disease processes. Several early nursing studies highlighted the problem of student attitudes toward aging and care of the older adult, the lack of trained professionals in gerontology, and the need for more research in gerontology.

The older population that is at the greatest risk of prejudice and stereotyping, however, are persons with mental illness, dementia, and mental retardation. The diagnosis of dementia often stigmatizes both the patient and the family. Research by Beck and others has helped explain aggressive behaviors in persons with dementia by illustrating the need for individualized care and behavioral systems theory to understand aggression in Alzheimer’s disease patient. This has promoted autonomy and personal control in the care of persons with dementia, and has highlighted the need for greater resources to care for older adults with mental illness (Rice, Beck, & Stevenson, 1997; Buckwalter, Maas, & Reed, 1997; Beck et al., 1997; Sherrell, Anderson, & Buckwalter, 1998). Other research on dementia has advanced the understanding of persons with dementia and has exposed myths often held about this population (Strumpf & Evans, 1988; Evans, Strumpf, Allen-Taylor, et al., 1997; Sherrel & Buckwalter, 1997; Frengley & Mion, 1998; Minnick, Mion, Leipzig, Lamb, & Palmer, 1998; Mezey & Fulmer, 1998; Brod, Stewart, & Sands, 1999; Volicer, Hurley, & Camberg, 1999; Fick & Foreman, 2000; Fick, Agostini, & Inouye, 2002). This research is important as it forces the reexamination of stereotypes held about older persons with dementia, and influences both care and treatment of older persons.

Ageism will continue to be important in almost every area of geriatric nursing research. Ageism will influence both the type of research that is done and the public dissemination of research. Researchers must describe the relationship of ageism with qualitative and quantitative research in the areas of ethics, workplace studies, decision making and informed consent research, genetics, health promotion and preventive screening, cancer, presentations of disease, symptom research, biomarkers of aging, quality of life, barriers to treatment, nursing home care and organizational studies, resource utilization in health care, dementia care, mental health, and the care of the disabled older adult.

Researchers have agreed that past experiences with the elderly and faculty role models affect attitudes (Wilhite & Johnson, 1976;
Alcohol is a solvent that permeates all body cells, including the blood-brain barrier, and has lipid-dissolving qualities. It is this latter quality that leads to findings that moderate drinking decreases fatty plaques in blood vessels and thus decreases the risk for heart attacks. Alcohol is a depressant drug and continued abuse leads to negative psychological and physical detriments including hypertension, cardiac arrhythmias, cardiomyopathy, hemorrhagic stroke, liver damage, distortions and errors in conceptual thought processes, memory decrements, depression, increased risk for all types of accidents, and risk for suicide.

Measuring alcohol intake presents research challenges. The amount of alcohol in a standard drink differs across countries and is made more complex by the fact that beer, wine, and other drinks may contain differing percentages of pure alcohol. Generally in the U.S. a standard drink is 12 ounces (oz.) of beer or wine cooler, 5 oz. of wine, or 1.5 oz. of 80 proof distilled spirits; that is, approximately 12 grams of pure alcohol per drink. Collecting data about alcohol intake is complex; in addition to the basic measure of a standard drink, it is crucial to determine the number of drinks consumed in a week or a month, the duration of the current and any prior patterns of alcohol intake, the number of drinks consumed in one drinking episode (binge drinking is defined as five or more drinks for a man and four or more for a woman during one episode), and the number of binge episodes during the past month/year.

Although many survey instruments and biomarkers exist to measure the amounts and effects of alcohol intake, no single approach is valid and reliable for men and women; across age groups; or for differentiating among binge drinking, alcohol abuse, and alcohol dependence. Blood alcohol level only reveals intake within recent hours, but does not inform about recurring or chronic intake. Carbohydrate deficient transferrin informs about longer term heavy drinking, but has acceptable sensitivity and specificity primarily for young adult and middle-aged men; it is much less valid for older men and for

**Alcohol Dependence**

The DSM-IV (American Psychiatric Association, 1994) diagnostic term for alcoholism is alcohol dependence. Although many people still use the older term “alcoholism.” Alcohol dependence is a chronic relapsing disease involving craving for, loss of control over, physical dependence on, and higher than normal tolerance for alcohol. The excessive intake of alcohol over time leads to social, emotional, and physical damage to health, interpersonal/familial relationships, and occupational status. It is a primary disease with genetic, psychological, lifestyle, and environmental causal influences that have not been adequately differentiated to date.
women of all ages. Most other biomarkers are not specific to alcohol effects, but simply report abnormalities in liver enzymes or hematological contents. There is also a measurement issue related to abstinence in comparison groups; it is essential to separate out “sick quitters” from lifelong abstainers or very low quantity users. Otherwise the results of studies are contaminated by the presence of subjects with alcohol-related sequelae (i.e., sick quitters) in the abstainer group.

Young adults, especially men, have the highest rate of drinking, binge drinking, and heavy drinking. Women at all ages drink less, but are at higher risk for negative effects of alcohol. The reasons have not been clearly explained, but lower body water to lipid content and less muscle mass are generally accepted facts. More controversial is the hypothesis that women produce much less alcohol dehydrogenase, thus increasing the time necessary for first-pass metabolism and prolonging the half-life of pure alcohol in body systems. Whatever the cause, women experience higher levels of cardiac, liver, and other system dysfunctions and psychological distress (depression and suicide attempts) earlier in their drinking histories and at much lower quantities compared to men. These findings led to the NIAAA (1995) guideline for moderate drinking of two standard drinks per day for young and middle adult men and one standard drink per day for non-pregnant women of all ages and elderly men.

Fetal alcohol syndrome (FAS) and alcohol-related birth defects (ARBD) are manifestations of neuro-developmental insults that result from alcohol ingestion by the mother during pregnancy. The negative effects are especially marked during periods of fetal brain growth spurts and continue during the postnatal period for breast-fed infants of drinking mothers. Consequences of FAS, and the milder form ARBD, include impaired attention, intelligence, memory, motor coordination, complex problem solving, and abstract thinking. There are also physical stigmas that attend FAS including abnormal facial features and other anatomical alterations (Connor & Streissguth, 1996).

Alcohol consumption differs among the three main ethnic groups in the U.S. (Cetano, Clark, & Tan, 1998). In general frequent heavy drinking and binge drinking has decreased among White men (from 20% in 1984 to 12% in 1995), but has remained stable among Black and Hispanic men (15% and 18% respectively in both years). Frequent heavy drinking is much less prevalent among all groups of women (2–5%). Within-group differences exist for ethnic minorities depending on where they were born. Asians, Pacific Islanders, and Hispanics who were born in the U.S. have higher rates of heavy drinking than those who immigrated to the U.S. Unfortunately, Blacks and Hispanics who have alcohol problems are much less likely to seek treatment compared to Whites.

Alcohol dependence is treatable with medication regimens (especially for detoxification), individual and family counseling, support groups, and self-help groups—primarily Alcoholics Anonymous and the 12 Step Program. Relapses are common, but the key is to get the drinker back into treatment and after-care following each relapse and eventually sobriety can be attained and maintained. Family solidarity is required to stop all covers-ups on behalf of the drinker. It is important that the drinker experience the full consequences of the drinking without being rescued so that continued denial of the effects of the drinking becomes impossible.

The research opportunities in this field are myriad. At the fundamental science level research is needed on the root causes of alcohol dependence including the role of genetics. The reasons for the excess risk among women merit considerably more research attention. Social, behavioral, and cultural studies are in order to address the many unanswered questions about adolescent drinking, college binge drinking, late onset alcohol dependence among elders, and differential risk for alcohol problems among ethnic minorities. Theory-based interventions should be developed and tested to enhance the case finding, referral, and successful treatment for adolescents, women, minorities, elderly persons, and white men. In the area of measurement, the
current paper and pencil survey instruments are biased toward white men and toward the young and middle aged. New biomarkers must be developed that are sensitive and specific for women and for older adults. These are but a few of the many areas available for future inquiry.

JOANNE SABOL STEVENSON

Alzheimer's Disease

Alzheimer's disease (AD) is a progressively degenerative neurological disorder (syndrome) that results in impaired cognition, mood, behavior, and function. Dr. Alois Alzheimer (1906) first described the disorder in a published case report on a 52-year-old patient who suffered from psychosis, memory loss, agnosia (impaired sensory perception), apraxia (impairments in carrying out tasks), and aphasia (impaired communication). After the patient’s death, Dr. Alzheimer performed an autopsy and discovered clumps—senile plaques—and knots—neurofibrillary tangles—in the patient's brain (Dharmarajan & Ugalino, 2003).

One hundred years later, despite decades of research, there remains no known etiology or cure for the disease. The diagnosis relies on a thorough clinical history and physical examination, including mental status testing, both to establish a diagnosis and to rule out other causes of dementia, such as brain tumors, metabolic disorders, or infection. Many genetic and nongenetic factors, such as estrogen, nonsteroidal anti-inflammatory medication, and apolipoprotein (apoE) alleles, have been speculatively associated with AD; researchers continue to discover definitive links between these factors and the illness.

Due to the lack of a diagnostic marker and the associated difficulties in diagnosing early-stage AD, precise prevalence rates are difficult to determine. Although a rare familial form of AD (afflicting people between 30 and 60 years of age) exists the disease is more prevalent as people age. Dementia, notably AD, affects only 1% of those between 60 and 64 years of age, with the number of cases doubling every 5 years in people over 65 (Beers & Berkow, 2000). In 2000, 40% (1.8 million) of people over 85 years of age were estimated to be afflicted with the disease. As a result of the rapidly aging U.S. population, the next 50 years is expected to show a threefold increase in the number of people with AD (Hebert, Scherr, Bienias, Bennett, & Evans, 2003).

Alzheimer’s disease has a protracted downward trajectory. The average length of the disease is 8 years, but it can span up to 20 years (National Institute of Aging, 1995). As a result of its progressively degenerative course, symptom progression is typically divided into three stages: mild, moderate, and severe. Mild symptoms consist of personality changes, memory loss, and impaired word finding. As the disease progresses, the initial symptoms worsen, with AD sufferers often developing increased behavioral problems such as wandering, physical and verbal aggression, and resistance to personal care (grooming and hygiene). In the severe stage, the AD sufferer is profoundly cognitively and functionally disabled, typically requiring 24-hour care. Death usually results from an infectious process such as pneumonia.

Care is provided primarily by family members, and an estimated 75% of older adults with dementia are cared for at home (Dunkin & Anderson-Hanley, 1998). This care is primarily uncompensated and includes emotional, physical, and financial assistance. As the disease progresses, families are increasingly burdened in trying to provide care, often suffering adverse personal physical and psychosocial consequences (Ory, Hoffman, Yee, Tennstedt, & Schultz, 1999). AD causes severe cognitive impairments, and families are often forced to make decisions for the AD sufferer (e.g., whether to resuscitate or whether to institutionalize), without the guidance of advance directives.

Treatments for AD are multiple and vary by illness stage. Pharmacologic treatments include medications to improve cognition, treat depression, or treat behavioral symptoms
Behavioral strategies are extremely varied, typically successful, and do not have the unfavorable side-effect profiles of many of the medications used to treat behavioral symptoms. Diversion and redirection to a preferred activity remain highly successful strategies to deal with problems related to the AD sufferer’s short- and long-term memory loss. Reality orientation is often unsuccessful, so validation therapy (Feil, 2002) is the preferred form of communication. Validation therapy techniques include carefully attending to a confused older adult’s expressions of impaired cognition (e.g., thinking past events are occurring in the present) and responding with acceptance and empathy. In communicating with confused older adults, careful attention also needs to be taken to provide implements such as hearing aides or glasses, to compensate for sensory losses.

Physical restraints typically increase agitation and are not associated with a decrease in falls (Strumpf, Robinson, Wagner, & Evans, 1998). Individual and family therapy should be encouraged, to assist families in planning and preparing for the sufferer’s future needs. Support groups, in particular the Alzheimer’s support groups, are also an excellent source of information and assistance. In the latter stage of AD, hospice is another source of family support.

AD research is overwhelmingly biomedic, attempting to uncover a cause, better treatment, or a cure for the illness. Many behavioral strategies have been researched and reported to be clinically successful in treating AD, including music therapy, reminiscence therapy, strategies to prevent wandering, and therapy animals. Although positive results have been reported in utilizing behavioral strategies, the methodological limitations of the studies (small sample sizes, sampling bias, short evaluation periods, and lack of consideration of confounding variables) affect the scientific rigor of these findings (Beavis, Simpson, & Graham, 2002).

The rapidly aging U.S. society and subsequent increase in the number of people with
Angina afford unique nursing opportunities and challenges. Most AD sufferers live in the community and are cared for by their families. Families interface with the health care delivery system at various points in time along the trajectory. It is then that nurses, in collaboration with people in other disciplines, can provide needed assistance to families struggling to manage in the face of this devastating illness.

Mary Shelkey

Angina

Angina pectoris, a major manifestation of myocardial ischemia, is found in 13.7% of women and 21% of men aged 65–69 (Mittlemark et al., 1993). In women aged 70–84 the prevalence is 19% and in those 85 and older it is 24.7%. In men aged 70 and older the prevalence of angina is 27.3%. Although angina usually indicates the presence of underlying coronary heart disease (CHD), myocardial ischemia can result from a variety of conditions that lead to an imbalance between oxygen supply and demand, for example, left ventricular hypertrophy and aortic valve stenosis. Myocardial ischemia, however, frequently occurs in the absence of angina or its equivalents (jaw pain, numbness, dyspnea, fatigue, or nonspecific symptoms related to transient left ventricular dysfunction). Angina, therefore, is neither a reliable nor sensitive marker of myocardial ischemia. Many elderly have atypical findings or have totally asymptomatic CHD. Nursing research, therefore, must be directed at these different CHD presentations.

Atypical angina manifested by nontypical chest, shoulder, or back pain, dyspnea, pulmonary edema, and cardiac arrhythmias (Gibbons, Bachulis, & Allen, 1999), along with atypical presentation of myocardial infarction (MI) are common the prevalence increasing with increasing age (Tresch & Alla, 2001). The presence of chest pain with MI may occur in fewer than 20% of the elderly presenting with MI. Atypical symptoms or absence of symptoms may not only lead to underdiagnosis of CHD, but in the setting of MI, to delay in seeking treatment and in diagnosis (Tresch & Alla). This may contribute to a higher morbidity and mortality (Tresch & Alla). Differentiation of atypical symptoms from other chronic conditions is difficult, and MI may not even be suspected. Individuals may often present with dyspnea, gastrointestinal (GI) symptoms, syncope, stroke, confusion, faintness, giddiness, weakness, or restlessness. The individual who has suffered an unrecognized MI days to weeks earlier may in fact present to the hospital in heart failure (HF) or with recurrent angina. MI may also be the result of another primary process causing an increase in demand or a decrease in flow, such as intercurrent illness, GI bleed, or HF. Since prompt recognition and treatment of MI is crucial to limiting infarct size and preserving myocardial function, it is vital that nursing research address issues central to atypical presentation (Reilly, Dracup, Dattolo, & King, 1994; Dracup & Moser, 1991; Funk, Naum, Milner, & Chyun, 2001) such as: identification of anginal equivalents, factors that delay decision to seek treatment (perception of symptoms and expectations), caregiver reactions to symptoms, health care provider recognition, assessment strategies, and educational interventions aimed at reducing delay in seeking treatment.

Despite the limitation of using angina as a sole marker of CHD, the presence of angina supports the diagnosis of CHD and is useful in assessing disease progression and efficacy of medical management. However, implementation of primary and secondary CHD prevention has been shown to be lacking and health care provider noncompliance with established guidelines is high (Feder, Griffiths, Eldridge, & Spence, 1999; Rolka, Fagot, Campagna, & Narayan, 2001). Nursing has an important role in studying dissemination and adoption of guidelines for secondary prevention established by the American College of Cardiology (ACC)/American Heart Association (AHA) to the elderly and their health care providers (Smith et al., 2001; Pearson et
al., 2002; Williams et al., 2002; Gibbons, Chatterjee, et al., 1999), with careful attention to use of aspirin, encouragement of physical activity, and control of lipids, HTN, obesity, and smoking, along with side effects associated with these interventions (Abete et al., 2001). In addition, nursing research focused on provider and patient-related factors contributing to inadequate CHD risk factor control is urgently needed, along with strategies to improve compliance with guidelines.

The importance and feasibility of optimizing self-management of CHD risk factors, including from a nursing perspective, have been demonstrated. Additional studies are needed in the elderly population, who are often excluded from intervention trials, and who are often confronted with comorbidities and a lack of social and financial resources. In addition, consideration of psychosocial factors specific to the elderly that influence CHD management is also warranted. Psychosocial (social support and interactions and relationships between persons managing the condition), personal (self-efficacy, denial, lack of motivation, educational, lifestyle, beliefs and past experience with management), environmental, and cultural influences which may contribute to CHD management and quality of life which may be affected by control of CHD, have not been widely studied in the elderly population. Anxiety and depression, may not only adversely affect CHD-risk-reduction behaviors, but have a role in the development of CHD and adverse CHD outcomes (Hegleson & Heidi, 1999; Sullivan, LaCroix, Spertus, & Hecht, 2000; van Elderen, Maes, & Dusseldore, 1999). The importance of depression and social support has been well documented especially in individuals with CHD (Stuart-Shor, Buselli, Carroll, & Forman, 2003); however, few interventional studies have extended these findings. Psychosocial and educational factors have been linked to how individuals perceive their own health status and manage chronic illness; these require further study, along with the influence of other comorbid conditions.

While assessment and management of typical and atypical angina are important problems, myocardial ischemia and infarction can also exist in the total absence of signs and symptoms, and unrecognized MI is common (Tresch & Alla, 2001). Individuals with asymptomatic ischemia tend to have a higher incidence of asymptomatic MI, underscoring the importance of detecting ischemia early in its course. Silent episodes outnumber symptomatic episodes in patients with chronic stable angina, unstable angina, and in asymptomatic patients following MI. Silent ischemia, present in 50,000 to 100,000 persons following MI and in 3 million persons with angina, along with symptomatic ischemia during daily activities, extent of CHD, the degree of left ventricular dysfunction, unstable angina, is associated with an adverse prognosis. Asymptomatic ischemia may also occur in the absence of known CHD and is frequently found in individuals with lower extremity arterial disease and diabetes. Recently, it has been shown that in older adults with type 2 diabetes (T2DM) without known CHD, 22% have CHD in the absence of symptoms (Wackers et al., 2004). Wide-spread screening of the elderly for asymptomatic CHD, however, has not been accomplished, so the true prevalence in the elderly population is not known.

The asymptomatic nature of CHD, particularly in individuals with diabetes mellitus (DM), presents a unique challenge in primary and secondary prevention as the large areas of potentially jeopardized myocardium are commonly found in these individuals. Not only are these individuals at risk for adverse CHD outcomes, but without cues such as angina, the individual may not be motivated to engage in control of CHD risk factors (Rockwell & Riegel, 2001) or know how to modify their activities. Although it has been shown that intensive lifestyle interventions and medical management in individuals with known CAD who also have asymptomatic myocardial ischemia may improve outcomes, little is known about the behavioral (Chyun & Minicucci, 2002; Chyun & Melkus, 2002) and psychological factors (Chyun, Melkus, et al.) that may contribute to control of CHD risk factors in this population. Addi-
tionally, in individuals with known CHD undergoing revascularization, quality of life (QOL) has been shown to predict long-term outcomes, disease progression, and response to therapy; however, little is known regarding QOL in individuals with asymptomatic myocardial ischemia (Chyun, Khuwatsamrit et al., 2003). Much needs to be determined regarding the individual and health care system factors that contribute to self-management of T2DM and CHD risk factors, as well as interventions that will successfully reduce their burden of risk.

Nursing also has an important role in identifying individuals with asymptomatic ischemia. Early studies suggested that a defect in pain perception may account for lack of anginal awareness (Droste & Roskamm, 1983). Recently, the presence of asymptomatic myocardial ischemia has been strongly linked to the presence of cardiac autonomic neuropathy (Chyun, Young, et al., 2003), yet standardized autonomic testing is infrequently used in clinical practice. Nursing also should share the responsibility for expanding the knowledge base of timing and circadian variation of episodes of asymptomatic myocardial ischemia and the psychosocial, environmental, cultural, and pathologic factors influencing the individual’s response to pain. Although research is limited in the area, certain personality traits—those who score lower on levels of nervousness, dominance, and excitability, and higher on the masculinity scale—have been associated with silent ischemia (Droste & Roskamm; Stuart-Shor et al., 2003). Further research utilizing personality characteristics, not only to identify asymptomatic individuals but as a basis for patient education, is warranted. Identifying ischemia triggers, such as daily activities and mental stress, and assisting the person to recognize other vague symptoms associated with ischemia may allow more aggressive management of the condition.

Although ST-segment monitoring has been shown to be a reliable measure of myocardial ischemia following thrombolytic therapy or coronary angioplasty, it has not been widely used in monitoring the elderly for asymptomatic myocardial ischemia, even in the acute care setting. Most contemporary monitoring systems provide the capability to monitor ST-segment changes, without extra costs to the individual and with minimal time commitment by nursing staff (Drew & Krucoff, 1999). Nursing, therefore, has several unique opportunities to participate in assessing elderly individuals with or at high risk of asymptomatic myocardial ischemia, as well as to correlate the presence of asymptomatic episodes with precipitating factors, psychosocial factors, response to medications, and adverse outcomes. As current studies progress, asymptomatic myocardial ischemia, is likely to receive increasing attention. Nursing must be prepared to implement educational interventions and document their efficacy, as well as play an active role in assisting the individual in the recognition and management of asymptomatic disease.

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Jessica Shank Coviello

Applied Research

In an attempt to differentiate between various types of research, the scientific community uses a myriad of terms, which, however, tend to fall into a discrete classification. On the one end, terms such as basic, fundamental, and theoretical research are used to refer to research focused on discovering fundamental principles and processes governing physical and life phenomena. On the other end, we find such terms as applied, clinical, practical, and product research. These refer to the application of the findings of basic/fundamental/theoretical research to generate research aimed at answering focused and problem-specific questions. Though it is the subject of ongoing debate, it is assumed that there are fundamental principles and processes that are core to the nursing discipline and its central tenets of health, patient, nurse, and environment. In addition, it is assumed that nursing draws on fundamental principles and processes discovered in other disciplines to gener-
ate new knowledge about nursing and patient care.

Under these assumptions, applied research in nursing can be defined. The etymology of applied goes back to the Latin *ad-plicare*, meaning to put something (a law, a test, etc.) into practical operation. Applied research in nursing, then, refers to research aimed at concrete and practical issues and questions of concern to the delivery of nursing care. The most evident type of applied research is intervention research—from exploratory investigations to rigorous clinical trials. This type of applied research is aimed at providing answers to questions about the effectiveness and efficacy of nursing interventions.

Yet nonintervention (or descriptive) research may be categorized as applied research as well if it meets the general criterion of being focused on concrete and practical issues and questions about nursing care. For instance, understanding the dynamics of clinical and subclinical noncompliance in transplant patients and their relationship to the occurrence of adverse posttransplant events helps nurses and other health professionals in developing interventions to enhance adherence to prescribed drug regimens (De Geest, Borgermans, et al., 1995). Developing risk profiles for institutionalization among various cohorts of community-dwelling elderly further the knowledge base for designing preventive strategies and models of care for patients, caregivers, and families (Abraham, Currie, Neese, Yi, Thompson-Heisterman, 1994; Steeman, Abraham, & Godderis, 1997).

In addition to effectiveness and efficacy, applied research in nursing also refers to cost calculations of nursing interventions. Managing the costs of care is a major issue in health care, and health care workers need evidence about the cost-effectiveness of the interventions used. For instance, implementation of a modified isolation protocol incorporating only those elements with supported effectiveness in the care of heart transplant recipients can be a source of considerable cost savings (De Geest, Kesteloot, Degryse, & Vanhaecke, 1995). Clinical and cost comparisons of preoperative skin preparation procedures in coronary artery bypass graft (CABG) patients provides additional data to support the necessary process of altering routine nursing practice to evidence-based nursing (De Geest et al., 1996).

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Sabina De Geest

**Artificial Intelligence**

The term *artificial intelligence* (AI) was first used in 1956 at a computer conference at Dartmouth College. Artificial intelligence has been variously defined as: the design and operation of computer systems capable of improved performance based on (a) experience (i.e., learning), (b) the computerization of activities that people believe involve thinking (such as problem solving and decision making), and (c) the development of computer systems that exhibit what people describe as intelligence, or the ability to reason and learn from experience. All three defined areas—machine learning, decision making, and reasoning—have produced distinct lines of research.

Typical areas of AI research include cognitive models of human learning, machine learning models, case-based learning models, and neural network research. The Navy Center for Applied Research in Artificial Intelligence conducts advanced research in several of these fields, especially those of machine learning, sensor-based control of autonomous activity, integration of a variety of reasoning to support complex decision making, and neural networks. Other major centers of AI development are located at Massachusetts Institute of Technology, the University of Georgia, and SRI International (produces commercial AI products).

Four capabilities have been identified for a computer to be able to produce an artificially intelligent product. First, it must be programmed with natural language processing to enable successful communication in a human language. Second, it must have a strategy for
knowledge representation so that it can store its own knowledge base as well as the information input by the user. Third, it must have programming that provides it with one or more information-processing and problem-solving strategies. Fourth, it must have machine learning strategies programmed. The research areas in AI that hold the most promise for nursing applications are machine learning, expert systems, and knowledge engineering and representation. The fourth requirement needs further definition because how a machine learns mimics a human process that may not be known to all readers.

Much work has been done on machine learning and reasoning in Defense Department laboratories. Machine learning requires the machine to evaluate its own performance and to change its decision-making strategies when performance success drops below predetermined acceptability levels. In general, this area of research focuses on pattern recognition and pattern reconstruction. Pattern recognition is a major source of human understanding, and making changes in mental protein-solving patterns is one definition of learning. Learning has been defined as adaptation to new circumstances by extrapolating the parameters of the problem and the deficiencies of the old problem-solving pattern to newly constructed patterns. The new patterns are tested until a more successful pattern is found. Thus, pattern recognition and elaboration is defined as the nature of learning.

When machines are programmed to recognize ineffectiveness of existing patterns and to construct and test changes in those patterns until a new pattern proves more successful, they are considered to exhibit machine learning. This area of research has produced significant new knowledge and applications in the defense industry. Of greater interest to nursing, it also led to new understandings about human reasoning and ways to improve human thinking, problem solving, and decision making. Woolery, Grzymala-Busse, Summers, & Budjhardjo (1991) examined the use of machine learning for development of expert systems in nursing.

The term AI has been used to deter to both expert systems and true artificially intelligent systems. The confusion stems from differences among users in the meaning of the term intelligence. The AI literature discusses two capacities of human intelligence: reasoning and learning from experience. All expert systems reason; that is, they apply one or more problem-solving strategies to specific information provided by a user and produce expert advice (or a decision) as a product. When humans perform this process, they are using reason. Some AI researchers add the requirement for machine learning to the definition of AI. Computer systems that are sophisticated enough to analyze their own performance and change their processing strategies in response to “experience” are said to learn. The capacity to learn is what differentiates AI from expert decision-support systems that do not achieve the level of true intelligence. It is typical to find the terms AI and expert system used interchangeably. However, the term AI should be restricted to systems that both reason and learn from experience.

In nursing the majority of publications that list AI as a search keyword address computerized nursing expert systems, which are usually clinical decision-support tools. The terms expert systems and decision-support systems are used interchangeably. Primarily, these are systems that help support decisions about nursing assessment or care planning. Much work also has been done on nurse staffing and scheduling systems, such as the MEDICUS or GRASP systems. These are management decision support systems that could also be considered expert systems for management. Decision-support systems may serve as an online reference without much reasoning ability. Poison control centers use such systems to determine the lethality and antidotes (if any) to a variety of substances considered to be poisonous to human beings.

Other types of expert systems accept data input from the user and provide a recommended course of action based on a preprogrammed problem-solving strategy. Still others guide the user in the selection of one or more problem-solving algorithms. The latter
system may not offer action recommendations but merely serve to support a logical, systematic approach to the user’s own problem-solving abilities.

Another line of nursing scholarship in the field of AI involves knowledge engineering in nursing (Chase, 1988). Knowledge engineering is a subfield of AI that seeks to understand the ways in which nursing experts conceptualize and define nursing problems and how they think about developing problem-solving strategies. Knowledge representation studies focus on a component of knowledge engineering. This field seeks methods of representing (programming and storing) information and human thinking processes in the computer. Knowledge is ultimately extracted from study of the ways that highly successful experts mentally depict external reality (knowledge representation) and from study of experts’ problem-solving techniques, strategies, and approaches.

Just as a hammer is a tool that expands the power of the human hand, the computer is a tool that can expand the power of the human mind. Artificial intelligence can greatly enhance the power of human cognition. The knowledge base of health science has increased exponentially over the past 20 years. The amount and complexity of information available for clinical situations can easily exceed the ability of an unaided nurse to use that information clinically. The human mind evolved to function under relatively simple survival conditions, not to integrate multiple, highly complex, technical sources of information nor to calculate interaction effects and probable outcomes of many variables. Unassisted, people cannot do that kind of work with an acceptable degree of consistency. Yet that level of information processing is exactly what modern science (and the U.S. legal system) demands of nurses. When the requirements of a task exceed human performance parameters, people must have tools that expand their capabilities. Artificial intelligence is one type of tool that can be developed to support and expand nurses’ cognitive abilities so that they can function in the sophisticated health care environment.

MARY L. McHUGH

Attitudes

An attitude can be defined as the person’s summary evaluation (like or dislike) associated with an object. An attitude object can be anything that is discriminated by the person. Attitudes are dispositions to evaluate objects and to respond. These responses are typically divided into three types: cognitive, affective, and behavioral (Eagly, 1992). Cognitive responses are beliefs or thoughts associated with the attitude object. Affective responses consist of emotions such as positive or negative feelings associated with the object. Behavioral responses are actions toward the attitude object that reflect favorable or unfavorable evaluations (Stroebe & Stroebe, 1995). Attitudes are thought to be acquired both directly through personal experience with an attitude object and indirectly through social learning (e.g., classical conditioning and modeling) from other persons (Baron & Byrne, 1994).

The primary reason attitudes are relevant for nursing practice is their relationship to health behavior. Although attitudes had long been assumed to influence behavior, early research failed to support a strong causal relationship between them. It was the inability to predict behavior from attitudes that led to new approaches to understanding attitudes. Social psychology has two different schools of thought about how attitudes affect behaviors, reflected in two models: expectancy-value and automatic attitude activation (Ajzen, 2001).

The rationale behind the expectancy-value model is that the process linking attitudes to behaviors is a reasoned one. According to this model (Fishbein & Ajzen, 1975), attitudes influence behavior through behavioral intentions or the intention to engage in the behavior. The direct antecedents of these behav-
ioral intentions are (a) the attitude toward the behavior and (b) the subjective norm, which is the person’s perception of the extent to which important others think that he or she should engage in the behavior. Ajzen (1988) revised this model by including additional concepts. The most popular revision is the theory of planned behavior; it proposes an additional predictor of behavioral intention, perceived behavioral control, which is the person’s perception of how easy or difficult it will be to perform the behavior. Proponents of expectancy-value models point out that the degree of correspondence between the specificity of the attitude and the specificity of the behavior is important. If the correspondence between level of specificity of the attitude and the behavior are similar, attitudes are stronger predictors of behavior. For example, an attitude toward a specific object (taking hypertension medication) would be a better predictor of the behavior of taking hypertension medication than would a more global attitude toward maintaining a healthy lifestyle. The major criticism of these models is that they do not account for other causes of behavior. Current research focuses on these other causes such as past behavior, habit, personality traits, and self-identity (Ajzen, 2001).

The attitude-accessibility model, which was developed by Fazio and Williams (1986), proposed that attitudes are not carefully reasoned as proposed in the expectancy-value model. In contrast, this model proposes that attitudes are automatically accessed in memory without conscious awareness and influence behavior directly (Baron & Byrne, 1994). An important component of this model is attitude accessibility, or the ease with which attitudes can be brought from memory. The more accessible the attitude, the greater the strength of the association in memory between the attitude object and its evaluation, the more readily the attitude is activated, and the stronger the attitude’s influence on behavior. Therefore, anything that would lead to an attitude becoming more accessible would lead to behaviors that are consistent with the attitude. For example, when the attitude is derived from direct experience with the attitude object, attitude accessibility is more rapid, and the relationship between attitudes and behavior is stronger (Eagly, 1992).

Attitude toward having a chronic condition has been found to be associated with adjustment. For example, in children with chronic epilepsy, attitudes toward epilepsy have been associated with depression symptoms (Dunn, Austin, & Huster, 1999). The attitude-behavior relationship is also relevant for nursing practice because nurses commonly intervene to assist persons in changing health behaviors. The expectancy-value model of attitude has been used much more extensively as a framework to guide health practice than has the automatic attitude activation model (Stroebe & Stroebe, 1995). For example, Blue, Wilbur, and Marston-Scott (2001) used the theory of planned behavior to study exercise behavior in blue-collar workers. The expectancy-value model and its extension, the theory of planned behavior, provide frameworks on which to build nursing interventions by providing an understanding about the beliefs and perceptions that shape attitudes and subjective norms. With further development the automatic attitude activation model will have implications for nursing practice through improving the understanding of circumstances when intentions to stop negative health behaviors (e.g., overeating) are not predictive of the behavior (Stroebe & Stroebe, 1995). Also relevant to nursing practice are strategies for changing attitudes, such as social influence and message-based persuasion (Wood, 2000).

Joan K. Austin
Basic Research

Basic research includes all forms of scholarly inquiry for the purpose of demonstrating the existence or elucidation of phenomena. Basic research is conducted without intent to address specific problems or real-world application of knowledge. The discipline of nursing is primarily applied rather than basic, although basic research is a part of the discipline (Donaldson, S. K., & Crowley, 1978). As a discipline and a science, nursing is informed by knowledge from basic and applied research, and nursing disciplinary knowledge is integrated into the broader context of the whole of human knowledge.

The origins of nursing research trace back to Florence Nightingale (Woodham-Smith, 1951). Over time, the majority of the scholarly work is best categorized as applied rather than basic research in that nursing research has been conducted for the primary purpose of solving problems related to human health. Nursing seeks knowledge from the perspective of the human experience of health. Human perceptions and experiences of health are studied with the intent to generate knowledge to solve problems through nursing care and practice.

There is a cadre of nurses who were doctoral prepared in the basic sciences, both social and biological, as part of the U.S. Public Health Service Nurse Scientist Training Program from 1962 until the late 1970s. Nurses with doctoral degrees in basic sciences were prepared to contribute as basic researchers, and then they adapted their knowledge and skills to conduct nursing research. Despite the growing number and popularity of doctoral programs in nursing, small numbers of nurses continue to pursue degrees in the basic sciences in the United States. This educational path is used more often in countries where doctoral programs in nursing are not available. Another link between the basic sciences and nursing has evolved as a result of doctoral students in nursing pursuing a graduate minor in a basic science or a postdoctoral fellowship in a basic science. These basic research programs for nurses with doctoral degrees in nursing are facilitated by nurses with doctoral degrees in basic research disciplines. Nurse researchers often engage in basic research to generate knowledge that may lead to new perspectives for applied research in nursing.

All clinical research in nursing is by definition applied research. Studies using animal subjects are often applied rather than basic research in nursing. Animal research is categorized as applied research if the work is designed to answer a clinical question, such as how does mammalian (e.g., rat) skeletal muscle adapt to non-weight-bearing conditions equivalent to bed rest (Kasper, Maxwell, & White, 1996)? In contrast, research involving human subjects or human cells and tissue might be basic research, particularly if the intent of the study is to elucidate an inherent mechanism.

SUE K. DONALDSON

Behavioral Research

An examination of behavioral research is best begun by examining what it is and differenti-
Behavioral research within nursing generally refers to the study of health-related behaviors of persons. Studies may include the following areas: (a) health-promoting behaviors such as exercise, diet, immunization, and smoking cessation; (b) screening behaviors such as mammography, breast self-examination, and prostate examinations; and (c) therapeutic behaviors such as adherence to treatment regimen, blood glucose monitoring, participation in cardiac rehabilitation programs, and treatment-related appointment keeping. The research spans medical and psychiatric populations. It is directed toward an understanding of the nature of behavior and health relationships and to the modification of behaviors that affect health. It has been estimated that over half of premature deaths could be prevented if health behaviors were altered.

Behavioral research has its roots in learning theories that arose in the early part of the 20th century. Classical or respondent conditioning was followed by instrumental or operant conditioning and evolved into the cognitive-behavioral theories that dominate the field today. In classical conditioning an unconditioned stimulus is paired with a conditioned stimulus, resulting in the development of a conditioned response. Much of the research emphasizes conditioned physiological responses. An example is found in the study of anticipatory nausea and vomiting during chemotherapy. In this case, chemotherapy (unconditioned stimulus) may induce nausea and vomiting. After several exposures to chemotherapy in a particular setting (conditioned stimulus), the setting itself may induce nausea and vomiting (conditioned response) prior to and independent of the actual administration of the chemotherapy (unconditioned stimulus). Another example is reciprocal inhibition or desensitization in which anxiety is viewed similarly as a conditioned response to stimuli. An incompatible response (relaxation) is paired with progressively stronger levels of the conditioned stimulus in order to inhibit anxiety responses.

With instrumental or operant conditioning, behavior is seen as arising from environmental stimuli or random exploratory actions, which are then sustained by the occurrence of positive reinforcement following the behavior. Laws have been established that address the identification of reinforcers, the schedules of administration of reinforcers for initiation and maintenance of behavior, and strategies for the extinction of behavior. In this model, motivation is seen as a state of deprivation or satiation with regard to reinforcers. Numerous strategies have evolved from this work, including but not limited to contracting and tailoring, which have been used in studies of patient adherence; token economies, which have been used in studies on unit management with the mentally ill or developmentally delayed; and contingency management, which has been used in the promotion of treatment behaviors such as exercise.

As the operant model has expanded over time, self-management has evolved as a special case of contingency management. With self-management the individual is responsible for establishing intermediate goals, monitoring progress toward those goals, and administering self-reinforcement for success. Self-management has been studied particularly for chronic, long-term regimens such as those for diabetes, asthma, and cardiovascular disease.

In both of these models there is an emphasis on behavior rather than motivation or personality or relationships, beyond that of the reinforcing behaviors of significant others. The history of the behavior is of less interest than the factors that currently sustain the behavior. An empirical model is used with an assessment of the frequency or intensity of the behavior over time, the stimulus conditions that precede the behavior, and the consequent or reinforcing events that follow the behavior. Intervention is then directed to the specific areas targeted by the initial assessment. Detailed assessment continues through the course of intervention and often through a period following intervention to assess maintenance or generalization.

Each of the cognitive-behavioral models identifies a cognitive feature as a major motivational determinant of behavior. Self-effi-
cacy theory postulates the role of perceived capability to engage in a behavior under various conditions. The theory of reasoned action postulates that intention to engage in a behavior is significant and is influenced by beliefs regarding behavioral outcomes and attitudes toward the behavior. The health belief model postulates that one’s perceptions about the illness in terms of its threat (severity and susceptibility), as well as the perception of the benefits and barriers to engaging in the behavior, influence intentions and subsequently behavior. However, the common sense model of illness proposes that the individual’s own model of the illness influences his or her illness or treatment-related behaviors.

Behavioral research can be distinguished from psychosocial research, which tends to emphasize adjustment and coping as well as predictor and moderator variables arising from the psychological state or the social environment of the person. Behavioral research, including cognitive-behavioral studies, emphasizes behavior. In the classical and instrumental models, observable behavior is stressed. In the cognitive-behavioral model, both observable and covert behaviors are stressed. Within nursing much of the behavioral research has addressed participation in treatment, exercise, sexual behaviors, health promotion, breast self-examination and mammography utilization, childbirth and maternal behaviors, behavioral symptoms of dementia, self-management in chronic conditions, management of alcohol or drug dependency, and the role of biofeedback in such behaviors as pelvic floor muscle exercise in incontinence and heart rate variability. Unlike psychosocial studies, factors such as personality, coping strategies, and socioeconomic status are not primary interests; however, they may be of interest in determining reinforcers and stimulus conditions.

There is an additional body of behavioral research that tends to be interdisciplinary in nature and is of relevance to nursing. There are studies in the community to modify health behaviors within populations and studies within multicenter clinical trials that attempt to influence the health behavior or protocol-related behaviors of research participants. Also there is a broad set of studies to identify the relationship between behavior and disease etiology, such as studies of the role of exercise on the maintenance of function in the older adult, mechanisms of addiction in smoking behavior, and the effect of neurotransmitters on eating behaviors.

Given the prevalence of lifestyle behaviors that adversely affect health and the management of illness, research to understand and modify those behaviors would benefit the individual as well as the population. There is a need for nursing research to expand into the interdisciplinary arenas, particularly in the examination of health behavior change in the community, studies within multicenter clinical trials, and the etiological relationship between behavior and health and illness. Further, many of the studies in nursing have been descriptive in nature or have focused on the development of assessment instruments. Although few of the studies have examined how to intervene with behaviors that contribute to the development or progression of illness, this research would be useful to better direct interventions with patients.

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JACQUELINE DUNBAR-JACOB

Benchmarking in Health Care

Benchmarking is a structured process used to discover, compare, and incorporate the best practices of high-performing organizations for the purpose of improving the benchmarking organization’s performance. It was first used in the late 1970s by the Xerox Corporation and soon became popular in other industries. The introduction of benchmarking in industry was aligned with total quality management (TQM) and continuous quality improvement (CQI). When used correctly,
benchmarking offers the opportunity for exponential improvement rather than the incremental changes most frequent with traditional quality improvement methods. As health care became more industrialized, with enormous pressure to increase efficiency, quality, and customer satisfaction, health care organizations began to adopt benchmarking. As in other industries, benchmarking is often used in conjunction with TQM, CQI, other quality assurance programs, or competitive analysis in health care organizations. It has been used to improve business processes, management processes, and clinical processes in health care organizations.

Benchmarking is most effectively introduced in an organization with a preexisting culture of process orientation and analysis. It is a continuous, ongoing process that requires planning, analysis, and adoption of new processes. Processes to be benchmarked are identified during the planning phase, and because benchmarking costs can be significant, it is important that the organization identify key processes for improving performance. Performance data to be used as benchmarks must be identified and available for analysis and comparison with selected high performers. Selection of organizations to benchmark against is another major decision during the planning phase. The organization may choose internal benchmarking to compare performance of similar operations or divisions within the organization, within one operation or division over time, or with findings from research literature.

However, to reap the full benefit of benchmarking the organization must move to external benchmarking and comparisons with other organizations. External benchmarking may be conducted with like organizations in a geographical region, with similar organizations in a collaborative project, with recognized high performers in health care, or with high-performance industries outside health care. Identification and comparison with high performers is costly and time consuming and may be more efficiently handled by a consulting group or benchmarking clearinghouse that does benchmarking for health care organizations and has access to data from similar organizations recognized as high performers.

Analysis requires two discrete sets of data: (1) the benchmarks, or performance measures, to be used in comparing the benchmarking organization’s performance against the selected high performers; and (2) a thorough description of the operational process being benchmarked in the organization using benchmarking and the comparison organizations. This operational description is often referred to as process mapping and is essential to identifying practices in the comparison organizations that enable them to be high performers. Identification of these “best” practices is a necessary prerequisite to the analysis, identification, and adoption of practices that can improve the benchmarking organization’s performance. Implementation of operational processes identified through benchmarking, followed by reevaluation of the selected performance measures, is a cyclical process that is repeated until performance goals have been reached and maintained over time.

Although benchmarking has the potential to assist health care organizations to make quantum improvements in operational and delivery systems, it also has the potential to increase stress and cost and to be counterproductive if used inappropriately or improperly. Because benchmarking is in its infancy in health care, a number of pitfalls must be avoided. A common problem is comparing the benchmarks (performance measures) and not looking at the process to find out how the high-performing organization achieves performance and how it differs from the benchmarking organization’s performance. Truly effective benchmarking requires in-depth, personal examination of the reasons for the high performer’s success. It also requires that performance and productivity measures be consistent with the philosophy and objectives of the organization (Smelzer, Leighty, & Williams-Brinkley, 1997). Problems also may arise from an inadequate study design, inadequate data analysis, and inadequate preparation of the organization for benchmarking.
Benchmarking studies have only recently been published in health care literature. Many of these studies are reported as case studies that provide information about the process being used, the organizational changes made, and the outcomes achieved through the benchmarking process. Examples of business and management processes studied include workers’ compensation process, admissions process, scheduling systems, and operating room use. Studies of benchmarking with clinical processes (Bankert, Daughtridge, Meehan, & Colburn, 1996; Czarnecki, 1996) and patient populations (Clare, Sargent, Moxley, & Forthman, 1995; Lauver, 1996) are reported in the literature and often contain cost information as well as patient outcomes. Although consulting organizations have accumulated comparative data from the organizations they service, this information may surface in the literature slowly, if at all. To determine the usefulness of benchmarking for achieving improvements in health care organizations, more evaluative studies are needed to assess the effectiveness of benchmarking for improving the cost and quality of services provided by health care organizations.

Marion Johnson

Bibliographic Retrieval Systems

Classifying knowledge in books and other documents is in the domain of library and information sciences. Books and other documents are considered “physical objects” that can be classified in a number of ways; however, subject classification is considered the most significant characteristic. Whereas scientists in a field identify the knowledge of the field, bibliographic classifiers organize the knowledge produced by the scientists (Landgridge, 1992). The classification system is used to index the literature and thus serves a purpose of location and retrieval of the indexed documents. When the classification system is accompanied by an alphabetical list of terms with cross-references, it is called a thesaurus (Landgridge, 1992).

The major bibliographic classification schemes dealing with the nursing literature are implemented in computerized bibliographic database retrieval systems for nursing and medicine. Computerized bibliographic databases based on specialty-subject thesauri are available for many other reference disciplines of psychology, education, sociology, and so forth.

Access to bibliographic databases is either through a search service offered by the primary developer of the classification system or is licensed for use by bibliographic retrieval services that provide access to multiple bibliographic databases. Fees for such services vary considerably.

A bibliographic retrieval system is a special type of information retrieval system. The information that is stored (and retrieved) provides citations of documents represented in the system. Citations commonly include the article author, title, and the exact location of the article (the title of the journal in which it is published, journal volume and issue number, and pages). Other document types (books, videos, etc.), if incorporated in the system, have descriptors appropriate for that document type. Other data that help to locate a specific document—for example, accession number and author address—will be added to the database by the producer of the system. Abstracts are usually included.

Computerized bibliographic retrieval systems have three components: (a) the classification system for the field of knowledge (subject headings, thesaurus, controlled vocabulary); (b) a database of documents indexed with the controlled vocabulary of the classification system; and (c) the retrieval system search engine (software). The quality of retrieval is a function of all three elements. The controlled vocabulary must adequately represent the literature in the field. Terms from the controlled vocabulary must be accurately assigned to the documents in the field. The search software logic with which searches are done facilitates certain types of searches and
hinders others, thereby affecting the quality of the retrieval.

Nursing has long been dissatisfied with bibliographic databases that index the nursing literature. In part, this is because the vocabulary used by major systems has not satisfactorily reflected nursing terminology. Systems oriented toward nursing literature overcome some of this difficulty by classifying things of importance in nursing but not in medicine, such as nursing theoretical frameworks.

Another long-standing disappointment in the profession has been the inability to locate nursing research by variables studied. This is because variable names are sometimes so far out on the classification tree that they are usually not suitable for subject headings. This makes sense because variables usually represent the new nomenclature in a field. These new terms are frequently renamed or incorporated into another term or they may disappear altogether. Vocabularies need more stability than is characteristic of research variable names. Because variable names are not always included in bibliographic classifications, articles are not indexed by the names of variables studied in the research.

The results section of research articles, where the variable names reside, is rarely used for assigning index terms (Horowitz, R. S., & Fuller, 1982). The identification of variable names as keywords by researchers is of little use. Currently, there is no way to tell whether an author-identified term or a classifier-assigned subject heading is a research variable name or just another topic the article is about. It is fair to say that “aboutness” indexing has a serious impact on retrievals of interest to researchers (Weinberg, B. H., 1987).

Research document representation in nursing-related databases is a problem for several reasons. First, if a controlled vocabulary is inadequate for any reason, indexers cannot assign terms to adequately represent documents. Second, research by nurses that is published outside the field may be in journals that are not indexed by the database developers in the domain. Third, bibliographic databases are limited to the published research literature. Frequently, the published literature fails to reflect adequately the knowledge being generated in a field. Cost of publishing and availability of reviewers limit the number of articles that can be published. Publication bias against small studies with nonsignificant findings and perhaps of parochial interest works against publication of clinical research in nursing. With more focus on statistical meta-analysis strategies, these studies might be combined and thus yield valuable new knowledge. The consequence of large amounts of fugitive research lies not just in the invisibility of knowledge to the discipline but results in a significant waste of resources to duplicate work that has already been done or to identify work that needs to be done.

The strategy or “logic” that software uses to search databases determines how documents can be retrieved and how accurately the document set of interest can be retrieved. Although other search strategies are becoming available, the primary search strategy used by bibliographic retrieval systems in nursing and related fields is based on Boolean logic. The searcher must fully understand the logic used by the search system and how it is implemented in the database of interest.

Boolean logic is based in set theory, which is a way of combining sets of things—in this case, search terms in documents. The operators, called Boolean operators, dictate how the documents containing the terms will be combined. The operator and causes all the documents containing one term, \( x \), and all documents containing another search term, \( y \), to be combined into the set of documents that contain both \( x \) and \( y \). This set of documents is called the search result.

The operator or results in a set of documents that have either the term \( x \) or \( y \). It includes the set of documents that have both \( x \) and \( y \). Other common operators are not, adjacent, includes, excludes, begins with. Generally, the more Boolean operators a system makes available, the more accurate the search that can be performed.

Accuracy is a generic term that refers to the concepts of sensitivity and specificity of
the search result. In Boolean search systems of bibliographic databases, sensitivity and specificity are inversely related: the search either results in many documents that are not relevant or results in a few of the most relevant documents being found but fails to turn up others of relevance.

In addition to Boolean operators, common bibliographic database retrieval systems will have tags that identify other salient features of documents in the field; for example, the language the article is written in, document type, and whether the article is about humans or other animals. These characteristics can be used to further delimit a search.

Researchers are interested in scientific findings, not documents (Doyle, 1986; Weinberg, B. H., 1987). All that can be obtained from a bibliographic database search is a list of citations of documents or perhaps the full text of some documents that may or may not contain research findings. The accuracy of these searches can be extremely low, depending on the complexity of the search.

The scientific knowledge is the research result or findings; however, bibliographic classification is done to organize the scientific knowledge produced after it has been embodied in documents (Landridge, 1992). When viewed this way, perhaps the results of research should not be part of a literature classification system because the results are the knowledge, not the document with the knowledge. Or perhaps this was and is the only legitimate method available to library and information scientists when approaching the literature of all disciplines.

Nonetheless, research knowledge can be indexed by its variables (Graves, 1997; Weiner, Stowe, Shirley, & Gilman, 1981) and linked to its source (the researchers); if published, the dissemination history of the study (bibliographic citations) can be provided. The Virginia Henderson International Nursing Library makes the nursing research that is in the Registry of Nursing Research accessible by directly indexing the studies by variable names as well as by researcher and by subject headings (see “The Virginia Henderson International Nursing Library”).

JUDITH R. GRAVES

Bibliometrics

Bibliometrics is broadly defined as the application of mathematical and statistical methods to published scientific literature in a disciplinary field (Pritchard, 1969). Bibliometric research methods are based on a literary model of science. Using bibliometrics, information scientists assume that published research documents reflect new knowledge in a scientific field and that references in these reports represent relationships among scientists and their work.

Bibliometrics is a useful research methodology for describing and visually representing the communication structure of a scientific field. It has been used successfully to evaluate such things as emergence, change, and communication networks in specialty areas. Bibliometric methods have been helpful in identifying the foundational fields (i.e., other scientific fields) that have driven the genesis of a new scientific field. They also can be used to identify prominent scientists or documents that have influenced the intellectual development of a scientific field. Thus, bibliometric studies may provide insights into the historical and sociological evolution of nursing science as well as the design of information retrieval systems in nursing.

Research questions addressed by bibliometric studies generally fall into one of four categories: (a) characterization of a scholarly community, (b) evolution of a scholarly community, (c) evaluation of scholarly contributions, and (d) diffusion of ideas from within and across disciplines (Borgman, 1990). Citation data are often used in bibliometric studies and are generally collected from bibliographies, abstracting and indexing services, citation indexes, and primary journals. Typically, the references of research journal articles are analyzed in bibliometric studies. Bibliographic attributes such as authors, citations,
and textual content are used as variables in bibliometric research.

Citation analysis is the best-known bibliometric strategy. It is a set of strategies for studying relationships among cited and citing literature in a scientific field. Bibliographic coupling and co-citation analysis use citation analysis to demonstrate linkage of citation data. In bibliographic coupling, the focus is on the citing literature; that is, the number of references two articles have in common reflects the similarity of their subject matter. In co-citation analysis the focus is on the cited literature, that is, the number of times two documents are cited together in the reference lists of later publications. Sets of co-cited document pairs may be grouped together and mapped, using graphical display techniques such as cluster analysis and multidimensional scaling. The unit of analysis for co-citation analysis studies can also be journals (journal co-citation analysis) or authors (author cocitation analysis). Co-word analysis is another bibliometric strategy based on the analysis of co-occurrence of keywords used to index documents or articles. This method is useful for mapping content in a research field or for tracing the evolution of networks of problems in a disciplinary field.

Bibliometric strategies are practical and may be applied to citation data that are readily accessible on citation indexes and online electronic databases. No subjective judgments are made by the researcher about what literature best defines a scientific field or specialty area. It is the scholars themselves who publish in the scientific literature that determine the intellectual base of the specialty area. However, citation data can portray only what the scientific community in a field of study has recognized by way of publication. In addition, bibliometrics does not have a theory that integrates the methods and techniques used in the analysis of citations. Therefore, it is important that the investigator clearly delimit the specialty area to be investigated, be familiar with the field of interest, and interpret citation data in conjunction with other sources of information relevant to the area of interest.

**Review of Research**

There have been at least five bibliometric investigations of the nursing literature. Garfield (1985), an information scientist, conducted a journal citation study on core nursing journals indexed in the 1983 *Social Sciences Citation Index*, using citation data from 1981 to 1983. Four bibliometric studies have been conducted by nurse researchers. Messler (1974) conducted a citation analysis investigating the growth of maternity nursing knowledge as reflected in published nursing practice literature from 1909 to 1972. Wilford (1989) used citation analysis techniques to study citation patterns depicted in the references of a random sample of 310 nursing dissertations from 1947 to mid-1987. Johnson (1990) conducted a bibliometric analysis using the technique of keyword analysis to describe the evolution of the holistic paradigm in the field of nursing. D’Auria (1994) used citation analysis techniques, including author co-citation analysis, to demonstrate the feasibility of using author co-citation analysis for identifying emerging networks of researchers in the subfield of maternal and child health nursing from 1976 to 1990. Further bibliometric analyses of the research literature from the general field or subfields of nursing will provide a baseline for describing and interpreting citation data in the field of nursing.

At this point in the development of nursing science, it is critical that nurse scholars create ways to increase the visibility and retrieval of scientific information being generated in the field. Bibliometric methods can provide a way to track disciplinary influences and the identities of nurse scientists and scientists from other disciplines whose interests are shaping the generation of scientific information in nursing. The findings of bibliometric studies will provide nurse scholars with a guide for scholarship for doctoral students and researchers in the field of nursing that may differ from information that has been passed down as traditional wisdom. Thus, the findings of bibliometric studies will open
up new avenues for debate and hypotheses generation in regard to the evolution of nursing science.

As the nursing research literature continues to grow, rigorous and systematic bibliometric research of citation data may contribute working models of the development of nursing science that could be used to evaluate scientific progress. By discovering trends in disciplinary and interdisciplinary linkages, nurse scholars can identify underdeveloped or neglected areas of research in nursing science. Evaluating the degree of scientific activity in research areas would help nurse scholars determine if research resources are allocated correctly as well as assist them in determining the need for new journals and books in the field of nursing. It will also provide an avenue by which nurse scholars may access scientific information and prevent the loss of information generated in the field of nursing.

Jennifer P. D’Auria

Biofeedback

While in the past, biofeedback for chronic symptom patterns has been thought to be simply training muscles and body functioning through operant conditioning, now it is more common to consider the brain and central nervous system as the central focus of treatment. It is, after all, the electrical-biochemical systems through which all bodily activity is finally determined. To focus on the brain/neural pathway acknowledges the mind-body interface and the centrality of the brain in the disease process.

The use of biofeedback and its accompanying belief in helping persons master self-regulation of body function and optimum states has been greatly impacted by the cellular research in the recent years. While on the one hand, groups of neuroscientists have explored the progress of using stem cells as a way of repairing organs, another movement in research has realized exciting possibilities in tracing evidence of the capability of the body to perform neurogenesis and neuroplasticity (Kempermann, Kuhn, & Gage, 1997; Eriksson et al., 1998; Kempermann & Gage, 1999; Bjorklund & Lindvall, 2000; Magavi, Leavitt, & Macklis, 2000). Early evidence of the possibility of generating growth or regrowth in neural tissue was reported by Marion Diamond (1988). In these early studies, Diamond stimulated brain growth in older rats by enriching the environment. From this study were derived the studies by Budzynski (1996), Budzynski and Budzynski (1997) to improve cognitive functioning of elderly humans by enhancing the brain with neurofeedback and light/sound stimulation.

Results of studies on cellular restoration of nerve tissue together with reports of improvement of body functioning through neurofeedback suggested that changes in bodily functioning can be reached through the brain. By managing appropriate change in the EEG or the brain’s electrical activity, the body not only can rid itself of chronic symptoms but can also heal itself. These new directions for intervention are reaching consumers of health care.

There are over 100 nurse professionals in the Biofeedback Certification of America (BCIA), the certifying body for biofeedback/neurofeedback. There are untold other nurses practicing without current certification. Many of these practitioners are performing exciting biofeedback/neurofeedback work with target chronic problems, such as attention deficit disorder, epilepsy, stroke, mild head injury, migraines, and other symptom patterns. But they practice outside the mainstream of nursing’s institutions of care. They practice privately alongside multiple other health disciplines. Other schisms are that these practitioners are not inclined to undertake research, and those who are doing research (often in universities) have little access to practice settings. The nursing biofeedback field could advance markedly if these activities and professionals could merge, as has medicine, to develop research based programs for specific target clinical problems.
Nursing biofeedback research has shown effective changes in patient symptoms through application of complementary techniques. A review of biofeedback/self-management training research by nurses prior to 1997 indicated favorable patient outcomes when performing management of stress symptoms, progressive relaxation, reduction of tension with EMG training, hand warming, training during childbirth, respiratory training, and heart rate variability training. These publications predominantly indicated individual efforts to inform the field of their respective specialized treatments. Over the years since then, there is very little shift to indicate that programs of care by nurses have proliferated. Also, fewer biofeedback studies have been generated in nursing publications. But there is evidence that research methods and physiologic measurement has markedly improved—many articles using feedback are competitive in nonnursing journals.

It is informative to point out the following: Chronic symptom patterns such as advanced heart failure, sudden cardiac arrest, incontinence following surgery, and elderly cognitive decline as listed above have not previously been treated with feedback training. Physiologic indicators with a psychological self-care orientation are used to demonstrate change. These above studies are few in number, but recently the kinds and quality of noninvasive instrumentation on the market are allowing researchers to trace change in bodily and psychological processes—EEG, heart rate variability, blood sugar levels, blood flow, CO2, and respiratory activity, to name a few. The stage is set for offering feedback to any number of chronic problems which have heretofore been neglected. Lynda Kirk, the new President of the Association for Applied Psychophysiology and Biofeedback, a nurse, recognized the dominance of the brain in feedback by quoting William James on the latest cover of AAPB Biofeedback: “The greatest thing, then, is to make the nervous system our ally instead of our enemy.”

HELEN KOGAN BUDZYNKI
HSIN-YI (JEAN) TANG

Bowel Elimination Among Older Adults

Bowel elimination is the end process of digestion resulting from interactions of the central and autonomic nervous systems, and endocrine, gastrointestinal and musculoskeletal systems. Three major bowel elimination problems have been studied and consistently have been shown to affect the older population: constipation, incontinence, and colorectal cancer (American Cancer Society, 2003a; Hogstel, 2001; Memorial Sloan-Kettering Cancer Center, 2003; Vogelzang, 1999).

Constipation, defined as the accumulation of feces in the lower intestines with difficulty evacuating this waste, is the most common complaint among older adults (Abrams, Beers, Berkow, & Fletcher, 1995). According to Annells and Koch (2002), laxatives have become the most commonly sought treatment for constipation. More than one third of older adults use weekly laxatives to reduce strain and enhance fecal elimination (Reiss & Evans, 2002). Research findings demonstrate that increasing fiber and fluid in the diet significantly decreases the need for laxative use and stool softeners (Howard, West, & Ossip-Klein, 2000; Robinson & Rosher, 2002).

Vogelzang (1999) cited seven reasons for constipation in the elderly. Multiple medications (polypharmacy) had been identified as a primary reason for constipation, especially in nursing home residents. Six or more medications have been shown to adversely effect motility of the digestive tract (Vogelzang). Older adults living at home may be at an even higher risk for overdose related to self-medication with over-the-counter drugs (Vogelzang). In addition, limited income influences the quality of food purchased and the degree of fiber-rich foods incorporated into the older adult’s diet. Annual income is less than $6,000 in 40% of older Americans, leaving them limited funds for groceries. Most do not take advantage of funded food programs. Selection of the same foods is common, lead-
ing to a poorly balanced diet (Vogelzang). Non-healthy snacking throughout the day also counteracts appetite as well as bowel regularity. Lack of social interaction, physical inactivity, nausea caused by uncontaminated food due to unclean food preparation, and inadequate cooking skills also have been identified as contributing factors to risk for constipation (Vogelzang). Constipation can be controlled by a well-balanced diet high in fiber, adequate hydration (at least 6–8 eight-ounce glasses of water/day), along with increased activity (Hinrichs, Huseboe, Tang, & Titler, 2001).

Fecal incontinence has been shown to contribute to decreased social activity (Giebel, Lefering, Troidl, & Blochl, 1998). Older adults are embarrassed that incontinence may occur in public, so they tend to limit outside activity with friends and family. There exists a strong correlation between urinary and fecal incontinence (Chassagne et al., 1999). In a survey conducted by Giebel and colleagues, 500 randomly selected older adults in Germany responded to a questionnaire about bowel habits. It was found that 4.8% were unable to control solid stool, whereas 19.6% experienced at least one type of incontinence. Women had more of a problem with pasty or liquid stools. They also experienced an urgent sensation to quickly reach the toilet. Men described soiling their underwear as most problematic. Controlling flatus was also described as a concern. Findings suggest that the lack of control associated with bowel habits plus the reduction in activities necessitate interventions aimed at education about intestinal health and dietary change. Another study done on fecal incontinence enrolling 1,186 older adults 60 years of age and older in a long-term care setting identified five risk factors associated with fecal incontinence: (1) history of urinary incontinence, (2) neurological disease, (3) poor mobility, (4) severe cognitive decline, and (5) age greater than 70 (Chassagne et al.). Fecal incontinence associated with impaction and diarrhea occurred in 234 (20%) of the sample. The study showed an association between permanent fecal incontinence and overall poor health in older adults.

Approximately 90% of individuals with colorectal cancer are over 50 years of age (American Cancer Society, 2003a). The United States Preventive Task Force recommends individuals beginning at age 50 be screened for colorectal cancer as follows: (a) yearly fecal occult blood test, (b) flexible sigmoidoscopy every 5 years, (c) colonoscopy every 5–10 years (American Cancer Society; Donovan & Syngal, 1998). Screening can reduce risk by up to 75% (Donovan, & Syngal). Those with a family history of colon cancer and/or polyps should be screened at a younger age and more frequently.

Borum (1998) evaluated the relationship of age with screening for colorectal cancer. A retrospective chart review of 200 patients over 50 years old in an ambulatory clinic showed that more rectal exams were done on 50–60 year olds than on 60–70 year olds. These results indicate that less screening is done in the older elderly than the younger elderly. As aggressive screening diminishes, risk for colorectal cancer increases (Borum).

Diet plays an important role in the prevention of colorectal cancer. Negri, Franceschi, Parpinel, and La Vecchia (1998) researched fiber intake and the risk of colorectal cancer. Dietary habits of patients (1,225 with colon cancers, 728 with rectal cancers, and 4,154 with no history of cancer) were studied. The data indicated that dietary fiber has a protective effect against colorectal cancer. High fiber diets may protect against colorectal cancer by allowing brief mucosal exposure to carcinogens. The longer stool remains in the intestine, the more likely the chance of cancer.

Caygill, Charlett, and Hill (1998) investigated the relationship between intake of high fiber and risk of breast and bowel cancer. The study showed cereal and vegetables protect against both colorectal and breast cancer. Fruit had no protective effect on colorectal or breast cancer. However, fruit was shown to be more protective against cancers of the upper digestive tract (Caygill, Charlett, & Hill).
In summary, older adults are at risk for developing bowel elimination complications, which may be associated with the physiological changes occurring with advancing age and lack of screening. Screening for cancer needs to be done on all elderly, regardless of advanced age. Diets high in fiber, adequate hydration, increased activity, and education programs encourage prevention of complications.

CORA D. ZEMBRZUSKI
EILEEN M. HERMANN

Boykin & Schoenhofer: The Theory of Nursing as Caring

The theory Nursing as Caring (Boykin & Schoenhofer, 1993, 2001) provides a conceptual framework for the nature of nursing as a caring discipline and profession. Embodying the aesthetic and personal realms of knowing in nursing (Carper, 1978; Chinn & Kramer, 2004; Boykin, Parker, & Schoenhofer, 1994), the theory incorporates the artistic and empathic aspects of nursing situations as personal caring connections between the nurse and the nursed as they occur in the moment. The theory of Nursing as Caring is essential to the core essence of nursing, providing a structure for practice, administration, education, and research.

Major assumptions/fundamental beliefs underlying the transformational model of the theory of Nursing as Caring include:

- persons are caring by virtue of their humanness
- persons are caring, moment to moment
- persons are whole and complete in the moment
- personhood is a process of living grounded in caring
- personhood is enhanced through participating in nurturing relationships with caring others
- nursing is both a discipline and a profession

(Boykin & Schoenhofer, 2001a, p. 11).

The focus of Nursing as Caring is that nursing, both as a discipline and as a profession, “involves the nurturing of persons living and growing in caring” (Boykin & Schoenhofer, 2001a, p. 12). Central concepts include caring, characterized by altruistic actions and the recognition of value and connectedness between the nurse and the nursed, the nursing situation, “a shared lived experience in which the caring between nurse and nursed enhances personhood” (Boykin & Schoenhofer, p. 13), and the caring between, a personal connection encounter between the nurse and the nursed “within which personhood is nurtured” (Boykin & Schoenhofer, p. 14).

An integral component of Nursing as Caring, the Dance of Caring Persons, represents the circular nature of caring grounded in the valuing of one another (the nurse and the nursed) as unique caring individuals (Boykin & Schoenhofer, 2001a; Boykin, Schoenhofer, Smith, St. Jean, & Aleman, 2003). This element of the theory acknowledges the need for a paradigm shift from the traditional top-down hierarchical structures present in health care organizations to circular structures of mutuality and respect found within nurse-client collaborative partnerships.

Research approaches developed within the context of the theory of Nursing as Caring include focusing on the discovery of the meaning of lived caring, and the understanding of value experienced in nursing situations (Boykin & Schoenhofer, 2001a). A qualitative group phenomenology approach was utilized to provide insight into the meaning of lived caring. Research participants generated data in focus group settings and also developed the synthesis of meaning (Schoenhofer, Bingham, & Hutchins, 1998). Qualitative research methodologies grounded in dialogue and description and interpreted as themes characterize research into the value experienced in nursing situations (Boykin & Schoenhofer, 2001b; Boykin et al., 2003).

Nursing as Caring guides research by providing a broad conceptual framework for the development of middle-range theories that address more specific phenomena of nursing as caring in areas of nursing practice, admin-
istration, and education. Examples of developments of such mid-range theoretical models based on the theory of Nursing as Caring include the theory of technological competence as caring in critical care nursing (Locsin, 1998); Dunphy’s (1998) “circle of caring” model for advanced practice nursing which focuses on caring processes; and the caring-based nursing model that grounded an acute care unit in the perspective of nursing as caring (Boykin et al., 2003). Future directions include the development of new methods of nursing inquiry appropriate to the study of the meaning of nursing within the lived experience of the nursing situation (Boykin & Schoenhofer, 2001a).

Mary Angelique Hill

Breast Cancer: Psychosocial Adjustment to Illness

Classified as a chronic disease, the demands of breast cancer extend over time, with some phases characterized by more demands and stress than others. Acceptance of the diagnosis, treatment decisions, emotional distress related to physical change and loss, alterations in lifestyle, uncertainty, and need for information and support are ongoing issues (Lovely & Klaich, 1991; Walker, Nail, Larsen, Magill, & Schwartz, 1996). Although the diagnostic and immediate postoperative phases are particularly stressful (Northouse, 1990), emotional distress (Hoskins et al., 1996b), distress from side effects (Walker et al., 1996), and limitations in role performance and sense of control may last longer.

Although adjustment has been commonly conceptualized as quality of life, the breadth of the broad conceptualization inhibits definitive studies of its dimensions and predictors. Adjustment has, however, been conceptualized in many ways, including role performance (Derogatis, 1983), sexual function (Lasry, 1991), emotional symptoms (Hoskins et al., 1996b; Pasacreta, 1997), cognitive function (Cimprich, 1993), self-esteem, and body image. To address the issue of multiple interpretations and dimensions, Dow, Ferrell, Haberman, and Eaton (1999) conducted a qualitative study of 687 survivors of various kinds of cancer and identified themes of struggle among independence-dependence, wholeness, life purpose, reclaiming life, multiple losses, control, and surviving cancer from a family perspective. Narrowing the focus of quality of life to breast cancer survivors, Ferrell, Grant, Funk, Otis-Green, and Garcia (1998) concluded that adjustment involves demands across the physical, psychological, social, and spiritual domains.

Similarly, Aaronson (1990) recognized the multidimensionality of quality of life and proposed the four major dimensions of functional status, symptoms related to the disease and treatment, psychological functioning, and social functioning. In general, it is agreed that the broad domains of adjustment to breast cancer may be conceptualized as psychological (Walker, Nail, & Croyle, 1999), physical (Given & Given, 1992; Cohen, Kahn, & Steeves, 1998; Wyatt & Friedman, 1998), and social (Tulman & Fawcett, 1990; Northouse, Dorris, & Charron-Moore, 1995).

The adjustment process has a strong effect on the family as a system (Cooley & Moriarty, 1997; Germino, 1998). Usual roles are altered with resultant interpersonal tension in both patients and partners (Lewis & Hammond, 1996). The factor of time is reflected in longitudinal studies of emotional and physical adjustment in both patients and partners. In their seminal study of 50 newly diagnosed breast cancer patients and spouses, Northouse and Swain (1987) noted that the emotional distress and mood disturbance among the spouses at 3-days post-surgery differed significantly from population norms. The distress and disturbance continued to 18 months. Higher emotional distress and lower adjustment among spouses (Given & Given, 1992), as compared to patients, may continue for as long as 3 years. As the person most intimately involved in the events related to the patient’s illness and treatment, the partner struggles with fear of the cancer, demands...
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CAROL NOLL HOSKINS

Breast Cancer Screening

Breast cancer is a disease for which there is no foreseeable cure, and indications are that the incidence will remain high. The American Cancer Society estimates that more than 211,300 women were diagnosed with breast cancer in 2003, and almost 39,800 will die. Although breast cancer remains a significant form of cancer mortality for women, in 1996 an overall decrease in mortality was reported. Because treatment is extremely effective with Stage I tumors, increases in mammography screening have influenced breast cancer mortality. When discovered early, breast cancer victims may anticipate a 97% chance for complete cure. Prospective mortality-based studies have demonstrated the effectiveness of mammography screening, particularly in women 50–70 years of age, and therefore most organizations recommend periodic screening beginning at age 50.

Recently, mammography recommendations have been expanded to include women 40 to 49. Consequently, both the American Cancer Society and the National Cancer Institute now recommend screening beginning at age 40. Obviously, breast cancer screening by mammography does not magically become effective at age 40 or 50 or 60, and one mistake that fueled controversy was comparing one decade to another. Comparing women aged 40 to 49 with women 50 and over creates artificial boundaries that cause much confusion. Now that the American Cancer Society and National Cancer Institute are in agreement, energy may be focused on other issues.

The effectiveness of clinical breast examination is not as clear as that of mammography, although it is currently recommended. Some studies demonstrating a mortality decrease for mammography have included clinical breast examination, but the independent effect of the latter has not been studied. In addition, the efficacy of breast self-examination (BSE) has been documented although not in randomized, prospective mortality-based trials. To date, retrospective studies have found that BSE may detect an earlier stage of disease or smaller tumor size.

Despite its apparent effectiveness, breast cancer screening is not used to its fullest advantage. While screening rates may approach 70% to 74%, rates are lower for minorities and women over 65. The rates for consistent mammography screening at recommended intervals are not good. Rates for mammography in 2000 ranged from 57%–72%. Rates for clinical breast examination and mammography were higher, ranging between 37.3% and 69%. Recent data indicate that women may report BSE practice as frequently as seven to eight times a year but have low proficiency scores.

It is obvious that breast cancer screening has the potential to reduce mortality and morbidity from this dreaded disease. Breast cancer screening rates, although increasing, are not optimal. Most problematic is the fact that women do not follow current recommendations for screening. Minority rates for follow-up are dismal, and access to care is a real issue. This health-promoting detection
activity is of primary importance to nurses in all areas of practice. Nurses are in an optimal position to increase all three screening methods (mammography, clinical breast examination, and BSE). Interventions to promote mammography and teach BSE can be carried out during general health promotion or while women are being seen for other reasons. Clinical breast examination is a skill that should be learned by all nurse practitioners and conducted yearly on all women aged 20 and over.

Several important theoretical variables have been tested for relationships to breast cancer screening—in particular, mammography and BSE. The theory that has generated the most research is the health belief model. The health belief model was initially conceptualized in the early 1950s to predict preventive behaviors such as influenza inoculations (Rosenstock, 1966). As originally formulated, the health belief model included the variable of perceived threat to health, which included the concepts of risk of contracting the disease (perceived susceptibility) and personal cost should the disease be contracted (perceived seriousness). In addition, benefits and barriers to taking a preventive action were predicted to influence the health behavior. In 1988, the concept of self-efficacy, or perceived confidence in carrying out a preventive behavior, was added to the health belief model.

Other theories that have been used to predict breast cancer screening have included Fishbein and Ajzen’s (1975) theory of reasoned action, which postulates that two major concepts are related to breast cancer screening: (a) beliefs and evaluations of these beliefs and (b) social influence. Social influence is also composed of two components: beliefs of significant others and the influence of significant others on the individual. Most recently, the transtheoretical model has been tested with mammography use and found to predict behavior (Prochaska et al., 1994). This model defines the outcome in terms of stages of preparedness to engage in a health-promoting activity. In addition to the factors involved in these models, descriptive research suggests that breast cancer screening is influenced by knowledge, previous health habits, particular demographic characteristics, and health care systems.

A number of studies spanning over a decade have used various models to predict mammography screening. In general, attitudinal variables such as perceived susceptibility, perceived benefits to screening, and perceived barriers to screening have been predictive of mammography. Rakowski and co-workers (1992) found that perceived pros (benefits) and cons (barriers) varied across stages of mammography. The most consistent predictors of mammography use have been physician recommendation and barriers. The latter have included perceived lack of need, fear of results, fear of radiation, cost, pain, time, and inconvenience. Recently, the transtheoretical model has been used for predicting mammography by postulating that women move through a series of stages from precontemplation, or not thinking about mammography, to maintenance of mammography over time.

Descriptive studies to predict BSE have spanned the past 2 decades. Again, the variables of perceived susceptibility, benefits, and barriers have been significantly related to BSE. A less significant prediction of BSE compliance has been physician recommendation. Instead, women who were taught personally and returned a demonstration have been found to comply at higher rates. A major problem with BSE research has been the measurement of outcomes. In many earlier studies women were asked how many times they examined their breasts, and this was used as the operational measure of compliance. Later, self-report proficiency scales were widely used. Research has shown that there is often little correlation between reported frequency and proficiency, indicating that even if women practice BSE, they may not be doing it proficiently enough to detect lumps.

Actual measurement of BSE proficiency also has been problematic. The best studies have used trained observers to watch women either complete BSE or identify silicon lumps embedded in models. Subjective norms, as identified in the theory of reasoned action,
have been predictive in some studies. Most research has identified low to moderate correlations between attitudinal variables and BSE. Perceived confidence for completing self-examination has been one of the strongest predictors.

Intervention research for both mammography and BSE has systematically built on the descriptive studies of earlier decades. Interventions have ranged from multistrategy community interventions to individual patient-oriented interventions. Many of the individually focused interventions targeted perceptions of risk, benefits, and barriers. Multi-strategy interventions often targeted physician recommendation, which had been found to be an important predictor of mammography screening. Various ways of delivering messages have been tried, including the media, telephone delivery, tailored letters or postcards, and in-person counseling. Access has been identified as a problem, as shown by the fact that persons in health maintenance organizations (HMOs) consistently have higher rates of mammography screening than do patients in private medical practice. Access-enhancing interventions have included the use of mobile vans, which provide easier access for women with transportation problems. Costs of mammography for indigent women continue to be a problem, although agencies such as the American Cancer Society and Little Red Door have helped to defray these costs. Social network interventions have been effective with minority groups. Peer leaders can sometimes be important links for low-income, African American, or Hispanic women. Most interventions, especially those based on sound theory, have been successful in increasing mammography.

Interventions addressing BSE often focus on teaching women the correct skills for practice. Many of the interventions use educational strategies, with or without counseling, related to the theoretical constructs of perceived susceptibility, benefits, and barriers. Many studies have used reminder systems or self-prompt to increase practice. Interventions have ranged from handing out pamphlets to one-to-one teaching sessions with return demonstrations. Studies using models to identify lumps have been the most vigorous. Studies that include personal demonstrations, guided feedback, and both cognitive and personal instruction evidence the greatest increase in proficiency.

Descriptive and intervention studies based on similar theories of breast cancer screening have extended over the past 2 decades. The major difference in relation to promoting mammography is the addition of physician recommendation. Physician recommendation is important both because medical advice is related to mammography and because an order may be necessary to obtain a mammogram. For BSE, personal teaching has been found to be a most important predictor. We now know enough about breast cancer screening to make certain recommendations for nursing practice. For both BSE and mammography, clinicians must take into account the individual’s perceptions about her susceptibility to breast cancer. If this perceived susceptibility is unrealistically low, efforts must be made to paint a more accurate picture. Perceived benefits and barriers to both mammography and BSE also should be addressed and individualized strategies developed. For BSE teaching, the set of skills needed to complete this exam and observation of proficiency will be important. A major future direction related to mammography will be to increase interval compliance.

Breast cancer screening research has broad implications for increasing other health behaviors, such as colorectal or prostate screening. Preventive behaviors such as the use of skin protection and adherence to low-fat diets can also be targeted for intervention trials. Finally, nurses must actively encourage public policy decisions that increase screening access for all people.

**Victoria Champion**

**Breast-Feeding**

Breast-feeding continues to be the gold standard for feeding infants, as it provides nutri-
tional, immunological, cognitive, and psychological benefits for young children. Recently, a burgeoning body of research in the immunological and biochemical sciences has continued to identify the unique properties and unreplicable living tissue transferred to infants and children through breast-feeding. These studies have made the connection between breast-feeding and a decreased risk of illness and health problems in infants and children, supporting its importance and necessity to the health of humans (Heinig, 2001). Once seen as a personal lifestyle choice, documentation of the superiority of breast-feeding to the health and well-being of infants, children, and women, has led to the recognition that breast-feeding is a health care behavior. There continues to be a large discrepancy in the United States between breast-feeding rates, especially according to income, education, race, and ethnicity (Ahluwalia, Morrow, Hsia, & Grummer-Strawn, 2003). When breast-feeding is examined as a health care behavior, nurses have an opportunity for health promotion and disease prevention among mother-child dyads which can affect all of society. The Healthy People 2010 (2000) national health objectives target, 75% initiation of breast-feeding, 50% breast-feeding at 6 months, and 25% breast-feeding children until 1 year of age.

Breast-feeding has an international and interdisciplinary focus. Many professionals from various arenas of health care and the sciences are interested in lactation and the field continues to grow; however, experts, especially lactation consultants, are still underutilized. Nurses have intimate contact with women at key times to make a difference in their breast-feeding experiences. The majority of nursing breast-feeding research relates to promotion, protection, and support of breast-feeding.

Breast-feeding researchers in nursing examined the policies and practices that impact breast-feeding initiation. Nurse scientists continue to develop instruments to assess breast-feeding (Dennis, 2002; Riordan, Bibb, Miller, & Rawlins, 2001). More research is needed into nurses’ influence on the decision to breast-feed and their roles in promoting and reinforcing women’s decision. Investigators have demonstrated the importance of health care professionals’ recommendations to mothers (Ahluwalia et al., 2003). Nurses need updated education based on research to provide this support at critical times, and to identify women at risk for complications early on, so that interventions can be initiated and referrals made in a timely fashion to preserve the breast-feeding relationship. They need to be aware of new research on breast-feeding in areas such as: breast reduction/augmentation surgery, HIV status, medical conditions, and drugs. Careful assessment of the benefits and risks of not breast-feeding should be in the forefront in nursing research.

The advent of the Breastfeeding-Friendly Hospital Initiative in 1997 in the United States by United Nations Children’s Fund (UNICEF) encouraged the identification of practices that impact breast-feeding duration. Studies have demonstrated the negative effect on breast-feeding initiation and duration of: labor medications, vigorous suctioning, forcing baby to breast, ineffective positioning, early introduction of pacifiers, delayed feedings, routine separation of mother and baby, failure of nurses to frequently assess breast-feeding encounters, use of supplements, and provision of gift packs with promotional materials for artificial infant milk (Auerbach, 2000). In contrast, a meta-analysis of over 35 studies demonstrated that breast-feeding educational programs had the greatest single effect on initiation and short-term duration of breast-feeding, although support programs did increase both short and long-term duration (Guise et al., 2003).

In a thorough review of the literature from 1990-2000, Dennis (2002) examined breast-feeding initiation and duration and concluded that mothers who weaned prior to 6 months postpartum experienced perceived difficulties with breast-feeding. These studies identified those least likely to breast-feed as: young, low income, ethnic minority, unsupported, full-time employed women with a negative attitude toward breast-feeding and low confidence in their ability to breast-feed.
Partners and nonprofessionals were most supportive, hospital routines were often detrimental to breast-feeding, and health care professionals who lacked knowledge related to breast-feeding were seen as negative sources of support providing inaccurate and inconsistent advice (Dennis). These results provide a target population for intervention and indicate that even as knowledge has grown, the shift from knowledge to practice is painful and takes time (Hong, Callister, & Schwartz, 2003).

A major population needing attention focused on breast-feeding are low-income women, especially women of color within this group. African-American women have among the lowest rates of breast-feeding in the United States (Ahluwalia et al., 2003), 45% report ever breast-feeding (compared to 66% and 68% of Hispanic and white women) (Bentley, Dee, & Jensen, 2003). Reasons given by women for not breast-feeding include: embarrassment, a lack of social acceptability of breast-feeding (both public and private), work or school, the difficulty keeping the infant close, and lack of support.

Nurse scientists are using different methodologies to study breast-feeding, including: ethnographies, phenomenological studies, historical-cultural approaches, and ecological perspectives. Theoretical frameworks used to explore the health behavior of breast-feeding include the theory of planned behavior, the health belief model, social cognitive theory using the concept of self-efficacy, and the social ecological framework. Nurses are exhibiting a stronger role in publishing studies examining breast-feeding education, support, and prenatal and postnatal interventions to support the mother and infant. Researchers have demonstrated the importance of peer and social support, the effect of hospital interventions, the need for comprehensive breast-feeding education and support, communication-related barriers, socioeconomic issues, the effect of values and practice, and most importantly the culturally relevant issues that influence breast-feeding choices.

Clinical issues being explored by nurse scientists include: biological benefits of breast-feeding to the mother, breast-feeding and circumcision, HIV and breast-feeding, lactation mastitis, and positioning and attachment. The influence of the health care delivery system, community, and society/culture cannot be ignored.

Challenges related to the study of breast-feeding include three major areas: the lack of consistency in the definition of breast-feeding (e.g., exclusivity), making comparison of studies tedious if not impossible; the difficulty measuring cross-cultural effects (lack of reliability and validity studies of major breast-feeding instruments with various cultures); and the development of prospective designs and randomized controlled trials.

Although breast-feeding is now recognized as a right of mothers, a health care behavior contributing to the reduction of infant and maternal morbidity and mortality rates, less expensive than artificial milk supplementation and more environmentally friendly, the national breast-feeding goals are far from being met. Federal funding for breast-feeding research in the United States demonstrates an incongruity with the national priorities for breast-feeding. Only 13.7% ($5.6 million out of $40.4 million available) of federal research funds from 1994 to 1996 were awarded to projects having an impact on the Healthy People 2000 goals for increasing the incidence and duration of breast-feeding. In contrast, 27 projects (7.5% or $4.1 million) involved the use of human milk composition and technologies to improve artificial milks (Brown, Bair, & Meier, 2003). Nurses need to be at the forefront in protecting, promoting, and supporting breast-feeding for the health of society. This will require exploring the ways that cultural norms and structures at all levels support or interfere with breast-feeding for all women and ways in which nursing can make a difference.

Suzanne Hetzel Campbell
Cancer in Children

Pediatric oncology represents only a small fraction of the discipline of oncology. However, the numerous advances in the diagnosis and treatment of childhood cancer have resulted in significant improvements in survival. Approximately 75% of all children diagnosed with malignant neoplasms will survive more than 5 years (Smith & Gloeckler Reis, 2002).

The annual incidence of childhood cancer is 15.6 per 100,000 children ages birth to 19 years (U.S. Cancer Statistics Working Group, 2003). There is a slightly higher incidence in males (16.5 per 100,000) compared to females (14.6 per 100,000). There are approximately 12,400 children and adolescents less than 20 years of age diagnosed each year with cancer (Smith & Gloeckler Reis, 2002). Childhood cancer is the third leading cause of death in children ages 1 to 19 years (Arias, McDorman, Strobino, & Guyer, 2003). For children of all ages, leukemia is the most frequent type of cancer, followed by brain tumors and lymphomas. Tumors of the kidney and soft tissue are more common in African Americans, whereas tumors of the bone are more common in Caucasians.

The cause of childhood cancer is not known. Some childhood cancers, in particular retinoblastoma, Wilms tumor, and neuroblastoma demonstrate patterns of inheritance that suggest a genetic basis for the disorder. Chromosome abnormalities have been found in acute leukemia and lymphoma as well as in other pediatric solid tumors. Wilms tumor is associated with an increased incidence of congenital anomalies. Children with syndromes caused by abnormal numbers of chromosomes (e.g., Down syndrome) have an increased incidence of cancer (Gurney & Bondy, 2002). Children with immune deficiencies are at greater risk for developing cancer. Despite the lack of knowledge about the origin of cancer, there is some information on risk factors that increase the likelihood of children developing cancer. Environmental agents such as exposure to ionizing radiation have been found to cause cancer in children (Gurney & Bondy).

Major areas of pediatric oncology nursing research include psychosocial care needs, physical impact of cancer, nursing care procedures, nursing professional issues, and management of health care resources. A review by Hinds, Hockenberry, and Schum (2002) found that the majority of published studies (70%) are related to psychosocial care needs of the child and family. Only 5.5% of the published studies were on nursing care procedures, and less than 5% were on nursing professional issues. Most studies (78.2%) were published in nursing journals and of those, 67% were published in cancer nursing journals. While increased attention on nursing research has occurred over the past 10 years, many areas of pediatric oncology nursing have yet to be explored.

The emphasis on psychosocial care needs of children with cancer and families has changed over the past 20 years, due to the improvement in childhood cancer survival. Nursing research in the 1980s focused on grief and loss experienced by the parents and siblings of children who died of cancer. Re-
searchers studied how care was provided in the home care environment, the needs of parents facing the loss of a child, and terminal care costs. As survival improved, chronic illness and its impact on the child and family living with a cancer took center stage. In recent years researchers have evaluated perceptions of clinical trials and understanding of the consent process, while continuing to evaluate stress and coping in the child and family. Adolescent risk-taking behaviors is a new research area as survival rates continue to improve and childhood cancer survivors move toward adulthood.

In order to evaluate the status of the current research on symptom management in individuals with cancer, the National Institutes of Health recently held a State of the Science Conference on Symptom Management in Cancer: Pain, Depression, and Fatigue (NIH, 2002). The review of existing research revealed that efforts to manage symptoms of cancer and its treatments have not kept pace with new advances in the causes and cures for cancer. Three landmark studies have addressed distressing cancer events and symptoms from the specific perspective of the child and their families (Hedstrom, Haglund, Skolin, & von Essen, 2003; Woodgate & Degner, 2003; Collins et al., 2000). Hedstrom et al. discovered that the most common causes of distress in a group of 121 children with cancer were treatment-related pain, nausea, and fatigue. Collins et al. described the most common physical symptoms (prevalence > 35%) in a group of 160 children with cancer as lack of energy, pain, drowsiness, nausea, cough, and lack of appetite. Woodgate and Degner evaluated expectations and beliefs about childhood cancer symptoms in a group of 39 children and their family members and found that these individuals expected to experience suffering as part of the cancer treatment. The families felt unrelieved or uncontrolled symptoms were necessary for cure. Nurse researchers have evaluated pain management issues, complications of central venous access, blood product infusion methods, and chest tube care.

Also, a relatively new area of symptom management research focus is the evaluation of fatigue in children and adolescents with cancer. Fatigue has been found to be one of the most distressing symptoms experienced during childhood cancer treatment. The prevalence of this symptom confirms the need to explore the interrelationships between fatigue and other symptoms commonly experienced by children with cancer. This symptom has been evaluated from both qualitative and quantitative research perspectives. Fatigue measurement instruments have been developed and tested during the past 5 years. Multi-center trials have been implemented to evaluate this symptom in children with cancer.

As survival for childhood cancer continues to improve, nursing investigations are focusing on survivorship issues and quality of life following the diagnosis and treatment of cancer. Nursing studies have documented the adverse effects of central nervous system (CNS) treatment on cognitive, academic, and psychosocial functioning. Interventions designed to minimize the adverse effects of central nervous system therapy are now being conducted.

Docherty (2003) recently completed a review of the published literature on symptom experiences of children and adolescents with cancer. This review revealed no longitudinal symptom management study designs, limited use of conceptual models or theories, frequent adaptation of adult instruments as symptom measures, and no attention to the impact of these symptoms on the children’s lives.

It is evident from the recent childhood cancer pain literature that there is still much to be gained from continued research. The importance of striving for symptom relief in children cannot be over emphasized. Recognition and acknowledgment of the beliefs and expectations of children and their parents regarding cancer-related symptoms (Woodgate & Degner, 2003) should continue to be a major research focus. Limited research is found regarding assessment of pain in children with cancer. Longitudinal studies evalu-
ating the trajectory of pain over time are not found. The effective use of pain management teams in hospital settings and their relationship with cancer center staff need further development and evaluation. Continued exploration of the most effective drug regimens and methods of delivery should be pursued for children experiencing all types of cancer pain. Finally, utilization of research findings in the clinical setting is lacking. More innovative, creative methods for dissemination of our knowledge of cancer pain and its management must be explored.

MARILYN HOCKENBERRY

Cancer Survivorship

As we move forward in the new millennium more people are living with cancer than dying from it (National Cancer Institute [NCI], 2003). Indeed barring death by other causes, 63% of adults treated for cancer are alive 5 years after diagnosis, accounting for 10 million cancer survivors (NCI). For most people this means that cancer has gone from a death sentence to a chronic disease. This success has resulted from continued advances made both in the laboratory and at the bedside.

The word survivor is derived from the Middle French survivre, to outlive, and from the Latin supervivere, to live more (Merriam-Webster Online, 2004). Thus, cancer survivorship is the period of time after the diagnosis and treatment of cancer through the remainder of life (NCI, 2003). It encompasses the physical, psychosocial, and economic sequelae of cancer diagnosis and its treatment and issues related to health care delivery, access, and follow-up care among both pediatric and adult survivors of cancer (NCI).

The current focus on cancer survivorship is in large part a result of the visionary efforts of the National Coalition for Cancer Survivorship (NCCS). Founded in 1986, it was established to refocus attention from people victimized by cancer to people living with and surviving cancer (NCCS, 2003). The NCCS evolved from a peer-support organization to what is now a formidable advocacy group setting public policy priorities on behalf of people with cancer. Moreover, as a result of the efforts of the NCCS as well as other grassroots organizations, in 1996 the NCI created the Office of Cancer Survivorship (OCS) in recognition of the large number of individuals now surviving cancer and their unique and unstudied needs. Since its inception the OCS has funded initiatives geared towards the stimulation of research on long-term cancer survivorship. Thus, although the concept of cancer survivorship is relatively young, these novel efforts have provided important structure for a small but rapidly increasing field of cancer survivorship research.

In his annual report to the nation, Dr. Andrew von Eschenbach of the National Cancer Institute identified areas of focus for survivorship research. They included long-term follow-up of childhood cancer survivors and issues faced by cancer survivors from underserved populations (NCI, 2003). These areas are uniquely relevant to nursing practice and therefore represent important areas for future research as the number of cancer survivors increases in the coming decades. Findings of studies related to these foci will be discussed.

Cancer survivorship research originated from studies conducted with adolescent and adult survivors of pediatric cancers culminating from 3 decades of successful treatment for pediatric cancers. Recent statistics indicate that 1 in 1,000 20-year-olds is a childhood cancer survivor (Meadows, Krejmas, & Belasco, 1980). Ironically, the same treatment that produced successful response rates can also cause long-term adverse effects (Smith, M., & Hare, 2004). For many pediatric cancer survivors, survivorship is marked by the occurrence of treatment-related late effects, i.e., side effects that do not resolve or that arise after completion of therapy, and may result in physical, social, and emotional consequences. Such effects include a plethora of physical, intellectual, pubertal, and reproductive manifestations, as well as the poten-
tial for secondary cancers (Swartz, 1999). These effects represent a lifelong risk that often negatively influence quality of life and may be linked to the practice of high-risk lifestyle behaviors, including smoking and consumption of alcohol, practices that are further complicated in this population because of their genetic predisposition and previous exposure to cytotoxic agents (Larcombe, Mott, & Hunt, 2002; Swartz).

An important vehicle for addressing some of these and other childhood cancer survivor concerns is the Childhood Cancer Survivor Study (CCCS). Funded by the National Cancer Institute, the CCCS is a collaborative, multi-institutional, longitudinal survey of over 14,500 5-year childhood cancer survivors initially diagnosed between 1970 and 1986. Survivors who participated in the study completed baseline and follow-up questionnaires including items related to organ system functioning, health habits, psychosocial health, fertility, and second malignancies. Highlights of four studies reporting initial findings were: (a) a statistically significant excess of secondary malignancies, the most common being breast cancer, thyroid cancer, meningioma, sarcoma, and bone cancer (Neglia et al., 2001); (b) reduced general physical and mental health, and activity and functional limitations when compared with siblings (Hudson et al., 2003); (c) increased use of special education services when compared with siblings (23% vs. 8%) (Mitby et al., 2003); and (d) increased reports of depressive and somatic distress when compared with siblings (Zebrack et al., 2002). These important findings provide insight into a variety of concerns relevant to childhood cancer survivors. As a result of this work, the CCCS has laid the groundwork for further examination into other issues that will provide additionally important contributions to childhood cancer survivors.

Cancer survivors from underserved populations may include the elderly, those with low income and educational levels, survivors from ethnic and cultural minorities, and those who live in remote areas (Rowland, Aziz, Tesouro, & Feuer, 2001). As increasing numbers of people from underserved populations are diagnosed and treated for cancer, significant differences have been reported with respect to patterns of cancer-specific survival and relative risks of cancer death (Surveillance Epidemiology and End Results [SEER], 2004), as well as other issues such as access to care (Shavers & Brown, 2002), cost of treatment (Brandeis, Pashos, Henning, & Litwin, 2001), access to educational and emotional support services (Wilson, Andersen, & Meischke, 2000), and meaning of cancer (Phillips, Cohen, & Moses, 1999). These differences have implications for the adaptation to and survival of cancer. Moreover, these factors may be complicated by poorer overall health status as a result of comorbidities or lifestyle.

In a review of the current state of knowledge of cancer survivorship among ethnic minorities and medically underserved groups, Aziz and Rowland (2002) found that research related to the impact of ethnic and minority groups on issues of survivorship is largely related to epidemiologic analysis of cancer risk and survival. Thus, research related to issues of the underserved and cancer survivorship is needed. Some of their findings included the following: (a) a majority of studies of late effects of treatment of secondary cancers were conducted on Caucasian survivors of cancer; (b) while there is a growing body of literature on sociocultural and behavioral determinants of cancer decision making, few studies explored interventions in underserved populations and; (c) culturally relevant measures that capture concerns of cancer survivors were largely absent.

The number of people with cancer is expected to reach 2.6 million by the year 2050. Thus, there is a growing emphasis on conducting research that improves the understanding of cancer survivors. Needed are intervention studies that develop or test strategies to promote optimal health status in survivors of cancer, information on survivors of cancer who have previously been understudied, and research on the impact of cancer...
Capitation

Capitation, a form of payment for health services, is usually associated with managed care. This form of payment is a change from fee-for-service payments as a method of compensation to capitation for services and to negotiation of reduced payments to healthcare providers (Schramm, 1996). Kongsvedt (1995) defined capitation specifically as “pre-payment for services on a per member per month (PMPM) basis” (p. 76). Capitation can also be defined as a fixed payment per health plan enrollee being paid to a provider for a defined set of services for a prescribed period of time (Knowlton, 1996). Under capitation, providers or provider organizations receive the same amount of dollars every month (PMPM rate) for each enrolled member regardless of how expensive the services are or whether the member actually received services. Capitation payments are usually calculated on the capitation equivalent of average fee-for-service revenues of the provider or provider organization (based on actual or existing data for the population of interest) and vary according to the age and gender of the enrolled members. In some cases, the capitation rate is also based on risk, or on expected high utilization of service based on risk, or on specific conditions such as use of illegal drugs, selected chronic illness, and so forth.

Although health care reform as a legislative agenda is no longer relevant, market-driven reform is rapidly changing the structure and terminology of health care delivery to managed care. Managed care has grown out of the need to control escalating health care costs and has become accepted as an inevitable way for health care to be delivered. Managed health care organizations are not new. They grew out of the private sector when prepaid plans were implemented in health maintenance organizations (HMOs). Implemented in the 1970s, HMO providers first shared the risk of financing health care for an enrolled population. Providers (primarily physicians) were offered the choice of collecting a fee for service from the patient or having the HMO pay the physician directly out of a prepaid per capita payment (capitation) for health services. Any excess revenue generated above expenses could be shared by providers, and enrollees (members) were also able to save health insurance premiums by reducing unnecessary hospital admissions and lengths of stays. Many forms of managed care organizations besides HMOs exist, but the challenge for all these provider organizations is to remove inefficiencies and reduce costs from the current fee-for-service systems and through capitation to improve the quality and coordination of care across the continuum.

In many cases, one capitated payment is in place that covers care across the continuum. In other situations, a blended capitation rate such as $x PMPM may exist for primary care services, with an additional capitated pool of #xx for referral services, and $xxx for inpatient or institutional care. Capitation affects nurses in all care settings across the continuum, from the staff nurse in acute care to the home health nurse to the primary care nurse practitioner. Awareness of the value of prevention, health promotion, and coordination of care in order to reduce unplanned visits and unexpected admissions is key to success in a capitated managed care system. New nursing roles of case management and primary care provider in community-based settings offer opportunities created by managed care and challenges to manage care within specific limited resources.

Research related to capitation in the context of managed care is health systems research, health services research, or evaluation research. Holzemer and Reilly (1994) used the term variations research as an important strategy designed to improve the quality of care while controlling costs. They proposed...
an outcomes model (based on the work of Donabedian) that allowed for measurement of variability related to client or population (age, gender, risk, etc.), variability of providers (such as advanced practice nurses vs. physicians), variability of interventions or process of care, and variability in outcomes of care (which may include quality indicators, costs, cost savings, and patient/provider satisfaction).

Research related to capitation may involve assessment of risk for population-based care and determining the appropriate capitation based on variability within different populations. Community health assessment performed by community health nurses may be used for these types of assessments. Research related to capitation may involve study of the different uses and types of providers or processes of care needed to achieve required outcomes at a particular price (capitation rate PMPM). Finally, the research may focus on the cost savings of a particular intervention, for example, transitional models of care between hospital and home or the use of case management models to reduce inappropriate utilization of care.

The unit of analysis in research related to capitation is of paramount importance. Nurse researchers may study the client and client characteristics, the provider or provider system, specific interventions, or outcomes. Outcomes research is of great interest to managed care companies that are implementing capitation models. These companies desire quality outcomes (functional and clinically relevant changes) in the client and client satisfaction with the care, and they want them in a cost-effective manner. Variations research is an attempt to control confounding variables such as risk, severity of illness, and client characteristics that influence outcomes of care. Risk adjustment of outcomes is complex but must be addressed in variations research. Use of information systems to obtain data related to costs and other outcomes from organizational databases must be addressed. The issue of decisions related to data substitution and use of proxies to handle missing data is a relevant issue for health systems researchers who study the impact or effectiveness of capitation in the context of managed care.

Finally, an important issue is educating practicing nurses, current nurse researchers, and future students in the risk, cost, and quality issues related to capitation in managed care. The rapid increase in managed care organizations and systems has introduced new terms and concepts into medical and nursing language.

More current literature suggests that providers are turning to fee-for-service charges to make up revenue lost under capitation (Dalzell, 2002). Nonetheless, even though health care on a fixed, per-capita budget has lost favor of late, many trends are cyclical just as this trend may be (Dalzell, 2002).

Patricia Hinton Walker
Updated by Karen L. Elberston

Cardiovascular Disease

Cardiovascular diseases (CVD), which include stroke, hypertension (HTN), arrhythmias, coronary heart disease (CHD), and heart failure (HF) are major contributors to mortality and morbidity. Although the most prevalent form of CVD is HTN, the majority of CVD deaths are attributed to CHD. The prevalence and incidence of CHD increase dramatically with age and CHD is the leading cause of death in the elderly, with 84% of all CHD deaths in those 65 years of age or older (American Heart Association [AHA], 2001). Angina, sudden death and myocardial infarction (MI) are the major manifestations of CHD. Twenty-five percent of men and 38% of women will die within 1 year of their MI (AHA). Although HF may result from valvular dysfunction and other conditions, the majority of cases of HF are attributable to CHD with approximately 22% of men and 46% of women disabled by heart failure post-MI (AHA). Despite the importance of CHD, prevention and management of CHD are only beginning to be studied in the elderly population. The Second World Assembly on Aging
in 2002 addressed the international issue of supporting patients in both primary and secondary prevention of CHD and HF that are so prevalent in the geriatric population. Although control of hypertension and dyslipidemia have been shown to reduce CVD mortality and morbidity in both middle-aged and elderly individuals, the efficacy of other measures such as lowering homocysteine and fibrinogen levels, quitting smoking, exercising or weight reduction are not yet established in the elderly. Nevertheless, such measures appear to be warranted (Kannel, 1997; Gladish & Rajkumar, 2001). Much of our current knowledge, however, is still based on studies conducted with non-elderly individuals.

CHD and subsequent MI are potentially preventable conditions. The recent publication of the standards of care for both dyslipidemia (Adult Treatment Panel III [ATP III] Guidelines, 2001) and hypertension (Chobanian et al., 2003) do not make guidelines specific to different adult age groups. Older and younger adults are classified by their risk factors, with increasing age yielding a higher risk score in the Framingham Risk Profile. Research aimed at prevention must address the importance of established risk factors in the elderly, as well as identifying new risk factors specific to the elderly population. Age-related differences exist between younger and elderly individuals regarding cardiac risk factors, and the role of conventional cardiac risk factors remains controversial. In addition, diabetes mellitus is a prevalent problem, and is considered a CHD equivalent (ATP III). Diabetes is also associated with an increased risk of recurrent MI, HF, and death following MI. Knowledge of diabetes management in relation to the development of CHD and MI, as well as to long-term outcomes, however, is limited.

Secondly, although information regarding patient management of cardiac risk factors is limited, recent trials of lipid-lowering agents have demonstrated a beneficial effect on morbidity and mortality (Mostaghel & Waters, 2003). Large multicenter hypertension trials have also begun to demonstrate the efficacy of aggressive hypertension treatment in reducing risk of CHD (Puddey, 2000). Identification and evaluation of the efficacy of other preventive interventions, therefore, need to be documented, as well as individual characteristics that contribute to better risk factor control. Nursing also has an important role in studying methods and adequacy of dissemination of guidelines for primary prevention of CHD established by the AHA, not only to the public, but to health care providers (Williams et al., 2002). Levels of physical activity and control of lipids, HTN, obesity, and smoking need to be determined, along with side effects of these interventions. Management of diet and exercise may pose special challenges; medications to treat hypertension and lipid abnormalities may not be well-tolerated and the potential for side effects and drug interactions is increased in the setting of polypharmacy. Finally, consideration of psychosocial factors is warranted. Psychosocial influences, which may contribute to control cardiac risk factors, and quality of life, which may be affected by control of cardiac risk factors, however, have not been widely studied in the elderly population.

Advanced age is known to be associated with an increased risk of in-hospital death following MI, and a beginning understanding of prognostic factors for short-term mortality is available (Normand et al., 1997; Chyun et al., 2002). Efficacy of monitoring for complications, and methods to prepare individuals and their caregivers for discharge, within a shortened hospital stay, however, need to be studied. Awareness of prognostic factors can assist in identifying patients at risk of short-term mortality so that interventional nursing care can be targeted, delivered to, and assessed in high-risk individuals. Many individuals who are eligible for aspirin or beta-blocker therapy following MI do not receive these medications upon discharge. Discrepancies between other medications known to have a survival benefit—ACE inhibitors, lipid lowering agents—may also exist and need to be documented, along with reasons for any discrepancy. Although coronary revascularization procedures—angioplasty or bypass
surgery—are being used more frequently, nursing research is also needed to document post-discharge complications and long-term management of underlying CHD. Hospitalization for acute MI or revascularization may provide the only opportunity to maximize CHD management, as well as link the individual to a cardiac rehabilitation program following discharge.

Older age has consistently been associated with poorer long-term outcomes—death, recurrent MI, and CHF—following MI. Although acute MI-related prognostic factors are beginning to be identified (Chyun et al., 2002), information on post-discharge factors that may have contributed to these outcomes, as well as to use of health care services, has not been documented. It is unknown how patients manage their cardiac condition, control specific cardiac risk factors, or if they participate in cardiac rehabilitation. Nor is it known what factors contribute to or prevent successful CHD management in the elderly. Angina and psychosocial factors may contribute to long-term management of CHD and adverse outcomes, yet only limited information is available on these possible influences (Stuart-Shor et al., 2003). These data are crucial prior to much-needed interventional studies aimed at decreasing the substantial mortality and morbidity associated with CHD and MI. Potential psychosocial factors that may contribute to poorer long-term outcomes, therefore, need to be identified. Educational strategies directed specifically to the needs of the elderly and their caregivers also need to be identified and tested. In addition, factors, such as the impact of functional status, which has been linked to mortality require further study in the elderly population with CHD.

Functional status has been shown to be an important prognostic factor after MI, even after adjustment for other prognostic factors, yet it has not been widely studied, despite higher levels of functional disability in the elderly. Functional loss appears to be proceeded by a decline in physical performance, and early functional limitations or mild impairments that are not evident clinically have been shown to predict subsequent functional dependence (Gill, Williams, Mendes de Leon, & Tinetti, 1997). Subjects at risk of functional decline may be identified early, prior to loss of function, so that interventions may be targeted. Although physical performance and functional status may influence participation in a cardiac rehabilitation program, both can be greatly improved through exercise rehabilitation. Therefore, low levels at outset should not prohibit participation.

Cardiac rehabilitation, including exercise rehabilitation, has been shown to improve exercise tolerance and assist in control of cardiac risk factors; however, few studies are available that address these issues in the elderly (Lavie & Milani, 1995; Pasquali, Alexander, & Peterson, 2001). Although physical activity is central to management of CHD, and it is recommended that men and women should be strongly encouraged to participate in exercise-based cardiac rehabilitation and that special efforts be made to overcome obstacles to entry and participation, the elderly, particularly elderly women, are referred to and enroll less frequently than younger individuals (Lavie & Milani, 1995). Despite improvements in functional status, anxiety, depression, mobility, health care resource consumption, and mortality with exercise, the majority of older adults report having no regular exercise and most report not having walked a mile in the past year. The reasons that individuals do not enroll in cardiac rehabilitation have not been well defined, but probably result from a combination of physical, psychosocial, and economic factors. Barriers to participation, therefore, need to be explored and strategies for improving access and maintaining participation tested.

Prevalence of HF in the elderly MI population increases with increasing age, and following MI, older age has been shown to be related to the development of HF despite normal systolic function. Normal age-related changes in the elderly also appear to affect diastolic, rather than systolic function. HF is associated with decreased quality of life and a decrease in functional capacity. While multidisciplinary teams, focusing on coordina-
tion of inpatient, outpatient and home care have demonstrated positive outcomes in terms of functional capacity, length of stay, readmission rates, self-care knowledge, patient satisfaction, and quality of life (Rich et al., 1995; Venner & Solitto-Seelbinder, 1996; Naylor et al., 1994; Stanley & Prasun, 2002; Grady et al., 2000), and prognostic factors for readmission have been identified, HF remains the leading cause of hospitalization in the elderly. Additional interventional studies are needed on management of common problems in this population—monitoring for deterioration in clinical status, medication, dietary and fluid adjustment, social support, and noncompliance—as well as in innovative strategies, such as use of structured exercise programs, in HF management. In addition, with the recent publication of new guidelines for HF, a new staging system expands the continuum of care to encompass prevention and includes screening and treatment targets for people at high risk for developing heart failure (Hunt et al., 2001). As HF will continue to be an important problem in the elderly population, nursing research should focus on evaluating nursing interventions that reduce hospital admission and improve quality of life.

JESSICA SHANK COVIELLO
DEBORAH A. CHYUN

Cardiovascular Risk Factors: Cholesterol

Coronary heart disease (CHD) is a major cause of morbidity and premature mortality in men and women in the United States, the industrialized world, and many developing countries. Atherosclerotic-CHD processes begin early in life and are influenced over time by the interaction of genetic and potentially modifiable environmental factors including health-related lifestyle behaviors. Hypercholesterolemia, elevated serum total cholesterol (TC), is recognized as an independent risk factor for CHD. Low-density lipoprotein cholesterol (LDL-C), the major atherogenic lipoprotein, typically constitutes 60%–70% of serum TC and is the primary target of cholesterol-lowering therapy. In 1988, based on available epidemiological and clinical data, the National Cholesterol Education Program (NCEP) Adult Treatment Panel (ATP) issued the first guidelines for identifying and managing hypercholesterolemia in adults. Throughout the past 16 years, results of numerous randomized controlled trials confirmed that lowering LDL-C was important in primary and secondary prevention of CHD. The most recent revision of these guidelines (Executive Summary of the Third Report of the National Cholesterol Education Program, 2001), referred to as ATP III, continues to focus on LDL-C as the primary target of risk reduction therapy, considers other lipid and nonlipid risk factors, and emphasizes therapeutic lifestyle change (TLC) and pharmacological therapies for reducing individual risk and the public health burden of CHD. With continued emphasis on identification of individuals at risk and more attention to adherence-enhancing strategies, ATP III incorporates numerous roles for nurses and nursing across health care settings where lipid abnormalities are diagnosed and treated.

ATP III continues to define hypercholesterolemia as TC ≥ 240 mg/dl (6.21 mmol/L) for individuals 20 years of age and older; TC levels of 200–239 mg/dl are considered borderline high and < 200 mg/dl is considered desirable. LDL-C levels are categorized as follows: very high (≥ 190 mg/dl), high (160–189 mg/dl), borderline high (130–159 mg/dl), above optimal (100–129 mg/dl), and optimal (< 100 mg/dl). Results of very recent clinical trials suggested that LDL-C lowering beyond 100 mg/dl in secondary prevention (after an acute coronary event) was associated with improved cardiovascular outcomes and raised questions regarding the currently established cutpoints for LDL-C (Cannon et al., 2004; Nissen et al., 2004; Topol, 2004). The National Cholesterol Education Program (NCEP) has not revised the 1991 definitions and guidelines for management of hypercholesterolemia in children and adoles-
cents in the United States; however, the American Heart Association’s (AHA) recent guidelines for primary prevention are consistent with NCEP definitions: acceptable TC (< 170 mg/dl [4.4 mmol/L]), borderline TC (170–199 mg/dl), elevated TC (≥ 200 mg/dl) (Kavey et al., 2003). Similar to adults, both lipid and nonlipid risk factors are addressed, LDL-C levels are targeted as the basis for treatment decisions, and TLC is the cornerstone of treatment. LDL-C levels ≤ 110 mg/dl are considered acceptable for children and adolescents without comorbidities; LDL-C < 100 mg/dl is recommended for children and adolescents with diabetes. ATP III recommends a fasting lipoprotein profile (TC, LDL-C, high-density lipoprotein cholesterol [HDL-C], and triglyceride) should be obtained once every 5 years in adults aged 20 years or older. A basic principle of prevention is emphasized throughout ATP III: the intensity of risk-reduction therapy should be adjusted to an individual’s absolute risk.

The Framingham projections of 10-year absolute CHD risk (i.e., the percent probability of having a CHD event in 10 years) are used to identify and risk-stratify individuals. In addition to LDL-C, risk determinants include: presence or absence of CHD and other clinical forms of atherosclerotic disease, cigarette smoking, hypertension (blood pressure ≥ 140/90 mm Hg or on antihypertensive medication), low HDL-C (< 40 mg/dl), family history of premature CHD, and age (men ≥ 45 years, women ≥ 55 years). The category of highest risk (10-year risk > 20%) includes CHD and CHD risk equivalents (other clinical forms of atherosclerotic disease, diabetes) has a goal of LDL-C defined as < 100 mg/dl. The intermediate risk category (10-year risk ≤ 20%) includes multiple (2+) risk factors and has goal LDL-C as 130 mg/dl; the lowest risk category (10-year risk < 10%) includes 0–1 risk factors with LCL-C goal of 160 mg/dl.

The cornerstone of treatment for hypercholesterolemia and other lipid abnormalities is therapeutic lifestyle change (TLC) with emphasis on dietary modification, increased physical activity and normalization of body weight. Important components of the TLC diet are saturated fat (less than 7% of total calories), polyunsaturated fat (up to 10% of total calories) and monounsaturated fat (up to 20% of total calories). Less than 200 mg/day of dietary cholesterol, 50–60% of total calories from carbohydrates and approximately 15% of total calories from protein are recommended. Other key components of the TLC diet include viscous fiber, plant stanols/sterols, and soy protein. Considerable variation in response to dietary modification has been observed in males and females across the life span. Variations in serum TC, for example (ranging from 3% to 14%) are attributed to individual differences in biological mechanisms, baseline TC levels, nutrient composition of baseline diets, and adherence over time to the prescribed dietary regimen.

The first priority of pharmacological therapy is to achieve the appropriate LDL-C goal (as defined by the individual’s category of risk). ATP III recommends the use of HMG-CoA reductase inhibitors (statins) as first-line therapeutic agents. In a meta-analysis of clinical trials, the average reduction in TC in over 30,000, middle-aged men followed for over 5 years was 20%, the average reduction in LDL-C was 28%, and the decline in triglyceride averaged 13% (LaRosa, He, & Vupputuri, 1999). Results of a very recent secondary prevention trial suggested that early and continued lowering of LDL-C with an intensive lipid-lowering (statin) regimen provides greater protection against death or major cardiovascular events than a standard regimen (Cannon et al., 2004). Other pharmacological agents currently used in treatment of dyslipidemia in adults include bile-acid binding resins, niacin, and fibrates. Decisions to initiate LDL-C lowering drug therapy, the type and dosage of agent to be used, and the schedule for monitoring individual response to therapy are based on the individual’s baseline risk status. Normally, the patient’s response is evaluated about 6 weeks after starting drug therapy. Relatedly, TLC continues throughout (and beyond) the duration of pharmacotherapy.
Consistent with recommendations of the 33rd Bethesda Conference on preventive cardiology (Ockene, Hayman, Pasternak, Schron, & Dunbar-Jacob, 2002), ATP III identifies and targets adherence-enhancing interventions that consider the characteristics of the individual patient, the provider, and systems of health care delivery. Case management by nurses within the context of multidisciplinary team approaches is considered an integral component of increasing adherence to therapeutic regimens for hypercholesterolemia and other lipid abnormalities.

Assessment and management of hypercholesterolemia and other lipid abnormalities is an important component of both individual/high risk and population-based approaches to CVD risk reduction. Current evidence-based guidelines, including ATP III and the AHA primary prevention guidelines for children and youth, consider both lipid and non-lipid risk factors, target LDL-C in algorithms for assessment and treatment considerations, and emphasize TLC as the cornerstone of treatment. Therapeutic regimens including pharmacotherapy and TLC are based on the individual’s risk status; treatment outcomes are optimized with case management by nurses within the context of a multidisciplinary team approach. Directions for future research build on and extend current programs focused on innovative models for primary and secondary prevention of CVD across the life span and with emphasis on both quality and cost as outcomes (Allen et al., 2002). In addition, current recommendations emphasize family-based approaches to CVD risk reduction; however, minimal data exist regarding strategies for effective implementation in clinical practice.

Laura Hayman

Caregiver

The term caregiver is defined as an individual who assists ill person(s), helps with a patient’s physical care, typically lives with the patient, and does not receive monetary compensation for the help. A more descriptive definition of a caregiver is a person who not only performs common caregiver responsibilities (i.e., providing physical, social, spiritual, financial management, and technical care) but also advocates for the ill person within health care systems and society as a whole. The caregiver role is often anticipated in relationship to elders, yet rarely is there preparation for caring for one’s child or one’s spouse.

Delineating the role of the caregiver reveals potential problems they experience. Direct patient care encompasses much more than physical care; it also necessitates learning an extensive amount of information about illness, symptoms, medications, technological treatments, and how to relate to health care professionals (Smith, 1995). Caregivers also must be prepared for emergencies and be capable to respond. Usually the caregiver must also maintain their personal responsibilities, whether as breadwinner, housekeeper, or both. The caregiver’s relationship with the patient, the caregiver’s age and life developmental stage, the patient’s illness severity, and the suddenness and amount of the change in the patient’s need for caregiving have been predictive of caregiver burnout in various illness populations such as cancer care with home chemotherapy, cardiac rehabilitation, muscle deterioration, and dementia victims (Biegel, Sales, & Schultz, 1991).

The indirect familial caregiver tasks include designating others to assist with patient care, exchanging information, and maintaining decision making among appropriate persons. Caregivers also have numerous expectations for themselves and from others around them to perform various psychosocial tasks such as coping with changes in role, grieving the loss of the health and personality of their loved one, releasing tension, resolving uncertainty or guilt, and providing positive regard for those with whom they interact.

Because the caregiver by definition is laden with tasks and expectations, it is no wonder that the major area of research has been caregiver burden and negative outcomes on care-
Caregivers’ physical, mental, and financial health. The majority of burden studies have been descriptive and correlational and have resulted in identification of multiple factors recognized as being significant for burden: characteristics of the care needed by the patient that are often measured as illness demands. Numerous variables (e.g., demographic information, developmental stage, social support) that have been studied in relation to caregiver experience are influential yet not universally predictive of caregiver burden (Biegel et al., 1991). Research across disciplines identifies significant negative health outcomes of caregiving (reduced physical function, immune status, wound healing, greater fatigue, mortality, and cardiovascular disease) (Beach, Schultz, Yee, & Jackson, 2000; Federal Interagency Forum on Aging, 2000; Given & Given, 1998; Schultz & Beach, 1999; Silver & Wellman, 2002). The majority of caregivers experience depression, social isolation, financial strain, sleep deprivation with daytime sleepiness, and inefficient use of family resources (Fitzgerald, 2003; Smith, 1996). These caregiver problems directly influence patient outcomes, resulting in complications and high health service use (Smith, Pace, et al., 2002). Smith’s (1994) research indicated caregivers’ motives for helping consistently explain variance in their depression, coping, and quality of life (Smith, Kleinbeck, Boyle, Kochinda, & Parker, 2002).

Problem-solving ability is lauded as essential and caregivers’ ability to solve problems can avert patient problems (National Family Caregivers Association, 2002; Schultz, 2000), yet only a handful of studies on problem solving in caregiving were found and not all had positive outcomes (Roberts et al., 1995). Unique research on the positive aspects of caregiving is being conducted by Smith under the concept of caregiving effectiveness. Effective caregiving is defined as family provision of technical, physical, and emotional care that results in optimal patient health and quality of life and minimal technological side effects (e.g., catheter infections) while maintaining the caregiver’s health and quality of life. Nursing interventions have been found efficacious for caregiver problems of depression, sleep deprivation, social isolation, and lack of access to evidence-based information, caregiving and complex technology problem solving. These interventions include counseling, peer support, high-quality internet information, and contacts with experts. For example, there is a dearth of research on caregiving with lifelong technology dependence that begins unexpectedly in middle life (when teenagers and elder family members also need assistance) and continues on a trajectory of intermittent disease exacerbations and slow, progressive decline (Collins, Stommel, Wang, & Given, 1994; Dimartini et al., 1998; Howard & Malone, 1996).

The most widely recommended clinical yet unverified approach is to provide guidelines to manage specific caregiving problems (Schultz, Lustig, Handler, & Martire, 2002). A step-by-step approach is an essential caregiving skill. Step-by-step guidelines on computer algorithms can guide systematic thinking and develop skills for solving stressful problems (Smith et al., 2003; Wilkinson & Mynors-Wallis, 1994). The state of the science report on computer-based algorithms that aid patients to make step-by-step decisions about treatment options concluded that improved knowledge, attitudes, and lower health services used resulted from patients’ use of algorithms (Agency for Health Care Policy and Research [AHCPR], 1998). The Cochrane review and randomized trial results concur, adding that patients with step-by-step decision aids had realistic treatment expectations, satisfaction with care, and lowered anxiety (O’Connor et al., 2002). The more successful problem-solving algorithms included logical, easily-remembered steps, multi-perspective (psychological and physical) information, long-term access, and booster repetition, all tailored to a specific group with common problems (Shaw, McTavish, Hawkins, Gustafson, & Pingree, 2000).

Research should continue on the culturally-related aspects of caregiving strategies
used in various ethnic groups (Picot, 1995). Another contemporary focus in caregiving research should be the caregiving family, as research has clearly indicated that multiple members of families are involved in providing direct and indirect care, both to the patient and in support of the primary caregiver (Smith CE, 1996). In addition to the caregiving family, the caregiving neighborhood or parish should be a focus of study. In some countries giving care is a way of life that extends to friends, neighbors, and society. In the Netherlands the term mantlezorg is used to define caregiving. This term is translated as the “care cloak,” protecting not only the patient but also the caregiver. In the U.S., Share the Care, a program designed for the care of people with cancer, is an example of mantlezorg (Lakey, Singh, Warnock, Elliott, & Rajotte, 1995).

Historically, research on the topic of caregivers has come from the literature on aging in which burden and supportive interventions have been studied. Interventions tested include teaching mastery of caregiving tasks, social interventions such as support groups or telephone contacts, and direct clinical services such as counseling and respite care. Outcomes of many of these intervention studies indicated that in the short term, the interventions may reduce caregiver stress in a limited way but the burden returns when the interventions cease. Research with midlife caregivers reveals the need for interventions on resource management (Smith, 1993b) and motivation to help (Smith, 1994a). Further research is needed to test more interventions and match the timing of the intervention with the developmental life stage of the caregiver.

Carol E. Smith
Helen A. Schaag

Caring

Caring has been identified as a central concept in the discipline of nursing. In the past 25 years theory and research on caring have grown steadily, contributing to a substantive body of knowledge that can be referred to as caring science. While criticism has been levied against this body of literature for its lack of conceptual clarity, there seems to be a growing international consensus in nursing that knowledge about caring is key to understanding human health, healing, and quality of life. One analysis (Morse, Bottoroff, et al., 1991) elaborated five perspectives of caring in nursing literature as: (a) a human trait or condition of being human, (b) a moral imperative, (c) an affect, (d) an interpersonal interaction, and (e) a therapeutic intervention. In another analysis of caring theory, Boykin and Schoenhafer (1990) argue for a multidimensional approach that poses ontological (meaning of caring), anthropological (meaning of being a caring person), and ontical (function and ethic of caring) questions to fully understand the concept. Watson (2001) defined caring as an ontology, a way of being, or a quality of consciousness that potentiates healing. She also defined caring as an ethic or moral imperative for relating with the other in which the humanity of the person is preserved. Swanson (1991) defined caring as “a nurturing way of relating to a valued other toward whom one feels a personal sense of commitment and responsibility” (p. 165). She identified five processes by which caring is enacted: knowing, being with, doing for, enabling, and maintaining belief.

Three reviews of the research literature on caring have been published. Swanson (1999) summarized and categorized the research related to caring in nursing science and Sherwood (1997) reported a meta-synthesis of the qualitative research on caring. Smith (2004) reviewed the research related to Watson’s theory of human caring. Many different designs and methods have been used to investigate caring including descriptive qualitative designs, surveys, phenomenology, and quasi-experimental designs using standardized scales and physiological measurement.

Swanson (1999) reviewed 130 databased articles, chapters, and books on caring published between 1980 and 1996. The studies were categorized into five levels: the capacity for caring (characteristics of caring persons);
Concerns and commitments (beliefs or values that underlie nursing caring); conditions (what affects, enhances or inhibits the occurrence of caring); caring actions (what caring means to nurses and clients and what it looks like); and caring consequences (outcomes of caring). In her summary of 30 qualitative studies that described outcomes of caring and noncaring relationships, Swanson found that outcomes of caring for the recipients of care were: emotional and spiritual well-being (dignity, self-control, personhood); enhanced healing; and enhanced relationships. Consequences of noncaring were humiliation, fear, and feeling out of control, desperate, helpless, alienated, and vulnerable. Nurses who care report a sense of personal and professional satisfaction and fulfillment while noncaring is related to outcomes of becoming hardened, oblivious, depressed, frightened, and worn down.

Sherwood’s (1997) meta-synthesis of 16 qualitative studies revealed four patterns of nurse caring: interaction, knowledge, intentional response, and therapeutic outcomes. Caring was defined within content, context, process, and therapeutic or healing outcomes. Two types of caring knowledge and skills were identified as person-centered and technical-physical.

Smith (2004) reviewed 40 studies published between 1988 and 2003 that focused specifically on Watson’s theory of transpersonal caring. Four major categories of research were identified: the nature of nurse caring, nurse caring behaviors as perceived by clients and nurses, human experiences and caring needs, and evaluating outcomes of caring in nursing practice and education. The highest number of studies were focused on nurse caring behaviors as perceived by clients or nurses. It is important to note that while patients rank behaviors such as knowledge and technological competence as the most important nurse caring behaviors, nurses rank behaviors such as presence, honoring dignity, and touch as most important. These differences suggest that nurses do not consider competence with medical and technical skills within the realm of nurse caring behaviors, but patients do. Patient vulnerability and the “taken for granted” nature of the instrumental activities by nurses might explain the differences. An expanding area of research is related to evaluating outcomes of caring. Research is indicating that caring-based activities impact mood following miscarriage, patient satisfaction, pain and symptom distress in patients with cancer, well-being, and even blood pressure.

Watson’s (2002) compendium of instruments to assess and measure caring is an important contribution toward the advancement of research in the field. This text provides background on 21 instruments, citations of work in which they were used, and a copy of the tools. Some of these tools are: (a) the Caring Assessment Report Evaluation Q-sort (CARE-Q) to measure perceptions of nursing caring behavior, (b) the Caring Behavior Inventory (CBI) to measure that which is associated with the process of caring, (c) the Caring Behavior Assessment Tool (CBA) and the Caring Assessment Tool (CAT) to measure patient perceptions of nurse caring behaviors, (d) the Nyberg Caring Attribute Scale (CAS) to measure caring attributes of nurses, and (e) the Caring Efficacy Scale (CES) to measure the belief in one’s ability to express a caring orientation and develop caring relationships.

The future of research in caring is promising. An international community of scholars is actively building knowledge in caring science. The International Association for Human Caring (IAHC) meets annually to disseminate the work of its members and the International Journal in Human Caring publishes research and scholarship that expands caring science. Scholars are examining the transtheoretical linkages between caring theories and other nursing conceptual systems (Watson & Smith, 2002). Important research questions center on the relationship between caring and healing outcomes, the qualities of a caring consciousness, the ontological competencies and types of nursing therapeutics that are caring-based, and the types of environments and communities that facilitate caring. Nursing is the discipline that is studying
the relationship between caring relationships and healing. Research needs to move beyond examining caring in nurse-patient relationships to caring in relationships with family, friends, God, etc. and how these relationships affect health and healing outcomes. It will be important to study both caregiver and recipient outcomes of caring theory-based models of practice in different settings. Swanson (1999) offered several suggestions for future research related to caring: developing measures of caring capacity, examining the effects of nurturing and experience on caring capacity, identifying and measuring the competing variables that may confound the links between caring actions and their outcomes, moving from studying the individual as unit of analysis to studying aggregates, and developing clinical trials to test the effectiveness of caring-based therapeutics in promotion of health and well-being. Different designs and methods must be used to capture the emerging questions in the field. Multiple ways of knowing from empirics to aesthetics are required to explore all dimensions of caring phenomena. A model of research that integrates these multiple perspectives and ways of knowing may be the preferred epistemological model for studying caring (Quinn, Smith, Ritenbaugh, Swanson, & Watson, 2003). 

SALLY PHILLIPS

Updated by Marlaine C. Smith

Case Management

Case management (CM) is a growing patient care delivery structure that has been implemented in almost all care settings including acute, subacute, ambulatory (emergency departments and outpatient clinics), long-term, health insurance organizations, community-based centers, and palliative/hospice. Despite the fact that CM has been recognized as an effective and desirable approach to care delivery for the patient and the health care organization, there continues to be little consensus as to what CM is, which resulted in the absence of a standard or universal definition. The literature contains multiple definitions for CM, and each definition frequently depends on the setting and model that is used, the discipline that employs it, and the type of personnel used to accomplish the functions (Cohen & Cesta, 1997); that is, those who assume the role of the case manager.

There is no clear agreement in the literature about the definition and component activities/elements of CM practice. There also exists considerable confusion regarding what constitutes CM, who is best to assume the case manager’s role, and which professional discipline owns or should own the accountability for the practice of CM. Some healthcare professionals view CM as a patient care delivery system; others see it as a process or an approach to better care delivery and outcomes. This difference in perception results in differences in the scope of CM practice. For example, when CM is viewed as a delivery system, its scope is wide and entails a continuum of care focus that transcends beyond one care setting or an episode of illness. However, as an approach to care or a process, it tends to be narrow, short-term, and focuses on one episode of illness/care, addresses the main issue(s) at that point in time, and takes place in a specific care setting.

There are multiple case management models in use today; however, all share similar aims: to improve health care delivery (access, continuity, and quality), eliminate fragmentation and duplication of services, and control or reduce costs. Models include private or independent case management, social case management, primary case management, nursing case management, advanced practice case management, telephonic case management, disability case management (including rehabilitation and vocational counseling), chronic care, worker’s compensation, and insurance case management (Cesta & Tahan, 2003). Regardless of the model, core functions identified are integration of care across the continuum, consumer advocacy, coordination of services among providers, and direct delivery of services to meet patient needs efficiently and effectively attending to
cost and the use of resources (Cohen & Cesta, 1997; Cesta & Tahan).

When attempting to define CM, one must examine the views of two professionally credible and leading groups in the delineation of the knowledge base for CM. These are the American Nurses Association (ANA) and the Case Management Society of America (CMSA). The ANA defines CM as:

...A dynamic and systematic collaborative approach to providing and coordinating health care services to a defined population. It is a participative process to identify and facilitate options and services for meeting individuals’ health needs, while decreasing fragmentation and duplication of care and enhancing quality, cost-effective outcomes ... (American Nurse Credentialing Center [ANCC], 1999, p. 3)

The CMSA defines CM as:

...A collaborative process which assesses, plans, implements, coordinates, monitors, and evaluates options and services to meet an individual’s health needs through communication and available resources to promote quality cost-effective outcomes ... (CMSA, 2002)

Case management as a concept and role function is not new. It has been used by mental health providers, public health nurses, and social services for about a century. The use of CM in the U.S. goes back to the last quarter of the 19th century in the provision of care for the immigrants by the settlement houses (in 1860), and in coordinating public health services by the first Board of Charities in Massachusetts (in 1863) (Tahan, 1998). Around the turn of the 20th century, the use of CM became popular in the public health sector and in community-based social work services in the form of “case coordination.” After World War II and in the 1950s, CM branched into the area of mental health especially to keep veterans out of the hospital (Tahan).

Major emphasis in the past was on the recipient of care and the coordination of services to meet the needs of the patient or client. However, more recently (especially since the mid-1980s), case management has become a dominant and desired approach to care and cost savings in the context of market-driven health care reform. The federal government enhanced the use of case management during the 1970s by way of funding certain community-based demonstration projects. However, the nurse case management model was first introduced in 1985 as a relatively new outgrowth of primary nursing and as a strategy to counteract the nursing shortage and meet the demands of the prospective payment system. This case management model emphasized early assessment and intervention, comprehensive care planning, and service system referrals to specialty providers (Cohen & Cesta, 1997). In the early 1990s and due to the proliferation of managed care, nursing case management models increasingly became interdisciplinary in structure; hence, the case management model of today focuses on interprofessional collaboration, with the case manager assuming the role of the gatekeeper of health care delivery and services.

Case management and managed care are two dominant concepts in discussion today in relation to the challenges of managing patients and resources in a cost-conscious and quality health care delivery system. Although managed care and case management are used to achieve effective management of care, it is important to differentiate between these two terms. Managed care can be described as a general system of care delivery that has replaced fee-for-service systems of care for improved management of resources, costs, quality, and effectiveness of health services. Case management, on the other hand, is a process of care that may be used as one strategy to control costs and inappropriate use of resources and services in a managed care system. Nursing case management provides outcomes-oriented care with attention to appropriate hospital length of stay and access to services, monitors use of patient care services based on type of client, integrates and coordinates clinical services, fosters continuity of care in the context of interdisciplinary and collaborative practice, and enhances patient
and provider satisfaction (Cohen & Cesta, 1997; Cesta & Tahan, 2003).

The literature describing CM practice and its outcomes is focused on select areas associated with the design, structure, roles, processes, implementation, and evaluation of these CM models; however, the absence of theoretical underpinnings for these descriptions is dominant. Nurse scholars have pursued the conduct of CM evaluative research to validate its value, aims, and outcomes, i.e., cost-effectiveness and quality care. Although it is evident in the literature that research supports these goals and strengthens the benefits of implementing CM strategies for the provision of care, the ability to link these outcomes to the CM system has not been as strong because of the lack of clear or standardized definitions for either CM or CM interventions or outcome measures/indicators. In addition, there seems to be a lack of clear theoretical frameworks that define the relationships between the structure and processes of CM interventions and their effect on outcomes, or that integrate the different aspects of CM practice (Tahan, 2003).

The CM research literature shows that CM models are rarely appropriately evaluated, and in some instances the variables examined are loosely defined or measured. In most of the studies the research design, data collection, and sampling methods seem to be an “afterthought.” The dominant approach to CM evaluation is the examination of cost and quality outcomes employing performance improvement and outcomes-measurement study designs. The dominant research studies are basically retrospective attempts at validating the value of CM. Although in some cases structure, process, and outcome variables are examined, evaluating the interrelationships among the variables or how they affect each other remains lacking. The majority of the published studies are primarily descriptive in nature and tend to ignore examining the effects of confounding variables (e.g., denials and appeals management, interdependence among multiple professionals including the physicians) that may have influenced the results obtained. Therefore, the significance and utility of these studies are compromised (Tahan, 2003).

Issues of cost, quality, access to care, and scope of services should be examined when evaluating CM delivery models, especially because of the claim that they are implemented to improve access to care, enhance quality, and control costs. The examination of these variables is essential so that the implications of CM for health policy decisions can be heightened. Very rarely a combination of these four variables is examined. The combination of variables most commonly used is cost and quality or access and quality. This existing limitation may be attributed to the challenge of conducting a study that combines the four types of variables. Such studies are also known to be complex, costly, time consuming, and require the coordination of a professional with specialized knowledge base in CM practice and research methods. Other challenges are attributed to the confusion of identifying the classification of the variables studied, such as readmission rate, complication rate, and length of stay, which are defined as both cost and quality variables depending on the researcher conducting the evaluation. Such confusion results from the lack of theoretical underpinnings of CM practice, con model frameworks, or standard definitions of the variables examined (Tahan, 2003).

Designing a study that evaluates the interconnectedness and relationships of structure, process(es), and outcomes of CM models is not an easy task. Research related to CM can be approached by evaluation research, experimental or quasi-experimental designs, or qualitative methods. However, because of the challenge of matching, randomizing, or controlling for control and experimental groups, quasi-experimental research is frequently used. CM research may focus on the processes of care (describing and differentiating CM models of care delivery) or on the outcomes of care that frequently include outcomes indicators such as quality and cost measures. Examples may include decreased length of stay, reduced hospitalization or readmission rates, nonroutine visits to providers and emergency departments, and...
consumer satisfaction. However, outcome studies must not dominate the research without attention to the specific structure (context of care delivery) and processes (tasks, activities, and behaviors) of care that may influence evaluation studies of CM practice.

Data collection may be facilitated through the use of patient questionnaires, self-report instruments completed by those providing CM services, or large data sets from health care provider agencies or payers. Issues and considerations related to CM roles and functions must be addressed. Two of the most significant issues related to the implementation of CM roles and research related to CM are educational preparation and ethical competence of the case manager. Because this practice arena continues to be changing rapidly, it has been difficult for educators to clearly define core competencies of the case manager and to be clear about the necessary level of educational preparation. Also, the various models of CM require attention to the structure of care, whom the case manager works for, and the primary purpose of the CM role. These issues impact the research designs and questions, depending on setting, type of case manager, and population managed by case managers.

Another critical issue related to CM that affects practice and research is that of ethics. Because many case managers face competing loyalties and priorities, the question of ensuring ethical competence becomes as important as clinical, intellectual, financial, and administrative competence. Cohen and Cesta (1997) identified six challenges to be addressed in practice and research as the role of case manager continues to evolve: (a) fidelity to the unique needs of individual patients, (b) competing loyalties, (c) resolving role conflicts, (d) owning responsibilities to underserved populations, (e) identifying personal biases, and (f) balancing care for others with appropriate self-care. Additional important ethical issues are consumer advocacy, balancing access to care and services with cost-effectiveness, and ensuring that consumers’ rights and safety are protected.

**Case Study as a Method of Research**

There are many references to case study in the literature, but there is little agreement about what a case study actually is. Case study is described by some as a research method (Yin, R., 1989), a data collection method, and a reporting method (Lincoln & Guba, 1985). Others argue that “case study is not a methodologic choice, but a choice of object to be studied . . . case study is defined by interest in individual cases, not by methods of inquiry” (Stake, 1994, p. 236).

Thirty years ago case study was a popular design for nursing research. Today it is used less frequently in nursing because of the development of more sophisticated methods of research. Disciplines such as nursing, medicine, psychology, sociology, anthropology, ethics, and history frequently use case study as a teaching method. Used as a research method, case study can be quantitative; but because of the narrative nature of the case study, it is often used as a qualitative method. Case studies can be as simple as a single, brief case or very complex, examining a large number of variables. It is also used for hypothesis testing and theory generation.

Generally, case study is defined as an intensive systematic study of an entity or entities with definable boundaries, conducted within the context of the situation and examining in-depth data about the background, environmental characteristics, culture, and interactions (Bromley, 1986). Used as a research method, case study can be exploratory, descriptive, interpretive, experimental, or explanatory. The level of analysis also varies from factual or interpretive to evaluative, with the unit of analysis a single person, family, community, or institution.

Case studies must be conducted within the context of the individual or group of individuals because beliefs and values are an integral element in defining and influencing the behavior and experience of people. To determine if the conclusions of a case study can be applied to other situations, the case-in-context must be delineated. Another charac-
characteristic of case studies is that they are present-oriented. Even though historical data about the entity being studied is included in the research, the study focus is on the present.

One purpose of case study is to expand the understanding of phenomena about which little is known. The data then can be used to formulate hypotheses and plan larger studies. Other purposes of case study include theory testing, description, and explanation. For example, the intensive analysis involved in case study is appropriate to answer questions of explanation, such as why subjects think or behave in certain ways. The case study approach also can be used when a problem has been identified and a solution needs to be found.

The research process for case study design is similar to techniques used in other designs. First, the purpose and the research questions are developed. Questions of what, how, and why are appropriate for case study designs. A theoretical framework may be used to guide the case study. This helps identify assumptions that the researcher may have about the phenomenon at the beginning of the study.

At the outset of the study the unit of analysis must be clearly delineated. The unit of analysis can be an individual, family, organization, or event. Clearly identifying the unit of analysis has implications for data collection and the study protocol. The protocol should list how subjects will be recruited, what constitutes data (documents, letters, interviews, field observation, etc.), what resources will be needed, and a tentative time line for data collection. The protocol may need to be modified as the study progresses and problems emerge. The protocol also identifies a plan for data analysis and reporting the data.

There are two basic designs in case study research. The first is the single-case design, which is used when a case represents a typical, extreme, critical, unique, or revelatory case. Multiple-case designs draw inferences and interpretations from a group of cases. When the purpose of the study is theory generation, multiple-case design is appropriate. Multiple-case designs also are useful to add depth to explanatory and descriptive studies.

Data for case study can be quantitative or qualitative and often include both in the same study. To improve the rigor of the study, three principles of data collection are employed: (a) multiple sources of data are used; (b) a case study base is developed using field notes, audio- or videotapes, logs, documents, and narratives; and (c) an audit trail is evident whereby the reader can follow the researcher’s process from question to conclusion (Lincoln & Guba, 1985).

Data analysis in case study is not well developed. Methods for analyzing qualitative data include content analysis, analytic induction, constant comparison, and phenomenological analysis. “Unlike statistical analysis, there are few fixed formulas [for data analysis] . . . much depends on an investigator’s own style or rigorous thinking . . . and careful consideration of alternative interpretations” (Yin, R., 1989, p. 105). Methods for analyzing quantitative data are similar to those in any quantitative study and would depend on the research questions.

Case study reports are presented in a variety of ways, from formal written narratives to creative montages of photographs, videotape, and arts and craft work. Most case study reports in nursing, however, are formal written narratives. The written product of case study is often artistic in its composition. There are no rules or standardized ways to write a report, but most case studies include an explanation of the problem or issue and a detailed description of the context and processes surrounding the phenomenon under investigation. A discussion of the results is also included in the report, which can contain inferences about how these results fit with the existing literature and practice implications.

The standard measures of reliability and validity apply to case studies that are quantitative. When a qualitative study meets the criteria for credibility, transferability, dependability, and confirmability, it is considered to be trustworthy. Credibility of the interpretations is supported by techniques such as triangulation of data collection methods,
negative case analysis, and checking the interpretation with the participants themselves. Transferability (or fittingness) is an indication of whether the findings or conclusions of the study fit in other contexts and fit with the existing literature. When another person is able to follow the researcher’s audit trail or the process and procedures of the inquiry, then the study is considered to be dependable. Confirmability is achieved when the results, conclusions, and recommendations are supported in the data and the audit trail is evident.

Conducting case studies requires a researcher who is flexible and comfortable with ambiguity. It is essential that the investigator be open to the idea that there is more than one “truth.” It is necessary for the researcher to be aware of his or her own assumptions, preconceived ideas and values, and of how these impact data collection and analysis.

Case studies are essential to nursing because they are an excellent way to study phenomena within the context in which they occur. Because nurses believe in the uniqueness of human beings, case study is a method to capture this uniqueness and afford a way to gain knowledge about human interaction and behavior as it is situated within time and culture.

Debera Jane Thomas

Causal Modeling

Causal modeling refers to a class of theoretical and methodological techniques for examining cause-and-effect relationships, generally with nonexperimental data. Path analysis, structural equation modeling, covariance structure modeling, and LISREL modeling have slightly different meanings but often are used interchangeably with the term causal modeling. Path analysis usually refers to a model that contains observed variables rather than latent (unobserved) variables and is analyzed with multiple regression procedures. The other three terms generally refer to models with latent variables with multiple empirical indicators that are analyzed with iterative programs such as LISREL or EQS. A common misconception is that these models can be used to establish causality with nonexperimental data; however, statistical techniques cannot overcome restrictions imposed by the study’s design. Nonexperimental data provide weak evidence of causality regardless of the analysis techniques applied.

A causal model is composed of latent concepts and the hypothesized relationships among those concepts. The researcher constructs this model a priori based on theoretical or research evidence for the direction and sign of the proposed effects. Although the model can be based on the observed correlations in the sample, this practice is not recommended. Empirically derived models capitalize on sample variations and often contain paths that are not theoretically defensible; findings from empirically constructed models should not be interpreted without replication in another sample.

Most causal models contain two or more stages; they have independent variables, one or more mediating variables, and the final outcome variables. Because the mediating variables act as both independent and dependent variables, the terms exogenous and endogenous are used to describe the latent variables. Exogenous variables are those whose causes are not represented in the model; the causes of the endogenous variables are represented in the model.

Causal models contain two different structures. The measurement model includes the latent variables, their empirical indicators (observed variables), and associated error variances. The measurement model is based on the factor analysis model. A respondent’s position on the latent variables is considered to cause the observed responses on the empirical indicators, so arrows point from the latent variable to the empirical indicator. The part of the indicator that cannot be explained by the latent variable is the error variance generally due to measurement.

The structural model specifies the relationships among the latent concepts and is based on the regression model. Each of the endoge-
nous variables has an associated explained variance, similar to $R^2$ in multiple regression. The paths between latent variables represent hypotheses about the relationship between the variables. The multistage nature of causal models allows the researcher to divide the total effects of one latent variable on another into direct and indirect effects. Direct effects represent one latent variable’s influence on another that is not transmitted through a third latent variable. Indirect effects are the effects of one latent variable that are transmitted through one or more mediating latent variables. Each latent variable can have many indirect effects but only one direct effect on another latent variable.

Causal models can be either recursive or nonrecursive. Recursive models have arrows that point in the same direction; there are no feedback loops or reciprocal causation paths. Nonrecursive models contain one or more feedback loops or reciprocal causation paths. Feedback loops can exist between latent concepts or error terms.

An important issue for nonrecursive models is identification status. Identification status refers to the amount of information (variances and covariances) available, compared to the number of parameters that are to be estimated. If the amount of information equals the number of parameters to be estimated, the model is “just identified.” If the amount of information exceeds the number of parameters to be estimated, the model is “overidentified.” In both cases, a unique solution for the parameters can be found. With the use of standard conventions, recursive models are almost always overidentified. When the amount of information is less than the number of parameters to be estimated, the model is “underidentified” or “unidentified,” and a unique solution is not possible. Nonrecursive models are underidentified unless instrumental latent variables (a latent variable for each path that has a direct effect on one of the two latent variables in the reciprocal causation relationship but only an indirect effect on the other latent variable) can be specified.

Causal models can be analyzed with standard multiple regression procedures or structural equation analysis programs, such as LISREL or EQS (see “Structural Equation Modeling”). Multiple regression is appropriate when each concept is measured with only one empirical indicator. Path coefficients (standardized regression coefficients, or $\beta$s) are estimated by regressing each endogenous variable on the variables that are hypothesized to have a direct effect on it. Fit of the model is calculated by comparing total possible explained variance for the just identified model with the total explained variance of the proposed overidentified model (Pedhazur, 1982). Data requirements for path analysis are the same as those for multiple regression: (a) interval or near-interval data for the dependent measure; (b) interval, near-interval, or dummy-, effect-, or orthogonally coded categorical data for the independent measures; and (c) 5 to 10 cases per independent variable. Assumptions of multiple regression must be met.

In summary, causal modeling techniques provide a way to more fully represent the complexities of the phenomenon, to test theoretical models specifying causal flow, and to separate the effects of one variable on another into direct and indirect effects. Although causal modeling cannot be used to establish causality, it provides information on the strength and direction of the hypothesized effects. Thus, causal modeling enables investigators to explore the process by which one variable might affect another and to identify possible points for intervention.

**JoAnne M. Youngblut**

**Cerebral Ischemia**

Cerebral ischemia is defined as inadequate blood flow to the brain to meet metabolic and nutritive needs of the brain tissue (Edvinsson, MacKenzie, & McCulloch, 1993). The severity of ischemia depends on the severity and duration of the reduction in cerebral blood flow (CBF) adversely affecting various func-
tional and metabolic processes as CBF decreases (Heiss & Rosner, 1983). The brain stores no oxygen and little glucose, and is thus dependent on a constant supply of oxygen and glucose from the blood.

Cerebral ischemia may be focal or global, depending on whether a part of the brain or the entire brain is ischemic. Focal cerebral ischemia occurs when a major cerebral artery becomes occluded or constricted from arterial spasm, emboli, or thrombosis. Global ischemia occurs from an overall decrease in CBF, for example after cardiac arrest. Global oxygen deprivation of the brain may also occur as a result of asphyxia, anemia, hypoxia, or near drowning. Nurses are responsible for identifying individuals at risk for focal or global cerebral ischemia. Nursing assessment of early symptoms of cerebral ischemia can allow for intervention and minimize the probability of permanent damage.

Spielmeyer first described “ischemic cell change” in 1922, (Spielmeyer, 1922), and Brierley presented the time course for neuronal change during a low flow state and provided evidence of the threshold for cerebral anoxic ischemia (Brierley, Brown, & Meldrum, 1971; Chiang, Kowada, Ames, Wright, & Majno, 1968). He observed and described in further detail the process of ischemic cell change (Brierley, 1973). With the initial decrease in blood flow, oxygen, and/or glucose to the brain, the contour of cells, the nucleus, and nucleolus remain unchanged. There is disruption of mitochondria and an increase in the astrocyte processes surrounding the neurons. As the ischemic process continues, there is neuronal shrinkage, changes within organelles in the cytoplasm, and the cell is further surrounded by astrocytic processes. As the nucleus continues to shrink and the cytoplasm becomes more amorphous, incrustations begin to form. Finally, as the incrustations disappear and the cytoplasm becomes increasingly homogeneous, astrocytes proliferate and lipid phagocytes form in preparation for removal of the now “ghost cell.” As the flow lowers and the mitochondria fail, energy sources change from an aerobic to an anaerobic pathway, with a corresponding increase in lactic acid production, metabolic derangement, and loss of ion and transmitter homeostasis. If this process continues unchecked, there will be inadequate energy to maintain the sodium potassium pump across the cell membrane (Jones et al., 1981). Researchers have increasingly detailed the process in an attempt to identify and improve the brain’s tolerance to recover from an ischemic challenge.

Servetus, in the 16th century, first presented the idea that blood flowed through the lungs; he was burned at the stake for his efforts. William Harvey (1578–1657) supported Servetus’ findings by describing the flow of blood through the body. Nearly 200 years later, oxygen was discovered by Priestley, and Steele and Lavoisier made the connection that oxygen contributed to the production of “heat” or energy. Adolf Fick, in 1870, defined blood flow as the quantity of a substance, such as oxygen, that is taken up by a specific organ over a unit of time (Fick, 1870; Obrist, 2001). The first “measures” of CBF involved direct and indirect observations of intracranial vessels (Roy & Sherrington, 1890). It was not until 1945, when Kety and Schmidt applied the Fick principle to diffusible gas, nitrous oxide, that one was able to estimate cerebral blood flow (Kety, 1950; Kety & Schmidt, 1948).

Kety was the first person to measure global CBF in humans using vascular transit time. The technique was modified by Lassen and Ingvar when Xe-133, a highly diffusible gas, was injected into the internal carotid artery (Lassen & Ingvar, 1972). Multiple extracranial detectors traced the transit time of the radiation from the Xe-133 as it flowed through the brain, providing focal CBF measures. Diffusible tracers are now combined with tomographic reconstruction such as computed tomography, PET, or magnetic resonance imaging (MRI), to calculate vascular transit time. For example, stable xenon-enhanced CT scanning measures CBF via conventional scanner interfaced with computer hardware and software and directs the delivery of xenon gas transit throughout brain regions. Serial CT scans are conducted during
the inhalation of a gas mixture containing 30% xenon, 30% to 60% oxygen, and room air. The serial images are stored and regional flows are calculated.

CBF is also estimated from measurement of cerebral blood volume. One way to estimate cerebral blood volume is using a gradient-echo planar system on MR systems. The determination and prediction of cerebral ischemia is only as good as the technique used to detect low flow states. Absolute CBF of the cerebral vessels combined with a marker of tissue response would provide the ultimate information in the evaluation of cerebral ischemia. However, the perfect technique is not yet available.

Future directions in cerebral ischemia involve giving a bolus of paramagnetic contrast material (i.e., gadolinium). The contrast media is traced and the amount of signal attenuation is proportional to the cerebral blood volume. With a series of multi-slice measurements, one may generate a time-density curve, and the area under the curve provides an index of relative blood volume (Grandin, 2003). Similar techniques are adapted to CT scanners with the capability for rapid sequential scanning.

The threshold for irreversible brain damage from cerebral ischemia is generally defined as below 20 ml/100g of tissue/minute (Jones et al., 1981; Yonas, Sekhar, Johnson, & Gur, 1989). CBF below this level alters the functioning of the mitochondria to produce energy. Studies show that the threshold for irreversible brain damage are volume and time dependent. Global brain ischemia that is sustained for longer than 4 to 5 minutes will result in permanent brain damage (Brierley, Meldrum, & Brown, 1973). The majority of studies show that above 23 ml/100g/minute, little impairment occurs; however, below 20 ml/100g/minute symptoms of neurologic impairment develop (Branston, Symon, Crockard, & Pasztor, 1974). Below 18–20 ml/100g/minute evidence of diminished electrical activity by evoked potentials or electroencephalogram occurs (Sundt, Sharbrough, Anderson, & Michenfelder, 1974). Below 15 ml/100g/minute is considered to be a threshold for synaptic transmission (Astrup, Siesjo, & Symon, 1981). In addition, factors including temperature, drug administration, and individual variation contribute to the complexity of defining this threshold. Recent work focuses on methods that “noninvasively” detect, track changes in, or treat cerebral ischemia.

Child Abuse and Neglect

Child abuse and neglect, often referred to by the broader term “child maltreatment,” are recognized as major social and mental health problems throughout the world (Bonner, Logue, Kaufman, & Niec, 2001). In the United States, child maltreatment has been identified as a national emergency and one of our nation’s “most compelling problems” (U.S. Department of Health and Human Services, 1998). All forms of child maltreatment pose major threats to the integrity of families and society at large and are known to be associated with a variety of mental health concerns as well as criminal activity (Gelles & Cornell, 1990; Hobbs, Hanks, & Wynne, 1999).

Child maltreatment can be differentiated in terms of acts of commission (i.e., physical abuse, sexual abuse, and/or psychological maltreatment) and caregiver omission (i.e., abandonment, neglect) (Cowen, 1999). “Child abuse” is legally defined as “Any form of cruelty to a child’s physical, moral or mental well-being” (Nolan & Nolan-Haley,
Examples of child abuse include overt physical abuse such as hitting, grabbing, burning, and shaking as well as emotional abuse that may be more subtle and difficult to detect. While reports of physical abuse still dominate the literature, there has been increasing interest in other acts of commission, particularly sexual abuse. However, to focus on sexual abuse alone, as is the recent trend, may be limiting as other important experiences commonly co-occur with sexual abuse that need identification and intervention (Dong, Anda, Dube, Giles, & Felitti, 2003).

Child emotional abuse and neglect are very common but have traditionally been, and continue to be, understudied, perhaps because professionals have difficulty recognizing and defining these terms. Generally speaking, child emotional abuse and neglect refer to a caregiver-child relationship that is characterized by patterns of harmful but non-physical interactions with the child. Unlike other types of abuse that are performed in secret, this emotional maltreatment is often publicly demonstrated (Glaser, 2002). Children who frequently witness family violence and abuse are also described as psychologically maltreated (Dong et al., 2003). “Neglect” has been defined as the “chronic failure of a parent or caretaker to provide children under 18 with basic needs such as food, clothing, shelter, medical care, educational opportunity, protection, and supervision” (Bonner et al., 2001, p. 1016). Currently efforts are underway to further define the concepts of emotional abuse and neglect (Glaser, 2002) so that important research questions related to the prevalence, risk factors, and long-term effects of this type of maltreatment can be answered.

Different forms of child abuse and neglect frequently coexist. For example, Clauseen and Crittenden (1991) found that 90% of children who had been physically abused and neglected had also been psychologically maltreated. Another important factor worthy of further investigation is the finding that psychological maltreatment was more strongly predictive of impairment in child development than the severity of physical abuse (Glaser, 2002). Researchers are faced with the challenge of clearly defining each type of maltreatment so it can be studied separately, while also evaluating the potential influence of one type of maltreatment on another. For example, in longitudinal studies of physical abuse, mechanisms are needed to determine, if possible, sequelae of physical abuse versus coexisting emotional abuse and neglect. Other related questions include whether coexistence of two or more types of maltreatment more adversely affect child prognosis than a single type of maltreatment, and whether current treatment modalities should be modified to address maltreatment coexistence.

Male victims and perpetrators are also underrepresented in the literature, perhaps because females are traditionally more likely to volunteer for research studies or because male child abuse victims are less likely to report. Gender differences are found in many areas of psychology and child-related research. For example, literature suggests that females are more likely to be victims of child sexual abuse, whereas males are more likely to suffer more physical abuse (Behl, Conyngham, & May, 2003). The first step in addressing this concern and other gender issues is to obtain accurate gender-specific prevalence data. Then efforts can be directed toward determining if child and/or perpetrator gender constitute risk factors and how those findings might be incorporated into prevention programs and intervention development.

The relationship between the caregiver and child is “nested” within the family that is, in turn, significantly influenced by each family member’s personal belief system and history as well as the social environment and culture. Yet, to date, the effect and interaction of these personal, social, and cultural influences have not been adequately studied. Ferrari (2002) provided a useful model for studying the predictive effect of cultural factors on parenting behaviors and definitions of maltreatment in three ethnic groups. Noting how the commonly used term “ethnicity” is complex and vague, the author defined three con-
cepts associated with ethnicity (maschismo, familism, valuing children) and defined them for study. Measuring these components, the author also examined the possibility of intergenerational transmission of abuse among cultures. This is another area warranting continued research.

Child maltreatment is clearly a specific and challenging area of inquiry that is in need of further research to develop and empirically validate effective diagnostic, treatment, and prevention programs for all forms of child maltreatment. Since the publication of Kempe, Silverman, Steele Droegenmuller, and Silver’s seminal article over 4 decades ago (1962), there have been promising trends in the development of relevant multidisciplinary theoretical models and increased focus for child maltreatment research. However, several important knowledge gaps remain. These include the need for (a) more specificity and differentiation regarding the type of maltreatment that is studied and reported, (b) more adequate conceptualization and research in the understudied areas of child emotional abuse and neglect, (c) examination of the coexistence and interaction of different forms of maltreatment, (d) more information regarding both male victims and perpetrators, and (e) examination of cultural influences upon child-rearing practices and definitions of maltreatment.

In addition to focusing on the previously discussed knowledge gaps, future research must also address important methodological issues. These include developing and using more standardized measures for identifying and differentiating forms of child maltreatment, measuring outcomes through recidivism data, conducting longitudinal studies to evaluate the children’s health, academic performance, and psychological adjustment, and developing culturally sensitive diagnostic and evaluative measures to ensure accurate representation and assessment of ethnically diverse children and families. Nurses are educationally, clinically, and ethically well positioned to lead the way in advancing this important area of science.

Jennifer Elder

Child Delinquents

Child delinquents (juveniles between the ages of 7 and 12) constitute a population not usually recognized as needing services to prevent them from becoming tomorrow’s serious, violent, and chronic juvenile offenders. The most violent behaviors demonstrated by delinquent youth are homicide and sex offenses. Although the number of cases involving offenses included in the FBI’s Violent Crime Index (criminal homicide, forcible rape, robbery, and aggravated assault) decreased by 8% between 1997 and 1998 (FBI, 1999), for children under the age of 12, child arrests for violent crimes increased by 45%. Overall, child delinquents arrested in 1997 were more likely to be charged with a violent crime, a weapons offense, or a drug law violation than a property offense (Snyder, 2001). A larger proportion of these young child delinquents, as compared with later onset delinquents, become serious, violent, and chronic offenders (Loeber, Farrington, & Petechuk, 2003).

To treat youth who have committed some violent act, an understanding of violence in the lives of children is necessary. Violent behavior has specific risk factors and more common forms of violence that vary by gender, age and race/ethnicity. Risk factors for violence include 2 or more hours of media violence daily, history of physical fighting, harsh spanking as a form of discipline, carrying weapons, exposure to domestic violence, history of suicidal attempts, bullying, fear of attack at school, crime victimization, maltreatment, and sexual abuse (Brown & Bzos-tek, 2003).

For infants and young children, the primary locus of violence is in the home. Health consequences of abuse include permanent brain damage from shaken baby syndrome
and homicide. The perpetrators are almost always a parent or other relative. The homicide rate for infants is higher than for any age group up to age 17 (Gells, 2002). Surviving toddlers exposed to domestic violence experience depression and psychological distress and are more likely than other children to be physically violent (Gells, 2003). Media violence and violence in the schools, which includes bullying and physical fighting, are more common sources of violence in middle childhood. Data indicate that chances of being bullied in school are higher for 6th graders than for any other group up to grade 12 (DeVoe et al., 2002). For teens, homicide and suicide increase rapidly and the risk of being a victim of sexual assault, aggravated assault, and robbery also increases (Minino, Arias, Kochanek, Murphy, & Smith, 2002).

Differences in violence experiences by race and ethnicity and by type of violence also exist. These factors reflect social factors related to family structure, income, education level, and neighborhood characteristics. Black infants are four times as likely to be murdered than Hispanic or white infants (Overpeck, Brenner, Trumble, Trifiletti, & Berendes, 1998). Black teens are twice as likely to be murdered as Hispanic teens and about 12 times as likely to be murdered as white teens (Anderson, 2002). Black youth are more likely to have been abused (U.S. Department of Health and Human Services, 2003a) and more likely to report being victims of aggravated assault and robbery than their Hispanic or white counterparts (Hawkins et al., 2000).

As might be expected, there are variations in the types of violence experienced by males and females. Females at any age are more likely to be victims of sexual abuse and rape (Finkelhor & Hashima, 2001). Males under the age of 8 are more likely to be victims of physical abuse in the home, a trend that changes to female teens between ages 12 to 17. Both male and female students are equally likely to report dating violence, but females are more likely to suffer significant injury from such violence (Hawkins et al., 2000).

A public health strategy used for public health risks should be applied to preventing serious and violent juvenile delinquency, with a focus on targeting early risk factors associated with persistent disruptive child behavior. Because it is not possible to accurately predict which children will progress from serious problem behaviors to delinquency (Loeb, Farrington, & Petechuk, 2003), it is better to address problem behaviors before they become more serious. Interventions delivered early are most effective to prevent child delinquency, whether these interventions focus on the individual child, the home and family, or the school and community.

The most promising prevention programs for child delinquency focus on several risk domains at a time (Herrenkohl, Hawkins, Chung, Hill, & Battin-Pearson, 2001) in an effort to shift the balance toward a greater number of protective domains. To achieve this effect, multisystemic programs designed to target the child, family, school, peers, and the community have proven most effective. These include parent training and family therapy in combination with classroom and behavior management programs.

The first step toward obtaining effective treatment is to provide families with access to mental health and other services. The delay between symptom onset and help seeking contributes to poor behavioral health outcomes. Awareness and use of culturally congruent approaches reduce the challenges to implementing interventions. Interventions must deal with the multiple problems stemming from generations of dysfunctional families. To be effective, these public health interventions must address both the social conditions and institutions that impact family functioning.

While the very early detection of emotional and behavior problems is a public health goal, results have been limited. Juvenile justice systems continue to be dumping grounds for children who are inadequately
served by other institutions (Kupperstein, 1971; Office of Juvenile Justice and Delinquency Prevention, 1995).

**Child Lead Exposure Effects**

Childhood lead poisoning is recognized as the most important preventable pediatric environmental health problem in the United States. The adverse health effects of lead exposure in early childhood are well documented. Lead poisoning is defined as exposure to environmental lead that results in whole blood lead concentrations \( \geq 10 \mu g/dL \) (micrograms/deciliter) (U.S. Centers for Disease Control and Prevention, 1992). Exposure to environmental lead begins in the prenatal period when physiologic stress mobilizes lead from its storage in maternal bone into the blood, where it easily crosses the placenta and is deposited in fetal tissue. Depending on the level of lead present in the environment, the exposure can continue as infants and children develop. Absorption of lead is dependent on age and nutritional status; young children and those who have diets high in fats are most susceptible. Lead is most commonly ingested through exposure to lead-contaminated paint and the resulting dust, soil, and paint chips. Once ingested, lead is distributed in the blood and eventually is deposited in bone and teeth.

Whole blood lead levels (BLL) greater than 10 \( \mu g/dL \) put children at risk for developing a variety of health problems. At high level exposures \( \text{BLL} > 20 \mu g/dL \), damage to the nervous, hematopoietic, endocrine, and renal systems can occur. At lower level exposures, these health problems include altered cognitive and neurobehavioral processes. Researchers have suggested that some of these effects may be seen in children with BLL as low as 5 \( \mu g/dL \) (Lamphear, Deitrich, Auinger, & Cox, 2000; Landrigan, 2000; Needleman & Landrigan, 2004).

Direct results of primary and secondary efforts at prevention of lead toxicity have significantly reduced BLL among young U.S. children within the last 30 years. The major sources of environmental lead exposure have been greatly decreased through the elimination of lead in gasoline, the banning of lead-based paint for residential use, and the elimination of lead solder from food and beverage cans. Despite the success of these efforts, lead poisoning continues to occur in about 5% of children 5 years of age and younger, and much higher levels of lead poisoning have consistently been documented among low-income, urban, and African-American children living in older housing in the Midwest and Northeast (Pirkle et al., 1994).

Childhood lead poisoning was first described in the late 1800s by Gibson and colleagues (Gibson, Love, Hendle, Bancroft, & Turner, 1892), who encountered a case of peripheral paralysis in a young child and described the similarities of the case to that of chronic lead poisoning in adults. Gibson speculated that the source of the lead poisoning was paint, and he described the long-lasting effects of the exposure. Unfortunately, most of Gibson’s observations were ignored, as the prevailing view of the time was that once a child survived lead poisoning, there were no lasting effects. It was not until the early 1970s that cross-sectional and longitudinal studies of low-level lead exposure were conducted.

These early studies of lead exposure involved comparisons of a lead-exposed group and a comparison group on intelligence test measures. As knowledge accumulated and research strategies became more sophisticated, researchers began to assess the influence of covariates, such as parental intelligence, socioeconomic status, and parental education level (Gatsonis & Needleman, 1992). Though conflicting results were common, lead exposure and neurobehavioral deficits remained significantly associated.

Although few nurse researchers have investigated the effects of low-level lead exposure on the neurobehavioral development of children, low-level lead exposure certainly falls within the realm of the phenomena of concern to the discipline. Lead exposure is unquestionably of clinical significance; until all lead is removed from the environment,
clinicians will be faced both with screening children for lead exposure and treating the effects of this preventable public health problem. The deleterious effects of lead exposure have been known for a hundred years; however, progress in prevention has been slow. Some of the reasons for this are related to society’s indifference to problems of poor and vulnerable populations. Until recently, lead exposure was thought to be a problem only for poor inner-city minority populations, and parenting practices were thought to contribute to the problem. Also, many considered the elimination of lead in gasoline and paint sufficient to eradicate the problem of lead poisoning. The Centers for Disease Control (CDC), in 1992, issued comprehensive guidelines for preventing and treating the problem of childhood lead exposure. These guidelines were issued after the CDC accumulated large amounts of scientific evidence from animal and human studies that supported the hypothesis that the deleterious effects of lead exposure occurred at levels previously thought to be harmless.

The earliest studies of lead poisoning were conducted on children who had BLL ≥ 60 µg/dL and were symptomatic. During the 1970s, researchers focused on asymptomatic children who had BLL in the 40–50 µg/dL. Conclusions about the effects of lead exposure were difficult to make from these studies because of their methodological shortcomings. In 1979, researchers conducted a major investigation of large cohorts of asymptomatic children and used shed deciduous teeth rather than BLL to measure lead exposure (Needleman et al., 1979). These researchers controlled for major confounding variables and concluded that BLL was associated with lower IQ, decreased attention span, and poor speech and language skills in the children studied. Long-term follow-up of these children led the researchers to conclude that the effects of low-level lead exposure (equivalent to BLL ≤ 25 µg/dL) persisted throughout young adulthood; failure to complete high school, reading disabilities, and delinquency were behaviors exhibited by children who had elevated BLL at age 7 (Needleman, Riess, Tobin, Biesecker, & Greenhouse, 1996).

Scientists criticized the work done by Needleman and his colleagues (1979) because the study lacked baseline data about early cognitive abilities of the subjects. For instance, it was proposed that the affected children may have had neurological deficits at birth that would lead them to certain behaviors (increased mouthing) that predisposed them to be lead exposed. To address this issue, subsequent studies were designed to follow large numbers of subjects from birth through early school age and major outcomes (e.g., IQ level, motor development, cognitive development) were measured, while large numbers of covariates were controlled. Numerous investigators using comparable designs reported similar findings; thus a solid consensus among investigators began to emerge that lead was toxic at extremely low concentrations. Research with lead-exposed primates strengthened the consensus, and the toxic level of lead was redefined by the CDC as a BLL ≤ 10 µg/dL.

Researchers continue to study the effects of low-level lead exposure on the development of children. While these efforts are worthwhile, future efforts could focus on (a) identifying mediators of lead exposure effects, (b) investigating the effects of lowering blood lead levels (chelation) on the neurobehavioral outcomes of children, (c) investigating the synergistic effects of other environmental exposures on neurocognitive development, and (d) investigating the effects of providing educational materials about reducing environmental lead exposure to families of low-level exposed children. Any efforts that address the primary prevention of the problem would help to protect thousands of children against the long-lasting effects of lead exposure.

HEIDI V. KROWCHUK

Childbirth Education

Childbirth education focuses on the learning needs of expectant families and covers a broad range of topics from the physical care needs of expectant women to the psycho-
socio-cultural needs of the new family. The goal of childbirth education is to assist families in acquiring the knowledge and skills necessary to achieve a healthy transition through the childbearing process and initial phases of parenthood. Classes range from courses designed for those considering pregnancy through courses dealing with infant care needs and early parenting issues.

Nurses are the professional practitioners who assume the primary responsibility for teaching childbirth education classes within the United States. Nurses are in a unique position to serve as childbirth educators because of their broad base of knowledge including both the behavioral and biological sciences. In addition, nursing’s focus on caring and emphasis on client education enable nurses to guide families toward their childbirth goals with sensitivity using appropriate educational methods. Nurses are the health professionals within the hospital environment who provide the majority of hands-on care and labor support. Thus, nurses are in a strategic position to act as patient advocates and to provide anticipatory guidance regarding the decision making that is often required during a birth within an increasingly complex health care system.

Formal childbirth education in the United States began with the classes in hygiene, nutrition, and baby care provided by the American Red Cross. During the early part of the 20th century, classes on childbirth and family care became increasingly available to American women. However, the classes provided little information regarding coping with the stresses related to labor. With the shift from the female controlled, social model of childbirth to the medical illness model of childbirth that occurred during the first half of the 20th century, the scientific community paid increasing attention to the control of pain during labor. Thus, classes initially focused on management of pain related to childbirth (Ondeck, 2000).

Contemporary childbirth education dates back to the work of Dick-Read, Lamaze, and Bradley. The notion of pain during labor as secondary to fear and the use of psychological conditioning methods to reduce both the fear and the pain became the basis for “natural childbirth.” While philosophical differences still exist among childbirth education methods, common aspects of all programs include education on: (a) the physical process of labor, (b) physical and psychological conditioning methods, and (c) supportive assistance during the birthing process.

A review of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) for the years 1997–2003 reveals 173 published research-based articles listed under the keywords “childbirth education.” A wide variety of topics are covered including: (a) postpartum skills such as parenting and breastfeeding; (b) classes for special populations such as grandparents, siblings, fathers, teens, disabled persons, and parenthood couples; (c) effects of mother-friendly and baby-friendly hospital protocols; (d) self-care measures during pregnancy and labor such as nutrition, fitness, pain control, breathing, and relaxation techniques; (e) effects of medical interventions such as epidural anesthesia, analgesics, and cesarean deliveries; (f) caregiver effects focusing on the outcomes achieved by midwives and doulas; and (g) childbirth educator competencies and teaching methods.

Expectant fathers are currently the focus of many research efforts. Greenhalgh, Slade, and Spiby (2000) reported that fathers attending childbirth education classes who wished to avoid information perceived as threatening had significantly less fulfilling childbirth experiences than similar fathers who did not attend classes. This finding questions whether traditional mother-focused childbirth education classes meet the varying needs of fathers, some of whom are eager to participate in the childbirth experience and others who are reluctant to do so. Diemer’s (1997) quasi-experimental study comparing traditional prenatal classes with classes using father-focused discussion groups found a decrease in psychological symptoms and greater improvement in spousal relationships for men attending father-focused groups. The need for attention to the special interests of fathers was also supported by the work of
McElligott (2001) and Smith (1999) who reported men’s need for information about their unique contribution to the childbearing experience.

Prenatal education related to breast-feeding continues to be a major focus of research. Cox and Turnbull (1998) reported that attending a breast-feeding workshop significantly increased both women’s confidence level and the length of time the women breastfed their infants. Britton’s (1998) qualitative study of the sources used by women for breast-feeding information identified discord between women’s expectations of breast-feeding and the reality of the experience. This study underscored the continuing need for prenatal breast-feeding education courses and development of peer-support and self-help groups.

A third area receiving continuing attention concerns childbirth education methods and content. The need for use of adult learning principles and identification of specific learner needs is continually reinforced. In addition, extension of the traditional childbirth education program to include gender-specific information on early parenting skills is supported (Callaghan, Jones, & Leonard, 2001; Schmied, Myors, Wills, & Cook, 2002).

Lamaze International (2002) presented a position paper for the 21st century which identifies the need to reshape the birth environment to be supportive of women’s confidence, control, and comfort as well as maintaining rewarding family interactions through encouragement and support. With the advent of the mother-friendly and baby-friendly initiatives, additional research is needed to identify educational needs of both consumers and practitioners that will support cost-effective, collaborative policies and high levels of consumer satisfaction. In addition, continued examination of the traditional course content in light of the needs of fathers and special populations is required. Use of the internet as a media for childbirth education has not been reported in the literature. Online courses and support groups may provide a fruitful avenue for childbirth educators wishing to provide high-quality, yet convenient, classes for today’s busy families.

**Bobbe Ann Gray**

**Children Exposed to Intimate Partner Violence**

Given the magnitude of this problem, there is a growing awareness of the potential harm to children exposed to violence within families. Following a 2-year analysis of violence and children, the American Academy of Pediatrics issued a policy statement indicating that the U.S. is experiencing an epidemic of children exposed to violence. Despite recognition that domestic violence seriously threatens the health and emotional well-being of children, only recently have researchers focused on children affected by domestic violence. There has been intense advocacy and legislative action to combat violence against women; however serious concerns about their children did not appear in the research literature until recently (Mohr, Lutz, Fantuzzo, & Perry, 2000). Children who live in homes where partner violence occurs are at risk for developing a range of emotional, physical, and behavioral symptoms. Research suggested that they are at serious risk of developing a host of aggressive, antisocial, or fearful and inhibited behaviors and deficits in social skills (Farrell & Bruce, 1997). They are reported to have impaired concentration and difficulties in school performance (Schwab-Stone et al., 1999; Delaney-Black et al., 2002) and higher levels of alcohol abuse as adults (Dube, Anda, Felitti, Edwards, & Croft, 2002). They perform overall at lower levels than nonexposed children on a variety of measures of cognitive and motor development (Jaycox et al., 2002). Children who witness domestic violence demonstrated higher levels of depression and anxiety than counterparts in nonviolent homes (Berman et al.; Hurt, Malmud, Brodsky, & Giannetta, 2001; Cuffe et al., 1998; Jaycox et al.). They see violence as an acceptable form of resolving interpersonal conflicts and
they are at risk for potential deviance in future social relationships (Hurt et al.).

Children from families with domestic violence are at risk of suffering physical violence themselves. The link between marital conflict and child maltreatment has received much attention in the past 10 to 15 years. It has been observed that children of battered women are at an increased risk of being abused themselves, with estimates of an overlap between spousal abuse and child abuse ranging from 30% to 60% (Hartley, 2002; Dong et al., 2003).

In addition, child exposure to family violence can be deadly. Dube et al. (2001) examined the relationship between the risk of suicide attempts and adverse childhood experiences and the number of such experiences. The researchers conducted a retrospective cohort study of 17,337 adult health maintenance organization members who attended a primary care clinic in San Diego within a 3-year period (1995–1997). Subjects completed a survey about childhood abuse and household dysfunction, suicide attempts (including age at first attempt), and multiple other health-related issues. The researchers discovered a powerful relationship between adverse childhood experiences and risk of attempted suicide throughout the life span. Alcoholism, depressed affect, and illicit drug use, which are strongly associated with such experiences, appeared to partially mediate this relationship.

Finally, in a landmark intervention study, Stein and a multidisciplinary group of colleagues (2003) evaluated the effectiveness of a collaboratively designed school-based cognitive behavioral group therapy intervention. The 10-session intervention significantly decreased symptoms of posttraumatic stress disorder (PTSD) in students who were exposed to violence and experiencing distress.

There is a dearth of research conducted by nursing scholars on children exposed to violence. Some recent work has been published on the issue of children’s reactions to exposure to family homicide, which may be considered within the context of family or intimate partner violence. Clements and Burgess (2002) conducted interviews with 13 children ages 9 to 11 years during the initial 1 to 3 months after a family homicide and provided insight into themes of bereavement. A major finding in the study was that the witnessing or hearing the news of a family member homicide was a powerful associative factor for childhood PTSD and for complicated bereavement.

In sum, nursing research concerned with victims’ children is scant when compared to what is being studied by psychologists, physicians, and social workers. Findings in all cases comparing children exposed to domestic violence with children from nonviolent homes indicate that this exposure (a) has an adverse impact across a range of child functioning, (b) produces different adverse effects at different ages, (c) increases the risk of child abuse, and (d) is associated with other risk factors such as poverty and parental substance abuse. However, comprehensive reviews of this literature indicate no reliable information about the impact of particular types or frequencies of domestic violence on children or the impact of various degrees of exposure on children’s functioning and across time. Close inspection of the child impact research indicates that it does not provide a substantial basis to inform strategic national policies and systemic action due to many gaps and inadequacies. Some of these include retrospective analysis, no longitudinal studies unsubstantiated reports of child exposure or the violent episode itself, exclusive use of the CBCL as opposed to instruments that are more domain specific, and others (for more in-depth discussion on shortcomings of this literature, see Mohr, Lutz, Fantuzzo, & Perry, 2000). Yet, without accurate, reliable information about the prevalence and nature of children’s exposure to domestic violence, prevention and intervention efforts cannot be designed for, and public and private resources cannot be appropriately targeted to the affected children.

Effective responses and effective interventions depend on responses to several questions. First, how many children are exposed to domestic violence, and what is the nature of these children’s exposure? Second, how
do these traumatic events uniquely affect the course of healthy development for child victims? Third, what factors increase risk for, or provide protection against, the potentially deleterious effects of child exposure to domestic violence? Fourth, what types of interventions can mitigate these specific negative effects? Responses to these critical questions require a scientifically rigorous research agenda, leading to the development of a trustworthy database.

Nurses are often the first care providers identifying and assessing not only adult victims but their children. Their presence in the area of adult victimology is laudable, but nurse scholars are relatively absent in the discussion surrounding the child victims—as invisible as the children themselves a scant 2 decades ago.

Wanda K. Mohr
Sara Torres

Chronic Conditions in Childhood

There is no one accepted definition of a childhood chronic condition; however, a research consortium on chronic illness in childhood recommended that it be defined on two levels: duration of the condition and impact on the child’s functioning (Perrin et al., 1993). In a definition based on duration, a chronic condition is one that has lasted or is expected to last more than 3 months (Perrin et al.). This definition would include recurring acute conditions (e.g., repeated ear infections) as well as those that are expected from the onset to be long-term (e.g., diabetes). In a definition based on impact on the child, a chronic condition would be one that limits the child’s functioning or leads to the child’s receiving additional medical attention beyond that expected for a child the same age. A recent trend is to address morbidities that are often associated with risk-taking behavior such as alcohol use, substance use, contraceptive use, and being overweight (Brown et al., 1999).

Prevalence estimates for childhood chronic conditions, or the number of children with chronic conditions at any given point in time, vary according to the definition used. Estimates of prevalence range from less than 5% to more than 30% (Newacheck & Taylor, 1992); they tend to be higher when the definition is based on duration and lower when the definition is based on impact on the child’s functioning. In 2001, more than 4 out of 5 children (83%) were rated as having very good or excellent health by their parents; about 8% of school-age children were reported to have their activities limited because of a chronic condition (Federal Interagency Forum on Child and Family Statistics).

Risk factors for health problems have been identified. Boys have more limitations from chronic conditions than do girls. School-age children (ages 5–17 years) are twice as likely to have a chronic condition as preschoolers (under 5 years). Children living in lower-income families are less healthy than children living in families of higher income. There is also a trend for Black and Hispanic families to have poorer health than White, non-Hispanic children. In contrast, White adolescents have the highest rates of substance use such as smoking cigarettes, drinking alcohol, and using marijuana (Brown et al., 1999). There are also changes in the prevalence of health problems experienced by children. For example, pediatric AIDS cases are declining. In contrast, asthma is increasing among all children, with the highest increases in children who are under 4 years (National Center for Health Statistics).

A large amount of research has been carried out to investigate children with chronic conditions. There is an increasing emphasis on assessing the health-related quality of life of these children. This research has established that, compared to the general population peers, children with chronic conditions are at risk for a poorer quality of life related to physical, psychological, social, and academic functioning. Moreover, the families of these children are at increased risk for adjustment problems.

Two major approaches to sample selection are used in research on children with chronic
conditions and their families: noncategorical and categorical. The major assumption behind the noncategorical approach is that there are many commonalities in the experience of families of children with chronic conditions. These researchers generally study samples in which many different chronic conditions are represented. In contrast, researchers using the categorical approach generally study samples that are homogeneous in regard to chronic condition. An example of nursing research using the categorical approach is the research on behavior problems in children with epilepsy (Austin, Dunn, & Huster, 2000). Even though there has been much discussion about which approach is better to use, the current thinking is that the purpose of the research should determine the approach used. In nursing, both approaches are needed to provide important information that will improve nursing care of children with chronic conditions and their families.

In the past decade there has been a strong trend to study chronic illness from the perspective of the person who is chronically ill. Many of these nurse researchers use qualitative methods to learn about the illness experience (Thorne & Patterson, 2000). This focus on the subjective experience is also reflected in a number of scales being developed to measure chronically ill children’s perceptions of the quality of life. Another trend is the increasing focus on interventions to help children cope with a chronic condition. For example, common interventions for children with diabetes include educational programs, psychosocial interventions (e.g., coping skills training, psychotherapy, stress management, and social support groups), and family intervention (Grey, 2000).

Joan K. Austin

Chronic Gastrointestinal Symptoms

Chronic gastrointestinal (GI) symptoms—which include frequent bowel-related abdominal pain, reflux, dyspepsia, constipation, painless diarrhea, and fecal incontinence (Talley et al., 2001)—may be common among the public (Talley et al.), but for the health provider they are also among the most difficult conditions to read and treat. When a chronic gastrointestinal pathology cannot be identified, it is more generally diagnosed as Irritable Bowel Syndrome (IBS) or Functional Bowel Disorder (FBD) (Heitkemper, Jarrett, Caudell, & Bond, 1998).

IBS is a recurrent disorder characterized by chronic abdominal pain, bloating, and altered bowel patterns. It is the most common disorder treated by gastroentrologists (American Gastroenterological Association, 2002; Fass et al., 2001) and is more commonly found among women than men. IBS has also been found to contribute to lowering of economic and other quality-of-life factors. One study showed that 15.4 million people in the United States suffer from IBS regularly, with most missing three times as many work days as those without symptoms (13.4 days vs. 4.9 days), costing employers $1.6 billion in direct costs and another $19.2 billion in indirect costs (American Gastroenterological Association).

Although the etiology of IBS has not been clearly identified, it is thought to be related to such factors as the following: (a) abnormal GI motility, described as high-amplitude propagating contractions or delayed transit of gas; (b) visceral hypersensitivity; (c) enteric infection; (d) autonomic dysfunction; and (e) dysregulation of brain-bowel interactions. In addition, stress and psychological affliction are important psychosocial factors in IBS (American Gastroenterological Association, 2002; Fass et al., 2001); however, these are only partially correlated with symptoms and are not sufficient to explain reports of chronic, recurrent IBS. Although there are several pathophysiologies of IBS based on this etiology, further studies are needed to clarify such findings.

There are multiple potential causes for IBS, and the diagnosis of each case must be based relative to the symptoms (Rome criteria). Symptoms include at least 12 weeks of abdominal discomfort or pain in the preceding
12 months, accompanied by two or three of the following additional features: (a) the pain or discomfort is relieved with defecation, (b) the onset of the pain or discomfort is associated with a change in the frequency of the movement of stool, and/or (c) the onset of the pain or discomfort is associated with a change in the form of the stool. In addition, cumulatively supportive symptoms include: (a) abnormal stool frequency (for research purposes, “abnormal” may be defined as more than three times a day and less than three times a week), (b) abnormal stool form (lumpy/hard or loose/watery stool), (c) abnormal stool passage (straining, urgency, or feeling of incomplete evacuation), (d) passage of mucus, and (e) bloating or feeling of abdominal distention (Thompson et al., 2000).

Management of IBS is based on the dominant symptoms, their severity, and psychosocial factors. It is also imperative in the management of IBS that the patient take responsibility as an active participant in his or her treatment. Nurses can engage patients by encouraging them to write down their symptoms and times of occurrence in a diary, which can also be used to monitor the daily food intake, activities, and events of the patient in order to identify possible exacerbating factors. If, on examination of the diary, symptoms prove mild, prescription medication may not be needed, though in general the patient will benefit from normal daily activities that include dietary and lifestyle modification (Ringel, Sperber, & Drossman, 2001). Once the patient has monitored symptoms for 2 to 3 weeks by writing them in the symptom diary, certain foods and other agents that worsen symptoms can be identified and avoided. However, nurses should remind patients not to be overly restrictive in their diet to avoid the risk of malnutrition. Some studies recommend a high fiber diet to resolve symptoms, even though it may initially cause bloating and flatulence. However, although helpful in treating constipation, maintaining high levels of fiber intake is controversial when used to relieve diarrhea and abdominal pain (American Gastroenterological Association, 2002).

In cases in which individuals with IBS do not respond to physiological treatments, psychological factors should be considered. Several psychological procedures have been studied in IBS patient therapy trials, including cognitive-behavioral treatment, stress management, dynamic/interpersonal psychotherapy, hypnotherapy, and relaxation/arousal reduction training (Ringel, Sperber, & Drossman, 2001; Drossman, 1995). Due to methodological limitations, however, there are as yet no comparative data demonstrating that one psychological intervention is superior to any other for any given patient group or set of conditions (American Gastroenterological Association, 2002). Several recent findings in nursing research have focused on the relationship between gastrointestinal symptoms and women (Heitkemper et al., 1998), the effects of coping with stress among women with gastrointestinal disorders (Drossman et al., 2000), differences in patients’ and physicians’ perceptions about IBS (Heitkemper, Carter, Ameen, Olden, & Cheng, 2002), and the sense of coherence and quality of life in women with and without IBS (Motzer, Hertig, Jarrett, & Heitkemper, 2003). These studies supply information suggesting that GI symptoms in some women are linked to the following: (a) reproductive cycling (increased GI symptoms at menses), (b) negative health outcome due to maladaptive coping and decreased self-perceived ability concurrent with or in response to a history of abuse, (c) discordance between patients’ and physicians’ views about IBS, and (d) reduced sense of coherence and holistic quality of life.

The care of patients with chronic GI symptoms is particularly challenging because the diagnosis is never assured and symptomatic treatments are not always successful. Diagnosis and treatment tailored on the basis of individual need should be carefully performed. In addition, establishing an effective relationship between the patient and the health provider requires patience, education, and reassurance for vital therapeutic management. Future studies are needed to determine the degree to which the modification of manage-
ment will improve symptom treatment, clinical outcomes, and the patient's overall quality of life. Finally, the treatments that are consistently effective for all symptoms should be further investigated.

Jin-Hwa Park

Chronic Illness

The practice of nursing has long been identified with the care and comfort of the chronically ill. It is apparent, however, that the health care delivery system, in general, has not adequately responded to the changing needs of the population, particularly in terms of the increasing numbers of chronically ill adults. Currently, in the United States, by age 70, a majority of the U.S. population copes with the effects of at least one chronic illness (Nesse, 2002). Blendon and colleagues (2001) reported that when asked what they thought were the most important health problems facing the nation, over 80% of respondents identified three chronic illnesses: cancer, human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), and heart disease as the top three.

Chronic illness includes a broad spectrum of diseases that differ significantly from one another in their underlying causes, modes of treatment, symptoms, and effects on a person's life and activity. Chronic illness refers to diseases that are caused by nonreversible pathology; are characterized by a slow progressive decline in normal physiological function; are permanent with cure unlikely; and require long-term surveillance, leaving residual disability (Hwu, Coates, & Boore, 2001). Families are drained physically, emotionally, and financially. There is often upheaval of relations among the patient, family, and other members of society. Overall, chronic illnesses vary greatly in their developmental course. Some conditions improve over time, some stabilize, and others are progressively degenerating and debilitating.

From the societal perspective, living with a chronic illness is a major source of health care utilization. In the United States, chronic diseases account for three quarters of health care costs (Vlieland, 2003). Specifically, Druss and colleagues (2001) indicated that almost half of U.S. health care costs in 1996 were borne by persons with one or more of five chronic conditions: mood disorders, diabetes, heart disease, asthma, and hypertension. In addition, the nonmedical costs are substantial due to lack of productivity. Druss and colleagues (2002) reported that the most expensive chronic illness at a population level was ischemic heart disease; at the per capita level it was respiratory malignancies. The conditions with the greatest disability (including bed days, missed workdays, and rates of impairment in activities of daily living and instrumental activities of daily living) relative to expenditures were mood disorders, chronic obstructive pulmonary disease, and arthropathies.

The traditional approach to studying chronic illness has been limited, focusing on the medical model. A new health paradigm—a care-oriented model of illness—has emerged. The concept of health is more readily measured in terms of maximizing physical, psychological, social, and spiritual well-being. In this paradigm, a holistic health-focused model has become accepted with a resulting change towards care of the whole person as well as the family. In addition, in chronic disease management, all clinical decisions need to be individualized, because they usually involve choices between possible outcomes that may be viewed differently by different patients. Vlieland (2003) recognized that a constant tailoring of care to the actual needs of individual patients as well as the complexity and long duration of the disease are the distinguishing features of chronic disease management. Another related framework that has emerged is the self and family management in chronic illness (Grey, Knafl, Gilliss, & McCorkle, in press).

Pollock (1987) provided an initial review of nursing research related to adaptation to
chronic illness. More recently, Fitzpatrick and Goeppinger (2000) edited ten chapters that reflected a variety of chronic illnesses and a full range of interventions to manage them. Valuable contributions to increase our understanding have come from first-person accounts of patients’ experiences (Thorne & Patterson, 2000). Other noteworthy efforts have been expanded to families, including ethnically diverse families (Chesla & Rungreangkulkij, 2001). Other important contributions have focused particularly on nursing interventions. For example, Frich (2003) concluded that nursing interventions for patients with diabetes can improve psychosocial and health outcomes in terms of facilitating adherence to regimens or behavior changes (greater self-care skills), patient satisfaction, good clinical outcomes (reduction in plasma glucose, decreased blood pressure and cholesterol), and cost savings.

Research related to improving the quality of life for people with chronic illness should be a national priority given that people are living much longer and better with conditions that used to be fatal. The existing literature is limited in several critical ways. Much of the research in chronic illness addresses a particular illness or disability. Findings may be applied too narrowly or too inclusively to illnesses with markedly different demands. The landscape of chronic illness is diverse and complex, presenting a vast range of symptoms and trajectories, accomplished by a variety of demands over the natural history of the diseases. Research to date has focused on only specific phases of the trajectory of specific diseases, and not on the unfolding of illness related to developmental tasks over the entire course of an illness. The impact of chronic illness on the patient, well family members, and key caregivers differs and depends on when an illness strikes in the family and on each member’s individual development. Many complex management interventions are eventually aimed at improving or maintaining the patient’s independent participation in society. Outcome measures covering this dimension are rarely applied. In order to capture these complex relationships, designs that include mixed methods will be essential.

RUTH McCORKLE
SIEW TZUH TANG

Clinical Decision Making

Clinical decision making is the process nurses use to gather patient information, evaluate the information, and make judgments that result in the provision of patient care (White, Nativio, Kobert, & Enberg, 1992). Clinical decision-making ability is defined as the ability by which a clinician identifies, prioritizes, establishes plans, and evaluates data. Decision making is central to professional nursing and has vital links to patient-care outcomes (Catolico, Navas, Sommer, & Collins, 1996). Researchers have investigated the process, types, and quality of clinical decision making. Catolico and colleagues (1996) studied decision making of practicing staff nurses. It was demonstrated that nurses with better communication skills had a greater frequency of actual decision-making practices. Intuition was a critical component of clinical decision making in a qualitative study of 10 novice nurse practitioners (Kosowski & Roberts, 2003). Some researchers have looked at approaches such as informatics or algorithms to aid decision making. Akers (1991) showed that nurses who used algorithms to aid their decision making utilized more thorough patient assessment and a more informed nursing response, which resulted in better patient management. Another critical issue is the educational level and preparation of the nurses who are formulating decisions. Studies have explored the decision-making process of student nurses, staff nurses, and nurse practitioners. A group of nursing students were given didactic and interactive teaching sessions on clinical decision making. Students’ decision making was in accordance with the decision making of experts significantly more often than that of the student nurses who
did not receive the decision-making content (Shamian, 1991). A study in the United Kingdom demonstrated that nurses having a college education were significantly better at decision making than their colleagues educated in diploma programs (Girot, 2000). Advanced practice nurses in specialty practices tend to generate fewer hypotheses in their clinical decision making. Those nurses must be aware that formulating a diagnosis too early in the data-gathering phase precludes the possibility of considering all options (Lipman & Deatrick, 1997).

When investigating the decision-making process, researchers have utilized simulations, together with interviews regarding the thought processes individuals use to reach decisions. The quality of decision making is defined as having the ability to make frequently required decisions (Catolico et al., 1996). That aspect of decision making has been studied by using computer-assisted simulations requiring nurses to make decisions in controlled clinical situations. To investigate clinical decision making by nurse practitioners, the nurses care for patients via computer and interactive videos. To more objectively assess student clinical competencies, the clinical decision-making skills of nurse practitioner students were evaluated using a standardized simulated patient encounter (Stroud, Smith, Edlund, & Erkel, 1999).

Various factors have been shown to affect clinical decision making, such as the experience and the knowledge base of the nurse. Those with case-related experiences are more likely to choose appropriate interventions. A study of nurse practitioners by White and colleagues (1992) concluded that case content expertise is crucial for clinical decision making from the aspect of understanding the significance of the data acquired and in making the correct decision. Nurses’ decision making is also affected by the sociodemographics of the patient. Age, sex, race, religion, and socioeconomic status can impact on decision making. Racial disparities in health care may be due to racial biases when formulating clinical decisions. Non-white patients presenting to the emergency department with chest pain are hospitalized less often than white patients (Pope et al., 2000). There was a significant difference in reports of suspected abuse after the evaluation of fractures between minority and non-minority children (Lane, Rubin, Monteith, & Christian, 2002).

Competent clinical decision making by nurses requires being cognizant of potential biases. Decision making is critical to nursing practice. Gathering, organizing, and prioritizing data are major components of the process. Continued research in this area can foster the development of decision-making skills in novice nurses and cultivate high clinical decision-making ability in expert nurses.

**Clinical Judgment**

Clinical judgment has been defined as the process by which nurses come to understand problems, issues, or concerns of patients, attend to salient information, and respond in concerned and involved ways. Clinical judgment occurs within a framework of clinical, legal, ethical, and regulatory standards and is closely aligned with phenomena such as critical thinking, decision making, problem solving and the nursing process (Benner, Tanner, & Chelsa, 1996).

Expert clinical judgment is held in high regard by nurses as it is generally viewed as essential for provision of safe, effective nursing care and the promotion of desired outcomes. Nursing research has been conducted on the processes of clinical judgment with the intent of better understanding how nurses identify relevant information from the vast amounts of information available and then how information is used to make inferences about patient status and appropriate interventions. The complexity of the clinical judgment process has brought about collaboration of nurse researchers with multidisciplinary experts from a broad array of scientific backgrounds including cognitive psychology, informatics, phenomenology, and statistics.
The body of research on clinical judgment generated by interdisciplinary collaboration has been categorized into two disparate theoretical classifications: the “rationalistic” and the “phenomenological” perspectives. In this context, the term “rationalistic” describes scientific inquiry into the deliberate, conscious, and analytic aspects of clinical judgment (Benner et al., 1996). Examples include research on the role of information processing, diagnostic reasoning (Tanner, Patrick, Westfall, & Putzier, 1987) and decision analysis (Schwartz, Gorry, Kassirer, & Essig, 1973) in the clinical judgment process. The term “phenomenological” refers to research on the skill-acquisition component of clinical judgment as advanced by Benner et al. in the Novice to Expert Model (Benner & Tanner, 1987; Benner et al., 1996).

Information processing theory and diagnostic reasoning are based on the work of Newell and Simon (1972b) and Elstein (Elstein, Shulman, & Sprafka, 1978) and collectively describe problem-solving behavior and the effect of memory and the environment on problem solving. These theories hold that human information processing capacity is restricted by short-term memory and effective problem-solving ability is dependent on adoption of strategies to overcome human limitations. Information processing theory and diagnostic reasoning have been applied widely to the study of clinical judgment and the use of information in the clinical judgment process. Published research suggested that nurses and physicians use a similar process for clinical judgment which involves information gathering, early hypothesis generation and then additional information gathering to confirm or rule out a suspected diagnosis or clinical problem. According to the “rationalistic theories,” early hypothesis generation “chunks” data and is an effective strategy for conserving short-term memory (Corcoran, 1986; Elstein et al., 1978; Tanner et al., 1987). While knowledge generated from work completed in the fields of information processing and diagnostic reasoning has been descriptive in nature, decision analysis is a prescriptive approach to decision making and involves the process of weighing cues and employing mathematical models (generally made possible through expert systems) to determine the course of action most likely to produce desired outcomes.

Corcoran (1986) used an information-processing approach and verbal-protocol technique to compare care-planning strategies used by hospice nurses. She found that unlike novice nurses, the overall approach of expert nurses differed by case complexity with a systematic approach employed for less complex cases and an exploratory approach for cases of greater complexity. In addition, expert nurses generated more alternative actions during the treatment planning process, were better able to evaluate alternative actions, and developed better care plans than did novices.

Tanner et al. (1987) used verbal responses to videotape vignettes to describe and compare the cognitive strategies of diagnostic reasoning used by nursing students and practicing nurses. They found that practicing nurses were more likely to employ a systematic approach and to be more accurate in diagnosis than the students. Henry (1991) examined the effect of patient acuity on clinical decision making of experienced and inexperienced critical care nurses using computerized simulations. Findings suggest that inexperienced nurses collected more data and had poorer patient outcomes than experienced nurses.

Salantera, Eriksson, Junnola, Salminen, and Lauri (2003) employed simulated case descriptions and the think-aloud method to compare and describe the process of information gathering and clinical judgment by nurses and physicians working with cancer patients. The authors found that while nurses and physicians identify similar problems, they employ divergent approaches to information gathering and clinical judgment.

Unlike the objective, detached approach to the study of clinical judgment characteristic of the rationalistic perspective, the phenomenological perspective holds that intuition is a legitimate and essential aspect of clinical judgment and is the feature that distinguishes expert human judgment from that
of expert systems (Benner & Tanner, 1987). Benner’s work is based on the skill acquisition model advanced by Dreyfus. According to this model, there are six key aspects of intuitive judgment: pattern recognition, similarity recognition, commonsense understanding, skilled know-how, sense of salience, and deliberative rationality (Benner & Tanner). Much of the research related to Benner’s work and the Novice to Expert Model relates to the relationships that exist between nursing knowledge, clinical expertise and intuition.

The Novice to Expert Model is based on Benner’s early work where a phenomenological approach was used to interview and observe nurses with varying degrees of clinical expertise. In the interview process, nurses were asked to describe outstanding clinical situations from their practice. Benner found that a holistic grasp of clinical situations is a necessary precursor to expert clinical judgment (Benner, 1984). Subsequent research has supported these findings and has teased out differences in clinical judgment between clinicians with varying levels of experience (Corcoran, 1986). In a six-year interpretive study of nursing practice, Benner et al. (1996) identified five interrelated aspects of clinical judgment: (1) disposition towards what is good and right; (2) extensive practical knowledge; (3) emotional responses to the context of a clinical situation; (4) intuition; and (5) the role of narrative in understanding a patient’s story, meanings, intents and concerns. The authors suggested that these aspects play a significant role in clinical judgment and deserve equal consideration along with the aspects arising from the “rationalistic” perspective of clinical judgment.

Research on clinical judgment identified two divergent but legitimate perspectives. The challenge for future research is to integrate these perspectives to study the impact of integrated models on clinical reasoning and patient outcomes. Synthesis holds promise for promoting evidence-base practice (EBP). Rationalistic models can be employed in the form of guideline-based tools to bring the best evidence to patient care. Phenomenological models hold potential for bringing effectiveness to EBP by providing a holistic evaluation of patient systems. A holistic perspective would serve as a guide to clinicians in the care of individuals through identification and application of evidence which is most relevant at the local level and for individual patients.

**Clinical Nursing Research**

Clinical nursing research is both broadly and narrowly defined. Broadly, it denotes any research of relevance to nursing practice that is focused on care recipients, their problems and needs. This broad definition stems from the 1960s, when a major change occurred in nursing science. Prior to the 1960s the research of nurses had focused on nurses and the profession of nursing including major questions of interest related to nursing education and the way in which nurses practiced within care delivery structures (i.e., hospitals). The reasons for these foci are many, but for the most part they stem from the dearth of nurses with advanced degrees at that time and the fact that nurses with advanced degrees were educated in other disciplines (e.g., education).

In the late 1950s and 1960s a major shift occurred, driven by three factors. First, leaders in nursing successfully lobbied for the institution of the nurse scientist program through the federal government, which provided financial support for nurses to be educated in the sciences (e.g., physiology, biology, anthropology, psychology). Second, nurse theorists such as Faye Abdellah, Virginia Henderson, Imogene King, Ida Orlando, Hildegard Peplau, and Martha Rogers began to formulate conceptual models to direct nursing practice, and attention was focused on designing research that more or less was guided by those models (or at least the substantive areas circumscribed by the models). Third, as more nurses attained advanced
degrees, doctoral education with a major in nursing finally became a reality, and the focus of nursing research shifted more firmly away from nurses and nursing education to the practice of clinical nursing. The broad definition of clinical nursing research, then, was originally formulated to differentiate between the research conducted by nurses prior to the 1960s, which focused on nurses, to the major shift in focus on practice.

Strongly influenced by the establishment of the Center for Nursing Research (at present the National Institute of Nursing Research) in the National Institutes of Health (NIH), clinical nursing research has recently taken on a narrower definition, modeled after the definition of clinical trials (large-scale experiments designed to test the efficacy of treatment on human subjects) used at NIH. This narrow definition limits clinical nursing research to only those studies that focus on testing the effects of nursing interventions on clinical or “nurse sensitive” outcomes.

In addition to an evolution in definition, clinical nursing research also has changed in form and complexity over time. Early clinical nursing research was characterized by a focus on circumscribed areas of inquiry using experimental and quasi-experimental methodologies. Investigators were few and tended to work in isolation. Prompted by metatheorists such as Dickoff, James, and Wiedenbach (1968) and methodologists such as Abdellah and Levine (1965) and Mabel Wandelt (1970), nurse scientists were advised to derive questions directly from problems encountered in their clinical practice and to strive to develop and test interventions to solve these problems. Often an investigator conducted single studies on different problems rather than series of studies focused on different aspects of the same problem. As a result, study results tended to be context-bound and limited in generalizability to other settings, samples, or problems. The relationship between theory development and research was discussed abstractly but not explicitly operationalized, and a philosophy of knowledge building, rather than problem solving, had not yet developed.

The next stage in the evolution occurred with the realization that little was known about many of the phenomena of concern to nurses. This heralded a period during which emphasis shifted away from experimental methods to exploratory/descriptive methods, such as grounded theory. Guided by the metaparadigm of nursing (person, nursing, health, environment), nurse scientists began focusing on discovering and naming the concepts of relevance for study in nursing, delineating the structure of these concepts, and hypothesizing about the relationships of these concepts in theoretical systems.

More recently, clinical nursing research has become clearly defined as a cumulative, evolutionary process. Investigators are still advised to derive questions from clinical problems, but the focus is on knowledge generation, specifically the generation and testing of middle-range theory (a theory that explains a class of human responses), for example, self-help responses, symptom experience and management, and family responses to caregiving. Because knowledge is viewed as cumulative, investigators usually study various aspects of one particular concept or response; studies build on one another, and each study adds a new dimension of understanding about the concept of interest. This approach to clinical nursing research requires investigators to use multiple methodologies in their programs of research, including (a) inductive techniques to discover knowledge from data; (b) deductive techniques to test hypotheses that are either induced or deduced; and (c) instrumentation to increase the sensitivity, reliability, and validity of the measurement system designed for the concept.

The methodologies being used include qualitative methods such as ethnomethodology, grounded theory, and phenomenology and quantitative methods ranging from traditional experimental methods and designs to less traditional methods, such as path analysis and latent variable modeling. Because human responses change over time based on contextual factors or treatments (independent variables) applied by the nurse investigator and
because understanding the nature of change often is at the crux of the theory building, skills in measuring change also may be required. This has resulted in the need for many investigators to incorporate techniques such as time series analysis and individual regression into their research.

Understanding the human responses of concern to nurses can also require an understanding of cellular mechanisms that are best studied in animal models and a coupling of biological techniques such as radioimmunoassay and electron microscopy, with psychosocial techniques such as neurocognitive assessment or self-report of psychological states. In addition, measurement of different units of analysis (e.g., individual, family, organization) may be required, along with strategies for understanding the effect of care contexts (e.g., social, physical, organizational environments) on the human response of concern. Needless to say, single investigators rarely have all the skills needed to advance the understanding of a particular concept. As a consequence, single investigators are becoming more and more a thing of the past as teams of scientists, including nurses and individuals from other disciplines, collaborate in the knowledge-building endeavor.

Nursing is concerned with human responses and is based on the assumption that humans are holistic and embedded in history and various environments. Clinical nursing research is about generating a body of knowledge on which nurses can base practice. It is about assuring the efficacy and safety of nursing actions, substantiating the effect of nursing actions on patient outcomes, and conserving resources (costs, time, and effort) while effecting the best possible results. It is about identifying strategies for improving the health of the population and promoting humanization within a health care environment that has a natural tendency to be mechanistic, compartmentalized, and focused on short-term rather than long-term gain. It is about client advocacy, client protection, and client empowerment. The challenge of clinical nursing research is to develop an understanding of human response through theory generation and testing while developing measurement systems and using research methods that capture the holism of the client and the holistic nature of the health care experience.

LINDA R. PHILLIPS

Clinical Preventive Services Delivery

Empirical support of preventive health care and health promotion has grown considerably over the past decade, demonstrating that the short-term investment in preventive care could avert health problems and medical costs over time (U.S. Preventive Services Task Force, 2000). Many serious disorders can be prevented or postponed by immunizations, chemoprophylaxis, and healthier lifestyles, or detected with screening and treated effectively (U.S. Public Health Service, 1994). However, many preventive care services are frequently not being delivered by clinicians in practice.

Despite the benefits of preventive care services, such as cancer screening and immunizations, utilization of specific preventive care services in New Jersey remain below state and national goals. Documented barriers to the implementation of these services included (a) clinician uncertainty about what services to offer, to whom, and how often; (b) lack of reimbursement and associated time constraints; (c) clinician attitudes and lack of knowledge about preventive services; (d) patient attitudes, confusion, and lack of understanding about clinical preventive services; and (e) lack of organized systems to facilitate the delivery of services (Griffith, Dickey, & Kamerow, 1995).

Clinicians are confronted with different recommendations regarding preventive care practices from the HPs they contract with. Multiple recommendations for preventive care sometimes conflict with each other, leaving clinicians confused about which services to provide. Literature shows that lack of a standardized approach to the delivery of clin-
ical preventive services (CPS) is a barrier to implementation (Griffith et al., 1995).

HP medical directors seek recommendations from government agencies and professional organizations in selecting CPS their HP should recommend. Some medical directors work with a committee of practicing member clinicians, obtaining feedback regarding recommendations they should provide. However, some medical directors decide what should be recommended on their own, reviewing original empirical research to supplement the national guidelines, particularly for newer or more controversial services (Fox & Cuite, 2001). In either circumstance, HP medical directors work independently from other HPs.

Through a partnership between the New Jersey Association of Health Plans and Rutgers College of Nursing, nine NJ HP medical directors were brought together to form a coalition to identify a set of CPS guidelines that all plans could endorse as priorities for implementation. In meeting this objective, these HPs will be able to provide contracting clinicians with information on the value of preventive services to their patients, compensating for uneven knowledge and skill that many clinicians have in the area of prevention.

Sisk (1998) discussed that initiatives to improve consistency, both scientific evidence and clinical practice, are increasingly focusing on managed care plans and integrated delivery systems. HPs should be able to implement guidelines, particularly because plans are being held accountable for care provided. HPs have leverage, if not control, over clinicians utilizing patterns.

The New Jersey Association of Health Plans and Rutgers College of Nursing collaborated in this concerted effort with nine HPs in NJ, HPs covering 4.8 million New Jerseyans that represent 98% of the state’s HMO market. Medical directors from competing HPs brought to the table expertise on CPS, discussed the current knowledge of evidence-based practice, and established a consistent set of guidelines to which all of the nine HPs agreed.

Agreed-upon guidelines of the coalition were based on the evidence-based U.S. Preventive Services Task Force (USPSTF) guidelines. The USPSTF, a body of preventive care experts convened by the U.S. Public Health Services, conducted comprehensive evaluation of the scientific evidence for CPS, including counseling interventions, screening tests, immunizations, and chemoprophylaxis (Fox & Cuite, 2001). Therefore, the coalition agreed on the value of these evidence-based guidelines as the standard for which preventive care should be delivered to the general population.

Seventy areas identified by the USPSTF for preventive care were reviewed by each medical director, individually through questionnaires and collectively through coalition meetings. Two rounds of questionnaires were sent to the medical directors to assess their HP’s level of agreement and/or disagreement with the USPSTF guidelines. Positively stated recommendations that the medical directors disagreed on were addressed at subsequent coalition meetings to promote consensus. A third questionnaire was then sent to the medical directors, requesting them to rank order these guidelines according to priority for implementation.

Using consensus-building strategies including three Delphi rounds and four coalition meetings over the course of a year, medical directors were able to identify a subset of USPSTF guidelines that all HPs could endorse as priorities for implementation in clinician practice. Medical directors discussed that these guidelines serve as the minimum for which preventive care services should be delivered and do not replace the clinicians’ judgment based on patient risk. However, implementation of these guidelines will ensure that all patients receive a consistent level of preventive care.

Decisions made at each level were based on scientific evidence and needs of their members at large. Their decision to include only those guidelines with good to fair evidence to support the recommendation that the condition be specifically considered in a periodic health examination, a level of strength “A”
or “B” recommendation as determined by the USPSTF, illustrates their commitment to sound and safe practice for their members. They also identified diabetes mellitus (DM) as a growing problem that warrants attention. Although there is no evidence-based recommendation to screen for DM as a preventive measure, the medical directors identified methods to screen for complications of this disease. They unanimously agreed that clinicians should provide services to prevent morbidity and/or mortality in this population.

Conflicting and confusing guidelines are detrimental to the delivery of preventive care and create a major barrier to CPS delivery. This project used a systematic approach to reach consensus among medical directors from competing HPs regarding CPS. It provides a template for other HPs nationwide to come to consensus on guidelines that support clinicians in the delivery of CPS.

**CYNTHIA GUERRERO AYRES**

**HURDIS M. GRIFFITH**

### Clinical Trials

A clinical trial is a prospective controlled experiment with patients. There are many types of clinical trials, ranging from studies to prevent, detect, diagnose, control, and treat health problems to studies of the psychological impact of a health problem and ways to improve people’s health, comfort, functioning, and quality of life.

The universe of clinical trials is divided differently by different scientists. Clinical trials are often grouped into two major classifications, randomized and nonrandomized studies. A randomized trial is defined as an experiment in which therapies under investigation are allocated by a chance mechanism. Randomized clinical trials are comparative experiments that investigate two or more therapies. Nonrandomized clinical trials usually involve only one therapy, on which information is collected prospectively and the results compared to historical data. Comparing prospective data with historical control data introduces biases from many sources. These potential biases are usually of such magnitude that the results of nonrandomized studies are often ambiguous and not universally accepted unless the therapeutic effect is very large. These same biases are not present to the same degree in randomized trials. Recent development and use of mega-trials represents one variation.

The mega-trial is a large, simple, randomized trial analyzed on an “intent to treat” basis. In mega-trials randomization serves to achieve identical allocation groups (equal distribution of bias) where there is poor experimental control and large between-subject variation. Results of mega-trials cannot readily be generalized because their conclusions are observations, not causal hypotheses and therefore not testable. Mega-trials can be repeated but not replicated. Mega-trials dispense with the scientific aim of maximum experimental control to remove or minimize bias and instead use randomization to achieve equal distribution of bias between groups (Charlton, 1995).

In clinical drug trials, following approval by the Food and Drug Administration (FDA), three phases of clinical trials begin. Phase I studies generally establish whether a treatment is safe and at what dosages. Phase II studies assess the efficacy of treatments after safety and feasibility has been established in Phase I. Phase III studies compare effectiveness of Phase II treatments against currently accepted treatments.

Some scientists divide clinical trials into three groups: (a) exploratory (initial trials investigating a novel idea), (b) confirmatory (designed to replicate results of exploratory trials), and (c) explanatory (designed to modify or better understand an established point). Other scientists divide the universe into two groups, such as pragmatic (practical benefits to the overall subject population treated) and explanatory (Viscoli, Bruzzi, & Glauser, 1995).

Issues surrounding clinical trials include biasing, expense of clinical trials, small sample sizes, and ethical issues. There are many biases that can compromise a clinical trial,
such as observer bias, interviewer bias, use of nonvalidated instruments, uneven subject recruitment by physicians, and individual subject factors. Recent concerns have focused on bias in sample selection.

To date, the majority of clinical trials have included a limited segment of the U.S. population, that is, mainly middle-class, married, White males with little to no inclusion of women and minorities. This lack of diversity in trial samples has yielded results that are not always generalizable and effective. Research also has demonstrated bias due to subject factors. For example, subjects were more likely to participate in clinical trials on multiple sclerosis if they had a higher than median income and were disabled from work (Schwartz, C. E., & Fox, 1995). Suggested approaches to reduce selection bias include (a) using a broad recruitment base to reduce patient and physician biasing factors and (b) facilitating subject transportation to the study site.

Clinical trials are expensive and resource-intensive. As a result, subject numbers are generally limited to the minimum number needed to demonstrate a significant effect not caused by chance. However, small clinical trials may not provide convincing evidence of intervention effects. Small clinical trials are valuable in (a) challenging conventional but untested therapeutic wisdom, (b) providing data on number of events rather than number of patients and thus may be sufficient to identify the best therapy, and (c) serving as a basis for overview and meta-analysis (Sackett & Cook, 1993).

To deal with the issue of small sample sizes, meta-analysis is increasingly being used. Meta-analysis (quantitative overview) is a systematic review that employs statistical methods to combine and summarize the results of several trials. Well-conducted meta-analyses are the best method of summarizing all available unbiased evidence on the relative effects of treatment (Richards, S. M., 1995). In a meta-analysis the individual studies are weighted according to the inverse of the variance; that is, more weight is given to studies with more events. Arrangement of the trials according to event rate in the controls, effect sizes, and quality of the trials or according to covariables of interest supplies unique information. If carried out prospectively, the technique provides information on the need for another trial, the number of subjects necessary to determine the validity of past trends and the type of subjects who might be benefited.

Ethical issues in clinical trials include issues of informed consent, withholding of treatment, and careful monitoring of clinical trial results. Additional issues of informed consent include assuring that subjects thoroughly understand potential risks and benefits of participation and any effects on their care should they decide to withdraw at any point in the study. Issues of withholding treatment include increasing subject risk or subject benefit if there is reasonable evidence of positive effects of the intervention or treatment. Careful monitoring of the effects of interventions or treatment is necessary to stop the trial if there is associated morbidity or mortality and extending the intervention or treatment to the control group in the event of significantly positive treatment effects.

Clinical trials remain the principal way to collect scientific data on the value of interventions and treatment. However, in designing and evaluating clinical trials, rigor of method, including careful evaluation of potential biasing factors, is essential. Meta-analysis provides a summary of all available, unbiased evidence on the relative effects of treatment. However, rigor of methods used to conduct the meta-analysis also must be evaluated.

**Dorothy Brooten**

**Cognitive Interventions**

Cognitive interventions have been defined as mechanisms designed to change cognitive function, such as attention, concentration, or memory (Baltes & Danish, 1980). An intervention may be defined as a programmatic attempt at altering the course of life-span developmental phenomena. Interventions may
be classified as concrete technologies involving such parameters as the goal (enrichment, prevention, or alleviation), the target behavior (attention, cognition, memory, or perception), the setting (family, classroom, community, or hospital), and the mechanism (training, practice, or health delivery). Nurse scientists have broadened the scope of their research in health and illness by including multivariate models of affective, cognitive, and behavioral interventions. This review describes the research of nurse scientists in two areas: (1) the integrative reviews of nonpharmacological interventions, and (2) programs of research in chronic illness, medication adherence, and pain. These programs are examples, and are not presented as a comprehensive review of cognitive intervention research from nurse scientists.

Eller (1999) reviewed the research on guided imagery, visualization, cognitive-behavioral techniques for symptom management of stress, anxiety, depression, and for reducing blood pressure, pain, and the side effects of chemotherapy. McDougall (1999) reviewed cognitive-behavioral interventions designed to improve cognitive function in older adults without cognitive impairment. Snyder and Chlan (1999) reviewed the research on music therapy designed to manage pain, decrease anxiety and aggressive behaviors, and improve performance and well-being. Even though the three integrative reviews were framed within the paradigm of complementary and alternative therapies, they illuminated the vast differences between and among the interventions. Three major differences in the interventions emerged from these comprehensive reviews: (1) dose (number of sessions and length of exposure), (2) the target populations, and (3) the methodologies.

Chronic illness, such as cancer, HIV, and fibromyalgia, do not have cure as their primary goal for treatment. Therefore, palliation, symptom management, and health promotion become important day-to-day activities to maintain function and live with the illness. A number of intervention studies to ameliorate symptoms from chemotherapy treatment are published. Since chemotherapy often causes individuals to experience cognitive difficulties and physical fatigue, which last over time, the programs of two researchers are illustrated. Elderly cancer survivors reported difficulty with attention, concentration, and memory. Women undergoing treatment for breast cancer have difficulty with attention fatigue, and cancer survivors may suffer cognitive losses. McDougall (2001) tested the effectiveness of an efficacy-based intervention designed to improve memory performance, memory self-efficacy, and metamemory in older adult cancer survivors and those with other chronic conditions. A total of 78 older adults (58 Fs, 20 Ms) with an average age of 82 years participated in the eight-session program. Individuals were grouped by chronic condition: cancer = 11, arthritis = 16, heart disease = 32, and other = 19. The cancer group was older, \( M = 84.82 \), reported greater memory decline, and had lower self-reported instrumental activities of daily living scores. The cancer group made significant gains in short-term memory of immediate and delayed story recall, memory-efficacy (\( M_1 = 48.22, M_2 = 58.00 \)), and metamemory (subjective memory evaluation) change (\( M_1 = 2.18, M_2 = 2.50 \)). The responses of a group of elderly to training varied depending on their health status.

Cimprich and Ronis (2003) tested the efficacy of a natural environment intervention, delivered 120 minutes per week of exposure, in the home of the individual. Capacity to direct attention was assessed with objective measures at two time points: 2 weeks before surgery and 2 weeks after surgery. Compared with the control group, the intervention group showed greater ability to direct attention. These two studies are examples of programs of research in which aspects of cognitive function have been used as outcomes of health promotion interventions.

A unique program of research is the work of Stuifbergen, Becker, Blozis, Timmerman, & Kullberg (2003). Over more than 10 years of systematic inquiry, she has demonstrated that cognitive behavioral health-pro-
motion interventions reduce the burden of illness and improve the health of women with multiple sclerosis (MS).

Older adults are particularly vulnerable to medication errors, whether intentional or unintentional. With older adults, age, cognitive function, and presence of depression are known to influence compliance and adherence behaviors. Two programs of research, emphasizing technology, are relevant to this review. Fulmer and her team (1999) tested two experimental interventions: video telephone and standard telephone against a control group receiving usual care. Compliance was determined as the percent of therapeutic coverage as recorded by Medication Event Monitoring System (MEMS) caps. The experimental groups, while not significantly different from each other, showed greater medication compliance than the control group, which worsened at 8 weeks.

Insel and Cole (2004) also incorporated the MEMS as a mechanism to enhance the availability of environmental cues to not only remember to take medications, but also to remember if the medications were taken as intended. The primary outcome measure, the percentage of days in which the correct number of doses was taken, significantly increased. The intervention focused on providing external memory cues to older adults responsible for self-management of medications. The cues assist in both remembering to perform the intended action (prospective memory) and remembering if the action was performed as intended (source monitoring). Therefore, the cues used both visual placement in salient places surrounding the time of day medicines need to be taken and also provided a way for older people to check if they have taken the medicines as desired. The interventions were tailored to the unique needs/lifestyle of the individual and embedded in the context of their living situation. These two studies provide examples in which the use of a commercially available technology produces significant health outcomes to assist older adults to maintain their independence.

Nurse researchers are making progress in developing cognitive interventions to manage pain. Two programs of research are described here. Wells-Federman and her team (Wells-Federman, Arnstein, & Caudill, 2002) provided a cognitive-behavioral treatment pain-management intervention to chronic pain patients. Physicians who determined that these individuals did not receive relief from pain and suffering after they had undergone multiple evaluations and treatments referred all individuals to the research project. The intervention was a group pain-management program that met once per week for 10 consecutive weeks. Topics explored during these weekly sessions were the role of lifestyle factors such as diet, activity, and physical and emotional tension. As a result of the intervention, pain intensity lowered by 18% and depression scores were reduced by 29%. In addition self-efficacy for pain management increased 36%. This intervention demonstrated that cognitive behavioral treatment reduced suffering and improved the well-being of persons with chronic pain.

Good, Anderson, Stanton-Hicks, Grass, and Makii (2002) evaluated the results of three nonpharmacological interventions delivered to 311 patients following gynecological surgery: jaw relaxation, music, combination of relaxation and music and a control group. Participants in the intervention groups practiced the technique for 2 minutes preoperatively and received coaching. The investigators evaluated sensation and distress of pain, opioid intake, or patient-controlled analgesia (PCA), and sleep. The intervention groups experienced less pain than the control group only receiving PCA. When combined with PCA, the three interventions had the same effects, that is a 9% to 29% reduction in pain. Those individuals who slept well had less pain on the following day.

With the greatly increasing older population, the cognitive function of older adults remains a great concern. Research focused on maintaining cognitive function and promoting improved cognitive function is actively being investigated. The future holds
great promise for the ability of science to assist older adults in maintaining cognitive function necessary for quality of life.

Graham J. McDougall, Jr.

Cohort Design

A cohort design is a time-dimensional design to examine sequences, patterns of change or growth, or trends over time. A cohort is a group with common characteristics or experiences during a given time period. Cohorts generally refer to age groups or to groups of respondents who follow each other through formal institutions such as universities or hospitals or informal institutions such as a family. Populations also can be classified according to other time dimensions, such as time of diagnosis, time since exposure to a treatment, or time since initiating a behavior. A cohort might be graduates of nurse practitioner programs in the years 1995, 2000, 2005 or siblings in blended families. Cohort designs were originally used by epidemiologists and demographers but are increasingly used in studies conducted by nurses and other researchers in the behavioral and health sciences.

In the most restrictive sense a cohort design refers to a quasi-experimental design in which some cohorts are exposed to a treatment or event and others are not. The purpose of a cohort design is to determine whether two or more groups differ on a specific outcome measure. Cohort designs are useful for drawing causal inferences in quasi-experimental studies because cohort groups are expected to differ only minimally on background characteristics. Recall that a quasi-experimental design lacks random assignment of subjects to groups. Although the groups in a cohort design may not be as comparable as randomly assigned groups, archival records or data on relevant variables can be used to compare cohorts that received a treatment with those that did not. Because simple comparisons between cohorts may suffer from a number of design problems, such as biased sample selection, intervening historical events that may influence the outcome variable, maturation of subjects, and testing effects, a strong cohort design can account for many of these threats to the internal validity of a study.

There are two major types of cohort design: cohort design with treatment partitioning and the institutional cycles design. In a cohort design with treatment partitioning, respondents are partitioned by the extent of treatment (amount or length) received. In the institutional cycles design, one or more earlier cohorts are compared with the experimental cohort on the variable(s) of interest. The institutional cycles cohort design is strengthened if a nonequivalent nontreatment group is measured at the same time as the experimental group. A well-planned cohort design can control for the effects of age or experience when these might confound results in a pretest-posttest design or when no pretest measures of experimental subjects are available. Cohort designs might utilize a combination of cross-sectional and longitudinal data.

The term cohort studies broadly refers to studies of one or more cohort groups to examine the temporal sequencing of events over time. Cohort studies may eventually lead to hypotheses about causality between variables and to experimental designs. Most cohort designs are prospective (e.g., the Nurses’ Health Study, in which 100,000 nurses were enrolled in 1976 and have been followed since) although some are retrospective.

There are a number of types of cohort studies. The panel design, in which one or more cohorts are followed over time, is especially useful for describing phenomena. Trend studies are prospective designs used to examine trends over time. In trend studies, different subsamples are drawn from a larger cohort at specified time points to look at patterns, rates, or trends over time (Polit & Hungler, 1995). Panel designs with multiple cohorts are used to study change in the variable(s) of interest over time, to examine differences between cohort groups in variables, and to identify different patterns between groups. In a panel study with multiple co-
horts, the groups can enter the study at different points in time, and the effects of aging can be differentiated from the effect of being a member of a particular cohort group (Woods & Catanzaro, 1988). A prospective study is a variation of a panel design in which a cohort free of an outcome but with one or more risk factors is followed longitudinally to determine who develops the health outcome. The prospective design is used to test hypotheses about risk factors for disease or other health outcomes. Some authors limit the term cohort study to designs in which exposed and nonexposed subjects are studied prospectively or retrospectively from a specific point.

A major problem with prospective studies of all types is subject attrition from death, refusal, or other forms of loss. The loss of subjects in a prospective study may lead to biased estimates about the phenomena of interest.

Carol M. Musil

Collaborative Research

Collaborative research involves cooperation of individuals, agencies, and organizations in the planning, implementation, evaluation, and dissemination of research activities. Ideal collaboration brings the perspectives of nursing practice, research, and education to bear on complex issues of health and nursing. The research process, context, design, and needed resources for collaborative projects are not unique within the research arena. The unique feature involves the configuration of a research team whose members bring varying expertise, perspectives, and authority within an institution or agency.

Two prevailing trends support collaboration, namely, constrained resources and sociopolitical accountability. With diminishing resources to fund research and to deliver health care, partnerships can be an effective and efficient way to use human, fiscal, and material resources. Pooling resources of a variety of individuals, agencies, and disciplines can maximize the potential of all participants and contribute to a greater outcome.

Related to scarce resources is the call for increased accountability of research efforts. If finite resources are to be allocated, society and specific funding sources ask that the project demonstrate societal relevance and a connection to public concerns. Through partnerships with consumers, communities, or current practitioners, relevant and timely issues are more likely to emerge as inquiry topics.

Potential collaborators fall into several categories. Individuals can come to the project with expertise in the research process or in a substantive clinical area. Individuals can contribute the perspective of education, service, or research. Agencies or institutions can participate as collaborators, bringing specific human or material resources. Population groups can contribute the perspective and wisdom of a community. Nursing literature also advocates international collaborative efforts.

Collaborative research involves multiple advantages. One potential advantage is a strengthened process and improved outcome through the contribution from multiple individuals with varying expertise and perspectives. Investigator bias can be reduced with multiple inputs. Multisite partnerships give a potential of larger sample size over a shorter time frame and the benefits of built-in replication. Resources and potential funding sources can be increased through collaboration. The possibility of greater dissemination of findings increases with more participants. Collaboration with clinical agencies can help identify potential student clinical placement and supports a context for research that is compatible with the realities of nursing practice. Additionally, innovations in nursing practice or policy are more likely to be adopted if those involved in implementation participated in the inquiry process. Finally, collaborative interaction can enhance professional creativity, collegiality, and productivity.

Although benefits exist, collaborative research also presents distinct disadvantages. Most disadvantages are related to interpersonal issues and the complexities of pulling
together different perspectives, priorities, and styles. Teamwork requires clear communication, trust, openness, administrative coordination, and distinct role delineation. Without those features, the integrity of the research and the professional productivity of the collaborators are at risk. Another disadvantage of collaboration is the possibility of multiple review boards and organizational protocols. Collaboration also may add to the time commitment.

Five major types of collaborative research described in the nursing literature are the traditional model, health care setting model, unification model, consortium model, and participatory action research. Each model has advantages and disadvantages.

In the traditional model, individual researchers from the same or different institutions work together. In this model, researchers learn from the expertise of each other. The usual equal distribution of experience and expertise means that the research tasks can be divided. The project ideas can be critiqued by two or more researchers with training in the research process or in a substantive area. Detrimental characteristics of the traditional model relate to the necessity of decreased teaching load for researchers with an educational appointment and the need for resources of funding and research assistance. Examples of the traditional model abound.

In the health care model, research occurs within a clinical institution under the leadership of an employed nurse researcher. Collaborators include the clinical staff and the nurse researcher. The strongest merit of this model is the development of practice-relevant research; and because clinicians are involved, there is ownership, accepted innovation, and practice based on scientific research. In this model, subjects are easily accessible, and interdisciplinary collaboration is easily arranged. Disadvantages involve the potential for poor generalizability, investigator bias, role conflict, and scarce research funding.

In the unification model, academic researchers from educational institutions and clinicians from health care agencies collaborate as equal partners. Benefits include combined resources from education and service, practice-relevant research, and enhanced collaboration. Disadvantages relate to the complexity of blending two institutions' perspectives and priorities, the challenges of meeting time and place, and the need to decrease teaching or work load for the researchers.

The consortium model involves individuals from multiple health care agencies in a geographic region. This model provides the benefits of cost sharing, large subject pool, decreased data collection time, and the momentum and inspiration of a shared project. Because of the geographic distance between sites, communication and decision making present major challenges. Multiple agencies also introduce multiple protocols or review boards. Researchers in this model often report an ambiguity regarding their role in the project.

The participatory action research (PAR) model combines community participation, research, and action to solve pressing social problems. This mode of inquiry involves the community as an equal partner at every step of the process. Benefits include empowerment of local communities, development of lay leadership, and resolution of real-life situations. Disadvantages involve a long time commitment and difficulty in obtaining funding.

Collaborative efforts can be enhanced by the explicit discussion and written communication of guidelines. Thiele (1989) mentioned three significant issues that require attention: “questions of authorship, contribution and recognition of effort” (p. 150). Written agreement among collaborators should clarify role responsibilities for each participant, decision-making processes, tentative time schedules, spin-off projects, and subsequent use of data. Engebretson and Wardell (1997) listed the requisite personal attributes as “trustworthiness, competence, and flexibility” (p. 43) and the requisite relationship attributes as “acceptance, validation, and commitment” (p. 44) and often synergy and fun.

Joanne W. Rains

Comfort

Comfort has been conceptualized as a holistic outcome of nursing care and defined as the
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experience of having needs for relief, ease, and transcendence addressed or met in four contexts of experience. The four contexts for experiencing comfort were derived from the literature on holism and were labeled physical, psychospiritual, environmental, and sociocultural (Kolcaba, 1991). Relief, ease, and transcendence, three types of comfort, were derived from a concept analysis of comfort (Kolcaba & Kolcaba, 1991).

Comfort care is nursing care that is intended to enhance a patient’s comfort beyond its previous baseline. Comfort care consists of goal-directed, comforting activities (the process of comforting) through which enhanced comfort (the desired end product or outcome) is achieved. The process is initiated by the nurse after an assessment of the comfort needs of the patient/family. Because the specified product or goal is enhanced comfort, a successful process is evaluated by comparing comfort levels before and after interventions that are targeted towards comfort.

The process is incomplete until the product of enhanced comfort is achieved (Dretske, 1988; Kolcaba, 2003).

Kolcaba (1994, 2003) provides a theoretical framework for practicing comfort care and for generating nursing research about comfort. Briefly, the theory states that interventions should be designed and implemented to address unmet comfort needs of patients and their families. Because comfort is a basic human need, patients and families often assist nursing efforts towards enhanced comfort. (In fact, some self-comforting measures can be negative, such as alcohol or drug abuse.) The effectiveness of comforting interventions is perceived in the context of existing intervening variables. Intervening variables are factors that recipients bring to the situation and upon which nurses have little influence, such as financial status, existing social support, previous experience with health care, and religious beliefs. Enhanced comfort strengthens patients and their families during stressful health care situations, thereby facilitating health-seeking behaviors (HSBs).

Schlotfeldt (1975) discussed HSBs in terms of those that are internal (fertility, healing), external (self-care, functional status), or leading to a peaceful death. Consistent with holism, conscious and subconscious experiences influence motivation for patients/families to engage in HSBs. Because HSBs are constructive, they are reciprocally and positively related to comfort. Comfort Theory states that patient/family comfort is the immediate goal of comforting interventions, and HSBs, specific to health-related goals, are subsequent outcomes.

Comfort Theory is focused on enhancing patient/family comfort for altruistic and pragmatic reasons. Patients/families want to be comforted by nurses in stressful healthcare situations. Because comfort is related to subsequent desirable health and institutional outcomes, the outcome of enhanced comfort is elevated in stature among other more technical and narrow outcomes. It is a holistic and nursing-sensitive outcome that is congruent with recent mandates to measure nursing effectiveness in terms of positive and desirable patient/family goals (Magvary, 2002).

The Theory of Comfort directs research in several ways. First, it guides nurses to test relationships between particular holistic interventions and comfort. Second, it guides nurses to test relationships between comfort and setting-related HSBs. If the relationship is positive, nurses have a pragmatic rationale for enhancing patient comfort. Third, it guides nurses to test relationships between HSBs and institutional outcomes.

Qualitative studies have been conducted to determine the nature of comforting nursing actions and what comfort means to patients. Journal publications by these authors did not define or operationalize the outcome of comfort. Several empirical tests of Comfort Theory have been conducted by Kolcaba and associates (Kolcaba, 2003). These comfort studies demonstrated significant differences between treatment and comparison groups on comfort over time. The following interventions were tested: (a) types of immobilization for persons after coronary angiogram, (b) guided imagery for women going through radiation therapy for early breast cancer, (c) cognitive strategies for persons with urinary frequency and incontinence, (d) hand massage for persons near end of life, and (e) generalized comfort measures for women during first and second stages of labor. In each study,
interventions were targeted to all attributes of comfort relevant to the research settings, comfort instruments were adapted from the General Comfort Questionnaire (Kolcaba, 2003), and there were at least two measurement points, usually three, to capture change in comfort over time.

To demonstrate that comfort is an important mission for nursing, additional tests of Comfort Theory should be conducted, including attention to increased functional status, faster progress during rehabilitation, faster healing, or peaceful death (when appropriate). Institutional outcomes could include decreased length of stay for hospitalized patients, decreased readmissions, and higher patient satisfaction.

Katharine Kolcaba

Community Health

Community health is influenced by environmental, biomedical, organizational, and behavioral factors and encompasses a broad definition of health. For example, good jobs, education, safe neighborhoods, access to health and social services, and recreation and leisure activities all promote community health. Community health is a process of health promotion and disease prevention in which community leaders identify community problems and assets, create consensus on goals, take action, and reach goals. Key aspects of this process are community development and multisectoral interventions, including health policy and community participation. Ongoing community-wide efforts assess and monitor progress in achieving explicitly stated community goals, for example, those adapted from Healthy People 2010 (U.S. Department of Health and Human Services [USDHHS], 2000).

Because the health of people is affected by broad contextual factors, nurses, particularly community health nurses, must collaborate with other disciplines in developing a knowledge base for community health. Useful theories and models that can be applied to the study of community health include cultural change theories, social change theories, critical theories, community development, diffusion of innovation, ecological models, community participation, community power, and community decision making.

Community health research can be classified in different ways. For example, categorical programs include large-scale interdisciplinary studies such as the Minnesota Heart Health Program, the Pawtucket Heart Health Program, and the Stanford Five-City Project. Noncategorical programs include Healthy Cities and action research. Epidemiological research includes community needs, assets assessments, and risk factors for disease. Finally, there are evaluations of community health interventions. Increasingly, nurses are conducting community health research and involving other disciplines and the community in the process.

Opportunities for nursing research in community health are enormous. The growth of managed care is placing increased demands on state and local public health systems to assure the continuation of vital programs. Research in managed care and its impact on community health is needed to assure accountability of essential services. The extent to which underserved populations receive care within cost-containment strategies should be studied. The development of community coalitions for health throughout the country requires further study. Most major health programs—for example, Assessment Protocol for Excellence in Public Health (APEX/PH), Planned Approach to Community Health (PATCH), Healthy Cities and Communities, and HIV/AIDS Community Planning—involves the development of community coalitions as part of the community health process.

Research is needed to explain under what conditions coalitions succeed in promoting community health programs and policies. How effective are these programs and policies in changing key community health indicators of success? Nursing interventions, such as nurse-managed clinics or community nursing centers, need further research. What are the
critical factors that sustain successful nurse-managed services at the local level? To what extent are these services being integrated into the networks of provider services? Dissemination of research findings is also important. For example, what are the characteristics of successful nurse-managed services that can be applied elsewhere and in what types of communities?

Likewise, the challenges are enormous. Nurses can take the lead in interdisciplinary research collaboration. The skills for community health research require the expertise of many disciplines in addition to nursing, including epidemiology, health economics, medicine, dentistry, health policy, statistics, and urban planning. The challenge is to share the expertise of each discipline as well as share the credit and rewards of collaboration. Although the time is ripe for funding such research efforts, such funding is highly competitive in the current health care arena.

The concept of community health incorporates a broad definition of health, one that recognizes the multiple community factors that support and impinge on health. Scientific inquiry that includes both qualitative and quantitative research approaches is needed to further build the body of knowledge relevant to the theory and practice of community health.

Beverly C. Flynn

Community Mental Health

Over the past 50 years, the community mental health movement has had a tremendous impact on psychiatric nursing, taking psychiatric nurses into communities and freeing them from their almost exclusive practices in large state hospitals. Nursing research in the area of community mental health has steadily increased, the United Kingdom having contributed most to this body of literature, especially in recent years. Historic influences in the United States (U.S.) and United Kingdom (U.K.) created different climates from which nursing research in each of these countries emerged.

From the early 19th century until the 1960s, mental hospitals, or “asylums,” constituted the major treatment resource for the mentally ill in both the U.S. and U.K. Advances in the use of psychotropic medications and government policy directives in each country spurred movement of mentally ill patients into the community. The historic report, Action for Mental Health, presented to the U.S. Congress in 1961, recommended a shift to community-based care. This was followed in 1963 by the enactment of the Community Mental Health Centers Act, which authorized $150 million in federal funds to develop comprehensive community mental health centers (Miller, 1981). The U.K. followed suit in 1962 when British politician Enoch Powell presented his Hospital Plan for England to Parliament; however, it was not until the publication of the 1975 White Paper, Better Services for the Mentally Ill, that any real increase in resources were initiated (Bonner, 2000).

The shift from hospital to community posed challenges for psychiatric nursing in both countries. Most psychiatric nurses in the U.S. were educated through hospital-based programs, making them ill equipped to take on the demands of an expanded community role. Although the findings of several early descriptive studies (Hess, 1969; Hicks, DeLoughery, & Gebbie, 1971) show psychiatric nurses functioning in diverse roles, nursing leaders (Mereness, 1983) during this period expressed concern that too often nurses in community mental health adopt “residual roles,” resulting from their lack of education in psychiatric theory and unequal status among fellow professionals.

In the U.K., social workers were the primary professionals delivering care to mentally ill patients in the community. Nursing was represented by the part-time activity of hospital-based psychiatric nurses who were seen merely as a technology through which psychiatrists could extend their authority beyond the confines of the hospital (Bonner, 2000). In both countries, the main role for
Community psychiatric nurses during these early years was the task of administering depot injections to patients with severe mental disorders.

The 1970s and 1980s were characterized by role differentiation and expansion for community psychiatric nurses in both countries. In the U.S., there was recognition of the need for advanced educational preparation of psychiatric nurses to meet the challenges of this evolving role (DeYoung & Tower, 1971). The findings of one descriptive study (Davis & Underwood, 1976) show that, although half of the nurses employed in four community mental health centers earned a bachelor’s degree and provided some consultation and counseling, most of their time was spent performing traditional functions. With increased educational opportunities, funded largely by the National Institute of Mental Health (NIMH) in the 1980s, psychiatric nurses grew more sophisticated and diversified. They began to function as therapists for individuals, families, and groups and to serve as case managers and coordinators of community services. Psychic home care nursing also began to flourish during this period as reimbursement for these services became available (Fagin, 2001). Although nursing research related to community mental health was still scarce, an early intervention study (Slavinsky & Krauss, 1982), funded by the NIMH, characterized nurses’ commitment to the care of psychiatric patients in the community and their skill in developing innovative programs for this population.

The drive for autonomy for community psychiatric nurses in the U.K. was away from psychiatry and “general nursing.” Their “professionalization” and expansion was largely achieved through their successful incursion into primary health care and distancing from mental health teams. Government initially supported community psychiatric nurses’ efforts in building new relationships with general practitioners, and even funded their training (Godin, 2000). Community psychiatric nurses expanded in number, and also in the range of therapeutic approaches used in their practices. As their self-image as professionals and their relationships with general practitioners grew, however, their caseloads became comprised of patients with less severe problems (Godin, 1996). The findings of one U.K. study (Barratt, 1989) show community psychiatric nurses’ self-perceived roles becoming more differentiated, emphasizing prevention, counseling, and a variety of therapies for certain patient populations. Another study (Wetherill, Kelly, & Hore, 1987), investigating the effectiveness of a structured home intervention to improve patient compliance in alcohol treatment and recovery, demonstrates the growing ability of community psychiatric nurses in the U.K. to develop innovative interventions and expand their practices to include a varied clientele base.

In the U.S., psychiatric nurses continued to develop pivotal roles in a variety of community treatment modalities. In one national survey of assertive outreach programs, findings show that 88% had a psychiatric nurse as an integral member of the treatment team (Deci, Santos, Hiott, Schoenwald, & Dias, 1995). Over time, psychiatric clinical nurse specialists became recognized as independent practitioners, eligible for third-party reimbursement, and active in caring for seriously mentally ill patients (Iglesias, 1998; White, 2000); however, research addressing specific psychiatric nursing interventions for this population was still quite limited (Beebe, 2001; Rabbins et al., 2000). The “Decade of the Brain” in the 1990s brought the medicalization of psychiatric practice. In response to the challenge of integrating biologic knowledge into clinical practice, psychiatric nurses working in community mental health centers and in private practice in the U.S. sought prescriptive authority. Current nursing research reflects efforts to understand prescribing practices of advanced-practice psychiatric nurses (Talley & Richens, 2001) and identify barriers to prescriptive practice (Kaas, Dahl, Dehn, & Frank, 1998).

By the 1990s, community psychiatric nurses in the U.K. were numerically the most dominant occupational group within community mental health care; however, this also
meant that they were perceived as responsible for many of its failures. Criticism was primarily directed toward their decision to shift focus away from the care of patients with severe mental illnesses in favor of work in primary health care. Many also questioned the effectiveness of their work in primary care, contending that counseling-based interventions were of unproven worth with people experiencing minor, self-limiting problems, and were not cost effective (Hannigan, 1997). Not only were community psychiatric nurses directed to reappraise the value they placed upon serving those with severe mental illness, they were also directed to develop and apply evidence-based interventions with this population.

One needs only to scan recent reviews of nursing research to gain an appreciation of the effort that has and is being put forth by psychiatric nurses in the U.K. to meet this mandate. The nursing literature is replete with studies investigating the clinical impact of specific interventions with severely mentally ill patients. Examples include nursing interventions for early detection of medication side effects (Jordan, Tunnicliffe, & Sykes, 2002), for identifying psychiatric illness in the elderly (Waterreus, Blanchard, & Mann, 1994), for providing sex education to mentally ill patients (Woolf & Jackson, 1996), for delivering a “psychosocial intervention” to families caring for a relative with schizophrenia (Brooker & Butterworth, 1991), and for using an “insight program” with patients diagnosed with schizophrenia (Pelton, 2001). While psychiatric nurses throughout the world can use the wealth of knowledge gained from these studies, it is equally important that research be directed toward testing nursing interventions within the context of specific communities and different cultures, and that nursing research in this area become more interdisciplinary in nature. It is also important that nurse researchers study the effects of disparity and stigma in access to community mental health care across the life span.

Wendy Lewandowski

Complementary and Alternative Practices and Products (CAPPS)

A large percentage of persons worldwide are using complementary and alternative practices and products (CAPPs), referred to also as “complementary and alternative medicine” (CAM), and, more recently, integrative medicine (NIH, 2003). However, the term CAM is not a true descriptor in that use of these practices and products is not limited to medicine. Integrative medicine is the newest term added to the range of definitions related to the concept of “complementary and alternative” medicine. The term “integrative” is increasingly used by clinicians and researchers, reflecting findings in the survey literature that suggested most people use CAPPs in conjunction with, rather than as an alternative to, conventional or mainstream medical services (NCCAM, 2003; Ni et al., 2002).

Despite any confusion in use of terms, surveys indicated that a significant percentage of the adult population in the United States (ranging from 30% to 45% at the beginning of the new millennium) is trying a variety of these ancient and modern CAPPs to treat a variety of symptoms and conditions (Eisenberg et al., 1993, 1998; Ni et al., 2002). A parallel trend is the increasing use of CAPPs among senior citizens, specifically in the aging U.S. population. A recent national sample study has shown that 30% of people aged 65 and older used at least one CAPP modality compared with 46% of those younger than age 65 (p = <.001) (Ai & Bolling, 2002). These surveys indicate, also, that the American public is spending billions of dollars for CAPPs, most of which is not reimbursed by third-party payers.

In response to the increasing interest of the American people in the healing potential of CAPPs, the Federal Government created in 1992 the Office of Alternative Medicine (OAM) (elevated in 1999 to the National Center for Complementary and Alternative Medicine [NCCAM]). The mission of the NCCAM is to assure users, through rigorous research studies, that the CAPPs widely used
by the American people do what the practitioners of these modalities and the manufacturers of these products claim. It is acknowledged today that anecdotes about efficacy and effectiveness of practices for which there are not plausible explanations are insufficient, thereby giving importance to well-designed and well-executed research.

The term complementary medicine/therapies was introduced during the decade of the 1970s in the United Kingdom and refers to those practices and products that link the most appropriate therapies to meet the individual’s physical, mental, emotional, and spiritual needs. In some cultures the term “alternative” refers to those practices and products that are provided in place of conventional health care, many of which are outside the realm of accepted health-care theory and practices in the United States. Still today, practices and products categorized as complementary and alternative reflect a broad spectrum of modalities and beliefs. Consequently, what is defined as such varies based upon professional or occupational perspective. Among the early initiatives of the NCCAM was identification of broad categories of CAPPs as a beginning to the classification of the more than 200 modalities that are reported to have more than 10,000 uses. These categories fall under the rubrics of alternative medical systems (e.g., homeopathy, naturopathy); mind-body interventions (e.g., mental imagery, music therapy); biologically based therapies (e.g., dietary supplements, herbal products); manipulative and body-based methods (e.g., massage, chiropractic); and energy therapies (e.g., qi gong, therapeutic touch, electromagnetic energy fields as in magnet therapy). The NCCAM fosters research to reduce barriers that keep promising therapies from emerging. To promote research in CAPPs, OAM initially established 10 research centers across the country, one of which is directed by a nurse. NCCAM has since enlarged this number to 13 research centers across the country and has reported plans to develop international research centers as well (NCCAM). Interested persons seeking state-of-the-science information on selected CAPPs may access a Public Information Clearinghouse Database, and the Evaluations Section of NCCAM may be accessed at the web site http://nccam.nih.gov/ (NCCAM, 2003; Taylor, 1998).

Selected complementary and alternative practices have been studied sufficiently to provide conclusive evidence of effectiveness. For example, there are data to support a number of behavioral and relaxation practices used to treat pain and insomnia. However, data currently available are insufficient to be definitive that one practice or procedure is more effective than another for a given condition. Yet, because of psychosocial differences among persons, as well as variations in personality traits among individuals, one procedure or product may be more suited than another for a given person (NIH Technology Assessment Panel, 1996; Owens, Taylor, & DeGood, 1999).

The challenge today for health care professionals is to become and stay informed regarding indications and contraindications for use of the myriad of procedures and products that patients are using, including the potential interactions of natural products with pharmaceuticals, foods, and lifestyles. Movement to offer some content about CAPPs within the curricula of schools of nursing, medicine, and pharmacy is evident. However, while faculty responsible for the integration of this content sometimes desire to include it, there appears to be less agreement among faculty on the practical aspects of its integration (Gaydos, 2001; Kligler, 1996). A more recent effort of the NCCAM focuses on introduction of CAPPs information into allopathic, osteopathic, nursing, dental, and pharmacy schools to capture the attention of young health professionals (Taylor, Menzies, & Boyden, 2001).

The main issue regarding research in CAPPs is not the adversarial position, e.g., “CAPPs vs mainstream,” but the more scholarly position of asking whether an intervention is effective or not; is it safe or not? (NCCAM, 2001). Rigorous programs of research involving any of these practices and products may begin with basic questions:
What’s going on with a particular therapy in the investigator’s target population? How do individual differences, as assessed by a given measurement tool, influence what happens or does not happen in the use of a particular therapy for management of a specified symptom? From general questions such as these, coupled with extensive literature reviews and consultation with experts, more specific questions about the use of these therapies in patient care evolve to guide the investigator’s research.

Because nursing takes the position that patients’ perceptions, thoughts, and feelings are an important part of their reality, these influence the nature of inquiry and the choice of outcome measures. Focusing on individual differences among patients when assessing use, efficacy, and effectiveness of CAPPs permits the investigator to analyze disparate patient care findings and synthesize these into questions that will add to the body of knowledge about these therapies (Owens et al., 1999). Findings resulting from research studies testing the efficacy of CAPPs may lead to knowledge that can be useful in making reliable predictions and linking appropriate therapies to a person for promotion of health or symptom management (Taylor, 1998).

Definitions of complementary and alternative procedures and products (CAPPs) and estimates of consumer use will continue to change as researchers complete rigorous scientific studies in this area. While health consumers today are empowered to take control of their health care outcomes, a large number of nurses and other health care professionals still lack knowledge about CAPPs, thus creating a barrier to consumers achieving their goal. Rigorous clinical studies continue to be needed to provide evidence of treatment efficacy for many symptoms and conditions. Research monies are available for competitive research proposals through the NCCAM and other departments within the National Institutes of Health. Consumer demand and pressure will continue to drive integration of selected CAPPs into the conventional health care system as well as prompting the need for continued rigorous science in this field. These factors foster optimism and increase the potential for additional evidence-based holistic care, facilitating the safe integration of selected CAPPs into health care.

Ann Gill Taylor
Victoria Menzies

Computer-Aided Instruction

Computer-aided instruction is an educational method in which specially designed computer programs are delivered to learners as replacement or adjunct to standard classroom or practical experience. This form of instruction may be offered in a classroom setting by an instructor. Instruction may be offered in the form of clinical simulation, where the program reproduces a virtual scenario similar to what the learner would experience in a live, clinical situation; it may also be used in adaptive testing which tailors the testing in response to a learner’s ability. Computer-aided instruction may also be offered in an interactive format for purposes of mastering theory in addition to clinical/psychomotor skills. Ayoub et al. (1998) proposed that use of an interactive computer classroom will help foster the development of critical thinking within groups at all levels of education. Utilization of this model of education becomes increasingly relevant in a basic or advanced practitioner role with the advent of the increasingly restricted clinical time allotments to students and faculty. Problem-solving skill development is impacted, and not uncommonly, places students with inadequate knowledge and insufficient clinical skills in situations which can ultimately prove harmful to patients (Weis & Guyton-Simmons, 1998).

One of the biggest impediments to broader use of the computer as an instructional device in the period from the late 1980s through the early 1990s was anxiety regarding computer use, commonly referred to as “technophobia” (Geibart, 2000). Age is also a factor, with older students exhibiting more anxiety than younger ones about computer technol-
ogy. Initial attempts to integrate the computer into education were limited to using the device as an alternative to paper-and-pencil assignments and testing. Gibbons, Bachulis, and Allen (1999) compared a group of 45 students who were asked to design a computer program on a relevant clinical topic and compared this group to another group assigned a paper-and-pencil independent study. Students with the computer assignments expressed more satisfaction with their assignment. Ravert (2002) reviewed nine educational programs (five medical, four nursing) utilizing clinical simulation as a part of their instructional program and found that only one of the nine, at a medical school located outside the United States, did not score positively as favoring computer simulation as a part of its academic program. Simulation lends itself to a number of learning opportunities, particularly with complex patients and patients utilizing complex medical technologies normally seen in a critical care area. The study of pathophysiological process also lends itself well to simulation (Hart, 2000).

Computer adaptive testing which adapts to the individual's ability forms the basis for many of the specialty practice and achievement examinations taken by practitioners. Probably the most familiar form of this type of testing is the National Council Licensing Examination (NCLEX) which was started in 1994. Forker and McDonald (1996) note that with the increased availability of microcomputers in schools, exclusive use of traditional paper-and-pencil testing is changing. It is safe to assume that this would be the case with computer simulation activities as well. It can also be assumed that with the almost daily advances in web-based technology, clinical education as well as education of a more theoretical nature, such as epidemiology or bioethics, will continue to lend itself to this mode of education.

The technology surrounding computer-aided instruction and testing will continue to expand greatly in the future. Distance learning will continue to become more widely used and embraced by educators throughout the world. Clinical simulation in the form of virtual reality will take the learner to new heights in very realistic learning adventures. As the use of computers in and out of the classroom continues to increase, research exploring the outcomes of this educational method will be forthcoming.

JOSEPH M. FILAKOVSKY

Computerized Decision Support Systems

Although there is no clear agreement about how to define Computerized Decision Support Systems (DSSs), most would agree that a DSS can be defined in general as a computerized system used to aid decision making related to semi-structured problems. But some incorrectly include under the umbrella of DSS software that are not truly DSSs, such as expert systems. While differentiation is fuzzy, in general a true DSS is a collection of software programs, at the core of which are mathematical and statistical modeling components which act with real data to facilitate decision making. A defining characteristic of DSSs is that they are proactive. They provide rapid responses to real situations based on real data, models, and established guidelines. They are designed to be flexible, and allow ad hoc queries and easy changing of parameters in order to accommodate clinician intuition and judgment.

DSS systems vary in terms of complexity and scope, ranging from simple provision of integrated reports to use of inferencing methods to determine complex associations between pieces of data. While their goal is to facilitate effective decision making, they deal with problems that are relatively unstructured. For example, such a system might be used to predict how a new patient care treatment might affect the average duration of patient stay in an institutional setting.

The ultimate goal of any DSS is to help clinicians overcome their cognitive resource limitations for processing and storage as well as problem solving in an increasingly com-
plex medical environment. DSSs do this by helping clinicians to manage information overload in order to properly assess all of the relevant information and generate systematic and reasonable therapy. This has the net effect of facilitating standardization of care, reducing errors, and improving quality of care.

Healthcare DSS systems use actual patient data to provide information that can help clinicians make decisions. Wyatt and Spiegelhalter (1990) add the requirement that a medical DSS generate case-specific advice. The use of DSSs in clinical decision support can be divided into two categories: diagnostic and therapeutic.

There are several types of diagnostic DSSs. First are systems generating differential diagnoses. Such systems provide lists of possible diagnoses based on given clinical data. However, such systems are often problematic as the potential benefit for the differential diagnosis-generating DSS to inform caregivers about additional relevant diagnoses can be outweighed by the “noise” that arises from the presentation of irrelevant or inappropriately ranked diagnostic choices (Weiner & Pifer, 2000). Another type of DSS is based on a rule in/out model. These are used by caregivers to rule in or out a small set of diagnoses based on a given set of objective clinical signs and symptoms. They function like a second opinion and have been successful in limited application (Weiner & Pifer). A third type of DSS is used for computer-aided review of clinical tests such as radiographs or pathology specimen evaluation (Alberdi et al., 2000; Peters, 1996). Such systems help caregivers to interpret results, and have again had success in limited application.

Therapeutic DSSs focus on decision making in point of care treatment. Some focus on medication dosing, with the goal of reducing errors and complications. Others manage complex processes such as ventilation and oxygenation (East et al., 1999). Most therapeutic DSSs focus on compliance of caregivers with established quality-of-care guidelines, such as embedding hypertension guidelines within the hypertensive patient record (McAlister, Covvy, Tong, Lee, & Wigle, 1986). Their goal is to generate, at the point-of-care, patient-specific evidence-based therapy instructions that can be carried out by different clinicians with little interclinician variability. Individualization of patient therapy is preserved by these explicit protocols since they are driven by individual patient data (Morris, 2001). A good example in nursing of such a DSS is the Braden System (Bergstrom, 1997). This is a DSS that guides the caregiver through risk assessment and then suggests risk-based care tailored to the specific patient risk-factors based on published guidelines. However, while the use of DSSs in therapeutics seems reasonable, research is need that demonstrate their benefits in terms of outcome measures (Weiner & Pifer, 2000).

Nursing research in the area of informatics has a history of perhaps 25 years, most of which has been heavily invested in the basic work necessary for the building of DSS systems. This basic work includes the development and identification of classification systems, taxonomies, vocabularies, best practices, essential data elements, and types of information used in nursing research and nursing decision making (McCormick & Jones, 1998; Werley, Devine, Zorn, Ryan, & Westra, 1991; Benner, 1984). While nurse informaticists have also developed circumscribed DDS systems using these building blocks, research related to the accuracy of the decisions and the efficacy of these systems in improving outcomes is fairly limited (Johnston, Langton, Haynes, & Mathieu, 1994). One study was located which tested the accuracy of a DSS system in using assessment data with a forward chaining inference engine to identify nursing diagnoses and interventions appropriate to the patient (Hendrickson & Paganelli, 1994). A few studies have moved beyond these basic issues to test the effectiveness of specific DSS systems in producing nursing decisions that result in better outcomes of care (Cuddigan, Logan, Evans, & Hoesing, 1988; Petrucci et al., 1992). Some have also moved to development of decision support systems based on established guidelines (Bowles, 2003). Future research will
likely focus on how DSSs can help nurses help patients make decisions in scenarios characterized by the need for careful deliberation about alternatives due to the risk or uncertainty of the outcomes or the value-laden nature of the decision (O’Connor et al., 1997).

In 1993, the National Institute of Nursing Research (NINR) constituted an expert panel on Nursing Informatics. They were charged with setting research priorities for nursing informatics as part of the National Nursing Research Agenda. In carrying out this mandate, the panel identified seven foci for research, and within each focus, these experts assessed the state of the science, then identified and prioritized more specific research needs (NINR, 1993). These foci were: (a) using data, information, and knowledge to deliver and manage patient care; (b) defining and describing data and information for patient care; (c) acquiring and delivering knowledge from and for patient care; (d) investigating new technologies to create tools for patient care; (e) applying patient-care ergonomics to the patient-nurse-machine interaction; (f) integrating systems for better patient care; and (g) evaluating the effects of nursing information systems. Similarly, in 2001 lawmakers provided the Agency for Health Research and Quality (AHRQ) with $50 million to undertake a major research initiative investigating the problem of medical errors. Among funded projects now under way are four different studies (two in adult and two in pediatric populations) assessing the impact of using handheld DSSs in ambulatory care settings (Ortiz & Clancy, 2003).

Health care delivery today is so complex that it is currently straining the resources of the country, and multifaceted clinical decisions are being made in an environment of rapidly escalating intensity. As DSS systems are developed to produce specific patient-care protocols that have been validated through using rigorous methodologies, these systems have the potential to decrease harmful variation in care, improve clinical decision making, reduce errors, optimize outcomes of care, and cut health care costs.

Concept Analysis

Concept analysis is a strategy used for examining concepts for their semantic structure. Although there are several methods for conducting concept analysis, all of the methods have the purpose of determining the defining attributes or characteristics of the concept under study. Some uses of a concept analysis are refining and clarifying concepts in theory, practice, and research and arriving at precise theoretical and operational definitions for research or for instrument development. Concept analysis has been used in other disciplines, particularly philosophy and linguistics, for many years. However, the techniques have only recently been “discovered” by nurses interested in semantics and language development in the discipline.

Concept analysis is a useful tool for nurses conducting research. Because the outcome of a concept analysis is a set of defining characteristics that tell the researcher “what counts” as the concept, it allows the researcher to (a) formulate a clear, precise theoretical and/or operational definition to be used in the study; (b) choose measurement instruments that accurately reflect the defining characteristics of the concept to be measured; (c) determine if a new instrument is needed (if no extant measure adequately reflects the defining characteristics); and (d) accurately identify the concept when it arises in clinical practice or in qualitative research data.

Concept analyses were relatively rare in nursing research until the early 1980s but have increased dramatically in number over the past 2 decades. Concept analysis is particularly relevant to a young science such as nursing. The process, regardless of method, requires rigorous thinking about the language used to describe the phenomena of concern to the discipline. Doing a concept analysis causes the researcher to be much more aware of and sensitive to the use of language in research. A conscious awareness of the language chosen to represent phenomena is necessary if nursing scientists are to develop a comprehensible body of knowledge for the discipline.

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It is also necessary for thoughtful practitioners to be aware of the language of the discipline. How nurses think about and describe the problems and solutions relevant to their practice is of paramount importance in helping the consumer of nursing care and the policymakers who influence the practice milieu to understand what nursing is and what nurses do. If nurses do not have a central core of well-defined concepts to describe their practice, then confusion and ambiguity will persist, and the development of nursing science will suffer.

Concept analysis has become a useful adjunct to nursing research. The outcome of a concept analysis significantly facilitates communication between researchers and practitioners alike. By specifying the defining characteristics of a concept, the researcher or practitioner makes it clear what counts as the concept so that anyone else reading about it or discussing it understands what is meant. Being clear about meaning allows better communication between scientists and practitioners about the usefulness and appropriateness of nursing language.

There is considerable discussion in the literature about which method of analysis is the most useful. Regardless of the method used, concept analyses can contribute significant insights into the phenomena of concern to nurses.

Kay C. Avant

**Consortial Research**

Consortial research is a form of collaborative research that can be used to increase the quantity and quality of nursing research within clinical settings. It involves cooperative efforts among researchers at several institutions. The sites have formal, well-defined administrative and working relationships that spell out agreed-upon roles and responsibilities.

Consortial studies are done for a number of reasons: (a) to achieve the required sample size when studying a low-prevalence disease; (b) to increase the ethnic diversity or other characteristics of a sample, thus increasing generalizability of results; (c) to shorten the time line for conducting the study by simultaneously recruiting subjects at multiple sites; (d) to provide mentoring to more junior researchers and staff nurses; (e) to share resources, tasks, and costs when external funding is not available; and (f) to increase opportunities for replication and dissemination.

Consortial studies may be conceived by one or a few investigators, who draft the initial proposal then recruit colleagues at other sites to participate in the study. These other investigators may be involved in helping to refine the proposal before it is submitted for funding. When the purpose of the consortium is more focused on mentoring junior colleagues or is a way to share resources and costs, it is more likely that development of the proposal will be a group endeavor from the start. In the latter case, the choice of topic may be generated by an advisory or steering committee. Whichever approach is taken, the pool of ideas generated by expertise from several institutions creates synergy that leads to more creative and productive research.

To conduct these multisite studies, one site usually serves a coordinating function for the study. Most often in externally funded studies, the coordinating center is responsible for identifying or developing questionnaires or other data collection forms, for data collection and processing procedures, and for receiving and centrally analyzing the study data. The oversight role of the coordinating center includes development and implementation of a quality control plan to assure standardization of sample identification, recruitment, and data collection procedures. Scientific issues for the conduct of the study are usually managed by a steering committee, often composed of the principal investigator from each participating site and a few key individuals at the coordinating center. Standing or ad hoc subcommittees of the steering committee are often formed to propose standards and oversee the work on specific aspects of the study. For example, the subcommittees bring proposals for publications and
presentations, participant safety and endpoints, or clinical aspects before the steering committee for approval. The degree to which the steering committee is involved in development of protocols, questionnaires, and so forth, as opposed to approving those developed by the coordinating center, varies by study and the reason the consortium was created.

In a consortium formed primarily for the purpose of sharing resources, mentoring junior researchers, replicating a previous study, or disseminating results, the steering committee may be composed of representatives appointed by each participating institution. In such cases the steering committee often serves the purpose of setting priorities for the activities of the consortium. Funding of studies conducted by a consortium may take several forms. When external funding is involved, the two most common types are (a) providing one large grant to a coordinating center, which then subcontracts with each clinical site, and (b) providing individual grants to each participating institution with a separate grant to the coordinating center. The first approach gives the coordinating center budgetary leverage when a site is not performing up to par. This is an advantage for involving a new site or increasing the number of subjects enrolled at existing sites by redistributing funds from the nonperforming site. The second approach requires that each site meet the commitments for the good of the overall study. A third model, used when external funding is not available, shares the cost of the research among participating institutions within the consortium.

In medical treatment research and public health prevention research, consortial arrangements have been a preferred structure for large randomized trials that must recruit substantial populations in a relatively short time, provide intervention, and have sufficient follow-up time to generate adequate statistical power to compare the effects of treatment on the study outcomes. Nursing has generally had less experience with this approach, although consortia of schools of nursing with several practice settings have been formed to facilitate the conduct of collaborative clinical nursing research (Rizutto & Mitchell, 1988a, 1988b, 1990; Schutzzenofer & Potter, 1989; Zalar, Welches, & Walker, 1985).

It may be expected that consortial research will increase as nursing researchers do more experimental research. Another factor that may promote consortial research in nursing is the changing health care system. As health care systems increase the number of contractual arrangements in attempts to provide cost-effective, integrated care across the continuum of patient needs, consortial research is likely to become more common.

BARBARA VALANIS

Content Analysis

Content analysis is a data analysis technique that is commonly used in qualitative research and focuses on structuring particular topics or domains of interest from unstructured data. It is a time-consuming process that involves organizing, identifying, coding, and making categories from patterns of data that are reflective of the topics (Patton, 1990). The topics or domains of interest are descriptive names chosen by the researcher and are sometimes also referred to as category labels (Morse, J. M., & Field, 1995). Historically, early content analysis focused on linguistic and observational data. However, in addition to information derived from interviews and casual or structured observations, researchers may analyze written text from special documents, archival records, field logs, and diaries or may develop schemes to analyze visual data from pictures or videotapes.

Content analysis begins with reading the text or written transcription of an interview, notes from an observation, or some other mode of data collection. The investigator reads the completed text and determines the main ideas or topics of the transcription or observation. The investigator then rereads the text and numbers and assigns a code to each segment or group of lines from the tran-
scription. Sometimes this may also be called labeling. Segments may consist of a single word or line, multiple words or lines, one or more paragraphs, or a pictorial schema and may vary according to the chosen topic or topics. The codes developed by the investigator reflect some commonality, such as an action or behavior, an event, thought, concept, and so forth. Line segments or groups of lines are separated and are grouped into categories, and the categories are grouped according to the topics that were identified by the investigator.

Topics or domains of interest may be chosen prior to a study, as with a focused study, or after the first interview. A focused qualitative study centers on one particular area of interest or intent, such as metaphorical analysis or feminist research. Another kind of focused study might center on a particular phenomenon like leadership style, body adornment among adolescent girls, or a demonstration of how caring activities are performed, to name a few.

The researcher may also choose to develop topics after a first interview or observation. Sometimes the topics seem to arise naturally from the data, whereas at other times the researcher must decide on and develop the topics from the information given. Developing a topic may be similar to making an index for a book or file labels (Patton, 1990). The researcher reads through the transcript of the interview or observation and begins to sort and organize the interview data according to likenesses and similarities. The researcher usually gets a sense of the main topics that pervade the text soon after the transcribing process is complete and after the first reading. This organization of the data may be done by hand or by using one of the many computer software packages that are available to assist organization of qualitative data.

J. M. Morse and Field (1995) suggest using between 10 and 15 main topics per study. They caution against making topics too specialized as only very small amounts of data will be able to fit into each. On the other hand, too many topics can cause confusion, and the researcher may have difficulty in remembering what categories go into each topic as the study progresses and more data are collected. With each subsequent interview or observation, the topics may be combined or subdivided into multiple categories as the need arises. As repetitive patterns arise, relationships between the categories and then between topics may be seen. Often the relationships may occur at the same time or be concurrent with each other. For example, in a study of adolescent face care, the topics “blemish care” and “facial scrubbing” are related and occur at the same time. In the same study, the topic “facial preparation” occurs or is antecedent to the topics of “blemish care” and “facial scrubbing,” whereas the topical area “making up the face” may occur as a consequence of one of the earlier categories that was formed (Morse & Field). Some researchers choose to quantify part of the analysis by counting frequency and sequencing of particular words, phrases, or topics.

The major reliability and validity issues of content analysis involve the subjective nature of the researcher-determined topics or category labels. What should be included within each topic should be clearly defined and should be clearly different from the others so that the results are mutually exclusive. The easiest way to determine reliability in a study that uses content analysis is to have two or more readers, other than the researcher, agree that the topics are appropriate for a particular study and that data can easily be organized under each. This is typically carried out by having the researcher randomly choosing a part of the study and having the readers look over the text and the topics independent of each other. A consensus of the readers would indicate the study’s reliability.

Validity in content analysis can be achieved by determining the extent that the topics represent what they are intended to represent. If the topics are based on a conceptual framework or a particular focus, they must be justified, described, and explained in terms of being representative of that conceptual framework or focus. Therefore, topics that are developed to reflect a conceptual framework or focus must be consistent with
Continuing Care Retirement Communities

A continuing care retirement community (CCRC) is a type of facility that provides housing, meals, and other services, including nursing home care, for older adults in exchange for a one-time capital investment or entrance fee, and a monthly service fee. Most CCRCs are sponsored by religious or other nonprofit organizations, but for-profit organizations have entered into the retirement business as well. The CCRC is usually constructed as a village or community, and the individual remains within this community for the remainder of his or her life. All CCRCs have a written contract that residents must sign. The terms of the contract vary, and have been separated into three categories by the American Association of Homes for the Aged: (1) Type A homes are “all inclusive” as they offer guaranteed nursing care in the nursing facility at no increase in the residents’ monthly fee; (2) Type B CCRCs do not guarantee unlimited nursing home care but have a contractual agreement to provide a specific number of days per year or lifetime of the resident in the nursing facility; and (3) Type C CCRCs are based on a typical fee-for-service approach. Financial stability, particularly of Type A and Type B CCRCs, depends on high occupancy rates in the independent living apartments and maintaining the residents’ optimal health and function so as to need fewer health care services.

The number of CCRCs has increased dramatically (50%) during the 1980s and has continued to grow. CCRCs are located throughout the United States although five states (Pennsylvania, California, Florida, Illinois, and Ohio) are home to more than one-third of the nations’ CCRCs. Despite the growth of CCRCs, proportionally they account for a smaller percentage of senior housing than previously. This is due to the dramatic increase in assisted living facilities.

Generally older adults who live in CCRCs are those who were never married, or married without children, are well educated, and health conscious (Krauskopf, Brown, Tokarz, & Bogutz, 1993; Petit, 1994; Resnick, 1989, 1998a). Initially CCRCs were for affluent older adults; however CCRCs are becoming more affordable and attracting those with more moderate incomes (Kitchen & Rouche, 1990). The decision to move into a CCRC requires a good deal of planning and adjustment for older adults, especially if they are relocating to another city or state, and/or moving from a large home to a smaller apartment.

The initial research in CCRCs focused on the adjustment to the community and the impact this had on the older adult. Resnick (1989), using a qualitative approach, described the challenges of adjustment to a CCRC and identified groups of individuals who were particularly at risk for relocation stress: (a) those who had experienced a recent loss, (b) those with a decline in mental status, and (c) the young-old (60 to 70 years) age group. Anticipating problems and letting residents know that they might have certain feelings helped residents in the adjustment process. The study also identified the need for frequent follow-up in the first 6 months to a year following the move-in as many residents did not begin to grieve over their losses until they fully completed the work of the move. Petit (1994) implemented the findings of this work as she developed the role of the wellness nurse in a CCRC.

The majority of the nursing research done in CCRCs has been on the health practices and health promotion of these individuals (Adams, 1996; Crowley, 1996; Resnick, 1998a; Resnick, Palmer, Jenkins, & Spellbring, 2000; Resnick, 2003). Generally these are descriptive surveys in which residents are asked about specific health behaviors such as getting vaccinations, monitoring cholesterol
and dietary fat intake, exercise activity, alcohol and nicotine use, and participation in health screenings including mammograms, Pap tests, stools for occult blood, or prostate examinations. The majority of residents in the CCRCs studied did get yearly flu vaccines and a pneumonia vaccine, and approximately 61% had an up-to-date tetanus booster. A smaller percentage (approximately 30%) monitored their diets. About 50% of those living in CCRCs drink alcohol regularly, only a small percent use nicotine (11%), and under 50% exercise regularly. Approximately 40% to 50% of the residents get yearly mammograms, 31% to 37% get Pap tests, 65% to 80% get prostate examinations, approximately 60% have stools checked for blood yearly, and a little over 50% monitor their skin for abnormal growths regularly. Overall, there is better participation in health promoting activities of older adults living in CCRCs when compared to older adults in the community. In a series of analyses examining the relationships between health behaviors among residents of CCRCs, age was the only variable that was significantly related to health behaviors and accounted for 7% of the variance. With increased age the residents participated in fewer health-promoting or preventive behaviors. Age, gender, physical and mental health, self-efficacy expectations, outcome expectations, and stage of change related to exercise directly and/or indirectly influenced exercise behavior in the residents. The influence of these variables on exercise behavior was supported in a qualitative study which focused on what helped older adults in a CCRC adhere to a regular walking program and what decreased their willingness to adhere. Crowley (1996) also considered the health behaviors of older adults in a CCRC and the outcomes of a wellness program which encouraged regular exercise. A total of 21% of the 225 residents exercised, and case reports identified positive outcomes such as weight loss and improved recovery following a fracture. Resnick (1999) explored the incidences and predictors of falls in a CCRC and found that the number of falls was the only variable associated with having an injurious fall. Resnick (1998b, 1999) also used a combined qualitative and quantitative approach to explore what increased or decreased residents’ willingness to participate in and actual performance of activities of daily living, such as bathing, dressing, and ambulating. Personality (i.e., determination), beliefs in their ability, the unpleasant sensations associated with the activity, goals, and fears, such as the fear of falling, were identified as common themes that influenced performance of functional activities. Based on quantitative findings, motivation (self-efficacy expectations, outcome expectations, and the personality component of motivation) as well as physical condition (standing balance and lower extremity contractures) were the most important predictors of functional performance in these individuals. Although not extensively studied, Russell (1996) considered the care-seeking behavior of older adults living in a CCRC. This was a qualitative study using ethnographic field research that incorporated semi-structured interviews, participant observation, and focus group interviews. The care-seeking process was described as sequential phases and stages that evolved over time. Resnick (2003) tested the impact of an individualized approach to health promotion in these sites, and Resnick and Andrews (2002) tested an educational intervention to help older adults make end-of-life treatment preferences. Some work has also been done to test exercise interventions in these settings. CCRCs continue to be a viable living environment for older adults. In order for these facilities to keep costs down and remain lucrative it is imperative that there be a focus on
maintaining health and function. Continued research needs to build on the preliminary findings from exploratory studies and begin to develop and test interventions that will help older adults in CCRCs maintain their health and function. For example, many CCRCs have “wellness programs” which are nursing driven. The outcomes of these programs need to be considered both from a health perspective as well as a fiscal perspective. Other important areas of research within CCRCs that nursing should consider include care processes around relocation to different levels of care, end-of-life issues, injury prevention, health-care utilization patterns and the impact this has on nursing care services.

BARBARA RESNICK

Coping

Coping is one of the most prolific topics in all of nursing research. Thousands of studies have been conducted by nurse researchers on coping, mainly with chronic illness, acute conditions, and treatment stress; family responses related to illness/disease; child/adolescent illness and hospitalization; specific illness, disease, diagnosis, medical treatment, and hospitalization stressors; caregiving, and sequelae such as distress. Prominent are studies of individuals and families facing chronic illness. The most frequent disease/illness situations in nursing coping research are cancer and cardiac disease or events. Coping is an exceedingly important area of nursing research since coping has important observable and measurable effects on health outcomes.

With few exceptions, coping in nursing research is defined using the definition and theory of psychologists Lazarus and Folkman (1984). They define coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). This definition accentuates the fact that coping is a process requiring effort, free of positive or negative evaluation, focusing on “what the person actually thinks or does” (p. 142).

Nursing research portrays coping as part of a dynamic process consisting of a stressor, appraisal, resources, coping, and outcomes. Stress in this perspective is defined as a “relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984, p. 19). Stress involves appraisal of the stressor for well-being (primary appraisal) and what can be done to manage the situation (secondary appraisal). Stressors in nursing research can be categorized as an “internal or external event, condition, situation, and/or cue” (Werner, Frost, & Orth, 2000, p. 10) that has the potential to bring about or actually activates significant physical, psychological, social, or spiritual reactions. They can be either normative or catastrophic.

Lazarus and Folkman (1984) also distinguish between problem-focused and emotion-focused coping. Problem-focused strategies are “directed at managing or altering the problem causing the distress” (p. 150). Emotion-focused coping is “coping that is directed at regulating emotional response to the problem” (p. 150).

Other coping theories tested in nursing research with individuals include Scott, Oberst, and Dropkin’s Stress-Coping Model incorporating anxiety in the stress and coping process. The theory most often employed in nursing research on family coping is the Resiliency Model of Family Stress, Adjustment, and Adaptation (McCubbin & McCubbin, 1996).

Coping resources examined in nursing can be categorized as social, psychological, spiritual, and other, such as finances and education. The social resource most studied is social support (Underwood, 2000). Nursing research has shown that social support “works through main, mediating, and moderating (buffering) mechanisms” (Underwood, p. 372). These processes are active and dynamic, and there is evidence that specific functions of social support and other resources become important in certain situations and specific
phases of illness, health crisis, or treatment. Generalizations indicate that context determines social support needs; social support can come from a variety of sources such as confidant or network; perceived support availability is often more strongly related to coping effectiveness than actual support received; social support has both positive and negative aspects; and there is a negative association between social support and deleterious outcomes such as depression and anxiety (Underwood). Instruments most frequently utilized for measuring social support with individuals are Norbeck’s Social Support Questionnaire and Weinert’s Personal Resource Questionnaire. Evidence is growing that support is an important family resource, particularly when families are faced with caregiving stress/burden. Family instruments include McCubbin and colleagues’ Social Support Index, and Fink’s Family Social Support Index (DeMarco, Ford-Gilboe, Friedemann, McCubbin, & McCubbin, 2000).

Hardiness is the psychological resource most studied in nursing coping research (Ford-Gilboe & Cohen, 2000). Hardiness, a personality phenomenon encompassing commitment, challenge, and control, especially health-related hardness conceptualized by Pollock, has been shown to be related to positive health outcomes for adults. Emerging as important in family nursing research, there is support that hardness mediates “the relationships between stressful life events and family adaptation” (Ford-Gilboe & Cohen, p. 427). It includes control, challenge, commitment, and confidence. Evidence is growing that hardness enhances coping for both individuals and families.

Other coping resources gaining nursing research attention include hope, control, sense of coherence, and self-efficacy. Antonovsky defined sense of coherence as an enduring orientation rendering events and stimuli comprehensible, manageable, and meaningful. Family sense of coherence is conceptualized as an “explanation of how these resources may contribute to health” (Antonovsky, 1998, p. 8).

Coping can be differentiated as coping style or coping strategies (behaviors). Coping style suggests typical responses across situations. Coping strategies are what people actually do in the face of stress. Nurse researchers examine coping strategies much more frequently than coping styles. Choice of strategies has been found to differ based on illness phase, specific stressors, and/or resources. People in many health/illness situations use a mix of problem-focused and emotion-focused strategies. Theoretically, problem-focused strategies are specifically tailored to the situation, while more global emotion-focused strategies are used across situations (Lazarus & Folkman, 1984). Instruments used most often to assess coping strategies in nursing research are the Jaloweic Coping Scale, the Ways of Coping Questionnaire, and the Family APGAR.

Over the last decade, there has been remarkable growth in the nursing research on coping in several areas. One of these areas is family coping. Another area is coping in children/adolescents (Stewart, 2003), where Lazarus and Folkman’s theory is most often applied. Most of these studies concentrate on serious illness, traumatic situations, and developmental transitions. While most investigations tap stressors specific to the situation, many also focus on behaviors based on Ryan-Wenger’s taxonomy of children’s coping strategies. Another newer area is spiritual coping (Baldacchino & Draper, 2001). Many researchers have found that spiritual coping strategies enhance positive health outcomes.

Specific findings of nursing coping investigations are numerous; several generalizations stem from the research. Problem-focused coping is consistently related to positive health outcomes and general well-being. Optimism is an important strategy for individuals, facilitating constructive action, choice among options, and retaining control. Positive social support for adults, children, and families is related to positive health outcomes, and may function through obtaining assistance, supporting self-esteem, receipt of advice or information, and/or presence of a confidant. Use of spiritual resources or cop-
ing strategies, such as prayer or religious attendance, is related to positive health outcomes. Exerting control is also associated with positive outcomes. Emotion-focused strategies, often associated with more negative outcomes, can be beneficial, especially in situations where there are few options. Coping strategies change over the course of illness stages. Less desirable coping strategies are associated with negative outcomes. Finally, coping strategies perceived by participants as most effective are often not those they engage in frequently.

Research designs most frequently used are descriptive/correlational and qualitative or interpretive. Longitudinal research is becoming more prevalent. Most studies employ self-report instruments, but interviews are gaining in popularity. Nurse researchers investigating coping are too numerous to mention, coming from all nursing specialty areas and many countries. Exemplary programs of research include those of Grey, Hagedoorn, Hinds, Hoskins, Jaloweic, J. Johnson, M. McCubbin, Nail, Northhouse, and Ryan-Wenger.

JOAN STEHLE WERNER

Coronary Artery Bypass Graft (CABG) Surgery

Coronary artery bypass graft surgery, a common treatment for coronary artery disease (CAD), provides significant improvement in symptoms in 76%–90% of the patients (Rahmitola, 1982). An estimated 800,000 surgeries are performed worldwide each year (Borowicz et al., 2002) with 519,000 performed in the United States in 2000 (American Heart Association, 2001). Although CABG surgery succeeds in treating physiological problems, a significant number of patients report feelings of anxiety and depression pre- and/or postoperatively and depression has been linked to morbidity and mortality (Borowicz et al.).

Research findings support the relationship of depression, anxiety, or a combination of the two with risk for cardiovascular disease (CVD), independent of classic risk factors, in patients with established CAD and in previously healthy individuals. Prevalence rates for patients with CVD range from 16%–23%, for clinical depression, and 31.5% and 60% for depressive symptoms (Pignay-Demaria, Lesperance, Demaria, Frasure-Smith, & Perrault, 2003).

Evidence that depression and anxiety have prognostic importance in determining CABG surgery outcomes supports the development of pre- and postoperative nursing assessment strategies to identify patients at risk for adverse events. Nurses can play pivotal roles in identifying patients who need further evaluation, providing education about the effects of depression and anxiety on CABG surgery outcomes, and developing and evaluating interventions aimed at ameliorating the effects of these risk factors on postoperative morbidity and mortality.

Demand for CABG surgery exceeds resources in many developed countries, leading to waiting lists. The experience of waiting for surgery has been studied from quantitative as well as qualitative perspectives. Patients on waiting lists experienced anxiety, depression, and negative impacts on quality of life (Screeche-Powell & Owens, 2003; Fitzsimmons, Parahoo, & Stringer, 2000; Teo et al., 1998; Jonsdottir & Baldursdottir, 1998). Levels of anxiety and depression in patients awaiting CABG surgery were significantly reduced in a randomized controlled trial of a nurse-led shared care intervention (McHugh et al., 2001).

Longitudinal studies of the impact of psychological variables on outcomes of CABG surgery demonstrate that recovery is neither simple nor experienced consistently in all patients. Although some studies included the measurement of both anxiety and depression, most examined the impact of depression on recovery. Researchers have found that anxiety levels significantly decreased over time and remained linear. Relationships between anxiety and depression over time were relatively weak while those relationships, at the same points in time, were relatively strong (Duits, Boeke, Taams, Passchier, & Erdman,
Coronary Artery Bypass Graft (CABG) Surgery

1997; Duits et al., 1999). Postoperative anxiety was directly related to perception of pain with the strongest relationship on postoperative day two. In a study of 38 males, 80% scored in the moderate range of anxiety preoperatively with anxiety-prone reactivity persisting in 38.9% of the patients postoperatively. These patients exhibited significantly more sleep disturbances, energy deficits, tiredness, immobility, and a lower quality of life (Edell-Gustafsson & Hetta, 1999).

Recently-reported longitudinal studies evaluating depression pre- and postoperatively report prevalence ranging from 16–50% preoperatively and 19–61% postoperatively. Almost all studies used self-report questionnaires for measuring depression. Subjects’ (n = 50 to 336) mean ages ranged from 54 to 65 years, represented a 3:1 male-to-female ratio, and ranged from 85%–100% Caucasian. An issue in evaluating patients for depression is the timing of the evaluation. Poston, Haddock, Conard, Jones, and Spertus (2003) found depression 1 month after surgery to be a better predictor of depression at 6 months than the preoperative score. Pirraglia, Peterson, Williams-Russo, Gorkin, and Charlson (1999) identified other predictors of postoperative depression: poor social support, at least one stressful life event in the last year, low level of education, and moderate to severe dyspnea. Hypothermia during CABG has been associated with higher levels of postoperative emotional distress (Khatri et al., 2001), and early extubation has been associated with fewer patients with depressive symptoms on day three postoperatively (Silbert et al., 2001).

Depression has consistently been associated with adverse outcomes after CABG surgery. Investigators (Perski et al., 1998; Scheier et al., 1999; Saur et al., 2001) have found depressive symptoms, pre- or postoperatively to predict postoperative cardiac events (unstable angina, myocardial infarction (MI), repeat CABG, or angioplasty) and were positively correlated with the rate of readmission for cardiac events. Connerney, Shapiro, McLaughlin, Bagiella, and Sloan (2001) determined that patients meeting criteria for major depressive disorder at discharge were significantly more likely to experience a cardiac-related event than were those who failed to meet the criteria (including those with depressive symptoms). Furthermore, depression was a predictor independent of classic cardiovascular risk factors.

In a study investigating the impact of depression on mortality, Baker, Andrew, Schrader, and Knight (2001) found mortality rates to be six times higher among the patients with preoperative symptoms of depression. Blumenthal et al. (2003) also identified higher mortality rates for patients with moderate to severe depression at baseline and mild or moderate to severe depression that persisted from baseline to 6 months. Limitations of these reviewed studies include low enrollment of women, racial homogeneity, high rates of refusal to participate, high attrition, and use of self-report measures to evaluate anxiety and depression.

Several studies have addressed gender differences in recovery from CABG surgery. Vaccarino et al. (2003) found that women were older and more often had unstable angina, congestive heart failure, lower physical function, and more depressive symptoms in the month before surgery. Younger women were at a higher risk of in-hospital death than men, a difference decreasing with age (Vaccarino, Abramsom, Veledar, & Weintraub, 2002). Postoperatively, for women but not men only, pain was correlated with depressive symptomatology and functional impairment (Con, Linden, Thompson, & Ignaszewski, 1999) and women had a more difficult recovery, unexplained by illness severity, presurgery health status, or other patient characteristics.

Postoperative neuropsychological deficits are a common complication of cardiac surgery, with incidence ranging from 25%–80% (Borowicz, Goldsborough, Selnes, & McKhann, 1996). Although investigators have found that changes in anxiety and depression did not influence changes in neuropsychological performance (Andrew, Baker, Kneebone, & Knight, 2000), multiple investiga-
tors have found that anxiety and depression impact perception of cognitive functioning (Vingerhoets, De Soete, & Jannes, 1995; Khatri et al., 1999). Factors predictive of post-CABG cognitive deficits were preexisting cognitive deficits, greater age, lower premorbid intelligence, and, at 3 months postsurgery, patients who received their first CABG surgery without cardiopulmonary bypass (Millar, Asbury, & Murray, 2001; Van Dijk et al., 2002).

Based upon several reviews of recent data, symptoms of depression and, to some extent, anxiety may be associated with cardiac events and mortality through multiple pathophysiological pathways. These include exerting a direct influence on health-related lifestyle behaviors (smoking, poor diet, low activity levels, poor adherence to treatment), effects on of hyperactivation of the hypothalamic-pituitary-adrenal and/or sympathomedullary axes, diminished heart rate variability, myocardial and ventricular instability in reaction to mental stress, alteration in platelet receptors and/or reactivity, and the inflammatory processes. To date, no one mechanism has been identified as the causal link between psychological states and cardiac events.

Although the benefits of short-term preoperative interventions have been examined in only one randomized controlled study of patients awaiting CABG surgery (McHugh et al., 2001), clinical experience suggests that routine screening and effective treatment preoperatively may decrease postoperative anxiety and depression and facilitate recovery. There is general agreement that early postoperative intervention should be offered to patients experiencing depression and/or anxiety. Some studies have shown that early psychological intervention may be associated with reduction in length of hospital stay, analgesic use, less subjective tension, and postsurgical morbidity (Mumford, Schlesinger, & Glass, 1982; Ashton et al., 1997; Perski et al., 1999; Karlsson, Berglin, & Larsson, 2000). A stress-management program, based upon relaxation techniques, offered 3 months after the MI or CABG surgery improved emotional well-being, daily activities, and several social parameters (Trzciniecka-Green & Steptoe, 1996). Data is also accumulating about the efficacy of selective serotonin reuptake inhibitors on the treatment of depression (specifically sertraline and fluoxetine) in patients with cardiovascular disease (CVD). To date, no studies investigating the effect of antidepressants after CABG surgery have been published. Clearly, there is a need for large, randomized trials of both antidepressants and psychosocial interventions post CABG surgery to determine their efficacy, especially since depression has clearly been linked to increased morbidity and mortality.

Susan H. McCrone

Cost Analysis of Nursing Care

Cost analysis of nursing care reflects a body of administrative studies that focus on quantifying nursing costs needed to deliver care to individual clients or aggregates in a variety of settings, employing a variety of practice models and analysis tools. All cost analysis is based on assumptions that must be examined and made explicit when reporting findings (Friedman, De La Mare, Andrews, & McKenzie, 2002).

Much of the research on cost analysis of nursing care has focused on “costing out” nursing services for the purpose of measuring productivity, comparing costs of various nursing delivery models, charging individual patients for true nursing costs, and relating nursing costs to other cost models, most notably Diagnostic Related Group (DRG) categories. The need and motivation for these costing efforts have evolved with the economic underpinnings of the health care system, as have the methodologies and setting focuses. For example, most studies in the 1980s were performed in acute-care hospitals, whereas more studies now relate to other settings.

Today, cost analysis of nursing care focuses on justifying the cost effectiveness of professional practice models, evaluating redesign efforts, and monitoring and control-
Cost Analysis of Nursing Care

ling nursing costs within an ever-tightening, cost-conscious health care environment. With the context of rising capitation penetration, cost analysis is essential to accurate capitation bidding and financial viability of the parent organization. As “best practices” benchmarking pushes the envelope of competitive bidding, demonstrating cost-effective nursing practice becomes essential to securing managed care contracts.

Cost analysis research is a type of nursing administrative research that evaluates aspects of the delivery of nursing care. More recently, this type of research has been performed in a multidisciplinary fashion under the broader rubric of health services administration research.

Cost analysis studies always have been relevant to decision making by nursing administrators in selecting delivery models, treatment protocols, and justifying budgets; but such studies may become central to the survival of the entire profession for the future. As cross-trained, unlicensed assistive personnel (UAPs) proliferate, nurse administrators must struggle to support the cost-effectiveness of professional nursing practice. Larger questions of appropriate skill mix cannot be determined solely on a cost per hour of service, cost per case, or cost per DRG basis. New studies are needed that will combine traditional cost analysis with differential outcome analysis to secure a larger picture of the “true cost-benefit ratio” for specific nursing models.

The most notable characteristic of cost analysis studies is the variety of definitions, variables, and measurement tools used in the studies. Eckhart (1993) performed a comprehensive review of 73 studies published from the early 1980s through 1990, focusing on costing-out nursing. Because of the impact of DRGs, length of stay (LOS) was a consistent variable. Length of stay was found to correlate highly to nursing work performed, whether measured by acuity indexes, nursing care hours, nursing costs, patient charges, or percent of nursing costs to hospital costs. These studies focused on in-patient settings, so little is known about cost analysis of nursing in nonacute settings that are the emerging focus of health care. Not all DRG categories have been studied, and there has been little validity or reliability reported on the instruments used to measure related variables. Definitions critical to this area of study must be standardized. For example, which nursing staff or other care providers are included in direct care calculations? What support services are included in indirect care calculation? What role should overhead and depreciation costs of nursing-related resources play?

Another major area of dispute for costing studies is the lack of a standard acuity measure because of the proprietary nature of most acuity systems. One study (Phillips, Castorr, Prescott, & Soeken, 1992) compared GRASP and Medicus acuity systems to the Patient Intensity for Nursing Index (PINI). PINI significantly correlated with both systems (p < .0001), but the shared variability was only 44% and 49% respectively. Shared variability between GRASP and Medicus was only 34%, and it was concluded that the two acuity systems do not measure nursing resource use in the same way. Neither system was predictive of PINI items “knowledge deficit, emotional status, severity of illness, or potential for injury.” Such PINI items as “hours of care, task/procedure complexity, and mobility” were significant predictors of both Medicus and GRASP scores (Phillips et al., 1992). These findings seem to indicate that task aspects of professional practice are measured by these systems but that interpersonal and observational aspects may not be fully appreciated. This work was confirmed by Cockerill, Pallas, Bolley, and Pink (1993) whose study compared case costs for patients across six acuity systems. Variances in estimated hours of care across workload measurement tools were statistically significant and varied by up to 30%. It is impossible to distinguish between true differences in case costs and measurement error across institutions in these circumstances. More study is needed to normalize acuity systems before cross-institutional data will be meaningful.

Cost and efficiency of nursing procedures or treatments continue to be studied. Capasso
and Munro (2003) compared two wound treatments (saline vs. hydrogel). Although both were comparable for wound closure rate and cost of treatment supplies, one was significantly more expensive. The saline treatment required a higher number of home nursing visits, accounting for the difference in cost. Clearly, such analyses demonstrate the multifactorial nature of costing research and the need to look beyond the obvious in doing such analyses.

Another fertile area for cost analysis is to evaluate cost differences among professional practice models. However, most of these studies use proprietary practice models that are difficult to duplicate in other settings. Variables are identified in these studies that do impact nursing costs, such as nursing turnover, ratio of productive to nonproductive hours, and nursing satisfaction. Russo and Landcaster (1995) evaluated unlicensed assistive personnel models relative to cost-effectiveness, quality patient outcomes, and customer satisfaction. More complex issues emerge for this type of analysis. Relative productivity across discipline levels, recruitment, training, and impact on quality must be added to the equation.

Given the growth of capitation, cost analysis of nursing services will need to take new directions. As critical pathways (benchmark performance tools) evolve as care guides, the costs of pathway changes on nursing delivery, patient outcomes, and case costs must be calculated. What are the most efficient and effective pathways toward resolution of a given health problem? What practice setting is appropriate for patients at each step of the pathway? For example, when is it safe to transfer a fresh open heart patient from critical care to a stepdown environment? (Earliest transfer to a least costly delivery mode saves money.) These calculations may be critical for institutions to secure managed-care contracts in a cost-competitive environment. Determining what activities can be safely eliminated from a pathway without negatively impacting care outcomes will have cost and resource savings as we move to “best demonstrated practices.”

Finally, we must move toward a cost-benefit analysis model that incorporates the outcomes of practice. This aspect has been especially elusive, given the “generic” and group nature of nursing practice. With multiple nursing providers impacting a patient’s care, how do we separate the relative contributions of each person or each subspecialty of nursing practice that a patient may experience in the course of their care from contributions of other disciplines? Additionally, we need to quantify the costs of increased patient mortality and failure to rescue associated with changes in nurse/patient ratios based on recent landmark studies (Aiken et al., 2002; Cho et al., 2003).

Mary L. Fisher

Critical Care Nursing

In the history of nursing the development of the specialty of critical care is fairly recent, paralleling the growth and development of intensive care units (ICUs) in the 1960s and 1970s. The first ICUs were areas in the hospital designated for the care of patients recovering from anesthesia who required close monitoring during a period of physiological instability. Recognition of the efficiency and effectiveness gained from segregating any patients who required intensive nursing care for a short period of time was spurred by experiences in managing groups of critically ill patients, such as those injured in the Boston Coconut Grove fire of 1942 and victims of the polio epidemics of the 1950s. The development of the mechanical ventilator and advances in coronary care led to recognition of the need for specialized skills and knowledge bases among nurses caring for these patients.

The first specialty organization was formed by nurses working in coronary care. As electrocardiographic monitoring became a routine tool in the care of many patients and critical care broadened to include the care of patients other than postanesthesia and those with cardiac disease, the American Association of Critical-Care Nurses (AACN),
originally named the American Association of Cardiovascular Nurses, was formed in 1969 (Lynbaugh & Fairman, 1992). This step was rapidly followed by the development of continuing education programs, formal recommendations for critical care curricular content in undergraduate programs, and a certification program. Today, AACN is the largest specialty nursing organization in the world, with more than 65,000 nurses in the U.S. and 45 other countries.

Heitkemper and Bond (2003) reviewed major advances in nursing research in critical care. Domains of nursing science predicted to emerge as important contenders for research priorities include genetic therapeutics and counseling, infection and emerging infectious epidemics, the aging population, high-risk neonates, health disparities, man-made and natural disasters, and the impact of gender on the mechanism, detection, and management of disease.

From the outset, critical care has been a research-intensive discipline, both in medicine and in nursing. The initial narrow focus on maintaining physiological stability of the cardiopulmonary system undoubtedly contributed to the early commitment to research-based practice. Dracup and Bryan-Brown (2003) observed an unprecedented change in the pace of critical care research and practice. Critical care researchers are venturing into multiple areas, including the impact of genomics and molecular biology on disease states. At the same time, there is an increasingly vast amount of published research, coupled with a trend toward specialization. Yet critical care nurse scientists have been extraordinarily productive, creative, and sophisticated in their investigations. A search of grants funded in 2003 by the National Institute of Nursing Research (NINR) yielded 24 federally funded studies of pediatric and adult patients with cardiac problems, four genetically-based studies, and more specifically, critical care research focusing on complex subjects such as heart-rate variability, prone positioning in pediatric patients with acute lung injury, gene expression in cerebral ischemia, the use of acute-care nurse practitioners in improving outcome in patients receiving long-term mechanical ventilation, and an ethnographic study of dying patients in surgical intensive care unit, examining family interactions with clinicians as the goal of care shifts from cure to comfort.

Phenomena of interest can be described as falling into five broad areas: (a) the critical care environment, (b) critical care nurses, (c) monitoring techniques, (d) interventions, and (e) outcomes of critical care. Journal articles published since 2003 in *American Journal of Critical Care, Critical Care Nurse, Heart and Lung, Nursing Research, and Biological Research for Nursing* were reviewed for evidence of significant trends and changing patterns of inquiry.

Interest in studying the critical care environment began with observation of postcardiopulmonary syndrome in open heart surgery patients in the 1960s. Efforts to describe this phenomenon and identify causative factors soon broadened to include all forms of delirium and disorientation, grouped under the heading “ICU psychosis.” This syndrome is now called delirium, described as a disturbance of consciousness, characterized by inattention and a change in cognition or perceptual disturbance that develop rapidly (Truman & Ely, 2003). Delirium, one of the most common complications in the ICU, has been found to be an independent risk factor for prolonged ICU and hospital stay, and higher mortality rates 6 months after discharge. Delirium may be associated with visual and auditory hallucinations, and sometimes paranoid ideation. It is thought to be related to a variety of physiological, psychological, and environmental factors.

Characteristics of the ICU environment that have been consistently implicated in studies and have been the target of changes in environment and care routines include sleep deprivation, social isolation, and multiple sources of unusual sensory stimulation, such as lighting and noise (Noble, 1982). Predisposing risk factors that are present prior to hospital admission may trigger delirium’s onset, including age over 70 years, recent history of alcohol abuse, and transfer from a nursing
home (Truman & Ely, 2003). Precipitating risk factors occurring following patient admission have been found to be any noxious stimuli initiated in the ICU setting, such as the administration of benzodiazepines, opiates, the performance of invasive procedures, and the emergence of electrolyte and fluid imbalance. Severe metabolic changes causing imbalances in neurotransmitter concentrations are thought to act as the basic mechanism for delirium, although environmental factors are known to play a role in its development and symptomatic escalation.

Another growing environmental concern is the potentially deleterious effects of light and noise in the neonatal intensive care unit on the growth and development of neonates, a subject that has received increasing attention from nurse scientists and greater funding for nursing research. A third recurring theme in the scientific literature is the need for the ICU environment to appear less threatening to patient family members and to meet family needs. Thus, the subject of ICU visitation has been examined by many investigators, particularly as it affects attitudes of family members and staff nurses alike. The emergency department as an environment of care has also been showcased as an important context of care, as the issue of family presence during patient resuscitation has received considerable attention by nurse researchers over the past several years. The boundaries between the sheltered ICU environment and the rest of the world, however, have become more permeable, given the recent turmoil and changing nature of world events. In response to these changes, Heitkemper and Bond (2003) recommend that nursing broaden its definition of environment to capture the threats of infectious disease, disasters, and health disparities as environmental factors in need of further research.

During the first decade of critical care development, there was considerable interest in studying the practitioners of this new specialty. In general, research projects were aimed at describing characteristics of nurses who chose this area of practice, comparing them with non-ICU nurses. In addition to looking for demographic differences, there was particular interest in the effects of working in the ICU environment on stress levels and the effects of stress, such as burnout and rapid turnover.

Currently, the focus of research on critical care nursing has shifted to a broader recognition of the importance of collaborative, interdisciplinary care and appropriate levels of staffing in order to ensure patient safety, improve patient outcomes, and address the growing nursing shortage due to dissatisfaction with working conditions. In a landmark study of more than 10,000 nurses and 230,000 surgical patients, Aiken and colleagues (2002) reported that when the safe patient-staff ratio exceeded 4 to 1 on a surgical floor, the frequency of patient deaths increased by 7% for each additional patient assignment added to the nurse’s workload. This problem is particularly salient in the highly complex critical care environment, where Cullen and colleagues (as cited in Dracup & Bryan-Brown, 2003) found that preventable adverse drug events are twice as frequent when compared with the incidence of medication-related errors outside of the ICU, and where the risk of an adverse event rises by 6% for each day of ICU stay. Proposed solutions evident in the literature include nursing interventions using a teamwork model to improve patient outcomes and the use of acute care nurse practitioners to oversee continuity of patient care.

Physiological monitoring has been the hallmark of critical care since its inception. Until the recent emphasis on reducing the cost of expensive services, the most common reason for ICU admission was either for frequent and close physical assessment by nurses or for monitoring of some physiological parameter that required specialized technology not available on the general hospital ward, such as electrocardiography or intracranial pressure monitoring. It is understandable, then, that studies of monitoring techniques have been so prevalent. In a review of critical care practice research conducted in the decade 1979 to 1988 (VanCott, Tittle, Moody, & Wilson, 1991), the most common content areas were the effect of patient posi-
tion on hemodynamic parameters (11%),
cardiac output measurement (6%), and coag-
ulation studies (5%). In the past decade, the
usefulness of physiologic monitoring con-
tinues to receive attention, especially in the con-
tinuing interest in the accuracy of measure-
ment of cardiac output with position change,
temperature, oxygen consumption, work of
breathing, neuromuscular blockade, as well as
the determination of novel biomarkers of
inflammation, rejection of organ transplanta-
tion, and sepsis. Greater numbers of critical
care nurse researchers are receiving genetic
training as well as federal funding for con-
ducting basic laboratory and animal investiga-
tions, including such topics as diaphrag-
matic fatigue, cytokine response to inflamma-
tion, and genetic susceptibility to cerebral
ischemia following brain injury.

Interventional studies have become more
frequent in the recent past. The majority of
these studies have focused either on psy-
chosocial interventions, such as teaching,
communication techniques, or family sup-
port, or on specific nursing procedures, such
as suctioning or chest tube drainage proce-
dures. Like much of nursing research in gen-
eral, many ICU intervention studies have
been limited by small sample sizes. In addi-
tion, earlier studies have typically used inves-
tigator-designed instruments, making com-
parisons across studies difficult; however, the
use of standardized acuity rating systems,
such as APACHE or TISS, to describe study
populations and control for acuity have be-
come more common. In her year-end review
of nursing intervention research, Naylor
(2003) noted that between 1999 and 2002,
there were 78 nurse-led studies funded by the
NINR: several of these projects focused on
the critically ill patient, such as measuring
changes in cerebral blood flow during suc-
tioning, determination of proper feeding tube
placement and detection of aspiration, the
 provision of ventilator care in patients with
Acute Respiratory Distress Syndrome, and
meeting the psychosocial needs of the patient
following acute myocardial infarction.

One very promising approach to the prob-
lem of small sample sizes is the AACN re-
search program of large, multi-site studies
coordinated by an AACN research team. These
investigations, termed “Thunder Proj-
ects,” have enabled researchers to conduct
large, tightly controlled studies of nursing
problems specific to critical care. For ex-
ample, Thunder Project I was a comparison of
the effectiveness of heparinized versus non-
heparinized flush solutions for maintaining
patency of arterial catheters. This study,
which supported the practice of heparinizing
flush solutions, had a sample of 5,024 sub-
jects (AACN, 1993). The objectives of Thun-
der Project II were to describe and compare
patients’ perceptions of pain and their re-
sponses to turning, wound drain removal,
tracheal suctioning, femoral line removal,
central line insertion, and nonburn wound
dressing change (Puntillo, 2003). The sample
size consisted of 91 children (ages 4 to 12),
151 adolescents (ages 13 to 17), and 5,959
adults (over 18 years of age). Procedural pain
intensity and its associated distress were
found to vary depending on the specific pro-
cedure performed. Overall, adults and chil-
dren (ages 4 to 7) reported turning to be the
most painful and distressing procedure, while
children (8 to 12 years old) rated tracheal
suctioning as the worst, and adolescents
found wound care to be the most painful and
distressing. More than 75% of children did
not receive medication prior to and during a
painful procedure, and more than 63% of
adults did not receive any medication for pro-
cedural events. How patients were prepared
for the procedure was found to be a key fac-
tor; anticipatory preparation should include
analgesic administration and information
about expected sensations that might occur.

As is occurring in other disciplines, there
has been a recent trend toward emphasizing
outcomes research in critical care focused
particularly on use of quality management
tools such as critical pathways; systems of
care, such as case management; and alterna-
tive environments of care, such as special care
units and observation units. It has been esti-
mated that critical care accounts for 15% to
20% of total hospital costs (Berenson, 1984;
Rudy & Grenvik, 1992). The high cost of
critical care in the context of a national commitment to reducing health care spending will continue to make testing of more cost-effective approaches to care a research priority.

The emphasis for research efforts has also been directed toward establishing best practices for nursing care. It is in this area of research that one can find numerous nursing studies in the scientific literature. Nursing bedside practices of interest have included testing different methods for providing oral care for intubated patients, endotracheal suctioning with saline lavage, skin breakdown in open-heart patients, the beneficial effects of tight glycemic control of preoperative patients, and the success of a weaning protocol for patients receiving mechanical ventilation. Qualitative approaches in research methodologies have flourished, such as focusing on patients living with heart failure, prolonged mechanical ventilation, nurse decision making about hemodynamic status, patient anxiety following cardiac surgery, and end-of-life care. Predictive studies of risk factors have focused on long-term disability posthead injury, transient myocardial ischemia, atrial fibrillation following open-heart surgery, delay in seeking treatment for chest pain, heart failure readmission, heart transplantation, and functional and cognitive status after cardiac surgery and cardiac rehabilitation. Educational nurse-led interventions have targeted compliance as a primary goal in patients with heart failure using telephone counseling and a web-based approach, as well as supporting patients undergoing cardiac rehabilitation.

Critical care research is expected to continue to concentrate in the areas of monitoring techniques, specific procedural interventions, and outcomes research. AACN’s research priorities for the 1990s included ventilator weaning procedures, hemodynamic monitoring techniques, measurement of tissue oxygenation, and nutritional support modalities (Lindquist et al., 1993).

Current research priorities (www.aacn.org/research, 6/24/02) include the following:

1. Effective and appropriate use of technology to achieve optimal patient assessment, management, and/or outcomes
2. Creation of a healing, humane environment
3. Processes and systems that foster the optimal contribution of critical care nurses
4. Effective approaches to symptom management
5. Prevention and management of complications.

In addition to the need for more multi-site studies in order to generate adequate sample sizes, there continues to be a need for the development of valid and reliable instruments that can measure outcomes, other than physiological parameters, that are sensitive to nursing interventions. In addition, many of the previously reported intervention studies should be replicated and tested with varying populations. Naylor (2003) pointed out that given the complex nature of effective interventions, the science underlying these interventions often spans knowledge derived from multiple disciplines, requiring the expertise and collaboration of scientists working in the basic, clinical, social, and behavioral sciences. For nurse scientists to succeed in the implementation of programs of research and dissemination of findings, they will need to utilize interdisciplinary collaboration and, ultimately, find ways to effectively transcend traditional disciplinary boundaries for the sake of addressing fundamental health issues and improving the health of individuals, families, communities, and society.

BARBARA J. DALY
UPDATED BY CAROL DIANE EPSTEIN

Cultural/Transcultural Focus

Cultural/transcultural focus is the study of the environment shared by a group seeking meaning for its existence. Nurse investigators pursue this focus to understand the association of culture to health and to provide culturally competent care. Although this focus is

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Growing within research, its impact on patient care has been limited. Culture receives only cursory emphasis in most curricula or practice settings, and few nurses are cultural experts. In light of projections that racial and ethnic minorities will be the majority in the United States by 2030 and the persistence of major health disparities between Euro-Americans and others, more and better nursing research on culture is needed.

Different perspectives on the meaning of cultural/transcultural research (C/TCR) exist. To some, the terms are essentially synonymous and questions of disciplinary origin are unimportant. Researchers in the Leininger tradition regard transcultural nursing as the proper term for a formal, worldwide area of study and practice about culture and caring within nursing.

Cultural/transcultural research is found in a great variety of research and clinical journals. Some C/TCR studies (particularly interventions and randomized controlled trials) may be found in the Cochrane database for evidence-based practice using a keyword search based on such terms as the disease name, nurs* and care, nurs* and intervention, and names of racial or cultural groups. Recent reviews of C/TCR include race and ethnicity as nursing research variables (Dreydahl, Taylor, & Phillips, 2001), health disparities among vulnerable populations as published in Nursing Research over five decades (Flaskerud et al., 2002), and application of the Oncology Nursing Society’s cultural competence guidelines to published oncology research (Phillips & Weekes, 2002). Searchers are cautioned that (a) the names of racial or ethnic groups are often used only descriptive labels, and findings do not advance true cultural knowledge; (b) race, culture, and ethnicity lack consensual definitions and are often used interchangeably; (c) acceptable names for groups change over time (e.g., Negro, Black, Afro-American, African American); (d) the name of the highest stage of cultural knowledge changes over time, with cultural competence or cultural proficiency being currently preferred; (e) databases on special populations are often nonexistent or inadequate; (f) although reports specify a focus on a cultural group, discussion may not relate findings to that group; and (g) findings ascribed to culture are often not distinguished from the effects of socioeconomic status, history, or political structures.

Most quantitative C/TCR is theory-based. Frequently used frameworks include Leininger’s culture care theory, self-care, health-seeking behavior, health belief models, stress and coping, self-efficacy, and transitions. The transtheoretical model of behavior change is becoming popular. Reports are now appearing on the cultural appropriateness of existing frameworks for particular groups. For example health belief models have been criticized for inadequately recognizing real (rather than perceived) barriers to care, spirituality, and the interconnectedness (rather than the individuality) of African-American women. Studies seeking explanatory models of illness are increasing, a welcome trend since this approach, which parallels an intake history and involves all aspects of the disease course and clinical encounter, seems relevant and practical to clinicians as well as researchers. Culture-specific models such as McQuiston and Flaskerud’s (2000) model for HIV prevention among Latinos are under development. Studies of model development to promote culturally competent organizations and build culturally diverse workforces, such as the Diversity Competency Model and the Leininger-based Model of Culturally Competent Leadership, are increasingly represented in administrative journals.

Although most data collection strategies, including physiological measurements are used in C/TCR, the most frequently used are focus groups, interviews, ethnographies, participant observation, and written questionnaires. Qualitative approaches have long been recognized as well-suited to C/TCR and are frequently used. However, the realization of their potential depends on the investigator’s awareness of or openness to the complexity and pervasiveness of culture in the research encounter (Morse, 2001).

The overwhelming majority of C/TCR has been intracultural, descriptive, small scale,
and nonprogrammatic. The typical study is an interview or survey on health knowledge, health beliefs and practices, or a concept like self-efficacy within one designated group conducted by a single investigator. However, cross-national nursing studies, studies with large sample sizes, studies done by interdisciplinary or international teams, and programmatic research are becoming more frequent.

Active C/TCR programs and their principal investigators include diabetes education for Mexican-Americans (Brown), diabetes management in ethnically diverse families (Chesla et al., 2004), HIV risk reduction interventions for impoverished Latina and Asian women (Flaskerud et al., 2000), cardiovascular health for African-American school children (Harrell, McMurray, Gansky, Bandiwalu, & Bradley, 1999), condom use in African-American adolescents (Jemmott, 2000), HIV prevention among Latinos (McQuiston & Flaskerud, 2000, 2003), and health needs of South American, Middle Eastern, and Korean women (Meleis, 1996). The dearth of programmatic nursing research on Native-American health is noteworthy.

Methodological research, including studies of recruiting and retaining subjects and instrumentation, is growing rapidly. The quality of measurement in C/TCR is improving steadily. The standards for rigorous translation are widely recognized, and both the cultural fit of items and the psychometric properties of an instrument for the target group are increasingly being reported and studied. Instrument reading level is receiving considerable attention in recognition of the prevalence of low literacy and low English proficiency in many populations (Weinrich, Boyd, & Herman, 2004). Instruments such as the Cultural Self-Efficacy Scale and the Cultural Awareness Scale are being developed to measure the outcomes of programs to promote multicultural awareness.

There are three major needs in C/TCR. First is the need for more intervention studies (Douglas, 2000). Recent estimates of the proportion of interventions in the C/TCR literature range from 3.6% to 14%. More investigators must move from descriptive studies to interventions to randomized controlled trials. The sheer volume of very similar studies of the health beliefs, family values, sex roles, and the importance of family decision making, folk remedies, or spirituality within certain groups suggests a sufficient base for intervention studies. A second great need is for application of existing guidelines for culturally competent research (Meleis, 1996; Phillips & Weekes, 2002; Porter & Villaruel, 1993; Villaruel, 1996). Research needs to be planned to be culturally competent. Culturally competent research is broader than efforts to select culturally appropriate instruments or to recruit appropriate subjects. Application of these guidelines should mesh nicely with the third great need of C/TCR, which is for research to be planned and conducted with greater community involvement.

More studies, particularly programmatic studies, are needed of Native-American health. Studies of multiracial or multiethnic persons are rare but urgently needed, given the growing numbers of people who identify themselves as having multiple heritages. Studies of rural, occupational, and sexual subcultures (groups not defined by race or ethnicity) are needed, as are comparative explorations of cultural perspectives on ethics. Folk and alternative healing practices and their possible combinations with biomedical approaches, need systematic, sensitive study. Studies of cultural adaptations of care in homes, the development of brief rapid strategies for cultural assessment, and development of the economic case for culturally competent care are needed to insure that culture is considered in this era of managed care, case management, and ever briefer inpatient stays.

Sharol F. Jacobson

Cumulative Index to Nursing and Allied Health Literature

In the late 1940s, although Index Medicus existed for the biomedical literature, there was no index to the few nursing journals published at the time. Individual librarians took
it upon themselves at particular hospitals or schools of nursing to index the journals they received for their own population. One such librarian in Los Angeles, Ella Crandall, used 3 × 5 index cards to meet the needs of nurses on the staff of White Memorial Hospital and later, Los Angeles County Hospital. This index, which began as an internal project, was published as The Cumulative Index to Nursing Literature in 1961, a cumulation of indexing covering the period 1956 to 1960. Seventeen journals were included in this publication—from the American Journal of Nursing and Nursing Research to the American Association of Industrial Nurses Journal. The “red books,” as this publication became known, were well received in the nursing community (Raisig, 1964) and became a familiar part of nursing education throughout the United States.

Over the next several decades the Index grew and changed, reflecting the changes taking place in the profession itself. As would be expected, many indexing terms are similar or identical to those used in the indexing of biomedical journals. There are some important differences, and many terms added to the thesaurus demonstrate the development and growth of the nursing profession, both as a practice and as a science. Increased emphasis on nursing research, specialty and advanced practice, and managed care has resulted in indexing terms such as phenomenology, survival analysis, family nurse practitioners, case management, and nursing intensity. Research terms describing design, methodology, analysis, and data collection have been added, as have the names of nursing specialties, organizations, and classification systems.

Aside from the terms used, the materials indexed are different from those in indexes of the biomedical and other literature. Books and book chapters, pamphlets and pamphlet chapters, dissertations, audiovisuals, and consumer health and patient education materials are just a few of the other types of materials indexed. Because of the difficulty in obtaining these materials they are often defined as elusive or fugitive literature.

Other changes have taken place over these years. Recognizing that the boundaries of nursing intersect with many other health care disciplines, “Allied Health” was added to the Index title in 1977, resulting in The Cumulative Index to Nursing and Allied Health Literature (CINAHL®). There are 17 such disciplines covered, including physical therapy, occupational therapy, and communicative disorders. In 1983 the CINAHL® electronic database became part of several online services and was released as a CD-ROM in 1989. Individual access via the Internet is available as well.

Recent years have seen the development of CINAHL-created documents as part of the database. These include research instrument descriptions, clinical innovations, accreditation materials, and legal case descriptions. The database can no longer be viewed as only a bibliographical database, although that continues to be its primary function.

Throughout the nearly 40 years of its existence, the primary goal of the organization has been to connect nursing—and later allied health—professionals with materials written about and for them. The basic premise underlying the existence of the Index is that effective and knowledgeable practice depends on access to materials describing or studying that practice. These materials may be present in a variety of formats and from a variety of sources. Whereas indexing began with fewer than 10 journals, the current journal list includes more than 1,000 titles. Content other than that listed above includes practice guidelines, practice acts, standards of practice, critical pathways, and even full text of some journal articles. Searching this material on a regular basis should be a professional obligation of members of all health care disciplines for the duration of their careers.

Diane Shea Pravikoff

Current Procedural Terminology-Coded Services

Current procedural terminology-coded services (CPT) include more than 8,000 services
listed in the Physicians’ Current Procedural Terminology manual published annually by the American Medical Association (AMA). Developed by the AMA in 1966, the purpose of the CPT system is to provide a uniform language that describes medical, surgical, and diagnostic services and thereby serves as a method for payment by public (Medicare and Medicaid) and private (commercial insurers) payers. It is used by policy makers in their deliberations on reforming the payment system.

In 1986 Congress created the Physician Payment Review Commission (PPRC) to advise it on reforms of the methods used to pay physicians under the Medicare program (Part B). Nursing groups such as the American Nurses Association lobbied PPRC to consider the contributions of nurses as they engaged in the process of revising the payment system. In its report to Congress, the PPRC stated that nonphysician providers should be paid at a percentage of physician payment levels reflecting differences in physicians’ and non-physicians’ resource costs: work as well as practice and malpractice expense. The American Nurses Association (ANA) disagreed, stating that nurses should be paid the same for the same service (Mittelstadt, 1991). The first nurse to serve on the Commission, Carol Lockhart, PhD, RN, FAAN, expressed concern about the lack of nursing data available to the PPRC. She stated:

Nursing’s role in the delivery of Medicare Part B services is undocumented. We have little or no data showing how much of a particular service, now billed by a physician, is done by a nurse, or how many services are delivered by the nurse and billed under the physician’s name. (Griffith & Fonteyn, 1989, p. 1051)

In an attempt to identify whether CPT codes might explain nursing work and therefore provide the needed data, studies were conducted to look at how many billable CPT activities were performed by nurses (Griffith, Thomas, & Griffith, 1991; Griffith & Robinson, 1993; Robinson & Griffith, 1997).

The American Journal of Nursing (AJN) (Griffith & Fonteyn, 1989) published a questionnaire on the performance of CPT-coded procedures by registered nurses; 4,869 RNs returned the questionnaire and 150 made telephone calls or wrote letters. The average number of coded services performed by the respondents was 27, with a range of 0 to 60 (Griffith et al., 1991). Given the large number of currently published codes in the manual, this number appears to be small; however, at the time of the survey, only 107 codes comprised 56.9% of all Medicare procedures (Health Care Financing Administration and Bureau of Data Management and Strategy, 1990). Survey results revealed that associate and baccalaureate degree nurses performed significantly more coded services than nurses with diplomas and masters degrees. The more experienced nurses (practicing more than 10 years) reported performing significantly fewer coded services and, as expected, nurses working in hospital settings performed more services. This exploratory study suggested that nurses often perform CPT-coded services with little or no supervision by physicians.

After realizing that the generalist AJN study was clearly supported by nurses, nine nurse specialist groups were surveyed and it was determined that 493 of over 7,000 CPT codes were performed by school nurses, enterostomal nurses, family nurse practitioners, critical care nurses, oncology nurses, rehabilitation nurses, orthopaedic nurses, nephrology nurses, and midwives (Griffith & Robinson, 1993; Robinson & Griffith, 1997). The number of CPT codes performed by specialty nurses ranged from 233 for family nurse practitioners to 58 for school nurses. The mean number of coded services performed by individual respondents ranged from 79 for family nurse practitioners to 18 for school nurses; individual respondents performed 0 to 162 codes. Supervision by physicians for these groups of nurses was infrequent. Charges to Medicare in 1988 for the coded services included in the survey were $22,793,427.34 (aggregate allowable charges).
A criticism of the CPT codes is their limitation to describe only physician services and not the full range of health services provided by the entire team. In a study comparing the frequency with which nursing activity terms could be categorized using Nursing Interventions Classification (NIC) and Current Procedural Terminology (CPT) codes, findings revealed evidence that NIC is superior to CPT for categorizing these activities in a study population of 201 AIDS patients hospitalized for pneumocystis carinii pneumonia. Nursing activity terms were categorized into 80 NIC interventions across 22 classes and into 15 CPT codes. All terms in the data set were classifiable using the NIC system and 60% of the terms were classified into 14 NIC intervention categories while only 6% of the terms were classifiable by CPT codes. These findings supported the importance of nursing-specific classifications for categorization of health care interventions in an effort to demonstrate nursing’s contribution to quality and cost outcomes (Henry, Holzemer, Randell, Hsieh, & Miller, 1997). However, another way to address the issue is to introduce nursing services into CPT if they are not otherwise described in another CPT code (Sullivan-Marx & Mullinix, 1999).

Recognizing that the CPT system does have deficiencies, the AMA, in 1998, began the task of developing the next generation, the CPT-5. The CPT-5 Project includes six workgroups and an Executive Project Advisory Group (PAG). One of the workgroups, “Nonphysician Practitioners,” is reviewing and evaluating weaknesses of the current system for coding the provisions of health services by nonphysician health care professionals (http://www.ama-assn.org/ama/pub/category/3883.html). Efforts are being made to gather information from other provider organizations to determine where and how the CPT system lacks adequate codes for the appropriate description of services of different providers. It is anticipated that the CPT-5 Project will be completed in the near future.

As we progress further through the 21st century, the public—consumers of care that nurses deliver will become even more interested in cost, accessibility, satisfaction, and quality. Because nurses have the abilities to deliver in all of these areas, they should be directly reimbursed for their services. If nurses want to proceed in this direction, then their challenge must be to accurately document their contribution of nursing practice to patient and program productivity and effectiveness through workload analysis, thereby providing meaningful data to consumers, policy makers, and payers (Robinson et al., 2001).

Hurdis M. Griffith
Karen R. Robinson
Data Analysis

Data analysis is a systematic method of examining data gathered for any research investigation to support conclusions or interpretations about the data. Although applicable to both qualitative and quantitative research data analysis is more often associated with quantitative research. Quantitative data analysis involves the application of logic and reasoning through the use of statistics, an applied branch of mathematics, to numeric data. Qualitative data analysis involves the application of logic and reasoning, a branch of philosophy, to nonnumeric data. Both require careful execution and are intended to give meaning to data by organizing disparate pieces of information into understandable and useful aggregates, statements, or hypotheses.

Statistical data analysis is based in probability theory and involves using a number of specific statistical tests, or measures of association between two or more variables. Each of these tests or statistics (e.g., $t$, $F$, $\beta$, $\chi^2$, $\phi$, $\gamma$, etc.) has a known distribution that allows the calculation of probability levels for different values of the statistic under different assumptions—that is, the test (or null) hypothesis and the sample size, or degrees of freedom.

Specific tests are selected because they provide the most meaningful representation of the data in response to the research questions or hypotheses posed. The selection of specific tests, however, is restricted to those for which the available data meet certain required assumptions of the tests. For example, some tests are appropriate for (and assume) nominal data, others assume ordinal data, and still others assume an interval level of measurement. Although each test has its own set of mathematical assumptions about the data, all statistical tests assume random sampling.

Several statistical computer programs (e.g., SPSS, SAS, LISREL, EQS) can aid the investigator with the tedious and complex mathematical operations necessary to calculate these test statistics and their sampling distributions. These programs, however, serve only to expedite calculations and ensure accuracy. Because the investigator must understand the computer programs to use them appropriately, there is a hidden danger in the ease with which one may execute such programs. For valid data analysis, the investigator must fully understand the underlying statistical procedures and the implied assumptions of these tests in order to apply them appropriately.

The logic of null hypothesis statistical data analysis is one of modus tollens, denying the antecedent by denying the consequent. That is, if the null hypothesis is correct, our findings cannot occur but our findings did occur, so the null hypothesis must be false. However, J. Cohen (1994) and others have convincingly argued that, by making this reasoning probabilistic for null hypothesis statistical testing, the original syllogism is invalidated. Moreover, for decades scientists from different disciplines have questioned the usefulness and triviality of null hypothesis statistical testing (see Labovitz, 1970; LeFort, 1993; Loftus, 1993; Rozeboom, 1960; Walker, A. M., 1986, for examples from sociology, psychology, public health, and nursing). Conse-
Data Collection Methods

Nurse researchers use a wide variety of methods for collecting data (the pieces of information used to address a research problem), and these methods vary on a number of important dimensions. One dimension involves whether the data being collected are quantitative or qualitative. Until the 1980s, nurse researchers predominantly used methods of collecting quantitative data (information in numeric form) that could be analyzed by statistical techniques. The collection of quantitative information tends to involve highly structured methods in which exactly the same information is gathered from study participants in a comparable, prespecified way. Although quantitative data collection remains the most frequently used approach, nurse researchers have shown increasing interest in collecting qualitative data (information in narrative form). Researchers collecting qualitative data tend to have a more flexible, unstructured approach to collecting information, relying on ongoing insights during data collection to guide the course of further data gathering.

Another important dimension concerns the basic mode of data collection. The most frequently used modes of data collection by nurse researchers are self-reports, observations, and biophysiological measures. Self-reports involve the collection of data through direct questioning of people about their opinions, characteristics, and experiences. Self-reports can be gathered orally by having interviewers ask study participants a series of questions—in writing by having participants complete a paper-and-pencil task or, less frequently, by having participants engage in some other activity, such as sorting cards. Structured, quantitative self-report data are usually collected by means of a formal, written document or instrument that specifies exactly what questions are to be asked. The instrument is called an interview schedule when the data are collected orally and a questionnaire when the data are collected in writing. Interviews can be conducted either in person or over the telephone. Interviews and questionnaires often incorporate one or more formal scales to measure certain clinical data (e.g., fatigue) or a psychological attribute (e.g., attitudes toward nursing homes). A scale typically yields a composite measure of responses to multiple questions and is designed to assign a numeric score to respon-
dents to place them on a continuum with respect to the attribute being measured (e.g., depression). A less frequently used method of collecting structured self-report data is referred to as a Q-sort, which involves having the participant sort cards with words or phrases on them according to some continuum (e.g., most like me–least like me).

Self-report methods are also used by researchers who are primarily interested in qualitative data. When self-report data are gathered in an unstructured way, the researcher typically does not have a specific set of questions that must be asked in a specific order or worded in a given way. Instead, the researcher starts with some general questions and allows respondents to tell their stories in a natural, conversational fashion. Methods of collecting qualitative self-report data include completely unstructured interviews (conversational discussions on a topic), focused interviews (conversations guided by a broad topic guide), focus group interviews (discussions with small groups), life histories (narrative, chronological self-disclosures about an aspect of the respondent’s life experiences), and critical incidents (discussions about an event or behavior that is critical to some outcome of interest). Although most unstructured self-reports are gathered orally, a researcher can also ask respondents to maintain a written diary of their thoughts on a given topic. Projective techniques, although not always considered a form of self-report, encompass a variety of data collection methods that rely on the participant’s projection of psychological traits in response to vaguely structured stimuli (e.g., a Rorschach test). Projective techniques almost always solicit qualitative data, but the data can sometimes be quantified. Self-report methods are indispensable as a means of collecting data on human beings, but they are susceptible to errors of reporting, including a variety of response biases.

The second major mode of data collection is through observation. Observational methods are techniques for collecting data through the direct observation of people’s behavior, communications, characteristics, and activities, either directly through the human senses or with the aid of observational equipment such as videotape cameras. Researchers who collect qualitative observational data do so with a minimum of researcher-imposed structure and interference with those being observed. People are observed, typically in social settings, engaging in naturalistic behavior. The researcher makes notes of his or her observations in narrative form. A special type of unstructured observation is referred to as participant observation: the researcher gains entry into the social group of interest and participates to varying degrees in its functioning while gathering the observational data.

Structured observational methods dictate what the observer should observe and how to record it. In this approach the observers often use checklists to record the appearance, frequency, or duration of preselected behaviors, events, or characteristics. Alternatively, the observer may use a rating scale to measure dimensions such as the intensity of observed behavior. Observational techniques are an important alternative to self-report techniques, but judgmental errors and other biases can pose a threat to the validity and accuracy of observational data.

Data for nursing studies may also be derived from biophysiological measures, which can be classified as either in vivo measurements (those performed within or on living organisms) or in vitro measurements (those performed outside the organism’s body, such as blood tests). Biophysiological measures are quantitative indicators of clinically relevant attributes they require specialized technical instruments and equipment. Qualitative clinical data—for example, descriptions of skin pallor—are gathered not through technical instruments but rather through observations or self-reports. Biophysiological measures have the advantage of being objective, accurate, and precise and are typically not subject to many biases.

Although most nursing research involves the collection of new data through self-report, observation, or biophysiological instrumentation, some research involves the analysis of preexisting data, such as are available through written documents. Clinical records,
such as hospital records, nursing charts, and so forth, constitute rich and relatively inexpensive data sources. A variety of other types of documents (e.g., letters, newspaper articles) can be used as data sources for both qualitative researchers (e.g., those conducting historical research) and quantitative ones (e.g., researchers doing a quantified content analysis).

The collection of data is often the most time-consuming and costly activity in the research process. It is also a challenging task that requires creativity, the ability to adequately match the research question with the appropriate approach, and the ability to work within budgetary constraints.

DENISE F. POLIT

Data Management

Data management is generally defined as the procedures taken to ensure the accuracy of data, from data entry through data transformations. Although often a tedious and time-consuming process, data management is absolutely essential for good science.

The first step is data entry. Although this may occur in a variety of ways, from being scanned in to being entered manually, the crucial point is that the accuracy of the data be assessed before any manipulations are performed or statistics produced. Frequency distributions and descriptive statistics are generated. Then each variable is inspected, as appropriate, for out-of-range values, outliers, equality of groups, skewness, and missing data. Decisions must be made about dealing with each of these. Incorrect values must be replaced with correct values or assigned to the missing values category. Outliers must be investigated and dealt with. If a categorical variable is supposed to have four categories but only three have adequate numbers of subjects, one must decide about eliminating the fourth category or combining it with one of the others. If continuous variable are skewed, data transformations may be attempted or nonparametric statistics employed.

Once each variable has been inspected and corrected where necessary, new variables may be created. This might include the development of total scores for a group of items, subscores, and so forth. Each of these new variables also must be checked for outliers, skewness, and out-of-range values. The creation of some new variables may involve the use of sophisticated techniques such as factor and reliability analyses.

Prior to each statistical test, the assumptions underlying the test must be checked. If violated, alternative approaches must be sought. Careful attention to data management must underlie data analysis. It ensures the validity of the data and the appropriateness of the analyses.

BARBARA MUNRO

Data Stewardship

Data and information are the symbolic representation of the phenomena with which nursing is concerned. Data are defined as discrete entities that are objective; information is defined as data that are structured and organized and that have meaning or interpretation. Information that has been synthesized so as to identify and formalize interrelationships is referred to as knowledge. When one term represents all three types of content, it is usually information. From this perspective, data are viewed as the raw material on which nursing knowledge and science are developed. Data stewardship refers to the responsibility to manage, administer, attend to, and take charge of the universe of relevant nursing data.

Nursing data issues revolve around several factors. The first relates to identification of the universe of relevant nursing data. Currently, there is no consensus regarding what data elements make up a minimum nursing data set nor what data elements are required to capture nursing diagnoses, interventions, and outcomes. Systems to label or name these elements also are inconsistently defined. Next, the complex nature of nursing phenom-
ena poses measurement difficulties. Measurement is the process of assigning numbers to objects to represent the kind or amount of a character possessed by those objects. It includes qualitative means (assigning objects to categories that are mutually exclusive and exhaustive) and quantitative measures (assigning objects to categories that represent the amount of a characteristic possessed).

Unlike other biological sciences, few nursing phenomena can be measured by using physical instruments with signal processing or monitoring. Measurement difficulties occur because nursing consists of a multiplicity of complex variables that occur in diverse settings. If one is able to identify what significant variables should be measured, then one is challenged with the difficulty of isolating those variables to measure them. Ambiguities and abstract notions must be reduced to develop concrete behavioral indicators if measurement is to be meaningful. Measuring nursing phenomena also requires the acknowledgment of the “fuzzy” and complex nature of nursing phenomena and the richness of the meaning contained in the context of the data. Finally, the value and use of data that are not coded or numeric, such as whole text data, must be studied to understand their benefits and boundaries for representing nursing phenomena. Content analysis of nursing data and their usefulness have to be further explored.

Processing data implies the transfer of data in raw form to a structured, interpreted information form. Information has characteristics of accuracy, timeliness, utility, relevance, quality, and consistency. Data stewardship suggests that attention be paid to these characteristics. For example, accuracy is of concern at the level of judgment in collecting data as well as at the level of the data collected. Quality of data and information is related to the ability and willingness of clients to disclose information as well as to the nurse’s ability to observe, collect, and record it. Reliability refers to random measurement errors such as ambiguities in data interpretation. These measurement errors that affect clinically generated data can occur at the point of care delivery, the time of documentation, and when data are retrieved or abstracted for studies (Hays, Norris, Martin, & Androwich, 1994).

With the advent of automated data processing and computerized information systems, decisions about data content, control, and cost need careful consideration. The content and design decisions concern format, standardized languages, level of detail, data entry and retrieval messages, and interfaces with nonclinical data systems. A primary concern of clinicians is the amount of time invested in harvesting data and recording it. Minimum time investment, with maximum clarity and comprehensiveness of data collected and recorded, is needed. Redundancy must be eliminated. Decisions related to content of data demand stewardship to ensure privacy, confidentiality, and security, especially when data are in electronic form. Requirements for legitimate access to data must be managed to facilitate the flow of clinical data while simultaneously restricting inappropriate access. There is a cost associated with the use and development of automated databases; however, accuracy, reliability, and comprehensiveness of information should not be sacrificed because of cost.

Data stewardship poses challenges and responsibilities for nurses in building knowledge bases. Standardization of terms of data is critical, and coordination and synthesis of current efforts are needed. If nurses are to be stewards of their data, then further study should focus on the following areas: (a) the definition and description of the data and information required for patent care, (b) the use of data and knowledge to deliver and manage patient care, and (c) how one acquires and delivers knowledge from and for patient care (National Center for Nursing Research, 1993).

CAROL A. ROMANO

Death and Dying

Death is the cessation of life. The definition of death has changed over time as advances
in medicine and technology made it possible to prolong cardiac and respiratory functions by “artificial” means. Today the widely accepted definition of death is the irreversible cessation of circulatory and respiratory functions, or the irreversible sensation of all brain functions, including the brain stem (President’s Commission, 1981). Dying is one of the many the transitions we experience in life. It is difficult to determine when dying begins, it occurs at different rates and ways in individuals. The American Geriatrics Society (AGS) offered clinicians some guidance for determining when dying begins with the statement: “people are to be considered to be dying when they have a progressive illness for which there is no treatment that can substantially alter the outcome” (AGS, 1997).

Dying has been defined by researchers on the basis of a diagnosis of a terminal illness or one without a cure, physician prognosis, prognostic assessments of patients or family members, and by care settings such as hospice.

Other terms associated with end-of-life care are palliative care and hospice. The World Health Organization (WHO, 1989) defined palliative care as “the active total care of patients whose disease is not responsive to curative treatment when the control of pain and other symptoms and of psychological, social, and spiritual problems is paramount” (p. 152). Hospice refers to a concept of care that can be provided in a variety of settings. The family is the unit of care and a multidisciplinary approach is used to address physical, psychological, and spiritual needs of the dying person and their family. The focus of care is enhancing the quality of remaining life and providing support to the family in the dying process and bereavement.

A number of recent studies of death and dying have identified problems with the care of dying persons and their families (SUPPORT, 1995; Field & Cassel, 1997; Teno et al., 2004). Nurses, as the largest group of health care providers, have the opportunity to change the experience of dying and promote quality end-of-life care. Nursing’s contributions to end-of-life care and areas for further research are described in the following sections.

Early studies of death and dying by nurses in the 1960s and early 1970s took place in hospitals and focused on nurses’ attitudes toward death and dying and family responses. Benoliel (1983), in a comprehensive review of nursing research on death and dying from 1969 to 1984, noted most nursing studies were descriptive in approach and lacked a central paradigm. She concluded that although the stressful nature of death and dying was well documented, little was known about the nature of support that is helpful to patients and families and the influence of other variables, such as age and culture.

The hospice movement began in the United States in 1974 with the opening of Hospice, Inc. in New Haven, Connecticut. Florence Wald, Dean of Nursing at Yale University Nursing, and a group of volunteers were instrumental in starting the first hospice. Hospice experienced rapid growth due in part to the growing dissatisfaction with medical care of the terminally ill. Studies of hospice began to appear in the literature in the 1980s. Corless (1994) reviewed hospice studies from 1983 to 1992 and noted that researchers examined the impact of hospice as an innovation, family perceptions of hospice care, coping strategies of families in hospice home care, and satisfaction with hospice home care. Studies of the effectiveness of interventions to control symptoms such as pain were lacking. The approaches used in these studies were primarily case studies, Q-sort techniques, and retrospective medical record analysis.

Research on hospice family caregivers has focused on persons with a diagnosis of cancer. The educational needs of caregivers for persons with a diagnosis of cancer were the focus of seven studies (Thiemann, 2000). Both quantitative and qualitative methods were used with similar findings. The most frequent educational needs were for information on the patient’s illness, instructions on caregiving techniques, and information on community resources.

Caring for a dying family member is an emotionally intense experience. Hospice fam-
ily caregivers for persons with a diagnosis of cancer need time for self, time for rest and sleep, spiritual needs, information on how to deal with the patient, and how to maintain independence (Thielemann, 2000; Harrington, Lackey, & Gates, 1996). Studies of family needs and coping are descriptive with small samples and lack diversity of age, diagnosis, and ethnic groups.

Research on the experience of dying is limited and has occurred in acute care hospitals or hospices. The setting of care for older adults has a direct impact on the quality of life at the end of life (Mezey, Dubler, Mitty, & Brody, 2002). The majority of studies are with persons who have a diagnosis of cancer. As people are living longer with chronic illness, there is a need for studies to examine the experience of dying from chronic illnesses, for example heart failure and dementia.

Several large-scale national studies in the 1990s described problems and deficiencies in end-of-life care. The Institute of Medicine studied end-of-life care and identified the following major deficiencies in care: too many people suffer at the end of life; legal, economic, and organizational obstacles obstruct excellent care at the end of life; the education of physicians and other health providers fails to provide them with the knowledge and skills required to care for dying patients, and current knowledge is inadequate to support evidence-based medicine at the end of life (Field & Cassel, 1997).

The Study to Understand Prognoses and Preferences for Outcomes and Risk of Treatment, known by the acronym SUPPORT, was a large-scale controlled clinical research study of more than 9,000 patients in five teaching hospitals. The study was designed to examine end-of-life decision making and test an intervention to improve end-of-life care. The first phase of the study examined decision making and patient outcomes. SUPPORT investigators concluded that physician-patient communication was often unreliable and physicians showed little interest in the patient's preferences for care. The second phase was an intervention designed to improve communication, end-of-life decision making, and pain management. Nurses were an important part of the intervention and worked with patients, families, and physicians. Unfortunately the intervention failed. Communication remained flawed, there was an overuse of aggressive treatment, and patients suffered undue pain at the end of life.

Dying trajectories differ at the end of life with various patterns of functional decline; however there are few studies of functional decline in large populations. Lunney, Lynn, Foley, Lipson, and Guaralnik’s study (2003) of 4,190 participants in the Established Populations for Epidemiological Studies (EPES) found that functional decline differs among four types of illness trajectories: sudden death, cancer death, death from organ failure, and frailty. Each of the four groups had different trajectories of dependency and needs.

The Robert Wood Johnson Foundation, the Project Death in America, and the Department of Health and Human Services have made funding available to educate nurses in end-of-life care and support research. Nurse researchers need to conduct research in a variety of settings with diverse population groups in order to influence practice and improve the quality of end-of-life care.

Sarah A. Wilson

**Delirium**

Delirium is an acute, fluctuating disturbance of consciousness and cognition (American Psychiatric Association [APA], 2000). It frequently accompanies acute physical illness and is found in all care settings. Estimates of the incidence of delirium range from 7% to 80% for all hospitalized patients; 46% for older patients receiving home health care services; and 14% to 39% for residents in long-term care settings. More recently, in a community-based sample, delirium was found to be superimposed on dementia in 13% of the cases.

Previously, delirium was thought to be self-limiting and benign. Recent discoveries indicate that delirium is associated with cog-
nitive and functional impairments persisting for 12 months or more after the index incident of delirium. Moreover, delirium portends poorer outcomes, greater costs of care, and greater chances for dementia and death. Despite these profound negative consequences for patients, families, health care providers, and society, delirium remains understudied. The current state of knowledge of delirium is summarized here.

Delirium is frequently underrecognized and misdiagnosed (although there is disagreement as to whether more patients are misclassified as false positive or false negative) (Inouye, Foreman, Mion, Katz, & Cooney, 2001). Recognition of delirium is especially problematic in elderly patients with an underlying dementia or those with the hypoaletic-hypoalert variant of delirium. Explanations for the underrecognition and misdiagnosis of delirium include the fluctuating nature of delirium; the variable presentation of delirium; the similarity among and frequent cooccurrence of delirium, dementia, and depression; and the failure of providers to use standardized methods of detection.

Improving the recognition of delirium requires a complex and dynamic solution. Knowledge of delirium and skill in its detection are necessary starting points for improving the recognition of delirium. However, knowledge and skill alone are insufficient, given the profound impediment to the recognition of delirium posed by negative ageist stereotypes. These conclusions are supported by the work of McCarthy (2003), which also highlights the powerful influence of the practice environment on how providers think about and respond to delirium.

Several instruments have been developed to screen for or diagnose delirium. Such instruments include: Folstein’s Mini-Mental State Examination (MMSE), Inouye’s Confusion Assessment Method (CAM), Vermeersch’s Clinical Assessment of Confusion-Form A (CAC-A), Albert’s Delirium Symptom Interview (DSI), Trzepacz’s Delirium Rating Scale (DRS), Neelon and Champagne’s NEECHAM Confusion Scale (NEECHAM), O’Keefe’s Delirium Assessment Scale (DAS), and Breitbart’s Memorial Delirium Assessment Scale (MDAS). Each has its advantages and disadvantages; the selection of which instrument to use depends in part on the purpose and patient population. The most frequently used instrument in research and clinical practice is Inouye’s CAM. These instruments are reviewed in greater detail elsewhere (Foreman & Vermeersch, 2004; Rapp et al., 2000). Expert opinion recommends the routine use of brief, standardized bedside screening measures as timely, effective, and inexpensive methods for assessing cognitive status and diagnosing delirium. Current standards for surveillance of delirium are to screen for the presence of delirium on admission to the hospital and at a minimum daily. Others recommend brief screening every 8 hours as an element of the standard nursing assessment. Additionally, when there is evidence of new inattention, unusual or inappropriate behavior or speech, or noticeable changes in the way the patient thinks, it is recommended that the assessment be repeated.

A few strategies to prevent and/or treat delirium in hospitalized patients have been tested with various groups of hospitalized adult patients; most have resulted in only modest benefits (Cole, 1999). The prevailing principles guiding prevention and treatment consist of multifactorial interventions that: (a) identify patients at risk, (b) target strategies to minimize or eliminate the occurrence of precipitating factors as primary prevention accomplished through risk reduction, and (c) identify, correct or eliminate the underlying cause(s) while providing symptomatic and supportive care.

Multicomponent interventions targeting several risk factors, rather than targeting a single risk factor for delirium, and interventions with surgical versus medical patients have proved more successful in reducing the incidence, severity, or duration of delirium. However, interventions have had no effect on the recurrence of delirium or on outcomes 6 months after discharge from the hospital.

To better understand why these interventions have not been more successful, some
investigators have conducted post-hoc analyses to identify characteristics of patients for whom these interventions have failed. These analyses have indicated that these interventions were less successful with patients who are at greatest risk for delirium: those who are demented, functionally impaired, and frailer. However, it is difficult to determine how to improve these interventions because these studies have been conceptually confused: efficacy has been confused with effectiveness; changing provider behavior has been confused with preventing or treating underlying causal agents for delirium; and primary prevention has been confused with secondary prevention. Moreover, interventions have targeted risk factors rather than the underlying pathogenetic mechanisms (i.e., the metabolic and physiologic deviations that disrupt neurotransmitter synthesis and functioning) (Trzepacz, 1999). Also, these studies have not been designed or powered in such a way as to determine which of the multicomponents actually contributed to the positive outcomes.

To improve the recognition, prevention, and treatment of delirium, the APA (1999), British Geriatrics Society (1999), and University of Iowa Gerontological Nursing Interventions Research Center (Rapp and the Iowa Veterans Affairs Nursing Research Consortium, 1998) have developed practice guidelines. These guidelines tend to be comprehensive and are generally based on expert clinical opinion; few aspects of these guidelines are based on empirical evidence. Moreover, Young and George (2003)—the individuals responsible for compiling the British guidelines—found that the existence of guidelines failed to improve the process and outcomes of care in delirium, indicating that much work remains to improve the care of individuals at risk for or experiencing delirium.

On the basis of this summary of the state of knowledge of delirium, the need for further study of delirium in all care settings is clearly documented. Such study should focus on all aspects of delirium, including the epidemiology and natural history of delirium, to improve our understanding of the duration, severity, persistence, and recurrence of delirium and to better target and time interventions. Greater insight into the underlying pathogenetic mechanism(s) of delirium would enable more rigorous development and testing of the efficacy and effectiveness of interventions to prevent and treat delirium.

Marquis D. Foreman
Patricia E. H. Vermeersch

Delphi Technique

The Delphi technique is a research method used to identify key issues, to set priorities, and to improve decision making through aggregating the judgments of a group of individuals. The technique consists of using a series of mailed questionnaires to develop consensus among the participants without face-to-face participation. It provides the opportunity for broad participation and prevents any one member of the group from unduly influencing other members’ responses. Feedback is given to panel members on the responses to each of the questionnaires. Thus, panel members communicate indirectly with each other in a limited, goal-directed manner.

The first questionnaire that is mailed asks participants to respond to a broad question. The responses to this questionnaire are then used to develop a more structured questionnaire. Each successive questionnaire is built on the previous one. The second questionnaire requests participants to review the items identified in the first questionnaire and to indicate their degree of agreement or disagreement with the items, to provide a rationale for their judgments, to add items that are missing, and to rank-order the items according to their perceived priority. On return of the second questionnaire the responses are reviewed, items are clarified or added, and the mean degree of agreement and the ranking of each item are computed. In the third questionnaire, participants are asked to review the mean ranking from the second questionnaire and again to indicate their degree of agreement or disagreement and give their rationale if they disagree with the ranking. Ad-
ditional questionnaires are sent until the group reaches consensus. Many variations of this procedure have been used, the number of questionnaires used ranging from three to seven.

To be eligible to participate as a panelist in a Delphi study the respondent should (a) be personally concerned about the problem being studied, (b) have relevant information to share, (c) place a high priority on completing the Delphi questionnaire on schedule, and (d) believe that the information compiled will be of value to self and others (Delbecq, Van de Ven, & Gustafsen, 1975).

Several disadvantages of the Delphi technique limit its application. First, there must be adequate time for mailing the questionnaires, their return, and their analysis. Second, participants must have a high level of ability in written communication. And third, participants must be highly motivated to complete all the questionnaires.

The Delphi technique was first developed by the Rand Corporation as a forecasting tool in the 1960s, when investigators found that results of a Delphi survey produced better predictions than round-table discussions. The technique was later used to solicit opinions of experts on atomic warfare as a means of defense. It has since been applied in diverse fields, such as industry, social services, and nursing because of its usefulness and accuracy in predicting and in prioritizing.

The Delphi technique has been used in nursing studies to identify priorities for practice and research. The American Nurses Association Center for Nursing Research (1980) used the technique to identify national research priorities for the 1980s; Demi, Meredith, and Gray (1996) used it to identify priorities for urological nursing research; Lewandowski and Kositsky (1983) and Lindquist and colleagues (1993) used it to identify research priorities for critical care nursing; and Lindemann (1981) surveyed members of the American Academy of Nursing to identify and prioritize issues important to nursing in the next decade. In a creative application of the method Demi and Miles (1987) attempted to achieve consensus on the parameters of normal grief by enlisting a panel of experts in the field of grief and mourning.

Alice S. Demi

Denial in Coronary Heart Disease

Coronary heart disease, and the experiences associated with it, precipitate many sudden changes that severely disrupt the balance of psychosocial and environmental factors in an individual’s life. Those who experience these changes use various resources such as denial in an attempt to cope with the anxiety caused by the various types of threatened or real losses associated with the disease (Cassem & Hackett, 1971; Ketterer et al., 1998; Robinson, 1988, 1993, 1994, 2003).

Denial is the ability of an individual to mentally ignore or push from one’s consciousness the reality of the situation at hand. It is one of the first adaptive behaviors or mechanisms that an individual uses during the stress-producing event of an acute episode of chest pain (Hackett & Cassem, 1982). Through this defense mechanism, the individual attempts to minimize or ignore the significance of the symptoms. For coronary patients, it is not difficult to use denial as a form of coping because once the pain has been alleviated and the person is resting comfortably, there are no other symptoms. As a result, it is easy for the patient to rationalize or deny that anything significant has happened.

Denial can be either healthy or unhealthy. Denial of the fact that a coronary event has occurred can be adaptive behavior during the first few weeks of recovery, enabling the person to cope with the shock and confusion. However, this denial can be maladaptive if it interferes with one’s ability to deal with the lifestyle changes needed to recover from the acute phase of the illness (Cassem & Hackett, 1971; Robinson, 1993, 1994). That is, prolonged denial or disbelief might cause the individual to ignore necessary activity restrictions, fail to take prescribed medications, or realize the significance of the illness. The problem then becomes one of understanding
when denial is helpful to the coronary patient and when it is harmful.

Given that coronary events result in numerous real and threatened losses, and all loss, whether real, threatened, or perceived, produces a grief response (with denial, shock, and disbelief being the initial response) (Engel, 1962), it becomes necessary to work through the grief process. However, this process should not be prolonged, since movement from denial to the next phase of the grief process might have a long-range effect on one’s ability to work through the losses and changes in lifestyle caused by having coronary problems. Since denial does not represent a single, easily understood phenomenon, it is often difficult to determine if denial is adaptive or maladaptive.

The use of denial by coronary clients is described extensively in the literature. However, little attention has been given to measuring it. In addition, clues that coronary clients are using denial may not be recognized through personal interviews or traditional assessment methods. Therefore, the Robinson Self-Appraisal Inventory (RSAI), a self-report assessment instrument, was designed to identify denial in persons with coronary heart disease, quantify it, and aid in its further study (Robinson, 1988, 1994, 2003). It could also assist health care professionals to plan interventions to manage denial.

The RSAI has been under development for approximately 10 years. Earlier studies led to revisions and reconceptualizations (Robinson, 1988), which have resulted in Form D. Even though the Hackett-Cassem Denial Scale was available for measuring denial, the number of items on the scale regarding patients’ personality traits and behaviors were not related to coronary heart disease and the general use of denial as a defensive trait. An additional weakness of this measurement was that the nature of several questions in the scale required the interviewer to make inferences when rating denial behavioral characteristics of the participant; it was not a paper-and-pencil self-report (Hackett & Cassem, 1974). Rather than measuring traits, the RSAI directly focuses on the patients’ present reactions to illness and it is designed as a paper-and-pencil, self-administered instrument.

Using the RSAI-Form D, Robinson (1994) found a significant decrease in mean denial scores from the 2nd to the 4th hospitalized day of potential or actual myocardial infarction patients. These findings were consistent with those reported by Cassem and Hackett (1971), who stated that feelings of denial are generally mobilized on the 2nd day; however, by the 4th day as the patient’s condition stabilizes, denial decreases. Factor analysis indicated that the 20-item RSAI-Form D probably is a multidimensional measure; however, a larger sample is needed with the addition of items to the scale to make the final determination. Four aspects of denial were extracted to include denial of secondary consequences, denial of illness and treatment, denial of anxiety, and denial of impact; thus, providing supportive evidence to the health care professional that using single specific or global criteria does not provide sufficient data for assessing denial. Some individuals may use one type of denial, whereas others may use another type. Each type of denial has its own purpose for the person. Therefore, it is beneficial for the health care professional to observe and listen closely to patients to understand their perspective as well as determine the type of denial that is being utilized (Robinson, 1994).

In summary, denial makes it possible for cardiac patients to block out information with which they cannot cope. It allows them to deal with reality in smaller, more manageable pieces. Denial can be adaptive, so instead of trying to push the patient out of denial before they are ready, one can assist them in adjusting to the loss. The nurse can determine the patient’s degree of denial and its effectiveness as a coping strategy, listen closely to the patient, use counseling strategies, provide the patient with opportunities to express any fears, and should not directly confront the patient’s denial. However, if the denial is maladaptive, the nurse should not directly confront the patient’s denial, but rather focus on establishing a trust relationship with the
Depression and Cardiovascular Diseases

Over the past 10 years, there has been growing interest in the relationship between depression and cardiovascular diseases. These are two of the most widespread public health problems in the United States, and are among the leading sources of functional impairment and disability. Recent research findings linking depression and cardiac disease will therefore be discussed, along with implications for future research.

In response to the growing awareness of the magnitude of the interaction between depression and adverse cardiac outcomes, several large-scale community-based studies have been conducted. Penninx and others (2001) followed a cohort of 2,847 men and women aged 55 to 85 years for 4 years. These investigators examined the effect of minor depression (i.e., Center for Epidemiologic Studies—Depression scale [CES-D] score of ≥16) and major depression (i.e., using DSM-III criteria) on heart disease mortality. They found that patients with major depression had significantly higher risk for cardiac mortality compared with those who had minor depression. These findings suggest that the severity of depression is related to higher cardiac mortality. In another study, Schulz and others (2000) studied a total of 5,201 men and women aged 65 years and older enrolled in the Cardiovascular Health Study. Controlling for sociodemographic variables and common comorbid conditions, individuals with higher scores of depressive symptoms were more likely to die than those who had lower scores. Depressed participants with heart failure at baseline had the highest mortality risk (adjusted RR = 2.44, RR = 1.62 for stroke patients, RR = 1.60 for intermittent claudication, RR = 1.30 for angina pectoris, and RR = 1.15 for myocardial infarction). Further, Cox proportional hazards regression model demonstrated that depressive symptoms were an independent predictor of mortality. In another study of the relationships among depression, coronary heart disease (CHD) incidence, and mortality, Ferketich, Schwartzbaum, Frid, and Moeschberger (2000) found that depressed men and women were at increased risk for incident CHD events, compared with nondepressed counterparts (RR = 1.73 (1.11–2.68), RR = 1.71 (1.14–2.56), correspondingly). Moreover, unlike depressed women, depressed men had an increased risk of cardiac mortality with adjusted RR = 2.34 (1.54–3.56).

Prospective population-based studies of depression also found an increased risk for CHD due to depression. Mendes de Leon and others (1998) conducted a cohort study and found a slight increase in risk for CHD events, RR = 1.03 (1.01–1.05), in fairly healthy older women. However, de Leon failed to find support for depression as an independent risk factor for CHD events in elderly men and women in the aggregate. Another prospective study used data from the Yale Health and Aging Project (Williams, S. A., et al., 2002). The sample consisted of 2,501 men and women, with a mean age of 74 years who were disease-free elders and were followed for up to 14 years. In comparison with nondepressed individuals, depressed individuals demonstrated 69% increase in the risk for incident heart failure. In addition, depressed participants were more likely to be women; consequently, depression was a significant risk factor of heart failure among women but not among men.

Using a randomized clinical trial, Berkman and others (2003) assessed the preventive effect of cognitive behavioral therapy (CBT) on depression in 2,481 myocardial infarction (MI) men and women. Although CBT reduced depression and decreased social isolation, it failed to reduce mortality or recurrent infarction events after a 6-month intervention period.
In short, research findings from community-based studies suggest that depression is a risk factor for cardiac morbidity and mortality. However, interventions that may reduce depression have failed to reduce depression-related cardiac outcomes (e.g., see Berkman et al., 2003). It is essential to note that many of these studies have controlled for demographic variables and medical comorbidity that might otherwise explain the findings reported.

Recognition of the overlap between depression and cardiovascular disease has led to increased interest in finding plausible biobehavioral mechanisms which link them together. In fact, there is evidence to indicate that depression may contribute to increased incidence of cardiovascular events. This effect may be mediated by other behavioral and biological factors that play major roles in the development of negative cardiac outcomes. There are several known behavioral risk factors (e.g., sedentary lifestyle, smoking, high-fat dietary intake) among depressed individuals that may contribute to the development of cardiac disease. In addition, recent research findings suggest that several biomarkers are implicated in both depression and cardiac disease pathogenesis. First, research showed that the hypothalamic-pituitary-adrenocortical (HPA) axis is activated during depression, which increases sympathoadrenal activity. Consequently, some risk markers such as catecholamines, cortisol, and serotonin are elevated in both depression and some cardiac diseases. Second, depressed patients are at increased risk for rhythm disorders. Recent evidence indicates that cardiac patients who are depressed exhibit reduced heart rate variability, a known risk factor for sudden death in patients with CVD (Carney et al., 1995). Third, depressed patients are more likely have platelet dysfunction that may have a negative impact on the development and prognosis of cardiovascular disease such as atherosclerosis, acute coronary syndromes, and thrombosis. Finally, the research demonstrated a close relationship among proinflammatory cytokines, such as IL-6 and TNF-α, depression, and incidents of negative cardiac outcomes. Briefly, any single mechanism will fall short of capturing the underlying pathogenetic processes of depression and cardiac disease. Therefore, several mechanisms are needed to account for the development and progression of the two.

This overview from a biopsychosocial perspective reveals that there is sufficient evidence to support an important association between depression and cardiac disease. It also suggests a number of significant directions for future research. Large, randomized clinical trials are needed to determine whether early detection of depression coupled with early intervention can prevent the development of cardiac disease or reduce the risk for incidents of negative cardiac events. Another research priority is to elucidate the potential mediating factors related to depression, such as failure to comply with medical care, sedentary lifestyle, eating habits, and smoking. Also, biological studies are needed to quantify the latent effect of the alterations in the level of risk biomarkers (e.g., homocysteine, IL-6, TNF-α, IL-2, serotonin, dopamine, cortisol, heart rate variability, and platelet activation), which could have a negative effect on cardiac function. Moreover, depression seems to be more of a problem for women with cardiac disease than for men. Therefore, future studies are needed that focus on whether there is a disproportionate weight of comorbid depression and cardiac outcomes among women.

Designing large-scale clinical trials that test biobehavioral research models, along with considering both physiologic and behavioral outcomes, are essential to better understanding of the depression-cardiac disease communication. In addition, studies designed to develop a more clear account of psychosocial risk factors to cardiac disease are urgently needed. Finally, in an era of genetic research, identifying genes or gene expression mechanisms that may link depression and cardiac disease may pave the path for ultimate under-
Depression in Families

Depression is a major mental health problem affecting 25 million Americans and their families. By 2020, depression will be the third leading cause of disability worldwide. Most people suffering from depression live with their families, usually their spouses and children, and the negative impact of depression on families has been well-documented (Coyne et al., 1987; Keitner, Archambault, Ryan, & Miller, 2003; Lee, 2003; Miller et al., 1992). Nursing has long viewed families as a context for caring for the individual with depression, but only recently has focused on the whole family.

Depression is a rather vague descriptive term with a broad and varied meaning ranging from normal sadness and disappointment to a severe incapacitating psychiatric illness. William Styron (1990) describes in Darkness Visible the unsatisfactory descriptive nature of the term depression: “a noun with bland tonality and lacking any magisterial presence, used indifferently to describe the economic decline or rut in the ground, a true wimp of a word for such a major illness” (p. 37).

Depression is a universal mood state with all people experiencing a lowered mood or transient feelings of sadness related to negative life events such as loss. For most, the feelings of sadness or disappointment resolve with time and normal functioning resumes. In contrast, the symptoms associated with the psychiatric illness of depression can disrupt normal functioning, influence mortality and morbidity, and can cause a myriad of problems within the family (Badger, 1996a; Bluementhal et al., 2003; Cuijpers & Smits, 2002; Katon, 2003). The psychiatric illness of major depressive disorder (MDD) is diagnosed if five out of the following nine symptoms are present for a minimum of 2 weeks most of the day, nearly every day: (a) depressed mood, (b) loss of interest or pleasure in all activities, (c) decrease or increase in appetite or significant weight change, (d) insomnia or hypersomnia, (e) psychomotor retardation or agitation, (f) fatigue or loss of energy, (g) feelings of worthlessness or excessive guilt, (h) difficulty concentrating or indecisiveness, and (i) recurrent thoughts of death, recurrent suicide ideation or attempt (American Psychiatric Association (APA), 1994). One of the five symptoms must be depressed mood or loss of interest or pleasure. Together, these symptoms cause significant functional impairment. In addition to MDD, depression is further classified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA, 1994) into other diagnostic subtypes such as minor depression or dysthymia by signs and symptoms, onset, course, duration, and outcomes.

Family refers to any group that functions together to perform tasks related to survival, growth, safety, socialization, or health of the family. Family members can be related by marriage, birth, adoption, or can self-identify themselves as family. This definition is sufficiently broad to be inclusive of all types of families; however it is recommended that researchers provide specific definitions of family appropriate to their research.

Genetic-biological research of depression in families includes genetic and biological marker studies (Flaskerud, 2000; Viguera & Rothschild, 1996). The four research approaches to the genetics of mood are: (a) familial loading studies (e.g., comparing families with depression to families without the disease), (b) studies evaluating the inheritability of mood disorders (e.g., twin studies), (c) studies of incidence of the risk for, but not yet ill from, mood disorders to determine biological or psychological antecedents, and (d) in theory, studies using genetic probes to determine which relatives and which phenotypes are associated with the genetic contributors to mood disorders (Suppes & Rush, 1994).
The results of the familial loading studies are clear whether the approach used is the “top-down” (i.e., studies of children with depressed parents) or the “bottom-up” approach (i.e., studies of relatives of depressed children) (Birmaher, Ryan, & Williamson, 1996; Jacobs & Johnson, 2001). Children with depressed parents have a significantly greater risk of developing depressive disorders and other psychiatric disorders than do children with parents without depression (Buckwalter, Kerfooot, & Stolley, 1988; Peterson et al., 2003; Nomura, Wickramaratne, Warner, Mufson, & Meissman, 2002). Biological marker studies have focused on growth hormone, serotonergic and other neurotransmitter receptors, sleep, and hypothalamic-pituitary axis (Keltner, 2000; Viguera & Rothschild, 1996). Despite evidence from genetic studies about the strong support for the genetic inheritance of depression, and the fact that abnormalities in biological markers persist throughout the life span, the relationship between genetic-biological predisposition and environment remains unclear.

Psychosocial research of depression in families has focused on communication, marital problems and dissatisfaction, expressed emotion, problem-solving, coping, and family functioning (Beach, Sandeen, & O’Leary, 1990; Biglan et al., 1985; Keitner, Miller, Epstein, Bishop, & Fruzzetti, 1987). The evidence strongly supports that families who contain members with depression have greater impairment in all areas than matched control families, and than families whose members are diagnosed with alcohol dependence, adjustment disorders, schizophrenia, or bipolar disorders (Coyne et al., 1987; Keitner, Miller, & Ryan, 1993). It is not surprising that depression has its most negative impact on families during acute depressive episodes (Miller et al., 1992), yet families with depressed members consistently experience more difficulties than matched control families even 1 year after initial treatment (Billings & Moos, 1985). Family members living with members with depression report greater health problems, with about 40% of adults being sufficiently distressed themselves to require therapeutic intervention (Coyne et al., 1987). The majority of recent studies of families with members with depression have used primarily inpatient samples, have focused on women as the identified patient, have often excluded parents with depression, and have been quantitative in nature (Schwab, Stephenson, & Ice, 1993). Few studies have used qualitative approaches to understand family members’ perspectives and treatment needs. Badger (1996a) used a grounded theory method to describe the social psychological process of families living with members with depression. The process, family transformations, refers to the cognitive and behavioral changes that occur within the family from the time the member initially exhibits symptoms through recovery and at remission. As family members moved through the three stages (acknowledging the strangers within, fighting the battle, gaining a new perspective), all members are transformed and family functioning forever altered. These results support findings from previous studies and provide perspectives of family members not normally included in depression research.

Despite identifying the multiple problems in these families, the role of the family in the treatment process has received less attention. Systematic family interventions have only begun to be developed and modeled after programs used with people with other psychiatric disorders and their families (Holder & Anderson, 1990; Keitner et al., 2003). For example, Lee (2003) found that in mothers who participated in a program to improve maternal coping skills, these coping skills moderated between depression and negative life events, reducing the negative effects on children. To date, few clinical trials have validated the effectiveness of these interventions. Families have identified the need for information about how to facilitate communication, decrease negative interactions, handle stigma, gain a new perspective, care for self and redesign their relationships (Badger, 1996b). In theory, education, support and partnering could move family members more quickly
Depression in Older Adults

Depression is the most common mental disorder among older adults in the United States and one of the most disabling conditions among elderly persons worldwide (Sable, Dunn, & Zisook, 2002). More than 6 million Americans age 65 and older representing approximately 15% of U.S. older adults suffer from depression (Sable et al., 2002). The prevalence of clinical depression ranges from about 3% in community samples to 20% in nursing home residents and nearly 30% of older adults seen in primary care settings (Alexopoulos, 2001). About 50% of older adults who are hospitalized for medical illnesses or receiving long-term care experience clinically significant depression (Alexopoulos). Older adults are vulnerable to depression for a number of reasons. Approximately 80% have at least one chronic medical condition that can trigger depression (Sable et al.). In addition, about 6 million older adults need assistance with their daily activities (Sable et al.), and inability to meet one’s own personal needs has been associated with increased vulnerability to late-life depression.

While depression is often viewed as a clinical syndrome with specific diagnostic criteria, depression has also been conceptualized as a mood state or as a collection of symptoms (Beck, 1997). Because older adults may not meet the diagnostic criteria for the clinical syndrome, studies of older adults commonly use the term depression to mean depressive symptoms (Futterman, Thompson, Gallagher-Thompson, & Ferris, 1995). Clinical depression is usually qualified by an adjective to specify a particular type or form, including reactive, agitated, and psychotic. In addition, based on etiology, depression is classified as endogenous (due to internal processes) or exogenous (due to external factors). Depression is termed primary when it is not preceded by any physical or psychiatric condition and secondary when preceded by another physical or psychiatric disorder. Finally, depression is classified as acute (less than 2 years duration) or chronic (more than 2 years). Clinical depression consists of characteristic signs and symptoms, as well as type of onset, course, duration, and outcome. The Diagnostic and Statistical Manual of Mental Disorders (DSM IV) (American Psychiatric Association, 1994) classifies clinical depression into major, minor, and dysthymic subtypes. Major depression refers to a depression that meets specific diagnostic criteria for duration, impairment of functioning, and the presence of a cluster of physiological and psychological symptoms (American Psychiatric Association). Minor depression includes fewer depressive symptoms than major depression. Dysthymia consists of fewer symptoms than are expressed in major depression but more than in minor depression, and it is more chronic (American Psychiatric Association).

Diagnosing depression in older adults is fraught with challenges. Depressed mood is one of the depressive symptoms that older adults may experience, but others may also experience a range of affective responses (Futterman et al., 1995). Indeed, many studies have reported that in older adults, a predominant depressed mood may not be as prominent as symptoms of irritability, anxiety, or physical or somatic symptoms and changes in functioning (Alexopoulos, 2001; Futterman et al.; Sable et al., 2002). In addition, symptoms of cognitive impairment that may occur in elders with depression may be mistaken for dementia (Sable et al.). It is estimated that about 15% of older adults have depressive symptoms that do not meet diagnostic criteria specified by the Diagnostic and Statistical Manual of Mental Disorders (4th ed.) (American Psychiatric Association, 1994).
Statistical Manual of Mental Disorders (DSM IV) (American Psychiatric Association, 1994) for diagnosis of major depression (Alexopoulos). Nevertheless, these older adults can experience functional deficits in activities of daily living (ADL) and instrumental activities of daily living (IADL) that compromise their independence and quality of life. Indeed, the symptoms of depression can lead to total inability of the older individual to care for self and to relate to others. There is also a potential for persons with depression to negatively affect family members and others around them.

Not surprisingly, few elders in the community seek mental health services. Most depressed elders are seen by general practitioners for psychosomatic complaints. Part of the symptomatology of depression is a focus on physical problems, and this requires practitioners to carefully assess for depressive symptoms. Suicide is a risk factor for depressed older adults. The suicide rate for individuals aged 80 and over is twice that of the general population and is particularly high in older White males. Interestingly, most suicidal elders recently visited a general practitioner prior to their suicidal act.

Studies of risk factors for late-life depression have examined the effects of gender, age, and race/ethnicity. Like earlier depression, late-life depression more commonly strikes women than men, at approximately a 2:1 ratio (Kockler & Heun, 2002). Recent population-based studies have estimated the prevalence of geriatric depression at 4.4% for women and 2.7% for men, while the estimated lifetime prevalence for clinical depression is about 20% in women and 10% in men (Kockler & Heun; Sable et al., 2002). Although female gender is a risk factor for depression throughout the life span, gender differences decrease with increasing age (Sable et al.), and white men ages 80 to 84 years are at greatest risk for suicide (Kockler & Heun).

Cohort studies have shown that the oldest-old, those over age 85 years, are more likely than the younger-old, those between 65 and 74, to experience depressive symptoms (Blazer, 2003). Depression is thought to afflict older adults of all racial and ethnic backgrounds similarly (Alexopoulos, 2001; Bruce, 2002); however, its symptoms may not be consistent across racial/ethnic groups, making early diagnosis and treatment challenging.

Research on depression among older adults was ignored in the past and is still a neglected area. Clearly, much more nursing research is needed. It is critical that nurses assume leadership in disseminating information about the outcomes of a variety of treatments that can be used for depression in later life. There is a particular need to examine suicide in late life and to develop better assessment instruments for detecting suicidal ideation in elders.

Jaclene A. Zauszniewski
May L. Wykle

Depression in Women

Women seeking help in the general health care sector often are depressed. Studies indicated that between 20% to 45% of women using primary care have major depressive disorder (MDD) (Bixo, Sundström-Poromaa, Björn, & Åström, 2001; Hauenstein, 2003; Kirmayer & Robbins, 1996; Miranda, Azocar, Komaromy & Golding, 1998). In these settings, patients are more likely to report their depressive symptoms as physical problems (Barsky, Peekna, & Borus, 2001; Katon, Sullivan, & Walker, 2001) and physicians less likely to identify and treat the disorder (Freiman & Zuvekas, 2000; Katz et al., 1997; Sundström, Bixo, Björn, & Åström, 2001). Nurses are positioned to detect and manage this major public health problem because of their prominence in the general health sector and their often greater proximity to patients.

MDD remains a significant source of morbidity and disability in women under 65. The physical symptoms of lethargy and sleep and appetite disturbance combine with the cognitive symptoms of disinterest, helplessness, hopelessness, and worthlessness to exact both
significant mood disturbances and functional impairments. Unfortunately, MDD is common among women. The population prevalence of MDD in women is 6% to 17% (Kessler et al., 2003). Combined with dysthymia, a milder but more chronic and equally disabling mood disorder, the population prevalence ranges from 12 to 25%, a rate twice that of men (Kessler, 2003). Women’s key risk factors for MDD include a family history of the disorder, single parenting, a history of child abuse, impoverishment, and poorer educational achievement (Brown & Moran, 1997; Hanson et al., 2001; Kessler et al., 1994; Kessler et al., 2003; Weiss, Longhurst, & Mazure, 1999). Social discrimination and sexual harassment also contribute to the preponderance of MDD in women. Marginalized women have the highest rates of MDD (Brown, Schulberg, Madonia, Shear, & Houck, 1996; Hauenstein & Peddada, in revision; Miranda et al., 1998).

While MDD is present in elderly women, the highest incidence of the disorder occurs in women 25 to 34, a time when women are developing both their work and family careers. Depressed women have higher rates of unemployment or partial employment, absenteeism, poor work productivity, and fail to progress in their work careers. This translates to an estimated annual cost per employer of almost $10,000 for every depressed woman working in the firm (Birnbaum, Leong, & Greenberg, 2003). Mood disorder also impairs women’s family careers (Gotlib, Lewinsohn, & Steely, 1998; Wade & Cairney, 2000). Depressed women are more likely to divorce than are unaffected women, and divorced women tend to be economically disadvantaged. Divorced women often are responsible for young children, and raising these children alone is difficult. These work and family patterns associated with MDD contribute to a cycle of hopelessness, worthlessness, and poverty that promotes a chronic and recurrent course of MDD that is refractory to treatment. This is a global phenomenon; the World Health Organization Global Burden of Disease study showed that MDD was the leading cause of disease related disability in women (NIMH Research on Women’s Mental Health—Highlights FY2001–2002).

Maternal depression also has significant effects on children. Research has shown cognitive and social deficits in children of depressed mothers that appear early in infancy (Essex, Klein, Cho, & Kalin, 2002; Field, 1998; Kaplan, Bachorowski, & Zarlingo-Strouse, 1999). These deficits persist into childhood and adolescence and have chronic effects on personal, school, and social functioning (Essex, Klein, Miech, & Smider, 2001; Gotlib et al., 1998; Murray, Sinclair, Cooper, Ducournau, & Turner, 1999; Oyserman, Bybee, & Mowbray, 2002).

A complex interaction of biological, psychological, and social factors contribute to MDD in women. Gender disparities in the occurrence of MDD and its coincidence with women’s hormonal changes point to estrogen as a physiological mechanism in women’s depression (Shors & Leuner, 2003; Steiner, Dunn, & Born, 2003). Gonadal hormones are thought to alter neurotransmitter functioning and learning resulting in more affective symptoms and nonresponsiveness in stressful circumstances. There is mounting evidence that childhood trauma such as sexual abuse can alter hypothalamic-pituitary-adrenal axis (HPA) functioning and increase vulnerability to future depression (Putnam, 2003).

Hormonal factors alone do not precipitate MDD in women (Kessler, 2003). The unstable HPA system is affected by women’s psychological and social environment, which may serve to precipitate physiological events. For example, animal models show that female rats when exposed to uncontrollable stress will fail to respond in subsequent controllable stress situations, a response style not shared by males (Shors & Leuner, 2003). Interpersonal distress is one example of uncontrollable stress. Research has shown that women locked in dysfunctional relationships for economic or other reasons are more likely to have recurrent depressive episodes (Hammen, 2003). Pessimistic thinking arising from low self-esteem also has been associated with
depressive symptoms in women (Peden, Hall, Rayens, & Beebe, 2000). Not surprisingly, MDD is more common among women who exhibit dependent personality traits (Widiger & Anderson, 2003). Despite progress in reducing gender discrimination, many women’s social environment contributes to MDD by stripping them of personal power. Early victimization contributes to victimization as adults. Low self-esteem increases the likelihood of an early and often unstable marriage that leads to divorce. Divorce is associated with economic hardship and single parenting. Victimization, marital instability, single parenting, and economic hardship have all been associated with often intractable depression (Bauer, Rodríguez, & Pérez-Stable, 2000; Brown & Moran, 1997; Earle, Smith, Harris, & Longino, 1998; Gotlib et al., 1998; Kessler, Walters, & Forthofer, 1998; McCauley, Kern, Kolodner, Derogatis, & Bass, 1998; Petterson & Albers, 2002; Scholle, Rost, & Golding, 1998; Wade & Cairney, 2000). While the evidence for these associations is convincing, the reciprocal relationship between MDD and the social condition of women is far less understood and is an area of needed research.

Evidence-based treatments for MDD include pharmacotherapy and psychotherapy. Minimum treatment includes 2 months of an antidepressant at a dose known to be efficacious in treating MDD or at least eight visits to a specialty mental health provider that last a minimum of 30 minutes each (Kessler et al., 2003; Young, Klap, Sherbourne, & Wells, 2001). The data show that minimum treatment can effect remission in the short-term but the extent to which there are long-term benefits is yet to be determined. There is significant evidence, however, that few receive even this minimum level of care (Kessler et al.; Wang, Berglund, & Kessler, 2000). While there are few large trials focusing specifically on women, three studies using evidence-based treatments have demonstrated modest treatment effects with both urban and rural women attending primary care (Hauenstein, 2003; Miranda, Nakamura, & Bernal, 2003; Pyne et al., 2003). The multifactorial nature of depression in women, however, may require different or more complex psychological and social interventions than those that meet the minimum standards for depression treatment. Many of the psychotherapies are considered gender neutral but few studies address gender differences in outcome. One example where gender differences in outcome were examined is that by Pyne and his group who used a simple, nurse-managed intervention, which included tailoring known efficacious treatment to the preferences of the patients and regular telephone follow-up. The treatment was cost-effective in women, but not in men, when quality of life was evaluated as the outcome. Gender-specific treatments might target psychological and social factors known to exacerbate depression in women. For example, because of the reciprocal effect of marital instability and MDD, interventions that focus on reducing interpersonal distress and spousal conflict may be especially promising for women (Hammen, 2003; Wade & Kendler, 2000; Worell, 2001). Interventions that stimulate positive life change also may work preferentially in women (Albertine, Oldehinkel, Ormel, & Neelen, 2000). Treatment for MDD driven by gender-specific theories based on women’s own voices and experiences, and the diversities and complexities of women’s experience may promote recovery instead of simply remission (Eun-Ok & Afaf-Ibrahim, 2001; Worell, 2001).

Recommendations for needed research on MDD in women have been enumerated by the American Psychological Association and the Office of Women’s Health at the National Institutes of Health (Mazure, Keita, & Blehar, 2002; U.S. Department of Health and Human Services, 1999b). Recommendations for research range from bench research to public education. Research focused on treatment approaches is especially relevant to nursing. First, gender-specific treatments for MDD need to be developed and tested. Treatments must be based on the unique biological, psychological, and social conditions of women generally, and tailored to the needs of ethnically diverse women and those in dire
social circumstances. The design of treatment programs should target recovery, not simply symptom remission. Second, research on treatment outcome requires evaluation of multiple areas of functioning including marital stability, parenting, and work productivity. From a policy perspective, MDD in women will not become a priority until the impact of MDD at the family and community level is realized and the effects of adequate treatment are determined. Third, attention must be paid to the provision of treatment that is accessible. Health services research in this area should consider novel venues and providers. For example, treatment services for women could be moved to the community in places where women commonly gather, such as churches, schools, and community centers. Because mental health care is a dwindling commodity it is important to consider non-specialty professional and lay providers. Nurses can be pivotal here, both in providing direct service and in organizing and supervising lay providers. Research paradigms that develop and test alternative health delivery methods will go far in closing the gap between need and treatment.

EMILY J. HAUENSTEIN

Descriptive Research

Descriptive research encompasses a broad range of research activity in nursing and has comprised the majority of nursing studies. Early research efforts were focused on descriptive epidemiological studies. Nightingale’s pioneering work is a well-known example of this type of research. Well schooled in mathematics and statistics, Nightingale created elaborate charts demonstrating morbidity and mortality trends of soldiers during and after the Crimean War. Her detailed record keeping and graphic representation of these data convinced officials of the need to improve sanitary conditions for soldiers, which drastically reduced mortality rates (Cohen, L. B., 1984).

The progress in descriptive research activity in nursing has been influenced by several events and movements over the past several decades: advanced degree education in nursing, philosophical debate about the role of nursing and nursing research in the scientific community, establishment of centers for nursing research, and the formation of an agenda for knowledge development in nursing.

With the help of federal traineeship money, the earliest doctorally prepared nurses obtained degrees in basic science programs. The adoption and rejection of the logical positivist view of science helped clarify linkages between philosophy, theory, and method. At one extreme, nurse scientists and theorists argued that the future of nursing knowledge development lay in empirical studies that allowed for repeated observational statements under a variety of conditions. It was believed that one ultimate truth could be found after repeated objective observations, which would eventually lead to discovery of universal laws.

Critics of the logical empiricist approach argued that truth is influenced by history, context, and a chosen methodology and is constantly in a state of flux. What is humanly unobservable one day may be observable with the help of technological innovation another day. Although logical positivism is no longer espoused in nursing theory and science, its role was crucial in initiating dialogue about what nursing knowledge is and how research in nursing should be advanced. These dialogues have helped swing the pendulum from valuing experimental research as the gold standard in nursing to recognizing the important role of descriptive and exploratory research.

Over the years, nursing leaders have struggled to establish which approach to knowledge development is appropriate and necessary for nursing. Dickoff, James, and Wiedenbach’s (1968) four levels of theory for nursing included the most basic type, factor-isolating theory, as the product of descriptive studies, with higher level theories built on the necessary base of this first level of theory. Steven-
son (1990) depicted a stepwise conceptualization of research in nursing, with exploratory research at the bottom and utilization in practice at the top. Descriptive research was thought to build on exploratory research findings and to provide a foundation of support for intervention studies, with the ultimate goal of utilizing research findings in practice. N. R. Reynolds, Timmerman, Anderson, and Stevenson (1992) encouraged nurse researchers to employ meta-analysis techniques to descriptive research. Meta-analysis is a useful statistical tool that synthesizes extant nursing research, but it has largely been applied only to experimental studies. Application of this technique to descriptive studies can help determine when a phenomenon is ready for testing with intervention studies.

Descriptive studies often are used when little research has been done in an area, to clarify and define new concepts or phenomena, to increase understanding of a phenomenon from another experiential perspective, or to obtain a fresh perspective on a well-researched topic. Also, the formulation and testing of measurement tools (e.g., to measure depression, anxiety, or quality of life) employ descriptive research techniques. The development and refinement of these tools will continue, with increasing emphasis on outcomes research as nurses are required to demonstrate how their interventions make a difference for their patients.

Public and private funding of nursing research has allowed for an expansion of nursing knowledge based in research. Of the many studies funded by National Institute of Nursing Research, Sigma Theta Tau, and private foundations, descriptive research continues to command a large portion of research dollars. Descriptive research can employ quantitative or qualitative (including naturalistic) methodologies. Quantitative descriptive methodologies include surveys, measurement tools, chart or record reviews, physiological measurements, meta-analyses, and secondary data analyses. Qualitative descriptive methodologies include interviews, focus groups, content analyses, reviews of literature, observational studies, case studies, life histories, grounded theory studies, concept analyses, ethnographic studies, and phenomenological studies. Many qualitative methodologies employ exploratory as well as descriptive techniques.

A large portion of descriptive research involves the use of surveys or measurement tools, physiological measurements, and interviews. Other naturalistic or qualitative methodologies (e.g., ethnography, grounded theory, phenomenology) have become more available to nurse researchers in the recent past and continue to add to the descriptive research knowledge base in nursing.

Many nursing organizations and associations have delineated priorities for a nursing research agenda that include clarifying philosophical underpinnings of holism, research on care and caring, health promotion, disease prevention and wellness, development of knowledge about the family and social support networks, and research on minority groups and culturally different views of health and illness. Adding to nursing’s knowledge base in these areas will require using descriptive research along with other research methodologies and incorporating the results of these studies into nursing practice and research endeavors.

Anita J. Tarzian  
Marlene Zichi Cohen

Diabetes

According to the Diabetes Research Working Group’s recent report *Conquering Diabetes: A Strategic Plan for the 21st Century*, diabetes is the 6th leading cause of death in the U.S., primarily resulting from cardiovascular disease. Diabetes is a disease that affects people of all ages and from every racial background. African, Hispanic, Native, and Asian Americans, the fastest growing segments of the U.S. population, are particularly vulnerable to diabetes and its most severe complications (National Institute of Diabetes and Digestive and Kidney Diseases, 2003). For ex-
ample, heart disease, stroke, kidney disease, blindness, and death due to diabetes are more common in African-American versus Caucasian adults.

The simplified criteria for diagnosis of diabetes using fasting plasma glucose $\geq 126$ mg/dl or casual plasma glucose $\geq 200$ mg/dl with classic symptoms confirmed on a subsequent day may be impacting the numbers of persons identified as having diabetes (American Diabetes Association, 2003). The total prevalence of diabetes in the United States is estimated to be 18.2 million: 13 million diagnosed and 5.2 million undiagnosed (Centers for Disease Control, 2003). Along with the tendency for obesity, inactivity, and an ever-aging population, the incidence of diabetes is expected to grow. In pediatric populations, an emerging epidemic of type 2 diabetes is occurring due to higher rates of overweight and sedentary behavior in youth as young as 10 years of age, seen predominantly in ethnic minorities (Fagot-Campagna, 2000).

Given these sobering statistics, there is strong evidence that the United States will face ongoing public health challenges to address the potential burgeoning onslaught of individuals who face declining health status, quality of life (QoL), and lost productivity related to an earlier onset of diabetes. Tighter glycemic control is shown to decrease the progression of diabetes complications in persons with type 1 and type 2 diabetes (Diabetes Control and Complications Trial Research [DCCT], 1993; United Kingdom Prospective Diabetes Group Study [UKPDS], 1998). The conundrum facing nurse researchers is how best to develop interventions that promote effective, individualized self-management in persons diagnosed with diabetes and to implement screening procedures for early detection and prevention in those most at risk for developing diabetes.

The majority of nursing studies focus on adults with diabetes, particularly in African-American women and Mexican and Native Americans with type 2 diabetes. The nurse researchers investigating symptom management, self-management or self-care, and community-based interventions using culturally sensitive approaches include Sharon Brown at the University of Texas at Austin; Felicia Hodge at the University of California, San Francisco; Gail Melkus at Yale University; and Anne Skelly at the University of North Carolina, Chapel Hill. Although each of the principal investigators has developed specific aims for their individual programs of research using quasi-experimental designs, there are some common areas of study. Examples of the diabetes-related outcomes that these investigations are addressing are diabetes knowledge, health beliefs and behaviors, metabolic control of glucose, body mass index, lipid levels, blood pressure, self-efficacy, and QoL. Focus groups with diverse populations are commonly used to gain a more comprehensive understanding of the sociocultural concerns of the study participants regarding diabetes management, to assist with tailoring culturally sensitive and feasible interventions, and to allow for detecting differences in more successful versus less successful results. Most of the studies included longitudinal evaluations of the interventions, which address diabetes education in nutrition, exercise, home glucose monitoring, and coping skills training.

Limited research with adults who have type 2 diabetes was available on the physiological benefits of interventions. Laurie Quinn at the University of Illinois at Chicago has collaborated with James Rimmer, an exercise physiologist, to identify the feasibility of a health promotion intervention with predominantly low-income, low-education, American women with multiple chronic conditions (e.g., obesity, hypertension, joint pain, and depression) in addition to diabetes. The 12-week intervention consisted of health behavior training with peer support, nutrition education, and prescribed exercise based upon personal aerobic capacity (peak VO$_2$). Using a 3 day per week format with transportation provided, subjects had significant improvements in total and LDL cholesterol, cardiovascular fitness, muscular strength, and nutrition knowledge. Thus, there is compelling need to devise interventions that target approaches for individuals with complex so-
Studies of youths with diabetes are addressing the needs of adolescents and their families. The nurse researchers examining issues in this population are Margaret Grey at Yale University, Carol Dashiff at the University of Alabama at Birmingham, and Melissa Faulkner at the University of Illinois at Chicago. Family and developmental perspectives are incorporated into the designs of studies of youths. Key variables are self-care or self-management, self-efficacy, QoL, coping, family adaptation, and autonomy as related to improvement in metabolic control. Grey is conducting a longitudinal study using QoL and metabolic control to evaluate the efficacy of coping skills training (CST) in youths receiving intensive diabetes management. This investigation is the longest ongoing clinical trial specifically testing the efficacy of an intervention with youths who have type 1 diabetes. Adolescents who received CST and intensive diabetes management had significantly better metabolic control and less impact of diabetes on their QoL than youths receiving intensive diabetes management alone after 1 year. Such evidence lends support for devising interventions to optimize both glycemic control and perceptions of QoL in youths with diabetes. Dashiff is developing a model of influences on the development of adolescent autonomy and family processes for self-care and diabetes control in early and middle adolescence. Her data will reflect the evolutionary development of the parent-adolescent subsystem prospectively over a 2-year period with the goal of identifying factors that improve diabetes control when providing family-based interventions.

Consistent with the overall aim of preventing long-term diabetes-related complications as teens make the transition to adulthood, Faulkner is investigating cardiovascular risks in adolescents with type 1 and type 2 diabetes. The intent is to describe potential sociodemographic, behavioral, or physiological factors that predispose youths with either type of diabetes to subsequent heart disease.

This research is partly based upon earlier work that found decreased heart rate variability, a marker for early cardiovascular autonomic disease, associated with having type 1 diabetes and poorer metabolic control (Faulkner, Hathaway, Milstead, & Burghen, 2001).

Improvements in glycemic control through individualized interventions developed and tested through scientific inquiry will increase the odds for minimizing complications of diabetes, which affect personal QoL and productivity and contribute to the economic burden associated with diabetes care. Future research must embrace not only better outcomes, including decreasing health disparities in minorities, but also the enormous need for prevention in those predisposed to the disease. Newer technologies for insulin delivery, continuous glucose sensing, and genetic engineering for individual therapies are on the horizon. Through their leadership in interdisciplinary science, nurse researchers will remain integral to the advancement of evidence-based diabetes care.

MELISSA SPEZIA FAULKNER

Disaster Nursing

Norris et al. (2002) defined a disaster as a sudden event that has the potential to terrify, horrify, or engender substantial losses for many people simultaneously. Disasters are classified by the nature of the event, i.e., natural, technological, and deliberate acts of mass violence (terrorism), and/or by the impact of exposure, i.e. “dose response.” Natural disasters are geophysical forces (e.g., earthquakes) or weather forces (e.g., hurricanes, tornadoes). Technological disasters are frequently attributed to human negligence and error and include collapse of structures, environmental catastrophes, and failures of public transportation equipment. Traumatic events are relevant to nursing science and practice for several reasons. First, these events are more common and have more pervasive impacts than previously thought. Norris (1992) in a survey...
of residents in four Southeastern cities showed a lifetime exposure rate of 69%. Those surveyed had experienced at least one traumatic event. Tragic death, robbery, and serious motor vehicle injuries were the three most frequently reported. The impacts of disasters on individuals and communities are multidimensional and immense, and adaptation to loss is of long rather than short duration (Murphy, 2001; Norris et al.).

Research findings (Hall, Norwood, Ursano, Fallerton, & Levinson, 2002; Murphy, 2001; Norris et al., 2002) resulting from all types of traumatic events suggests five major domains of human responses following exposure to one of these events: (a) Specific psychological problems include shock, terror, guilt, horror, irritability, anxiety, hostility, post traumatic stress disorder (PTSD), and depression; (b) Cognitive responses include inability to concentrate, confusion, self-blame, intrusive thoughts (flashbacks) about the experience, decreased sense of self-efficacy, fear of losing additional control over life events, and fear of reoccurrence of the event; (c) Biological responses include sleep disturbance (insomnia, nightmares), exaggerated startle response, and indicators of stress and immune disorders. Behavioral responses include avoidance, social withdrawal, interpersonal stress (decreased intimacy and lowered trust in others) and substance abuse; (d) Resource losses include losses of income, social support, time for noneffect activities, social embeddedness, optimism, self-efficacy, and perceived control; and (e) Collective responses. Neighborhood and community response studies are rare with assessments generally taking three approaches: Participants have been asked to report community conditions, individual level responses have been aggregated, and archival data have been used to illustrate loss and responses to loss, for example, changes in liquor sales in a given neighborhood or community (Bromet, Parkinson, Schulberg, & Gondek, 1982; Gleser, Green, & Winget, 1981; Norris et al.).

Norris et al. (2002) summarized both the individual and collective outcomes obtained from 160 disaster samples from 29 countries. All three types of disaster, natural, technological, and mass violence events, were examined and analyzed for effect size. The magnitude of severity of negative consequences for the individual level response samples reviewed by Norris et al. was rated by level of impairment: minimal—11%, moderate—51%, severe—21%, and very severe—18%. When the data were assessed by type of event, victims of terrorist attacks (as opposed to natural and technological events) suffered the most severe consequences. Norris et al. reported that women and youths were more severely affected than men and older adults. Rescue and recovery workers were reportedly the most resilient. Examples of U.S. disasters rated as “high impact” by Norris et al. were the Buffalo Creek dam collapse (1972), the Exxon Valdez oil spill (1989), Hurricane Andrew (1992), and the Oklahoma City bombing (1995). Findings emerging from World Trade Center study samples, i.e., Manhattan and nearby areas, showed incidence of symptoms of stress ranging from 20% to 40%, suggesting a high disaster impact (Galea et al., 2002; Schuster et al., 2001).

Disasters and their outcomes are difficult to study. There are several reasons for this and some cannot be overcome. First, “pre-event” data are rarely available. It may be that mental disorders are overestimated in some postdisaster samples. Second, study reports vary widely in their methods. Norris et al. (2002) noted that 68% of the samples in their data set provided single, one-time data frequently by telephone. Initial, postevent data collections ranged from immediately after an event up to 7 years later, making the determination of immediate impact difficult to estimate. Most longitudinal studies have not collected follow-up data for more than a year, leaving long-term outcomes unknown. Thus, study design variability poses a threat to generalizability of findings.

Four suggestions for the study of disasters are to: increase the number of community and family studies, examine the roles of protective factors and lost resources, develop and test evidence-based interventions, and increase nurse researcher involvement. Research is
needed in regard to factors that prevent or impede negative consequences, e.g., the roles of social networks and the efficiency of relief agencies. Collective responses interact with individual responses, making outcome measurement a challenge. The measurement and documentation of posttrauma responses has improved over time, but there is a lack of understanding in regard to how to reduce high levels of PTSD. Beaton and Murphy (2002) have made some initial recommendations in regard to the timing of psychosocial interventions following terrorist events. Finally, nurses provide postdisaster emergency services and follow-up treatment, and some have assisted in study data collection, but only a few have been study investigators.

Shirley A. Murphy

Discourse Analysis

Discourse analysis is a method that has multiple meanings referring to a wide range of analytical procedures. Such methodological diversity has resulted not only from various philosophical traditions that treat discourse differently but also from conceptualization of discourse analysis by diverse disciplines that emphasize different aspects or meanings of discourse. Discourse is viewed as an appropriate subject matter for research by various disciplines, including linguistics, philosophy, anthropology, sociology, psychology, information science, literary criticism, journalism, and practice disciplines such as nursing and medicine.

Although the term discourse in relation to discourse analysis is defined and used differently in linguistics and in other disciplines, discourse refers to language-in-use as connected speech or written texts produced in social contexts, rather than in terms of single sentences considered in terms of grammar and syntax. Discourse analysis deals with texts of conversations and written texts produced among individuals, as well as those produced within larger social, historical environments such as journal articles or newspaper accounts, that are not directed to specific individuals as their audiences. Discourse as the object of analysis is usually obtained from natural occurrences rather than from constructions designed solely for the purpose of analysis as either exemplary or ideal cases.

The term discourse in discourse analysis is commonly accepted as a mass noun with the above definition. However, the use of “a discourse” or “discourses” can be often found in discourse analysis with the post-structural, critical perspective. But the current literature abounds with both usages of the term (i.e., “discourse” and “a discourse”), not necessarily used consistently within one specific perspective.

Discourse analysis has its historic origin in the ancient Greek differentiation of grammar and rhetoric in language use (van Dijk, T. A., 1985). Although the study of rhetoric was differentiated from the study of grammar in linguistics throughout the centuries, it was not until the middle of the 20th century that a more formal approach to discourse analysis gained its appeal in linguistics. Hence, “pragmatics” in linguistics emphasizing discourse analysis has been separately developed, in contrast to the study of language proper that focuses on formal grammatical, syntactical, and morphological structures. Following this modern revisit in linguistics, many other disciplines have begun to take discourse as the proper subject of their scientific study. Although there are cross-disciplinary discussions of the methodology and application of various approaches of discourse analysis, there is no unified, integrated approach to discourse analysis. The literature across the disciplines suggests that there are at least three general perspectives within discourse analysis: (a) the linguistic perspective, (b) the conversation perspective, and (c) the ideology/critical perspective.

The linguistic perspective takes discourse as text produced by language use in either speech or writing. Thus, discourse text for this perspective can be from interpersonal conversations, written texts, or speech expositions such as testimonies. This perspective encompasses the formal pragmatics in lin-
Discourse analysis as a branch of sociology is a study of language use within the functional paradigm of sociology, which views social life in relation to larger social structures such as gender, status, social class, role, and ethnicity. Sociolinguists are concerned with ways in which people use different linguistic forms according to macrostructural and contextual differences.

Anthropological approaches in the linguistic perspective are ethnopoetics and ethnography of communication. Ethnopoetics is the study of oral discourse as speech art in the tradition of literary analysis and is concerned with the structures of verbal aesthetics. The focus is on the poetic patterning of discourse within different cultures. On the other hand, ethnography of communication, advanced by Hymes (1964), is concerned with general language use as practiced in specific sociocultural context. Ethnography of communication, done either from the cross-cultural, comparative orientation or from the single-culture orientation, is based on the assumption that discourse should be studied, positing it within the dynamics and patterns of discourse events in a given cultural context. In all these branches of the linguistic perspective, the emphasis is on the linguistic forms as used in social life.

The conversation perspective takes discourse as conversational texts; it has been developed from the ethnomethodological tradition of Garfinkel in sociology. In this tradition, Sacks (1967) and others pioneered conversation analysis as a form of discourse analysis. Conversation analysis views discourse as a stream of sequentially organized discursive components that are designed jointly by participants of conversation applying a set of social and conversational rules. Conversation analysis studies rules that participants in conversation use to carry on and accomplish interaction, such as topic organization, turn taking, and use of response tokens. In recent years, however, conversation analysis has extended to include behavioral aspects of interaction (e.g., gesture, gaze, and laughter) as its analytical components. The use of transcripts and transcription symbols has been extensively developed in this perspective.

Discourse analysis in the ideological/critical perspective differs from that in the other two perspectives in its emphasis on the nature of discourse as historically constructed and constrained idea and knowledge. Discourse in this perspective is not considered in terms of linguistic form or interactive patterning. Rather, discourse is not only what is said or written but also the discursive conditions that produce imagined forms of life in given local, historical, and sociocultural junctures and thus is embedded in and with power and ideology.

This perspective was represented by poststructuralists such as Foucault (1972) and Lyotard (1984), who viewed discourse analysis not simply as an analytical process but as a critique and intervention against marginalization and repression of other forms of knowledge and discursive possibilities. Foucault treats discourses in relation to rules tied to specific historical conditions of usage and as power relations. Hence, discourse analysis in this perspective is oriented to revealing sociohistorical functions and power relations embedded in statements of talks and texts as
well as what Foucault called “systemic archives,” of which statements form a part.

The foregoing discussion indicates that discourse analysis is not a unified approach to studying language use. Although three perspectives are identified for this method, there is a blurring of differences among the perspectives. The method, however, remains multi-discipline-oriented. In nursing, discourse analysis is being applied with all three perspectives. Discourse analysis with the linguistic perspective has been applied to study discourse comprehension in client-nurse interactions or discourse organization of nurses’ notes and to analyze various discourses on such topics as abortion, individualized care, and professionalism in the nursing literature related to macrostructural or contextual factors.

On the other hand, discourse analysis with the conversation perspective has been applied to the study of turn taking and topic organization in client-nurse interactions and to examine the dynamics of home visiting. Within the ideological/critical perspective, discourse analysis has been applied to examine nursing documentation as a form of power relations, to analyze discourse of nursing diagnosis in the nursing literature, and to explicate the language of sexuality, menopause, and abortion as power relations and ideology. Written texts produced by clients and nurses and client-nurse conversations, as well as texts in the public domain, are the rich sources for applying discourse analysis to study the language-in-use from these perspectives.

HESOOK SUZIE KIM

Disparities in Minority Mental Health

Disparities in mental health services for racial/ethnic minorities are continuous, ongoing, and persistent (Miranda, Lawson, & Escobar, 2002; Institute of Medicine [I.O.M.], 2003; U.S. Department of Health and Human Services [U.S.D.H.H.S.], 2003; Sue, 2003). Because of the holistic and preventive care attributes found in nursing research, education, and practice, nurses are prepared to address the issues of disparities in minority mental health. Nurses have ethical responsibilities that include doing no harm through the provision of safe patient care (Gastmans, 1998). Practicing within an ethically challenging environment calls for nurses to be aware of and to address the issues of health disparities for racial/ethnic minorities. It is imperative that nurses become culturally competent in the care that they give to all people including racial/ethnic minorities. The Institute of Medicine Committee on understanding and eliminating racial and ethnic disparities in health care (I.O.M.) defines “disparities in health care as racial or ethnic differences in the quality of health care that are not due to access-related factors or clinical needs, preferences, and appropriateness of intervention” (pp. 3–4). Racial/ethnic minorities are less likely to receive needed mental health care and when they do it is of poorer quality than whites.

The four major minority groups are both racial—Black, Native Indian/Alaskan Native, and Asian/Pacific Islanders, and ethnic—Hispanic (any race). Miranda, Nakamura, and Bernal (2003) stated that although race is based on an outdated impression of biological origin, race does designate strong social meanings, whereas ethnicity refers to affinity with a group that is believed to share a common lineage. According to the U.S. Census Bureau (2001), from 1900 to 1965, racial/ethnic minorities made up 10% of the U.S. population. By 2000, they were almost 30% of the U.S. population, and by the mid-21st century racial/ethnic minorities will be approximately 40% of the U.S. population. The U.S. Census Bureau reported that of the 281.4 million people that live in the United States, 12.3% are Black, 0.9% are Native Indians/Alaskan Natives, 3.7% are Asian/Pacific Islanders and 12.5% are Hispanic.

Today, racial/ethnic minorities still are affected by long-term legalized racism/discrimination. For Blacks, it was slavery; Native Americans and Japanese—forced relocations; Hispanics—conquest; and Chinese—involuntary noncitizenship. This led to institution-
alized racism, with a continued distrust by minorities of organized systems, including the health-care system. Stigma prevents many minorities with mental illness from seeking help. According to the Surgeon General, stigma plays a stronger role in not seeking treatment with racial/ethnic minorities than with whites. As stigma lessens, a change in public attitude should occur and people will be more likely to seek care.

Prevalence of mental disorders are relatively similar across racial/ethnic populations, although there are clear variances within subgroups (Miranda et al., 2002). Blacks in need of mental health care receive only half the care of whites, and the rate of uninsured minorities to whites is 2:1 (U.S.D.H.H.S., 2003). Almost 30% of Hispanics and 20% of Blacks do not have a primary source of health care and many racial/ethnic minorities live in remote and rural areas. People who do not have a primary source of health care or who live in remote and rural locations are less likely to be insured or more likely to be underinsured. Being insured increases the likelihood for accessibility to mental health care.

Mental health disparities for racial/ethnic minority populations are sustained by barriers to cultural competence that include racism/discrimination, stigma, communication, misdiagnosis, treatment, and lack of research (U.S.D.H.H.S., 2003; Miranda et al., 2002; I.O.M., 2003). The Surgeon General in the landmark supplement, Mental Health: Culture, Race and Ethnicity (2003) reasoned that racial/ethnic minorities experience (a) less opportunity of entry to and ease of use of mental health services, (b) less potential for receipt of mental health services, (c) poorer quality of mental health treatment, and (d) underrepresentation of racial/ethnic minority clinicians, researchers, and educators in the mental health field.

There are major gaps in empirical data for mental health services for racial/ethnic minorities. Misdiagnosis, treatment, and cultural competence have been studied. Most research has been done with the black population. Misdiagnosis occurs in all groups including whites but it occurs to a more significant degree in minorities (Miranda et al., 2002; I.O.M., 2003). Racial/ethnic minorities were less likely to receive appropriate care for depression or anxiety than were whites. Black patients with affective disorders are more likely to be diagnosed as schizophrenic than are white patients and therefore, less likely to receive lithium (Miranda et al.; I.O.M.; U.S.D.H.H.S., 2003).

Misdiagnosis leads to mistreatment in the form of no treatment, inappropriate treatment, or undertreatment. Tardive dyskinesia (a major side effect of major antipsychotic medication), excessive dosing, and as needed medications are complications more likely to occur in racial/ethnic minority groups than in the white population (Miranda et al., 2002; I.O.M., 2003; U.S.D.H.H.S., 2003). Unless a proper diagnosis is made, mindful of the varying presentations of mental health symptoms among racial/ethnic minorities and patient’s acceptance of the interview process, which may not be culturally competent, effective treatment is unlikely to occur (I.O.M.).

Other studies indicate that minorities are likely to have untoward effects from treatment because of sensitivity to medication, improper medication, and intermittent or inappropriate treatment (I.O.M., 2003; U.S.D.H.H.S., 2003). Further, a lack of cultural competence among service providers has contributed to a lack of use of mental health services that contributes to the likelihood of minority persons receiving more inappropriate care than whites (I.O.M.; U.S.D.H.H.S.).

Stigma of people with mental illness has existed throughout history (I.O.M., 2003). Over this period of time, the treatment of mental illness has always been separated from the treatment of physical illness. Stigmatization of mental illness leads to the avoidance of and the treatment of persons with mental illness. Stigma is so widespread and such a formidable barrier to seeking mental health services that it is imperative to determine its dynamics and the impact on persons who need and deserve mental health services (U.S.D.H.H.S., 2003).
Significant gaps in nursing literature exist regarding minority mental health. Future research is needed to increase knowledge and ameliorate racism/discrimination, stigma, communication problems, misdiagnosis, and treatment in minority mental health (I.O.M., 2003; U.S.D.H.H.S., 2003). Mental health screening instruments need to demonstrate satisfactory reliability and validity across diverse ethnic minority populations to determine their cultural relevance and sensitivity (Baker & Bell, 1999). Although Baker and Bell addressed instrument appropriateness among mental health care of blacks, the data are generalizable to other racial/ethnic minorities.

The treatment outcomes for racial/ethnic minorities are influenced by the cultural incompetence and bias of providers (I.O.M., 2003; U.S.D.H.H.S., 2003; Sue, 2003). Diagnostic criteria for quantifying mental health symptoms exist, though their use may paradoxically limit the provider from making an appropriate clinical formulation when varying presentations of mental health symptoms in minority ethnic populations exist. An appendix to the DSM-IV TR (2000) features guidelines for the cultural formulation to be putatively incorporated into the clinical interview. These have not been included in the text as an integrated part of multiaxial assessment due to incomplete empirical data to guide practice. Cultural competence needs to be well-defined, evidence-based, and empirically-measured for its impact on outcomes associated with mental health therapies (Sue, 2003).

Cultural influences of both provider and patient potentiate communication difficulties that direct the uninformed provider to underestimate the prevalence of clinically-significant mental health symptoms among racial/ethnic minorities (Baker & Bell, 1999; I.O.M., 2003). After many years of looking at ethnic match of provider and client, where both are of a common ethnic background, cultural match, where the client regards the provider as culturally-sensitive, flexible, and willing to regard the individual’s unique needs, is identified as a better predictor of positive health outcomes, treatment continuity, and function (Maramba & Hall, 2002). Also, studies (Miranda, 2003; Baker & Bell, 1999; I.O.M., 2003; U.S.D.H.H.S., 2003) have recommended that theoretically-based inquiry, culturally-appropriate measurements, and culturally-competent mental health treatment options comprise future scientific studies with racial/ethnic minority populations.

Knowledge development regarding the needs of racial/ethnic minorities is influenced by several factors, including historical and ethical influences, provider cultural incompetence, and the academic and clinical community’s lack of consensus guiding inquiry into minority mental health care. Academic and empirical study of minority mental health and related disparities in mental health care are needed to correct the provider’s knowledge and decrease prejudice. This is a step toward bringing the best evidence into day-to-day practice.

MARGARET A. WHEATLEY
EVAANJE JURATOVAC

Dizziness in the Elderly

Dizziness is a common and perplexing complaint for older adults and their health providers. The many presentations of the symptom and multiple etiologies make diagnosis and treatment difficult. Since it cannot be seen, the symptom may be discounted by health professionals and treatment may be delayed. This elusive symptom affecting balance has been associated with falls, fear of falling, anxiety, functional decline, and a decrease in quality of life (Aggarwal et al., 2000; Yardley, 2000). Because dizziness results from impairments or diseases in multiple systems, Tinetti and colleagues (2000) suggested the best approach to dizziness is to consider it a geriatric syndrome. This designation would lead to a multifactorial approach to evaluation and treatment that has been successful with other geriatric syndromes such as falls and delirium. However, dizziness can often
be linked to distinct underlying causes that can be treated (Drachman, 2000).

The prevalence of dizziness has been reported to range from 24% to 34% of older adults living in the community (Boult, Murphy, Sloane, Mor, & Drone, 1991; Tinetti, Williams, & Gill, 2000). Dizziness increases with age and is more common in women (Boult, Murphy, Sloane, & Drone, 1991; Aggarwal et al., 2000). One population-based study in a biracial community found a lower prevalence of 9.6% when defining dizziness as a regular symptom that occurred at least once per month (Aggarwal et al.), and dizziness was not associated with race.

Descriptions of dizziness can range from a sensation of spinning or motion to light-headedness, fainting or falling, and many variations of these. Balance or the ability to maintain an upright position results from visual, proprioceptive, and vestibular input to the brain. Central integration and motor response are needed. Dizziness results when there is a mismatch between the messages as to our position in space. Aging can cause decreased efficiency or function in any or all of these balance mechanisms, which may explain the increased incidence of dizziness with age. The multiple disease processes which can result in a feeling of dizziness are many, making diagnosis and treatment difficult, and even deciding which specialist to refer a patient to can be challenging. But clinical characteristics usually help the practitioner determine a cause.

Recent efforts have focused on defining the symptom of dizziness and its subtypes so that it can be studied empirically in order to develop guidelines for medical practice. Sloane, Coeytaux, Beck, and Dallara (2001) proposed four subtypes of dizziness: vertigo is the feeling that the surroundings or person is moving or spinning, presyncope is the sensation of feeling faint or lightheaded, disequilibrium is the sense of unsteadiness, and a final category includes other sensations. While they note that the elderly may have difficulty placing their dizziness into one of these categories, these subtypes can give clues as to the underlying cause of the dizziness and appropriate treatment.

Vertigo is often caused by benign paroxysmal positional vertigo (BPPV) and may be caused by displaced otocnal crystals in the inner ear. Acute labyrinthitis and Meniere’s disease are also common peripheral vestibular causes. Vertebrobasilar insufficiency may interrupt blood flow to the vestibular system. Presyncope is often related to cardiovascular causes including orthostatic hypotension, arrhythmia, transient ischemic attacks, carotid sinus hypersensitivity, and vasovagal syncope and is often associated with lightheadedness or syncope more than vertigo. Disequilibrium can also be due to vestibular causes or balance disorders. Medication effects, anxiety, and neurological conditions should also be explored.

Treatments for dizziness in elderly clients are based on the etiology of the symptom. Symptoms arising from cardiovascular disorders are often resolved through medical management. Postural hypotension may involve ongoing safety measures to avoid dizziness, lightheadedness, or falls. Benign paroxysmal positional vertigo often responds to movement therapy designed to move the displaced otocnia, through a 360° rotation of the head. Medication treatment can decrease the symptoms of Meniere’s disease.

Despite medical strides, many must learn to live with ongoing symptoms. Patients can learn to manage their symptoms through an understanding of situations that exacerbate their symptoms and their responses. Yardley tested a nursing educational program including exercises that ameliorated anxiety and physical symptoms (Yardley, Beech, Zander, Evans, & Weinman, 1998). Vestibular rehabilitation using physical therapy can ameliorate symptoms, and one study has shown that older adults do just as well as younger adults in responding to a rehab program (Whitney, Wrisley, Marchetti, & Furman, 2002).

Dizziness has a negative impact on quality of life for older adults, causing feelings of insecurity and anxiety (Mendel, Bergenius, & Langius, 2001). Kao, Nanda, Williams, and Tinetti (2001) found dizziness associated
with depression, anxiety, gait and balance disorders, medical conditions, and medications. Others have also found dizziness associated with falls (Lawson et al., 1999), fear of falling, which can lead to avoidance of activity (Yardley, 2000), and functional decline (Aggarwal et al., 2000).

Measures to explore the effects of dizziness have been developed. A vertigo symptoms scale was developed by Yardley, Masson, Verschuur, Haacke, and Luxon (1992) and used to examine the relationship of anxiety and vertigo, and in other studies. Questionnaires were completed by 127 patients from a specialty clinic. Factor analysis identified items for exploring symptoms of vertigo, anxiety, and somatization.

The Inventory for Dizziness (Hazlett, Tusa, & Waranch, 1996) measures symptoms, responses of significant others to the dizzy person, and activity levels. The instrument was an adaptation of a pain inventory, administered to 184 patients presenting to a specialty dizziness clinic. Factor analysis was used for item selection and factor development, and support further investigation of the instrument.

The Dizziness Handicap Inventory (DHI5) (Jacobson & Newman, 1990) was developed to explore the impact of dizziness on everyday life and includes 25 three-level items, and has been used in several studies. Effects were grouped into three categories: functional, emotional, and physical. The scale was tested in 63 patients who complained of dizziness and findings indicated good test-retest reliability as well as homogeneity of the constructs; another study demonstrated good test-retest reliability. A short version was developed by Tesio, Alpini, Cesareani, and Perucca (1999) using item-response methodology for item reduction. Dizziness is common and the difficulties of diagnosis and treatment only increase the patient’s challenges in managing this uncomfortable symptom. Some measures have been developed to help understand the problem of dizziness and its impact. Further research is needed to explore the effects of dizziness and interventions to manage the symptoms. As new interventions are available for treatment, additional research into the best ways to educate and deliver information to older adults who suffer its consequences will be needed.

Helen Lach

Doctoral Education

Doctoral education in nursing includes two general types of programs offering distinctly different types of degrees. The basic differentiation is between research-focused and practice-focused programs. Research-focused doctoral programs comprise the majority of programs. They are designed to prepare the graduate for a lifetime of scholarship and research. Research-focused doctoral programs offer either the academic doctorate (Doctor of Philosophy—PhD) or the professional Doctor of Nursing Science—DNS, DSN, or DNSc) degree; one research-focused program offers the EdD. Practice-focused doctoral programs, which are fewer in number, are designed to prepare the nurse for leadership in practice and for specialized advanced practice and administrative roles. The degree titles that are currently offered by practice-focused programs include the Doctor of Nursing (ND), and the Doctor of Nursing Practice (DNP or DrNP); one practice-focused program awards the DNS. Currently, over 88 institutions offer doctoral programs in nursing and several (7 currently) offer both a research-focused and a practice-focused program. Six programs are offered jointly or collaboratively between two or more institutions.

Over three fourths of existing programs offer the academic doctorate, reflecting the trend in research-oriented programs to offer the PhD rather than the professional degree, because the PhD is universally recognized and accepted and enjoys considerable prestige, particularly in academia. Curricula for programs leading to research-focused doctorates typically contain a core of required courses addressing nursing theory, methodology, theory development strategies, and various as-
pects of research methodology and statistics. Additionally, students usually are required to develop substantive expertise in a specialized area of nursing knowledge and research by selecting courses in nursing and related disciplines (cognates), becoming involved in hands-on research-related experiences such as research residencies or practica and research assistantships, and conducting a major independent research protect and writing the dissertation. Typically, half or more of the credits focus on research methodology and actual conduct of research. On the average, full-time students complete their doctoral study in 4 years: 2 years to complete the course work and an additional 2 years to complete the dissertation. Although the degree title is different, research-focused programs leading to the professional doctorate (DNS, DNSc, DSN) have curricula that are quite similar to the academic doctoral programs. Theoretically programs offering the DNS are more likely to emphasize research that is applied and relates directly to clinical, administrative, or policy-related practice and leadership. In addition to research preparation, curricula for such programs often include practicum experiences designed to develop a high level of research expertise in a specialized area of nursing practice. The required dissertation is often applied in nature. Graduates of research-focused programs are most likely to assume faculty positions upon graduation, but increasingly are being employed as researchers in clinical environments.

An important trend in nursing is the rapid increase in practice-focused doctoral programs. Although they are not new to nursing, practice-focused doctoral programs have received renewed interest as a viable alternative to the academic doctorate for individuals who wish to attain the highest level of expertise in clinical practice. The curricula differ considerably from those of the research-focused programs, with the major differences being that they typically have fewer credits addressing research and do not require a dissertation. Areas of content that are common to virtually all of the practice-focused doctoral programs include: the scientific underpinnings for practice; advanced practice in a given specialty area of nursing; organization and system leadership, change strategies and quality improvement; analytic methodologies related to the evaluation of practice and the accrual and application of evidence for practice; use of technology and information; development, application and evaluation of health policy; and interdisciplinary collaboration. In addition, programs provide the basis for advanced specialized expertise in at least one area of nursing practice. A dissertation is generally not required; however, most programs include a practice-related project and a residency experience. Some practice-focused doctoral programs limit their specialty areas to those concerned with the direct care of patients as implemented in advanced practice nursing roles (i.e., nurse practitioner, nurse midwife, nurse anesthetist, clinical nurse specialist), while others also include specialty preparation in administration or executive practice. There are several different points of entry into practice-focused doctoral programs; some require students to enter with some specialty preparation at the master’s level and others permit post-baccalaureate entry. In all cases, graduates are expected to provide visionary leadership in the practice arena as advanced practice nurses, program managers and evaluators, and nursing service administrators. Graduates of practice-focused doctoral programs frequently assume positions as clinical educators in schools of nursing.

Historically, doctoral nursing education began at Teachers College, Columbia University, and at New York University in the 1920s. After a 30-year hiatus during which no new programs were opened, interest in doctoral education was rekindled; by the end of the 1970s, a total of 18 programs had been initiated. During the 1980s the number of programs more than doubled, and with the rapid increase in programs and enrollments came concern about maintaining high quality. The American Association of Colleges of Nursing took a leadership role in developing indicators of quality regarding student and
Drinking and Driving Among Adolescents

Drinking and driving is rooted in the central role that alcohol plays in American life and culture. Alcohol is commonly found at celebrations, parties, and leisure activities. In addition, advertisements on television, magazines, and billboards present messages that shine a positive light on drinking. Given this situation and despite drinking laws, adolescents drink and drive, and adolescents who have been drinking are involved in fatal crashes at twice the rate of adult drivers (National Highway Traffic Safety Administration, 2002). Thirty percent of youth aged 15 to 20 who were killed in automobile accidents had been drinking (National Center on Addiction and Substance Abuse at Columbia University, 2002). Six articles on drinking/driving were published in the nursing literature from 1995 to 2001. No nursing publications were uncovered on drinking/driving for 2002 and 2003. Only two of the six focused on drinking/driving among adolescents (Kuthy, Grap, Penn, & Henderson, 1995; Shreve, 1998). Kuthy and colleagues evaluated a 20-minute program showing pictures of automobile accidents to determine if there was a change in drinking/driving behavior after the program. One month after the program a telephone interview indicated that the 274 high school driver’s education students showed a significant change in drinking/driving behavior. Shreve evaluated a student drinking/driving prevention program with 39 students. Following the program, 40% of the students indicated they would change their behavior. It can be concluded that little has been published in the nursing literature on drinking/driving and there are no studies focusing on intervening in drinking/driving situations. However, health promotion is a major goal of nursing, and investigating intervening as a passenger in drinking/driving situations may offer approaches to change behavior that may prevent the injurious consequences associated with drinking/driving among adolescents.

In a national study of 10,277 drunken driving fatalities, Isaacs, Kennedy, and Graham (1995) found that in 5% to 10% of these cases there were sober passengers who could have intervened. Furthermore, half of the fatalities in persons 16 to 19 years of age had
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at least one sober passenger in the car who could have intervened. In a study of adolescents in grades 9–12 conducted in 199 schools in 34 states, 30% reported that in the previous 30 days they had ridden with a driver who had been drinking alcohol and 13% had driven a car or other vehicle after drinking alcohol (Grunbaum et al., 2002).

Shore and Compton (2000) describe successful interventions in drinking/driving as forceful statements, clear demands, and concrete actions. These are more effective than requests, pleas, or suggestions. Thus, more assertive interventions tend to be more successful than less assertive interventions. Threatening the drinking driver’s competence is less likely to be effective in stopping the drinker from driving (Shore & Compton, 1998). Smart and Stoduto (1997) found that people tend to intervene more with friends than with strangers. Having some familiarity with the intoxicated individual seems to be more conducive to intervening. Smith and colleagues (2004) in a qualitative study on intervening as a passenger in drinking/driving queried 52 youths about drinking/driving situations and interventions. Findings of the study included the following drinking/driving situations where the participants were: entangled with a drinking driver who was determined to drive, endangered while riding in a car with a drinking driver, and stranded because they did not get in the car with a drinking driver and had no one to turn to for a ride. Interventions described by the participants were: to persuade, to interfere, to plan ahead, and to threaten. It can be concluded that if youth passengers intervene and break the link between drinking and driving there is potential for reducing drinking/driving fatalities.

Mary Jane Smith

Drug Abuse

Drug abuse or addiction is a chronic, relapsing, and treatable disease subcategory of psychiatric illnesses called substance-abuse disorders (American Psychiatric Association [APA], 1994). The most common drugs of abuse in the U.S., other than alcohol, nicotine, and caffeine, are cocaine (crack), amphetamines, cannabis (marijuana), hallucinogens, inhalants, opioids, phencyclidine (PCP), sedatives, hypnotics, and anxiolytics (anxiety agents). Drug abuse interferes with normal brain functioning, usually creating powerful feelings of pleasure or euphoria; however, there are long-term effects on brain metabolism and activity such that physical addiction and craving for more of the drug occurs (http://www.nida.gov/Infofax/understand.html).

The societal economic impact of drug abuse in the U.S. was estimated at $97.7 billion per year in 1992. These costs included crime, medical care, drug addiction treatment, social welfare programs, and lost work. Money spent on illicit drug purchases was found to be $57.3 billion, of which $38 billion was paid for cocaine, $9.6 billion for heroin, $7 billion for marijuana, and the rest for all other illegal drugs or misuse of legal drugs (White House Office of National Drug Control Policy [ONDCP], 1996).

Most drug abusers are men. In 1995 there were 874,000 admissions to publicly funded treatment facilities, with men accounting for 70% and women 30% of admissions. The largest percentage of admissions was for cocaine (38.3%), followed by heroin (25.5%) and marijuana (19.1%). Treatment methods include behavioral therapies (counseling, psychotherapy, support groups, or family therapy), treatment medications (methadone maintenance for heroin addiction), short-term and residential in-patient treatment, drug-free outpatient treatment, and therapeutic communities. In general longer and more comprehensive treatment programs have better results compared to short-term or minimalist treatment programs (http://nida.nih.gov/Infofax/treatmeth.html).

Drug abuse among women often presents different health and treatment challenges compared to men. Up to 70% of drug-abusing women report histories of physical and sexual abuse and drug and alcohol abuse in
Dysphagia

Dysphagia is a symptom exhibited by either difficulty swallowing or pain on swallowing that is experienced on a continuum from the inability to move food back in the mouth to a total inability to take nourishment. While the prevalence of dysphagia in the general population is unknown, risk has been estimated in adults over 50 from 16% to 22%. Among both men and women, there have been recent increases in illicit use of prescription opiates (oxycodone, hydrocodone), while cocaine/crack use has decreased slightly. Use of PCP and club drugs (MDMA/Ecstasy, GHB/date rape drugs, and Ketamine/Special K/Vitamin K) has increased. The GHB trend is of particular concern as the drug is tasteless and often is put into drinks without the victim being aware of ingesting the drug. Women on college campuses are especially at risk for this scenario.

Areas for future research include prevention research on the special issues facing men versus women and specific to each age group from school-aged youth through the elderly. The major foci of prevention research—the individual, the peer group, or the community all require additional research and theory development and testing. Genetic research is adding new insights every day and young scientists would do well to become trained in this area so as to be on the cutting edge of drug-abuse knowledge development. Better approaches to case finding and referral for treatment are needed. Finally, the realm of drug-abuse treatment is fraught with dropouts, treatment failures, and relapses. Creative new treatment modalities need to be developed and tested. Rather than one-size-fits-all treatment modalities, perhaps it is time to develop ones that are designed to best match the needs of a specific subpopulation—youth, adolescents, adult women, adult men, or elderly men or women.

JOANNE SABOL STEVENSON
are more likely related to other factors such as poor oral health or adverse effects of medications.

Identification of persons with dysphagia can be a critical assessment that the nurse needs to make early to prevent further problems and start effective treatment for a potentially occult disease. Accompanying symptoms (Palmer, 2002) associated with all stages of dysphagia include weight loss, dehydration, complaints of food “sticking” in the throat, change in dietary habits, and drooling, while oral and pharyngeal dysphagia includes a change in voice, coughing, difficulty initiating a swallow, and coughing or choking with swallow. Persons with esophageal dysphagia experience recurrent pneumonias. For some individuals, dysphagia may be temporary and with aggressive rehabilitation may reverse, for example in the acute stroke victim. However, for persons with progressive diseases such as dementia and Parkinson’s disease, the goal of care is to maintain functional and safe swallowing for as long as possible.

Ethical issues in dysphagia dramatically increased within the past 5 years as results from large studies began to demonstrate the medical futility of tube feeding in persons with severe cognitive impairments. As providers of information and counseling to families and caregivers regarding end-of-life decision making, nurses need to be familiar with these findings. While the ethical arguments of “sanctity of life” versus “quality of life” are often at the core of debates regarding use of tube feeding for persons with dementia, the issue may initially present as a safety problem: should someone with a severe cognitive impairment with an ineffective swallow who is losing weight be tube fed? A review of the literature concerning the use of enteral feeding in persons with severe cognitive impairments by Finucane, Christmas, and Travis (1999) demonstrated that much of the justification for use of tubes was not supported by well designed studies: the prevention of the consequences of malnutrition, improved survival, change in pressure ulcer status, decline in risk of infection, improvement of functional status and comfort. By using a national nursing home database, the Minimum Data Set (MDS), researchers found wide regional variation in use of tube feeding in this impaired population (Aronheim, Mulvihill, Sieger, Park, & Fries, 2001) and that select organizational characteristics, e.g., larger, for-profit homes in urban areas lacking a nurse practitioner, influenced the rate of tube feeding (Mitchell, Teno, Roy, Kambomoto, & Mor, 2003). Several national organizations, including the Hospice and Palliative Nurses Association (HPNA) (2003), developed a position statement on the use of artificial nutrition and hydration in which they addressed the point at the end of life when persons are unable to take foods because of dysphagia or other problems, or resist foods. While not advocating for either using or not using tube feedings, the HPNA recommended counseling patients, families, and caregivers concerning the benefits and burdens of this intervention as well as advocating for advance care planning concerning this issue. Thus, nurses need to consider causes of dysphagia, the individual’s capacity for rehabilitation, prior declarations regarding end-of-life care, and put possible treatments into an evidence-based perspective when they consider this issue in persons with severe cognitive impairments (Amella, 2003).

Assessment of dysphagia can be accomplished by the nurse through the use of psychometrically sound instruments; two instruments were developed in the past 5 years, the McGill Ingestive Skills Assessment (MISA) (Lambert, Gisel, Groher, & Wood-Dauphinee, 2003) and the Massey Bedside Swallowing Screen (MBSS) (Massey & Jedlicka, 2002). The MISA addresses a range of criteria—positioning, texture management, feeding skills, liquid and solid ingestion, and has good interrater reliability and internal consistency. However, the testing of the MBSS was criticized for having too broad inclusion crite-
Nurses should not only be assessing who is at risk for dysphagia, but once this is known, who will develop complications. Using MDS data from three states ($n = 102,842$), Langmore, Kimberly, Skarupski, Park, and Fries (2002) sought to determine predictors of aspiration pneumonia, one of the assumed consequences of dysphagia. In this descriptive study, the researchers found that of the $3\%$ of the residents who had pneumonia ($n = 3,118$), $18$ factors predicted aspiration using a logistic regression model: the highest were suctioning, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), tube feeding, bedfast, Case mix index, indicators of delirium, weight loss, and dysphagia/swallowing problems, while interestingly, cerebrovascular accident (CVA) was actually protective ($OR = .83$). Results of this large study support and refute an earlier $5$-year study led by the same author (Langmore et al., 1998) that examined predictors of aspiration: tube feeding was found to be a predictor of aspiration in both studies, dysphagia was not found to be a predictor in the earlier study while feeding dependence was the strongest predictor in the earlier study but was only mildly predictive in the larger. Researchers sought to determine if persons who had experienced a stroke were aware of their swallowing problems and would alter their eating patterns, thus decreasing complications. In a descriptive study of $27$ persons who were determined to be dysphagic by a speech pathologist, only $3$ had awareness of their problem when directly asked (Parker, C., et al., 2004). Poor awareness of swallowing problems also was a predictor at $3$ months for persons with more complications. Westergren, Ohlsson, and Rahm Hallberg (2001) found that among patients who were admitted to a facility after stroke with swallowing difficulties ($n = 24$) and received individualized nursing interventions, the level of alertness and the energy level of the patients was most predictive of increased ability to eat and swallow and development of further complications.

It is critical for nurses to examine quality-of-life issues for all persons with impairment in eating and swallowing problems. Several studies (Perry & McLaren, 2003; Mercadante, Casuccio, & Fulfar, 2000; Sjostrom, Holmberg, & Strang, 2002) showed that among persons with stroke and progressive cancer, dysphagia can be both painful as well as a barrier to the enjoyment of previous activities. Nursing interventions should facilitate the social as well as nutritional aspects of meals so that the one of the critical factors to eating—the pleasure of a good meal and good company—is not lost.

Elaine J. Amella
Elder Mistreatment

Elder mistreatment (EM) is a complex syndrome that can lead to morbid or even fatal outcomes for those afflicted. Mistreatment is the term used to describe outcomes from such actions as abuse, neglect, exploitation, and abandonment of the elderly, and it affects all socioeconomic, cultural, ethnic, and religious groups. The prevalence of EM is estimated between 700,000 and 1.2 million cases annually in this country (Pillemer & Finkelhor, 1988). The National Elder Abuse Incidence Study documented over 500,000 new cases annually (Tatara, 1993).

The National Research Council (NRC) (2003) convened an expert panel to review prevalence and risk for elder abuse and neglect and concluded that EM is an intentional action that causes harm or creates a serious risk of harm (whether or not harm is intended) to an at-risk elder by a caregiver or other person who stands in a trusting relationship to the elder, or is the failure by a caregiver to satisfy the elder’s basic needs or to protect the elder from harm. There are several types of EM described in the NRC report. Abuse is generally understood as physical assault inflicted on an older adult resulting in harmful effects. Abusive behavior may include hitting, kicking, punching, and other physical contact. Neglect is the refusal or failure to fulfill any part of a caregiver’s obligations or duties to an older adult. Neglect may be intentional or unintentional. Self-neglect occurs when an older adult, either knowingly or unknowingly, lives in such a manner that is deleterious to his or her health. Exploitation is fraudulent activity in connection with an older adult’s property or assets, and abandonment is defined as the deliberate and abrupt withdrawal of services in caring for an older adult. Restriction as a form of EM has recently been examined in an investigation of caregiver behaviors that have fewer social sanctions but may be equally deleterious to the older person (Fulmer & Gurland, 1996). Evidence suggests that only 1 in 14 EM cases is reported to some public agency. Nurses can do much to help in the screening and detection process of EM by doing a careful history and physical assessment with attention to the subjective complaint of EM, along with any signs or symptoms of the same. Underreporting of EM is a serious concern because older adults may have disease symptoms or age-related changes that imitate or conceal mistreatment symptoms, making the assessment process complex. Few clinicians have been trained in EM assessment and intervention, which has also led to underreporting. With an unprecedented number of individuals living beyond the age of 65 and even beyond the age of 85, nurses must be sensitive to the possibility of EM (Bergeron & Gray, 2003; Capezuti, Brush, & Lawson, 1997; Fulmer et al., 2003; Fulmer, Guadagno, Bitondo Dyer, & Connolly, 2004; Harrell et al., 2002; Heath, Dyer, Kerzner, Mosqueda, & Murphy, 2002).

Theories for EM causality have been posited. The dependency theory refers to the amount of care an elder person requires and is related to stressed caregiver research, which describes overwhelmed caregivers who lose their control or stop providing reasonable
care. Conversely, there are data that reflect the caregiver’s dependency on the elder (for shelter, money, etc.), which puts the elder at risk. Transgenerational violence theory refers to children who learn violent behavior as normal and then become violent and abusive as they grow older. This might be viewed from a learning theory perspective, although some have looked at it as a retribution act; an adult child may strike back at a parent or caregiver who was once abusive. The psychopathology of the abuser theory refers to any nonnormal caregiver, such as substance abusers (alcohol, drugs), psychiatrically impaired individuals, or mentally retarded caregivers. The number of mentally retarded elders over 65 years of age has grown substantially over the past decade, creating situations where mentally retarded or disabled offspring become caregivers for very elderly parents (National Research Council, 2003).

Early studies looked at the prevalence of EM from a variety of perspectives: acute care, community nursing care, and the nursing home setting. Differences in operational definitions, methodological approaches, and the lack of national prevalence studies have made it difficult to understand the conditions under which EM is likely to occur. Although EM education and training has improved, there is still a great need for more systematic nursing assessment, care planning, and follow-up with the older adult. The need for researchers who can contribute to this area of inquiry is great.

There is no Denver Developmental screen for older adults that enables the clinician to understand what an 80-year-old looks like and what conditions are likely to represent EM. Signs and symptoms of EM might include unexplained bruises, fractures, burns, poor hydration, reports of hitting or any other violent behavior against the older adult, sexually transmitted disease in institutionalized older adults, unexplained loss of money or goods, evidence of fearfulness around a caregiver, or the subjective report of abuse. It is especially difficult to evaluate the demented older adult for EM; a careful and thorough interdisciplinary team approach is required.

The American Medical Association’s Diagnostic and Treatment Guidelines on Elder Abuse and Neglect (American Medical Association, 1992; Aravanis et al., 1993), although over 10 years old, provides excellent guidelines for the assessment of EM, along with flowcharts for assessing and intervening in cases. A summary of EM instruments for screening and assessment is available (Fulmer, Hyex, et al., 2004). Special attention must be given to an older adult who has diminished or absent decision-making capacity. Dementia has been documented as a risk factor for EM and should automatically trigger EM assessment (Lachs, Williams, O’Brien, Hurst, & Horwitz, 1997; Coyne, A. G., Reichman, & Berbig, 1993). Cognitive status can only be determined by rigorous clinical testing and use of validated instruments. Overzealous protection of a competent elder is a form of ageism that infantilizes the older individual and takes away their autonomy. Each state has elder mistreatment reporting laws or requirements that professionals should be familiar with. Interdisciplinary care teams are especially important in the EM assessment process. Each team member is able to use their own expertise to the benefit of older adults (Fulmer et al., 2003). A key practice implication for EM is the inclusion of family violence questions in every history with attention to and documentation of any signs or symptoms of EM.

Terry Fulmer

Electronic Network

In general, a network is composed of a minimum of two connected points. For example, one person talking with another, face-to-face, can constitute a network. Telephone networks connect at least two people using transceivers, wire, switches, and computers. Television networks connect large numbers of people. An electronic network is considered to be the connection or linking of two or more computers to allow data and information exchange. Electronic computer net-
works may be as small as two computers or as large as the Internet, considered to be a network of networks.

The goal of networks is information exchange and may or may not be bidirectional. Person-to-person conversations, even if using some sort of intermediary like the telephone, are usually bidirectional. Television and some computer network applications may be unidirectional; however, bidirectional computer networks are the most common. Examples include local area networks (LAN), which may serve a department; larger networks called wide area networks (WAN); and the Internet. Intranets, which are the internal deployment of Internet technologies, are becoming more and more common.

Electronic networks are exciting tools for nursing and will be increasingly important in information acquisition and dispersion. Electronic networks, such as the Internet and the World Wide Web (WWW), not only provide a means of communicating but also facilitate collaborative research, promote education regardless of geographic limitations, and allow access and acquisition of needed resources. Electronic networks will continue to affect areas integral to nursing, such as a lifetime electronic health record, nursing research, increased interdisciplinary collaborative research, education without walls for patients and nurses, and nursing knowledge acquisition and information exchange.

Although the essence of nursing has been a network, that is, the nurse-patient relationship, there is limited nursing research on electronic networks. Brennan, Moore, and Smyth (1991) and Ripich, Moore, and Brennan (1992) investigated the use of electronic networks to facilitate nursing support of home care clients and their caregivers. They concluded that a computer network is an excellent tool to facilitate support and information exchange among caregivers and between nurses and caregivers for patients with AIDS and Alzheimer’s disease.

There are anecdotal reports and case studies to support nurses’ use of electronic networks. Sparks (1993) has been instrumental in her advocacy and promotion of electronic networks and resource availability for nurses. In the early 1990s she championed the Educational Technology Network (E.T.Net). E.T. Net promoted the exchange of information and ideas for nurses, nurse educators, and nursing students. It was the first international electronic network managed by a nurse. Barnsteiner’s (1993) and Graves’s (1993) work with nursing resource availability (Online Journal of Nursing Knowledge Synthesis and the Virginia Henderson STTI Electronic Library, respectively) and DuBois and Rizzolo’s (1994) in the American Journal of Nursing’s AJN Network to promote continuing education for nurses are additional examples of nursing use of electronic networks.

As information technology increases in use and health care requires increased efficiency, nurses will rely more and more on information technology as one tool for providing the best possible patient care. Local electronic networks, such as clinical information systems, will include other larger networks so that nurses will have the best information resources to assist nursing care. Research concerning the effects of electronic networking on nurses and other health care professionals, as well as on patients and their families, is needed. Electronic networking should be examined as an independent variable through the inclusion of electronic networks in all stages of the research process. This research will promote the advancement of health and patient care by providing the scientific foundation for the appropriate application of electronic networking technologies.

W. Scott Erdley
Susan M. Sparks

Emergency Nursing

Emergency nursing is by its very nature multifaceted. Emergency patients range from newborns to the “old-old” and the nursing and medical diagnoses for which they seek treatment include common illnesses such as flu symptoms to life-threatening injuries or
events. Emergency nursing research, then, has many foci. The breadth of emergency nursing care enables emergency nurses to apply evidence-based knowledge from other clinical nursing specialties, but emergency nursing presents challenges that are unique to the emergency or urgent care setting.

While the exact number is unknown, it is estimated that about 80,000 RNs consider emergency nursing to be their clinical specialty. What is known is that in 2003, Americans made 110.2 million visits to hospital emergency departments (National Hospital Ambulatory Medical Care Survey: 2002 Emergency Department Summary, Centers for Disease Control and Prevention [CDC]). This represents a 23% increase in emergency department usage in the past decade. Of note is that while usage of the emergency department has increased, the number of emergency departments in the U.S. has decreased by approximately 15% (National Center for Health Statistics, March, 2004).

In 1991, the Emergency Nurses Association (ENA) Foundation was established as a means to provide funding (and encouragement) for peer reviewed research. In addition, shortly thereafter, a doctorally prepared nurse researcher was hired to be the Director of Research at the Emergency Nurses Association’s headquarters. Several multisite studies were developed and conducted by a team of researchers, using practicing emergency nurses as data collectors. The convergence of these factors served to aid in the creation of a “research culture” as a visible component of emergency nursing.

As noted by Bayley, MacLean, Desy, and McMahon (2004), the number of emergency nursing research articles increased from 49 studies in the years between 1982–1991 to 262 published studies between 1992–2002, representing a fivefold increase. They found, however, that emergency nursing research was “scattered across many topics.”

As the major source of funding for emergency nursing research, the ENA Foundation established a list of “research initiatives” that would receive preference in funding decisions. The current research initiatives are: (a) mechanisms to assure effective, efficient, and quality emergency nursing care delivery; (b) effective and efficient outcomes of emergency nursing services and procedures; (c) factors affecting emergency nursing practice; (d) influence of health care technologies, facilities, and equipment on emergency nursing practice; (e) factors affecting health care cost, productivity, and market forces to emergency services; (f) ways to enhance health promotion and injury prevention; (g) methods for handling complex ethical issues related to emergency care; and (h) mechanisms to assure quality and cost-effective educational programs for emergency nurses.

While these initiatives gave a sense of direction, in many ways they were considered to be too broad to foster the concerted effort needed to build an emergency nursing knowledge base necessary for evidence-based practice. Excellent studies that have had important consequences for the care of emergency patients and their families have been the direct result of funding provided by the ENA Foundation. One such study involved the issue of family presence during resuscitation. The concept of family members being present at stressful times has received a good deal of attention, not only by and for emergency nurses, but this knowledge base has been extended to use in other areas of nursing.

A review of research presentations and posters displayed at the most recent annual meeting of the Emergency Nurses Association can give an overview of topics of interest in emergency nursing research. Included in oral presentations were topics focusing on blood-drawing techniques, injury prevention, use of the emergency department for nonurgent illnesses, emergency nurse burnout, and aspects of pain management. Some examples of poster presentations included: triage, trauma care, standardized language usage (NIC, NOC, NANDA), pain management protocols, and pediatric issues. It becomes clear that although the research culture in emergency nursing has consistently increased and excellent studies are being conducted, the is-
sue of the research being scattered rather than focused remains a concern.

The Emergency Nurses Association also has worked closely with the U.S. Coast Guard in research funded by the Coast Guard to examine factors related to boating injuries. This is in keeping with a commitment of the Association to engage in injury prevention activities from a number of different perspectives. In addition, the Association has also conducted extensive research funded by the Health Resources and Services Administration’s Maternal and Child Health Bureau (HRSA/MCHB) focused on the provision of family-centered care in the emergency department.

In 2002, Bayley, MacLean, Desy, and McMahon, with funding and support from the Emergency Nurses Association and the ENA Foundation, undertook a Delphi study to identify and prioritize “research questions of greatest value to emergency nurses and of highest importance for health care consumers.” Participants in the study were highly experienced in emergency nursing and most had advanced degrees. After the round I responses were collapsed into 154 research topics, participants in round II were asked to evaluate each of the topics using two questions: “(1) what is the value of research on this question for practicing emergency nurses, and (2) what is the importance of research on this question for consumers of emergency nursing services?”

Results demonstrated that the answer to the first question about value of the research question to practicing emergency nurses concerned issues related to staffing, holding patients in the emergency department for long periods of time, and the ongoing educational needs of emergency nurses. The second question, having to do with the importance of the research to consumers of emergency care, issues of pain management were of most concern. Other areas of highly ranked research needs for emergency nurses included methods of effective patient education, and the provision of sufficient numbers of adequately prepared professional nurses for the care of persons with emergency health problems.

The authors noted the consistency of the findings with ENA’s mission and values, especially the value statement “All individuals have a right to quality emergency care delivered with compassion.” They postulated that all of the highly ranked research topics had safety and quality of care as the central organizing principle. The information derived from this important study will be of immense help to future emergency nurse researchers as well as practicing emergency nurses who seek to provide the most relevant, evidence-based practice to their patients. The results of the study can organize and focus future research endeavors as well as establish funding priorities for the ENA Foundation and others. The future for emergency nursing research is brighter because of the Delphi study. Now, emergency nursing researchers will be able to develop the knowledge base essential for effective emergency nursing practice.

ANNE MANTON

Empathy

Empathy is a dimension of nursing that is central to caring competence, and it is often touted as the essence and art of nursing. Empathy in nursing is the ability of nurses to penetrate the covert thoughts and feelings of the client, to accurately interpret the client’s thoughts and feelings as if they were their own, and to verbally and nonverbally convey that interpretation back to the client in forming a positive nurse-client relationship. When empathy is appropriately expressed it is in the form of sincerity, genuine positive regard, and sensitive understanding of the client’s private world. Empathic nursing care has been shown to improve physiological and psychological outcomes for clients (Hope-Stone & Mills, 2001).

Carl Rogers (1961) believed that empathy is the ability to perceive the internal frame of reference of another with such exactness as to be one with the other person’s frame of reference. Carper (1978) correlated empathy
with aesthetic knowing in her description of fundamental patterns of knowing in nursing.

From a historical perspective, the roots of morality are found in empathy. Being able to empathize with potential victims encourages people to act and help others. Empathy underlies many facets of moral judgment and action. An instance when empathy leads to moral action is when a bystander is moved to intervene on behalf of a victim; the more empathy a bystander feels for the victim the more likely it is that the bystander will intervene (Goldman, 1998). The level of empathy felt toward another will shape one’s moral judgments and empathic attitudes. Putting oneself in another’s place leads people to follow certain moral principles.

Developmentally, there is a natural progression of empathy from infancy onward. At 1 year, children feel distress and will start to cry when they see another child cry. After 1 year, the child will try to soothe another child that is crying. The most advanced level of empathy emerges in late childhood when children begin to feel empathy for the plight of an entire group, such as the poor or the oppressed. During adolescence, empathic understanding can reinforce moral convictions developed earlier in life that center on a desire to alleviate misfortune and injustice (Goldman, 1998).

Early nursing research on empathy indicated that empathy development programs had little to no effect on empathy. However, later studies have shown that by including strategies such as art, nurse educators can enhance basic empathy among nursing students, which may have implications for nurses.

Kunyk and Olson (2001) described the concept of empathy found in the nursing literature between 1992 and 2000. They found five conceptualizations of empathy: (a) empathy as a human trait, (b) empathy as a professional state, (c) empathy as communication process, (d) empathy as caring, and (e) empathy as a special relationship. Nurse authors are approaching empathy from a variety of perspectives, time frames, measurements, and outcomes indicating advancement of the science regarding empathy in nursing.

G. Evans, Wilt, Alligood, and O’Neil (1998) addressed empathy as a multidimensional phenomenon and stressed the importance of understanding two types of empathy: basic and trained. They likened basic empathy to natural, raw, or ordinary feelings for others, such as the innate tendency of a child to cry when recognizing distress in another human. They likened trained empathy to increased empathy as a result of knowledge and education. They used the Layton Empathy Test and the Hogan Empathy Scale to measure trained and basic empathy in 106 nursing students and found that trained empathy was not sustained over time, causing the researchers to call into question attempts by nursing faculties to teach empathy to students. They emphasized the importance of obtaining a measurement of students’ baseline empathy as a way of monitoring changes in basic empathy after exposure to various empathy learning modalities. G. Evans and colleagues (1998) suggested new approaches to facilitate students’ discovery of their basic empathy and emphasized that basic empathy can be identified, reinforced, and refined in order to develop expertise in the expression of empathy.

Oz (2001) conducted a quasi-experimental investigation of empathy with 260 nurses who were randomly assigned to intervention and control groups. They utilized Dokmen’s Scale of Empathic Skills, and the Empathic Tendency Scale to measure empathic communication skills and empathic tendency levels. Their intervention consisted of education about empathic communication. Results indicated that nurses gained empathic communication skills as a result of empathy training. However, this training did not significantly change the nurses’ basic empathic tendency levels.

Wikstrom (2001) investigated the effect of an intervention program on student nurses’ engagement in learning about empathy. The investigator assigned participants to intervention and control groups. The intervention group received empathy exercises involving
the use of a reproduction of Edvard Munch’s painting, “The Sick Girl,” to stimulate discussion and account-making regarding interpretations of empathy depicted in the painting. There was a significant improvement in the intervention group members’ levels of empathy as compared to the matched control group. The research findings supported the use of art as a complementary strategy to theoretical knowledge on empathy to stimulate nurses’ basic empathy.

Kunyk and Olson (2001) found evidence that the concept of empathy is being advanced conceptually and empirically with more depth and breadth in the nursing literature. They, however, insisted that a more mature concept of empathy must emerge before empathy can be fully useful in nursing practice, research, and education.

Alligood (2001) and the Empathy Research Team at the University of Tennessee, Knoxville, developed an implicit middle range theory of empathy to explain how the concept of empathy operates within the context of King’s general systems framework of personal, interpersonal, and social systems. A middle range theory of empathy conceptualized within this established nursing framework provides new understandings of basic empathy for nursing. According to Alligood, empathy has been viewed from a behavioral (state) approach; however, the more current view of empathy emanates from a developmental (trait) perspective. Viewing empathy as a state rather than a trait of individuals represents a perspectival shift and opens avenues for research in nursing related to empathy and emphasizes the importance that nurses have to develop and understand their own empathy as a basis for clinical practice (Alligood).

In the past 20 years, empathy has been conceptually and empirically advanced in the nursing literature. Studies have raised critical questions about the nature of empathy and how empathy may or may not be teachable using various educational and experiential strategies. Research findings suggest that baseline measurements of empathy in nurses and nursing students can be a starting point for developing strategies to enhance empathic responding to clients. Nursing as a profession needs more replication of studies to identify basic empathy skills and to discern the differential impact of empathy education versus empathy education combined with experiential exercises in empathic understanding such as art, film, and literature. With continued research and growth in the understanding of empathy, the art of nursing can be enhanced.

**Dianna Hutto Douglas**

**End-of-Life Planning and Choices**

End-of-life (EOL) planning and decision-making (i.e., choices) have been explored from myriad perspectives: patient, family, or surrogate decision maker, professional provider, informal or formal caregiver, health system costs, ethics and morality, law and regulation, barriers and facilitators, consumer and professional education needs, culture, sites of care, and organizational characteristics. Research represents virtually all health care clinical and management domains and is widely published in peer-review journals. The nursing research surrounding decision-making capacity, life-sustaining treatment decisions, age and site-specific issues (e.g., pediatrics, nursing homes), clinical issues (e.g., pain, change of condition), and ethical moral perspectives on choices at the end of life, is presented here.

Clinicians, ethicists, and legal scholars agree that the decision to choose/appoint another to make decisions for one in the event of loss of decision-making capacity (i.e., Durable Power of Attorney for Health Care/Health Care Proxy [HCP]) is less risky and requires less cognitive capacity than the creation of a list of treatments desired and not desired at some point in the future regarding unknown conditions (i.e., Living Will). There is scant research on how nurses assess a patient’s decisional capacity to make choices about life-sustaining treatments. Molloy et al. (1996) assessed individuals living in nursing homes, retirement homes, and homes for the
aged for their capacity to create an advance directive (AD). Five different measures of capacity were used, including assessment by a specially trained nurse and by a geriatrician independent of each other. The investigators determined that it was possible to differentiate between those who could learn about and create an AD from those who could not, using the Standardized Mini-Mental Status Examination (SMMSE). Mezey, Teresi, Ramsey, Mitty, and Bobrowitz (2000) developed an instrument (“Guidelines”) for determining if a nursing home (NH) resident had the capacity sufficient to create a HCP, that is, to choose a surrogate health care decision maker. The tool demonstrated criterion-related validity and reliability. Data analysis indicated that many cognitively impaired residents had this capacity. Mezey and colleagues suggest that the Guidelines are more predictive than the MMSE in identifying such residents and could be used for that circumscribed purpose.

Schlegel and Shannon’s (2000) descriptive study of nurse practitioners (NP) \( n = 145 \) reported that most (but not all) NPs were knowledgeable about the legal guidelines for EOL decision making but few included ACP as part of their practice. To address this, the investigators recommended that formal didactic curricula and role modeling be included in NP education. Lehna (2001) devised and tested a needs assessment for EOL education among NP students. Findings indicated that students were gaining knowledge, competency, and confidence from practice rather than from theory and class discussion. Goodwin, Kiehl, and Peterson (2002) suggest that primary care nurse practitioners should use King’s “interacting systems” or transaction model, and goal achievement theory, to facilitate advance care planning. This approach has not been tested although the authors suggest that it would be good only for RNs and NPs who wanted to actively address EOL issues using a nursing model.

For family members of NH residents, decisions about EOL care are easier when staff listen to family’s fears and concerns, engage them in ACP well before a crisis or terminal event, and provide relevant information (e.g., what antibiotics can and cannot do) (Wilson, S. A., & Daley, 1999). Qualitative analysis of the investigator-designed interview revealed that staff caring behaviors, family participation in decision making prior to death, knowledge of what the dying process looked like and how long it might take, being present at the time of death, and receiving spiritual support were important for family members making difficult choices. In a review of the research literature about the EOL care provided in NHs and assisted living residences (ALRs), Cartwright (2002) concluded that staff and family differ about the kind and quality of EOL care in these settings.

Hospice care can be provided in ALRs in virtually all states, but the availability of skilled nursing care and oversight is extremely variable (Mitty, 2003). Thus, an older person choosing to remain in an ALR, that is, to age in place and die there, may have to use additional private funds to access the kind of care needed at the end of life. Few states require that ALR residents or staff be educated about ADs but many ALRs want residents to have made a decision about CPR at the time of admission. Most NHs provide “hospice-like” care or have a contract with a hospice provider and all NHs must educate staff and residents about ADs. Some NHs and most ALR—for a variety of reasons—transfer dying residents to the hospital.

Orem’s self-care deficit model was used to elicit factors associated with the option for patients with terminal cancer to die at home (Groh, 1999). Self-care deficit of patient and caregiver, availability of nurses and other supports, and resources were key factors in maintaining patient autonomy. The nurse was instrumental in identifying and facilitating patient’s choices regarding self-care deficit and symptom relief. Ladd, Pasquarelle, and Smith (2000) used case-based analysis to describe and discuss ethical and legal issues that arise in nursing care of patients dying at home. The authors suggest that the nurse-patient relationship in a home care setting is different, richer, and more nuanced than in the hospital setting. Dying at home means
that the family has to be prepared and the nurse has to try to anticipate their disagreement with the patient’s AD wishes. Ladd et al. propose a holistic assessment that includes assessment of the patient’s decisional authority and relationship with significant others. They also recommend that the nurse work with the patient to define the role of each family member in decision making—with and for the patient.

Many legal scholars and ethicists hold that there is no difference, ethically or legally, between withholding or withdrawing a life-sustaining treatment (LST). To study the decision makers involved in withdrawing or withholding LSTs, Reckling (1997) directly observed and interviewed family members (n = 16) and professional staff (n = 29) of 10 ICU patients. Some items from the Social Context Survey were used to measure attitude toward withdrawing and withholding LSTs. Three basic decision-making roles were identified: advocate (to withhold/withdraw LST), neutral party (will go with any position), and resistor (to withdraw/withhold LSTs). Interrater agreement is reported with regard to the assigned role. More healthcare professionals were advocates than resisters; more family members were resisters than advocates. Nurses were the only professionals who assumed a neutral role. Among Reckling’s findings was the feeling that those who made the decision to withdraw a LST did not always carry it out; this often fell to nurses who carried out the action but claimed no responsibility for its consequences. Some respondents felt that it was permissible to withhold a LST but were resistant to withdrawal. Factors associated with advocacy included poor prognosis, patient discomfort, attention to scarce resources, and the patient’s known preferences. Factors associated with neutrality or resistance were constraints on practice, fear of legal liability, and distrust. Reckling also suggests that situational factors and organizational culture may have influenced nurses’ passive role-taking.

Mezey, Kluger, Maislin, and Mittelman (1996) described the decisions made by spouses (n = 50) of patients with Alzheimer’s disease to consent to or forgo LSTs. Presented with two conditions—critical illness and irreversible coma—spouses were asked to rate their agreement with, certainty of, and comfort with four LSTs: CPR, ventilator, feeding tube, and antibiotics. In the face of critical illness, almost equal numbers of spouses would consent to or forgo CPR and a breathing machine; far fewer (n = 5) would forgo antibiotics. Among 50 spouses, 5 chose to forgo all LSTs. In the face of irreversible coma, spouses were more likely to forgo all LSTs and were more certain and comfortable with their decision. Spouses experiencing high burden were more likely to consent to treatment. Few spouses appeared to be acting under the substituted judgment standard of decision making.

In general, there are many limitations to the research regarding EOL planning and choices. Many of the studies we reviewed were based on small and uncontrolled samples. Design weakness can generate misleading and unrepresentative findings. Several studies discussed in this chapter suggest future research that would vary with regard to site, subject, design and methods, questions to be addressed, or interventions to be tested. Baggs and Mick (2000) suggest that collaboration among health care providers, patients, and families could be an effective approach to ACP, given that such collaborative models have support value in community-based care delivery to elders. S. A. Norton and Talerico’s (2000) strategies to facilitate EOL decision making include guidelines for communication, such as, clarifying goals and burdens of treatments, and using words such as “death” and “dying” in discussions with patients and families. They suggest assessing patient and family understanding and information needs. Yet, culture studies advise caution in using the “d” words: How should one proceed? Which nursing model, if any, can best guide the nursing strategy? Bosek, Lowry, Lindeman, Barck, and Gwyther (2003) delineate several recommendations to promote a positive death experience that include professional as well as patient and family education about the physiological dying
process, comfort interventions, and the utility of ADs for decision making at the end of life. Given the cultural diversity of caregivers and care recipients, understanding the nature, context, and content of EOL care continues to require thoughtful and sensitive research design.

Ethel L. Mitty
Mia Kobayashi

Endotracheal Suctioning

Endotracheal suctioning (ETS) is a common nursing intervention to remove mucus and debris from the tracheobronchial tree by the insertion of a suction catheter through the endotracheal tube and the application of vacuum during catheter withdrawal to aspirate tracheal secretions. Endotracheal suctioning is usually performed every 1–2 hours or as needed to maintain airway patency and arterial oxygenation. There is insufficient research data to identify the most significant clinical indicators to determine the need for ETS. However, clinicians report the following clinical cues: color, breath sounds, respiratory rate and pattern, coughing, presence of secretions in the tubing, saw-toothed flow-volume loops on the mechanical ventilator, and blood oxygen levels to indicate need. The ETS procedure has a number of components including: hyperoxygenation (increased inspired oxygen) which can be delivered either via the ventilator or manual resuscitation bag, hyperinflation (volume of inspired air above baseline tidal volume), open vs. closed ETS through an inline suction catheter to maintain mechanical ventilation, and post-oxygenation. Associated variables include: saline instillation for the purpose of irrigation, suction catheter size, level of negative suction pressure, depth of suction catheter insertion, application of negative pressure either continuously or intermittently, duration of negative pressure application, and number of hyperoxygenation/hyperinflation suction sequences.

Despite almost 80 years of research, controversy continues regarding the most efficacious endotracheal suctioning procedure. While components of the endotracheal suctioning procedure have been well researched, the utilization of research findings has been variable in the clinical setting. The components of the endotracheal suctioning procedure have been developed to prevent the complications associated with the procedure.

The majority of research has been conducted to develop techniques to minimize the most common complication: hypoxemia. Hypoxemia, which is the lowering of blood oxygen levels, may result from the disconnection of the patient from the ventilator during the procedure and/or due to the removal of oxygen from the respiratory tract during the application of vacuum. Researchers have documented other side effects which include: (a) atelectasis, (b) bronchoconstriction and tracheal trauma, (c) alterations in arterial pressure (hypotension and hypertension), (d) increased intracranial pressure, (e) cardiac arrhythmias, (f) cardiac arrest, and (g) death. Atelectasis is due to the insertion of a suction catheter with an outer diameter that is too large for the inner diameter of the endotracheal tube, causing catheter impaction and the removal of respiratory gases from distal alveoli with the application of vacuum. Bronchoconstriction and tracheal trauma are due to the catheter stimulating the bronchial smooth muscle and inner lining of the trachea (Czarnik, Stone, Everhart, & Preusser, 1991; Turner & Loan, 2000).

Hyperoxygenation/hyperinflation is a component of the ETS procedure used to prevent hypoxemia. Hyperoxygenation is the administration of a fraction of inspired oxygen (FiO₂) greater than the patient’s baseline FiO₂, either prior to (pre-hyperoxygenation) or following (post-hyperoxygenation) suctioning. Hyperinflation is defined as the delivery of a breath of inspired air greater than the patient’s baseline tidal volume. Research has shown that patients who receive no form of hyperoxygenation/hyperinflation with ETS show a significant decline in arterial blood oxygen. A critical evaluation of the
research examining the effect of hyperoxegenation/hyperinflation on suction-induced hypoxemia shows variability in the techniques and the results. However, despite the conflicting findings, investigators have documented that three to four hyperoxegenation/hyperinflation breaths at 100% oxygen and 135–150% of tidal volume have been effective in preventing suction-induced hypoxemia (Stone & Turner, 1989). A recent survey indicated that the majority of critical care nurses use hyperoxegenation alone \( (n = 55/60) \) (Paul-Allen & Ostrow, 2000). Researchers have documented that hyperinflation followed by ETS may cause both a decrease or increase in mean arterial pressure and may be due to the number of hyperoxegenation/hyperinflation suction sequences.

Hyperoxegenation/hyperinflation breaths can be delivered using either a manual resuscitation bag (MRB) or a ventilator. Investigators have reported inconsistently on the ability of different MRBs to deliver 100% oxygen. Research has shown that consistency is improved when the MRB has a reservoir of 1,000–2,000 cc attached to an oxygen source at a flow rate of 15 L/min or flush and adequate time is allowed for refill from the reservoir. Recent studies comparing the ventilator and the MRB, which have controlled important intervening variables, have concluded that hyperoxegenation/hyperinflation breaths delivered via the ventilator have resulted in elevated blood oxygen levels which are superior or equivalent to the MRB in preventing suction-induced hypoxemia. Investigators have also determined that the MRB produces a greater increase in airway pressure, arterial pressure, and heart rate when compared to the ventilator. Hence, the ventilator is the preferred mode for delivering hyperoxegenation/hyperinflation breaths (Stone, K. S., 1990; Grap, Glass, Corley, & Parks, 1996).

Closed ETS using an inline suction catheter permits uninterrupted ventilation, oxygenation, and positive end expiratory pressure during ETS. Without hyperoxegenation, blood oxygen levels decline more with open ETS than with closed. With hyperoxegenation, via the ventilator or MRB, the decline in blood oxygen levels is equal or less with closed ETS. While saline instillation prior to ETS is common clinical practice, there is inconclusive research to support any physiological benefit and it may actually cause a decline in blood oxygen levels (Raymond, 1995). The relationship between the outer diameter (OD) of the suction catheter and inner diameter (ID) of the endotracheal tube can be a significant factor in the development of atelectasis during ETS. Researchers recommend an OD/ID ratio of 1:2. This can be achieved with a 14 Fr. catheter and an endotracheal tube of 7, 8, or 9 mm. Since the level of negative pressure or suction applied to the catheter influences the degree of tracheal trauma, negative airway pressure, secretion recovery, and hypoxemia, researchers recommend a suction pressure of 100–120 mm Hg. The suction catheter should be advanced down the endotracheal tube without the application of vacuum until gentle resistance is met to reduce mechanical stimulation of the tracheal tissue that may cause bradycardia, premature atrial contractions, and increased intracranial pressure (Rudy, Turner, Baun, Stone, & Brucia, 1991; Kerr, M. E., Rudy, Brucia, & Stone, 1993). The catheter should be withdrawn a few centimeters prior to the application of vacuum to prevent catheter wedging, the vacuum can be applied either continuously or intermittently with no significant difference in tracheal trauma while withdrawing the catheter in a rotating motion (Czarnik et al., 1991). The duration of suction application should be no more than 10 seconds. The number of hyperoxegenation/hyperinflation suction sequences or catheter passes should be limited to no more than two per episode, as research data indicate that there is a cumulative increase in arterial pressure, heart rate, and intracranial pressure with each pass (Stone, K. S., Bell, & Preusser, 1991; Rudy et al.). If additional suction passes are needed, 5–10 minutes should elapse to allow for the patient’s hemodynamic variables to return to baseline. The patient should be assessed for changes in blood pressure, heart rate, arrhythmias, and increased intracranial pres-
sure and the patient’s ability to tolerate the procedure should be documented. The lungs should be auscultated to assess airway clearance and the character of secretions (amount, color, and viscosity) should be recorded following ETS.

Kathleen Stone

Endotracheal Suctioning in Newborns: NICU Preterm Infant Care

Neonates with respiratory distress syndrome (RDS) who require endotracheal (ET) tube intubation and mechanical ventilation (MV) are the major population in need of a modern neonatal intensive care unit (NICU). MV is lifesaving to provide adequate oxygen and gas exchange in these neonates. During the period(s) of MV, ET suctioning (ETS) procedure has to be performed by nurses to maintain patent airways to ensure adequate gas exchange. ETS is the only method that can be used to maintain the airway by clearing the airway secretions and debris when the ET tube is inserted, as the ET tube essentially stops the mucociliary transport system and inhibits the infant’s capacity to cough and clear out the secretions and debris in the airway. ETS involves steps of inserting a sterile catheter through the ET tube, stopping no more than 1 cm past the end of the ET tube, and using negative pressure while withdrawing the ET catheter to clear out the secretions and debris (Turner & Loan, 2000).

ETS could be one of the most detrimental procedures in NICU care, causing tracheobronchial trauma including mucosal necrosis, tracheal lesions, ulceration, perforation of the trachea and hypopharynx, pneumothorax, and bacteremia (Turner & Loan, 2000). Other complications of ETS include hypoxia and desaturation, bradycardia, and increased intracranial pressure (Shiao, 2002; Skov, Ryding, Pryds, & Greisen, 1992). The trauma to the tracheobronchial tissues can be cumulative over the duration of ET insertion regardless of modes of MV support, including conventional MV and all new forms of high-frequency ventilators, and these traumas cannot be recovered until 28 days after removing the ET tube and discontinuing MV (Turner & Loan). ETS tops all NICU procedures in causing worst desaturation events (Shiao, 2002) and in causing hypoxia lasting 4 minutes or longer (Wrightson, 1999).

Neonates, particularly preterms, who need MV are very sensitive to environmental stimuli and easily develop episodes of desaturation. In addition to RDS, the presence of patent ductus arteriosus and the increased oxygen-hemoglobin affinity of fetal hemoglobin are cardiopulmonary causes of hypoxemia in preterm neonates. Ventilatory weaning, though aggressive, must follow a fine line between oxygen toxicity and hypoxemia. Thus, a better monitoring approach is crucial during MV support in neonates (Shiao, 2002). Significant changes have been demonstrated for ETS procedures with hemodynamic monitoring, cerebral blood flows, autonomic neural responses, and behavioral assessment (Bernert et al., 1997; Segar, Merrill, Chapleau, & Robillard, 1993; Shiao, 2002; Skov et al., 1992).

Since the 1970s, nurse researchers including Turner and the ETS critical care nursing study groups, as well as researchers from medical sciences, have investigated ETS procedures closely, leading to publications with very clear understanding of pathophysiology for the airway system and ETS trauma in neonates (Turner & Loan, 2000). Interventions minimizing the detrimental effects of ETS include preoxygenation, shallow suctioning, sedations, and comforting measures, the nature of catheters and ETS, and the frequencies and duration of ETS procedure.

The summary reviews from Wrightson (1999) supported the use of hyperoxygenation (preoxygenation) for different durations before the ETS procedure, though the most conclusive study on preoxygenation indicated providing 1 minute 100% oxygen before ETS using a manual Ambu bag (Kerem, Yatsiv, & Goitein, 1990). When closed ETS system (insufflation of suction catheter using
a special adapter to allow MV to continue while suctioning occurs) is used to cause less interruption of oxygen supply, hyperoxegenation can be supplied using MV (Turner & Loan, 2000). Unlike adults, hyperinflation using peak inspiration pressure is not recommended in neonates because of the potential to cause pneumothorax from excessive pressure due to the infant’s poor alveolar compliance. Hyperventilation is commonly used in combination with hyperoxegenation in neonates, and the individual effect has not been documented.

Also supported from the reviews was the use of shallow ETS method (to insert the suction catheter only 1 cm beyond the ET tube) instead of deep ETS method (stopping suction catheter when it meets resistance, indicating that the catheter is touching the tracheal carina or tissue), since this caused less damage to the tracheal tissue (Wrightson, 1999). The newest shallow ETS method, however, suggests advancing the suction catheter to the same length as the ET tube (Ahn & Hwang, 2003) and not beyond the ET tube to prevent trauma to the tracheal tissue.

Saline installation before ETS was not supported by the reviews (Wrightson, 1999). Turning the infant’s head sideways for ETS to reach the left lung was not supported either as it only increases the chances of traumatizing the airway with the increased risk of dislocating and removing the ET tube from the airway, without the benefits of removing airway secretions. As the length of the trachea is only about 4 cm in neonates, 3 cm of the tube can be moved in and out of the trachea when the infant’s head is turned sideways or extended; thus, turning the head sideways will only increase the risk of ET tube removal and lead to airway trauma from the deep suction method, without any benefits of removing the airway secretions (Turner & Loan, 2000). Chest physical therapy was not supported as it only stimulates afferent vagal nerves to produce aggravating bradycardia and hypoxia in infants without obvious benefits in removing airway secretions (Turner & Loan; Wrightson).

Three additional matters for ETS are suggested from Wrightson’s reviews (1999). ETS should only be performed on an as-needed basis by observing and assessing (including auscultation) the signs of secretion in the airway and in the ET tube. ETS procedures should not last longer than 1 minute, with no more than two consecutive ETS passes each time. Also, the monitor readings including oxygen saturation should be examined to prevent hypoxia and to ensure the recovery from ETS procedure before next ETS.

Other recent studies indicated that sedations and music therapy, involving the comforting management of infants with ETS, caused less aggravations and negative afferent vagal stimulation, and attenuated autonomic neural responses for hemodynamic changes in the infants (Burgess, Oh, Brann, Brubakk, & Stonestreet, 2001) and caused less desaturation (Chou, Wang, Chen, & Pai, 2003). ETS catheters are now designed with multiple side holes to prevent abruptly increased suction pressure; thus the trauma to the trachea in neonates is less than using earlier catheters with fewer or a single side hole (Turner & Loan, 2000). Future research could be designed for the following areas in neonates, including more advanced monitoring of tissue oxygenation to prevent hypoxia associated with ETS, comforting interventions in addition to preoxyegenation with ETS to prevent detrimental hypoxia and cerebral effects, and ways to eliminate ETS trauma to the airway tissue such as the shallow ETS method.

SHYANG-YUN PAMELA K. SHIAO

Enteral Tube Placement

An enteral tube is defined as any small-bore tube passed through the nose or mouth into the stomach or small intestine for the purpose of decompression, medication instillation, or feeding. Because safety issues related to enteral tubes that can be passed directly through the wall of the stomach or jejunum are different, only the issues surrounding nasogastric/
orogastric (NG/OG) tubes and nasointestinal (NI) tubes will be discussed.

It is estimated that approximately one million enteral tubes are placed in adults and children in the United States annually (Metheny, Spies, & Eisenberg, 1986). Feeding by NG/OG/NI tubes is preferred when the gastrointestinal (GI) system is functional and the need for assisted feeding is expected to be short-term. Enteral feeding is physiologic, achieves a positive nitrogen balance sooner than total parenteral nutrition, enhances gut healing, and reduces bacterial translocation, and also is less costly and is associated with low rates of sepsis. Even in clients maintained primarily by total parenteral nutrition, small amounts of nutrients are fed into the lumen of the gut through enteral tubes to maintain the structure and function of the small intestine. For many clients, feeding by NG/OG/NI tubes remains an essential lifesaving procedure.

Previous studies found NG/OG/NI tube placement errors to be common, with prevalence rates of errors in adults ranging from 1.3% to 89.5% depending on how narrow or broad the definition of error was (McWey, Curry, Schabel, & Reines, 1988; Niv & Abu-Avid, 1988). Studies in children show that between 20.9% and 43.5% of enteral tubes are placed incorrectly when placement error is broadly defined (Ellett & Beckstrand, 1999; Ellett, Maas, & Forsee, 1998). Although estimates of error rates vary, there is no doubt that they are common.

Errors in placement of NG/OG feeding tubes, which include initial erroneous placements as well as displacements over time, can lead to serious complications. If a tube ends in the airway, feeding through the tube will result in pulmonary aspiration or other pulmonary complications. Feeding through a tube ending in the esophagus increases the risk of pulmonary aspiration. When an NG/OG tube erroneously passes into the duodenum and the client is fed formula requiring both gastric and pancreatic enzymes for complete digestion, malabsorption that results in inadequate weight gain (or weight loss), diarrhea, and possibly dumping syndrome may occur. Increasing the safety of NG/OG feeding requires knowledge development in at least two areas—predicting the insertion distance for correct tube placement and determining tube position. The state of the science regarding each of these knowledge needs will be reviewed. At present no methods have been shown empirically to be adequate for predicting correct tube insertion length. The one adult study (Hanson, R. L., 1979) concluded that use of the direct nose-ear-xiphoid (NEX) distance to determine the insertion length, the standard measurement used in practice, was not accurate. Hanson recommended a formula \((\text{NEX} - 50 \text{ cm})/2 + 50 \text{ cm}\) adapted from his regression equation on NEX, which in his sample was 91.4% accurate for estimating the distance for placing the NG tube tip correctly in the stomach.

Only a few studies have addressed insertion-length estimators in children. Ziemer and Carroll (1978) found at autopsy in infants that an NG tube inserted using the NEX distance almost always reached just past the lower esophageal sphincter and needed to be advanced a few centimeters for correct placement in the stomach. They proposed that a more accurate method would be using the length from the tip of the nose to the lobe of the ear to a point midway between the xiphoid process and the umbilicus (NEMU). Weibley, Adamson, Clinkscales, Curran, and Bramson (1987) found on radiograph that 55.6% of NG/OG tubes in 30 premature infants were incorrectly placed using the NEX distance and 39.3% of NG/OG tubes were incorrectly placed using the NEMU distance. All of these errors involved high placements (which, if in the respiratory tract or the esophagus, often result in serious complications, such as aspiration pneumonia or parenchymal perforation with resulting pneumothorax). Surprisingly, however, in spite of the evidence from these studies, a telephone survey of 113 Level II and III nurseries in five midwestern states found that 98% of nurses continued to use NEX to calculate tube insertion distance (Shiao & DiFiore, 1996).

Beckstrand and colleagues (1990) investigated the methods recommended in the nurs-
ing literature for predicting correct placement length for NG/OG tube insertion, including NEX, NEMU, and regression on height. In a sample of 500 children, they found regression on height in three age groups to be the superior predictor of esophageal length. This method, referred to as the age-related, height-based method, was supported by Hanson's (1979) study in adults.

Currently an abdominal radiograph is the only consistently valid and reliable way to verify the position of flexible small-bore NG/OG tubes. Indeed, radiographs have been recommended by many to determine tube placement in patients; however, placement must be checked frequently while a tube is in place, and the summative radiation risk of multiple radiographs as well as their expense makes the development of adequate bedside placement-locating methods imperative.

Several methods of detection have been investigated in adults, including: (a) aspirating gastric contents and measuring the pH, bilirubin, pepsin, and trypsin levels; (b) placing the proximal end of the tube under water and observing for bubbles in synchrony with expirations; (c) auscultating for a gurgling sound over the epigastrium or left upper quadrant of the abdomen; (d) examining the visual characteristics of aspirates; (e) measuring the length from the nose/mouth to the proximal end of the tube; and (f) measuring CO$_2$ level at the proximal end of the NG/OG tube. Each of these methods has its problems, however. Metheny, Smith, and Stewart (2000) found that the combination of pH, bilirubin, pepsin, and trypsin correctly classified 100% of respiratory placements and 93.4% of GI placements in adults; however, no bedside tests are currently available for measuring pepsin and trypsin, thus limiting their clinical usefulness. Placing the proximal end of the tube under water and observing for bubbles in synchrony with expirations involves risk that clients will aspirate water on inspiration, especially those being mechanically ventilated. Simple auscultation is not a reliable method to assess tube position because injection of air into the tracheobronchial tree or into the pleural space can produce a sound indistinguishable from that produced by injecting air into the GI tract (Metheny, McSweeney, Wehrle, & Wiersema, 1990). Metheny, Reed, Berglund, and Wehrle (1994) showed that visual characteristics improved nurses’ predictions of stomach and intestinal placements but reduced discrimination of respiratory placements. Finally, there is evidence that CO$_2$ monitoring has the potential to differentiate respiratory from GI placement; however, it has yet to be used clinically to detect respiratory placements (Burns, S. M., Carpenter, & Truitt, 2001; Thomas, B. W., & Falcone, 1998). To summarize, in adults pH and bilirubin of aspirate are the only reliable indicators of tube position.

Fluids aspirated from different organs have different mean pH values, and Metheny, Stewart, and coresearchers (1999) suggested that these expected differences might be useful for testing for feeding tube placement errors. Although an advance over auscultation, pH testing alone is an inadequate locator in both adults and children because of overlap in pH between sites, difficulty in obtaining aspirate, and other factors affecting pH readings.

In a study of 800 aspirates collected from 605 fasting adults, Metheny and coresearchers (1999) found that gastric aspirates had significantly lower pH values (mean 3.5) than intestinal aspirates (mean 7.0). About 15% of the gastric aspirates had pH values overlapping with the pH values of intestinal aspirates. In addition, pH values from four tubes inadvertently placed in the respiratory tract overlapped with the range in intestinal placements. Although in the research setting investigators were very successful in obtaining aspirate, in the clinical setting this may be more of a problem. It may be impossible to obtain any fluid if one or more of the orifices are not in a pool of fluid. Furthermore, flexible small-bore tubes tend to collapse when negative pressure is applied with a syringe; therefore, the absence of fluid is not necessarily evidence of improper placement. Another factor that may reduce the usefulness of pH testing is the administration of gastric acid-
inhibiting medications resulting in an elevated gastric pH, although the evidence is mixed on this question (Metheny et al., 1993; Metheny, Eikov, Rountree, & Lengettie, 1999).

Metheny, Smith, and Stewart (2000) recommended that the bilirubin level and pH of aspirates be jointly used as tests to help differentiate gastric, intestinal, and respiratory placement of tubes. They measured bilirubin and pH of aspirates from NG and NI tubes as well as tracheobronchial suction and pleural fluid aspirates and found bilirubin levels to differ as predicted. Metheny and Stewart (2002) found bilirubin levels in neonates’ gastric fluid comparable to adult levels. Although the pH/bilirubin test correctly identified 100% of actual respiratory aspirates, it correctly identified only 85.9% of nonrespiratory aspirates. Furthermore, only 29.4% of predicted respiratory aspirates were actually respiratory, and 87.7% of nonrespiratory placements were accurately predicted. Metheny and Stewart concluded that a bilirubin concentration of \( \geq 5 \text{ mg/dL} \) was a good predictor of intestinal tube placement, whereas a bilirubin concentration of \(< 5 \text{ mg/dL} \) was a good predictor of gastric tube placement whether or not the adult was fasting. Bilirubin can be easily measured at the bedside using the method developed by Metheny and Stewart in which reagent strips are compared to a color scale.

In summary, although estimates of tube placement errors vary, there is no doubt that they are common and can lead to serious complications. The direct NEX distance, the standard measurement currently used in practice, has been seen to be inaccurate in both adults and children. The NEMU distance, tested only in children, also seems to be inaccurate. Although the age-related height-based method has some research support, it has never been tested clinically. Because of the overlap in pH values for respiratory, gastric, and intestinal placements; the difficulty in obtaining aspirate to test pH; and the possible effects of acid-inhibiting medications, total parental nutrition, and physiologic immaturity in young infants on the pH of aspirate, it is evident that pH alone is not a reliable method for discriminating among gastric, intestinal, and respiratory placements. Furthermore, these problems may be worse in children than adults. Joint measurement of bilirubin and pH may be a better alternative to the use of pH alone.

Marsha L. Ellett

**Epilepsy**

Epilepsy refers to a chronic condition characterized by recurrent seizures. A seizure is a temporary alteration in functioning caused by abnormal discharge of neurons in the central nervous system (Holmes, G. H., 1987). The exact nature of the seizure depends on the function of the brain cells that are affected by the abnormal discharge. Seizures are classified into two major types: partial and generalized. Partial seizures, which occur when the electrical discharge remains in a circumscribed area of the brain, can be broken down further into elementary or complex divisions. With elementary partial seizures, the person’s consciousness is not impaired. With complex partial seizures, there is some impairment of consciousness. In some persons with partial seizures, the abnormal discharge spreads throughout the brain and is referred to as a partial seizure with secondary generalization.

Generalized seizures occur when the discharge affects both brain hemispheres and results in a loss of consciousness. The two most common types of generalized seizures are generalized tonic clonic (grand mal) and absence (petit mal). In generalized tonic clonic seizures, the person typically stiffens all over in the tonic phase, has jerking movements of the arms and legs in the clonic phase, and is incontinent of urine. Following the seizure the person is commonly sleepy. In absence seizures, there are a few seconds of loss of consciousness. The person generally stares blankly and sometimes rotates the eyes upward. An absence seizure begins and ends abruptly (Dreifuss & Nordli, 2001).
Epilepsy affects over 2 million persons in the United States. The cumulative incidence to age 80 years is 1.3% to 3.1%. Incidence rates are highest among those under 20 years of age and over 60 years of age. The trend is for the frequency of epilepsy to be decreasing in children and to be increasing in the elderly. Rates are slightly higher for men than for women. The prevalence of active epilepsy, defined as having had a seizure in the past 5 years or taking daily antiepileptic medication, is between 4.3 and 9.3 per 1,000. In approximately 70% of new cases of epilepsy there is no specific identified cause. In the remaining 30% the risk factors for epilepsy are severe head trauma, infection in the central nervous system, and stroke. In the United States the prevalence of epilepsy is lower in Whites than in non-Whites, although the reasons for these differences are not clear (Hauser & Hesdorffer, 1990).

Remission of epilepsy, defined as 5 years without seizures, is more common among persons with generalized seizures, those with no neurological deficits, and those with a younger age of onset. Approximately 70% of persons with epilepsy can be expected to enter remission (Hauser & Hesdorffer, 1990).

The major treatment of epilepsy is antiepileptic medication. Most epilepsy is well controlled with such treatment, but approximately 20% of persons continue to experience seizures despite treatment with medications. When partial seizures originate from a well-defined focus in an area of the brain that could be excised without serious neurological deficits, surgery to remove the affected part of the brain is an option. Other treatments for epilepsy have been tried with some success. The ketogenic diet, which consists of food high in fat and low in carbohydrates, has been used since the 1920s. Recently, there has been increased interest in the ketogenic diet as a treatment. Another recent treatment is the vagus nerve stimulator, which sends electrical energy to the brain via the vagus nerve (Epilepsy Foundation, n.d.).

Most nursing research has been devoted to the impact of epilepsy on the quality of life. Some persons have severe quality-of-life problems that prevent them from engaging in fully productive lives. The exact prevalence of these problems is difficult to establish because most studies have been carried out on clinic samples, that is, on persons with seizures that are more difficult to control. Problems most commonly found in children include anxiety, poor self-concept, social isolation, depression, behavior problems, and academic underachievement (Austin & Dunn, 2000). The most common problems found in adults with epilepsy are unemployment, depression, social isolation, and problems with adjustment. Unemployment may be twice as high in persons with epilepsy as in the general population (Hauser & Hesdorffer, 1990). Factors generally associated with quality-of-life problems are severe and frequent seizures, presence of other conditions or deficits, chronic condition, negative attitudes toward having epilepsy, and lack of a supportive family environment.

Research to guide the nursing care of persons with epilepsy is limited. Research is needed to understand the factors that lead to quality-of-life problems. A recent study with children suggests that behavior problems are already evident at the time of the first recognized seizure (Austin et al., 2001). Moreover, research that tests nursing interventions is needed to guide nursing care designed to prevent and reduce the development of adjustment problems. More nursing research is needed on teaching self-management to persons with epilepsy. DiIorio and colleagues (2003) are studying self-management in adults with epilepsy. Nurses should play a major role in developing knowledge to provide a research base for nursing practice with persons with epilepsy.

Joan K. Austin

Ethics of Research

The ethics of research—defined as what one morally ought to do in conducting, disseminating, and implementing results from sys-
tematic investigation or scholarly inquiry—are determined by both traditional and changing social values. These values vary within and among cultures worldwide; therefore, as international nursing research increases, nurse researchers must be attuned to the ethics of conducting research in other countries (Olsen, 2003). However, within the preceding context, two points cannot be disputed: (a) all research has ethical dimensions, and (b) all research must be ethical.

Rapid advances in science and technology have led to several important policy documents and ethical guidelines for nursing research. The policy documents include the 1980, 1995, and 2003 American Nurses Association’s (ANA) *Nursing’s social policy statement*. The ethical guidelines for nursing research include the ANA’s 1975 and 1985 *Human rights guidelines for nurses in clinical and other research*, as well as part of Provision 7 of the 2001 ANA *Code of ethics for nurses with interpretive statements*.

The conduct of research with humans imposes strong moral obligations on nurse researchers especially in light of genetic advances and the use of human biological materials in nursing research (Jeffers, 2001). Nevertheless, once the ethics of the research have been approved by an institutional review board or its equivalent, subject or participant selection (or human biological materials selection) occurs. The decision of whom or what to include and exclude from a study places the following moral burdens related to the ethical principle of justice on the researcher: (a) how to weigh the ethical pros and cons of using human biological materials or vulnerable persons as subjects, (b) how to avoid consistently selecting human biological materials or subjects based solely or primarily on ease of accessibility or any attribute that is not essential to the study’s objectives, and (c) how to avoid overuse or underuse of human biological materials or any group of research subjects.

Once human subjects are selected, they should be given sufficient and unbiased information about all important aspects of the study and their roles in the study before agreeing to participate. In addition, subjects’ comprehension of information about the study and the informed consent process should be ascertained initially and throughout the study as indicated. Subjects have the right to stop participation in a study at any time and without fear of retaliation. The preceding steps are based on the ethical principles of autonomy and respect for autonomy. If subjects are not autonomous, proxy consents must be obtained.

The ethical conduct of research also focuses on the ethical principle of nonmaleficence (do no harm). The researcher must understand that the possibility of harm or potential harm can occur to subjects at any time while conducting research. Therefore, the researcher must carefully weigh any benefits against therapeutic harms (i.e., harms that are necessary to produce a greater good in the conduct of the research). However, therapeutic harms always require moral justification, and under no circumstance should the subject be used solely as a means for the advancement of science.

The ethical principle of nonmaleficence also applies to scientific misconduct. Scientific misconduct is viewed as an intended act of deception that deviates from a discipline’s ethical norms. It typically takes the form of plagiarism, irresponsible authorship, data falsification, data fabrication, and questionable research practices. Nurse researchers should be familiar with their organization’s policies and procedures about scientific misconduct, as well as federal regulations to deter scientific misconduct. In addition, nurse researchers should be aware of three reports authored by the Institute of Medicine on scientific integrity (James, N., Burrage, & Smith, 2003).

When an interdisciplinary team is involved in the conduct of research, the principal investigator should be clearly designated and should assume overall accountability for the study. He or she is responsible for the supervision of all team members, including research assistants. Each team member must not only assume accountability for a part of the research but also must understand how that
research builds on that of other team members. Finally, all members of the interdisciplinary research team must come to a common understanding of what the ethics of research means for their study.

The conduct of research with animals also has ethical import because of past and current cruelty to them and because of the increased need for basic research in nursing. The guiding ethical principles for researchers are (a) to use animals for studies only when necessary, (b) to inflict the least amount of harm and suffering to the fewest number of animals while still attaining research objectives, and (c) to obtain the approval of institutional animal care and use committees or their equivalent.

Some scholars and ethicists would argue that significant research of high quality that is not disseminated presents an ethical issue because persons who could benefit from that research are denied that benefit. Furthermore, undisseminated research cannot be implemented into practice. The ethics of the dissemination of research also involves researchers and peer reviewers. Researchers as authors have an ethical obligation to clarify primary and coauthor credits as soon as possible during the preparation of a manuscript; to designate when the manuscript is part of a larger study; to submit a manuscript to only one editor at a time; to present accurate, unbiased, relevant, and appropriately documented information in the manuscript; to notify appropriate persons when scientific misconduct is detected in one’s own or other’s studies; to avoid the use of retracted or invalid study results; and to understand the ethical issues involved in internet research (Im & Chee, 2003).

Researchers as peer reviewers have an ethical obligation to be objective in their review of research manuscripts and timely in their return of them; to offer constructive critiques that demonstrate respect; to avoid any conflicts of interest; and to maintain anonymity of authors and confidentiality of content until the manuscript is published.

The research literature indicates that many practitioners of nursing lack the education needed to understand research or to use the findings in practice. This lack of knowledge and comprehension diminishes nurses’ autonomy and puts them at risk for potentially unsound ethical decision making about research utilization. Therefore, persons responsible for implementation of research into practice must assist practitioners of nursing to critique research for scientific and ethical merit and for clinical applicability. This critique includes the insight that studies typically are replicated before being implemented into practice. Furthermore, persons implementing research into practice must ensure that strong and ethical administrative support exists so that implementation can begin, continue, and terminate if necessary without causing harm to patients, staff, or the organization.

In summary, the most important aspect of research is that it be ethical. Although the ethics of research are complex, nurse researchers should respect these ethics and incorporate them into their studies or scholarly inquiries now and in the future.

MARY CIPRIANO SILVA

Ethnogeriatrics

Ethnogeriatrics is an evolving multidisciplinary subspecialty in geriatrics which examines health and aging issues in the context of cultural beliefs, values, and practices among racial and ethnic minority elders. Demographic effects, heterogeneity, barriers to access and utilization of services, interaction of culture-based practices and formal systems, impact of public policies, and culturally sensitive patient-provider relationships are key concepts in the field (Harper, 1990; McBride, Morioka-Douglas, & Yeo, 1996; Richardson, 1996). They provide useful information to guide health care delivery systems and service providers in reducing health disparities. Because nursing science is deeply rooted in integrative and holistic perspectives, it is well positioned to explore multifaceted conceptual frameworks such as the explanatory
model (Kleinman, Eisenberg, & Good, 1978) and transtheoretical models (Plowden & Miller, 2002; McBride et al., 1998), and blend them into established or evolving nursing theories (Chen, 1996; Leininger, M., & McFarland, M., 2002).

A review of literature from 1996–2002 on African-American and Asian-American older adults was summarized according to: what is known about access to community-based health care, issues raised by research findings, and gaps in research (McBride & Lewis, 2004). The limited research on chronic diseases shows variations in type of illness, prevalence of disease, and quality of care (e.g., Baumann, Chang, & Hoebeke, 2002; De la Cruz, McBride, Compas, Calixto, & Van Derveer, 2002; Ness, Nassimiha, Feria, & Aronow, 1999). Information on cohorts of older African Americans are predominantly on individuals born in the United States and descendants of slaves from Africa. In contrast, studies on cohorts of older Asian Americans, whose ethnic origins are from over 50 countries, consist of a mix of recent immigrants, long-stay residents, and U.S. born. Important differences between and within groups (or heterogeneity) in terms of cultural beliefs and historical experiences are seldom measured and examined as factors contributing to disparities in access and utilization of services. Descriptive, exploratory, cross-sectional studies dominate the research effort on African-American and Asian-American older adults to identify unmet needs; few focus on culturally appropriate interventions. In some large databases, health status is often measured by self-reports (McBride & Lewis). However, it is unlikely that the information is verified by clinical data or linked with culture-based practices, particularly for those who are monolingual, low acculturated, or less educated older people.

In view of the projected 12% increase of racial and ethnic minority elders by 2030 and a continuing climate of rapidly diminishing resources, pursuing well-designed longitudinal intervention studies with randomized samples using culturally relevant research designs (e.g., case study designs) which are critical to improving quality of care for racial and ethnic minorities is a serious challenge to current and future nurse scientists.

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Ethnography

The term ethnography translates as “the written description of the folk (people/nation).” However, the term is currently used to refer to both a specific naturalistic research method and the written product of that method. As a research process ethnography is a comparative method for investigating human behavior and patterns of cognition through observations in the natural setting. As a written product, ethnography is a descriptive analysis of the beliefs, behaviors, norms, and patterns of a culture. The focus on culture and cultural processes is central to ethnography and is one of the ways in which ethnography differs from other naturalistic methods, such as grounded theory (the study of basic social processes) and phenomenology (the study of the individual’s lived experience).

Ethnography was developed primarily by anthropologists as they sought to understand other cultures and traditions. Although ethnography remains the primary research method in anthropology, it is employed by several other disciplines, most notably sociology, psychology, education, and nursing. As the method was adopted outside anthropology, the focus of study shifted from small-scale or tribal societies to areas more closely linked with the discipline adopting the method. For example, the study of small urban social communities was undertaken by sociologists from the Chicago School, investigations of schools as microcosms of society were addressed by educators, and the health beliefs and lay systems of ethnic groups were targeted by nurse anthropologists.

In the discipline of nursing, ethnography was introduced into the literature primarily by nurse anthropologists beginning in the late
Two seminal articles appearing in *Nursing Research* by Elizabeth Byerly (1969/1990) and Antoinette Ragucci (1972/1990) laid the foundation for future nurse ethnographers. As doctoral education came to be sponsored through the nurse scientist program, several nurses chose anthropology as a focus of doctoral study. This first generation of nurse anthropologists who conducted ethnographies included pioneers such as Madeleine Leininger, Agnes Aamodt, Pamela Brink, Margarita Kay, Elizabeth Byerly, and Oliver Osborne. A second generation of nurse anthropologists included Juliene Lipson, Evelyn Barbee, JoAnn Glittenberg, Marjorie Muecke, Janice Morse, and Toni Tripp-Reimer. Later, as schools of nursing developed their own doctoral programs, some nurse ethnographers began to be trained within schools of nursing.

There are several different traditions subsumed under the term ethnography. Each of these has emerged with its own particular historical context, and each addresses somewhat different elements of culture. However, each of these approaches may be used fruitfully in nursing research, given the appropriate research question. Although there are over a dozen distinct ethnographic traditions, examples of four will be provided to demonstrate the diversity of approaches within ethnography.

An early ethnographic approach developed by Boas around the turn of the century is termed historical particularism. The central tenets of this approach are that each culture has its own long and unique history and that all elements of a culture are worthy of documentation. A typical product of historical particularism is the creation of cultural lists or inventories. This approach has been used in nursing research to identify specific folk treatments used in ethnic groups and to generate items to be used later in the construction of structured instruments.

Functionalism is a second ethnographic tradition. Here, however, the task of ethnography is to describe the structural elements and their interrelated functioning in a culture. This approach historically has been the most widely used in nursing research. A prominent example is that of Leininger’s sunrise model.

The goal of ethnoscience, a third ethnographic tradition, is to discover folk systems of classification to determine the ways people perceive and structure their thinking about their world and to identify the rules that guide decision making. The taxonomy known as the Nursing Interventions Classification (NIC) was derived by using the ethnoscience approach.

Symbolic ethnography is a fourth approach, which is rapidly growing in application in nursing research. Here, investigators view culture as a system of shared meanings and symbols. They further believe that cultural knowledge is embedded in “thick descriptions” provided by cultural members. Most nursing research that deals with informants’ explanatory models use this ethnographic tradition.

Fieldwork is the hallmark of ethnographic research. Fieldwork involves the investigator’s immersion in the target community for long periods of time in order to gain understanding for contextualizing the ethnographic data. Stages of fieldwork include (a) field entry, (b) development of relationships, (c) data collection, (d) data manipulation, (e) data analysis, and (f) termination. Many of these stages, particularly (b)–(e), overlap in time.

In conducting fieldwork an investigator may employ several strategies for data collection, including participant observation, informal interviews, structured interviews, pictures and videotapes, census and other statistical data, historical documents, projective tests, and psychosocial surveys. The variety of research strategies that are appropriately employed is another way in which ethnography differs from most other naturalistic methods. Further, ethnographers may use quantitative data to augment qualitative data. However, the mainstay strategies of ethnography rest in participant observation and informant interviews. If the focus of the ethnography concerns the cognitive realm (attitudes, beliefs, schemata) of the members of the culture, then interviewing is the primary strategy. On
the other hand, if the focus of the ethnography involves structural features or patterns of behavior, then observations are the primary strategy. The majority of ethnographies, however, use a combination of strategies.

Methods used for data manipulation include strategies for taking notes and making memos, coding strategies, and indexing systems. More recently, computerized software programs such as ETHNOGRAPH and NUD*IST have been fruitfully employed to aid in the management of data. Methods used in data analysis include matrix, thematic, and domain analysis.

In summary, ethnography is a method designed to describe a culture. The ethnographer seeks to understand another way of life from the perspective of a person inside the culture (emic view). Participant observation and informant interviewing are the major strategies used during fieldwork. The specific ethnographic tradition used by the investigator determines the form of the ethnographic product.

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Janet Enslein
Barbara Rakel
Lisa Onega
Bernard Sorofman

Evaluation

Evaluation is a method for measuring the effect of some purposeful action on a particular situation. It is often described as an assessment of worth. In evaluation, both anticipated and unanticipated outcomes are important and are included in the discussion of findings and the publication of results. The purpose of evaluation is to provide information for decision makers who usually have some stake in the outcome of the intervention.

Evaluation methods have been categorized along a continuum ranging from simple assessment, in which informal practices are used to look for indication of outcome, to evaluation research, in which research methods are used to allow for generalization to other comparable situations. In actuality, the use of informal practices for determining intervention outcome is never appropriate. Consequently, the term evaluation should suffice for all efforts in which a systematic process is used to determine the effect of some intervention on some anticipated outcome. The research component of the term is assumed. No matter what the purpose of the evaluation, the issue of rigor is always foremost, and the methods and measurement approaches used should involve the same level of attention given to any research method.

According to Rossi and Freeman (1985), evaluations serve one of three purposes: (1) to conceptualize and design interventions, (2) to monitor implementation of some intervention, or (3) to assess the utility of some action. In the first type of evaluation, studies focus on (a) the extent of the problem needing intervention, (b) who should be involved in or targeted for the intervention, (c) whether the intervention proposed will address the problem or the needs of individuals, and (d) whether the chance for successful outcome has been maximized.

In the second type of evaluation, studies focus on what is done; they generally are referred to as process evaluation studies. These studies also determine whether the intervention is reaching the targeted population and whether what is done is consistent with what was intended. Process evaluations are essential for determining cause and effect, although they are not sufficient by themselves for measuring impact. That is where evaluation researchers often get into trouble. They stop collecting data once they describe what was done; therefore, process evaluation methods have tended to be viewed with disfavor, which is unfortunate. Although they are insufficient by themselves, they are absolutely necessary for determining whether the intervention caused the outcome and if so, how—and if not, why not.

In the third type, studies determine both the degree to which an intervention has an impact and the benefit of the intervention in relation to the cost. The degree of impact is
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referred to as the intervention’s effectiveness, and the degree of cost is referred to as its efficiency (Rossi & Freeman, 1985).

Recent writings on evaluation focus on the need for theory to guide the investigation and frame the results. Authors have identified theories that range from those targeted solely for the purposes of designing evaluations to those directed at the expected relationships between intervention and outcome. For example, behavioral theories often are used to develop interventions targeted at changing health behaviors; they also are used to select measures for determining impact. Evaluation theories, on the other hand, focus on the purpose of the study—whether it is for determining what goals or outcomes should be examined, how the treatment should be developed and delivered, or under what conditions certain events occur and what their consequences will be. H. T. Chen (1990) has defined these two types of evaluation theory as normative (the first type) and causative (the second). Normative theory is derived from prior knowledge, usual practice, or theory. Causative theory is empirically based and specifies causal relationships between intervention and outcome.

Measuring the true effect of the intervention often is difficult. Evaluation studies are subject to the same measurement and analysis problems associated with other designs. In addition, Ingersoll (1996) has summarized several others that are important to evaluation research. Among these is the need to measure the extent of the intervention introduced, which is frequently absent from reports of evaluation studies. This information assists in demonstrating cause-and-effect relationships and clarifies what magnitude of the intervention is required before an effect is seen. It also helps to prevent the potential for Type III, IV, and V evaluation errors, which affect statistical conclusion validity and generalizability validity.

Type III evaluation error is an error in probability and results in solving the wrong problem instead of the right problem. It usually occurs when the program is not implemented as planned and when insensitive measures are used to determine effect. Type IV error occurs when the evaluator provides information that is useless to stakeholders. Type V error involves confusing statistical significance with practical significance, which ultimately leads to Type IV error (Ingersoll, 1996).

Evaluation is key to measuring intervention magnitude and effect. To assure that evaluations are useful, however, steps must be taken to design them according to some meaningful conceptual framework; and close attention must be paid to maximizing the rigor of the methods, analysis, and rejection of alternative hypotheses. Approaches to quality control recommended for other non-experimental, quasi-experimental, and experimental designs are appropriate. With attention to these aspects of the evaluation process, evaluations become an effective means for extending nursing science.

GAIL L. INGERSOLL

Evidence-Based Practice

Evidence-based practice (EBP) refers to nursing practice that utilizes research findings as the foundation for nurses’ decisions, activities, and interactions with clients. Another term which is often used synonymously but is slightly different is the term “research utilization.” Research utilization specifically refers to the practical utilization of findings from one or more scientific studies and is a predecessor of EBP. EBP is broadly conceptualized as a continuum of synthesized information used to improve practice and patient outcomes (Bakken, 2001). These two terms encompass the burgeoning interest in developing a practice in which there is solid evidence from scientific research that explicit nursing actions are clinically relevant, cost-effective, and result in positive quality outcomes for clients. The focus of EBP is its emphasis on integrating the best available research evidence within the clinical, patient, and organizational context of an institution to attain high-quality and cost-effective care.
According to Hewitt-Taylor (2002), evidence-based practice is a process that entails six elements: (a) selecting an area of practice that requires an evidence base, (b) making decisions about what constitutes evidence, (c) conducting a systematic search for evidence, (d) evaluating individual pieces of evidence, (e) synthesizing the findings of these sources into a cohesive whole, and (f) applying this evidence appropriately to patient care situations.

The desire to explore the path and timing of research to practice began in the 1960s and 1970s. N. Caplan and Rich (1975) coined the terms instrumental utilization (changing practice based on empirical evidence) and conceptual utilization (inability to change behavior based on the results, but a new awareness during caregiving). The slow evolution of practice change was called knowledge creep and decision accretion by C. Weiss (1980). Practice changes occur slowly over time as nurses and other health care providers repeatedly come into contact with new knowledge during readings, discussions, and at local and national meetings. Estabrooks (1999) reported three types of research utilization: indirect (changes in nurses’ thinking), direct (incorporating findings into patient care), and persuasive (using findings to change decision makers’ behaviors and beliefs).

Two formal efforts undertaken in the 1970s to bridge the gap between nursing research and nursing practice were the Western Interstate Commission for Higher Education (WICHE) Regional Program and the Conduct and Utilization of Research in Nursing (CURN) projects. In the WICHE project, although nurses were successful in increasing research utilization, they noted a dearth of scientifically sound nursing research with identifiable nursing implications. The goal of the CURN project was to increase the use of research results in daily practice by disseminating current findings, encouraging collaborative research with relevance to nursing issues, and enhancing administrative and organizational change supportive of implementing new evidence.

The Cochrane Collaboration, which was founded in the United Kingdom in the 1970s, was a foundation of the evidence-based practice movement. British epidemiologist Archie Cochrane, noting the paucity of evidence supporting care, advocated for the availability of clinical summaries upon which health care providers could base their decisions. This led to the formation of the Cochrane Collaboration (www.cochrane.org), whose aim is the preparation and dissemination of systematic reviews of the results of health care interventions. As the Cochrane movement was going on, Dr. David Sackett pioneered evidence-based medicine (EBM) at McMaster Medical School. He conceptualized EBM as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of EBM means integrating individual clinical expertise with the best available external evidence from systematic research” (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996, p. 71).

Rigorous rating systems for evaluating evidence have been developed by Sackett and others (1996), Stetler and others (1998), as well as the AHCPR (2003) (now Agency for Healthcare Research and Quality [AHQR] http://www.ahcpr.gov/new/press/pr2002/ strengpr.htm). In general, the rating systems order the types of evidence in the following manner: meta-analyses of randomized, controlled trials (RCT) (strongest evidence); experimental studies (or RCT); quasi-experimental studies (time series, nonequivalent control group) or matched case-control studies; nonexperimental studies (correlational, descriptive); and program evaluations, quality improvement projects, case reports, authoritative opinions (weakest evidence).

Two models (Stetler Model, Iowa Model) that were originally designed for research utilization have been adapted for use in EBP projects. These models have been the inspiration for the following steps to change practice: (a) identify a clinical problem; (b) collect the evidence about clinical issue (literature review, integrative review); (c) review, evaluate, and synthesize available evidence; (d)
plan the EBP change; (e) design, implement, and evaluate a pilot EBP project; (f) design, implement, and evaluate a larger EBP project; and finally (g) disseminate the results (Polit & Beck, 2004).

Currently, informatics has become a key contributor to EBP and the promotion of quality patient care (Bakken, Cimino, & Hripcsak, 2004). Although this is not yet the standard, the methodology exists and presents an opportunity to impact quality of care through using up-to-date evidence about best practice tailor-made for an individual patient. For example, a patient is admitted for a specific operative procedure; reminders are sent to the physician and nurses regarding type of antibiotics, changes in care and testing based on laboratory functions, and best educational methodologies for the patient based on his demographics. These care processes are changed based on the most current and best evidence for care and treatment. Computer-based reminders have been demonstrated to decrease errors of omission and enhance adherence to clinical practice guidelines (Overhage, Tierney, Zhou, & McDonald, 1997).

There is some concern by practitioners that the systematic reviews used by clinicians are a watered-down version of the scientific method and raw data. Although Cochrane reviews, summarizations, and metaanalyses of data are used by clinicians in the formation of guidelines, nurses continue to appreciate the scholarly merit of single study or a series of studies—excellently formulated and conducted. In this author’s experience, since the nature of nursing problems do not always fit the structure of a randomly controlled trial, evidence in one or a series of studies is evaluated and considered by their scientific soundness and clinical significance.

Polit and Beck (2004) recommend eight strategies for promoting the use of research findings in current practice. Researchers should collaborate with staff nurses to: identify current clinical problems, use rigorous designs, replicate findings, write clear research reports and share the information, report findings that are conducive to meta-analysis, present clinical implications of the research, disseminate findings energetically in multiple media (journals, conferences), and finally, prepare integrative and critical research reviews and make them available to busy practicing nurses.

Polit and Beck (2004) also identify nursing and organizational barriers to the utilization of evidence by practicing nurses. Bedside nurses may not be prepared to critically appraise the evidence. Nurses may not only lack the motivation to make changes, but be resistant to making changes that impact their comfortable practice. For organizations, administrators can foster a climate conducive to innovation. They can offer emotional, moral, and instrumental support for innovation, and can reward nurses for innovative and evidence-based practice at the bedside as well as support organizational initiatives.

ROBIN FLESCHLER

Experimental Research

True experiments have the potential to provide strong evidence about the hypothesized causal relationship between independent and dependent variables. Experiments are characterized by manipulation, control, and randomization. The quality of experiments depends on the validity of their design.

Manipulation means the researcher actively initiates, implements, and terminates procedures. In most instances, manipulation is linked to the independent variable(s) under consideration. Essential to manipulation is that the researcher has complete control over the process. The researcher decides what is to be manipulated (e.g., selected nursing intervention protocols), to whom the manipulation applies (e.g., samples and subsamples of subjects), when the manipulation is to occur according to the specification of the research design, and how the manipulation is to be implemented.

Manipulation implies and is impossible without researcher control over extraneous sources that might affect and lead to incorrect scientific conclusions. Control aims “to rule
Randomization entails two separate processes: (a) random selection of subjects from the population and (b) random assignment of subjects to treatment and control conditions. Random selection is the process of randomly drawing research subjects from the population about which the researcher wants to gain knowledge and to which the researcher hopes to generalize the findings of a study. Random assignment entails allocating sampling units (e.g., patients) to treatment and control conditions by using a decision method that is known to be random (e.g., coin toss, random drawing, use of random tables, computer-generated random sequences of options). Random selection is virtually nonexistent in intervention studies in nursing; moreover, a large proportion (55.3%) of nursing intervention studies do not even use random assignment methods (Abraham, Chalifoux, & Evers, 1992).

T. Cook and Campbell (1979) reviewed four types of validity of research designs, potential threats to each, and strategies to remedy these threats. Statistical conclusion validity addresses the extent to which, at the mathematical/statistical level, covariation is present between the independent and dependent variables (i.e., the extent to which a relationship exists between the independent and dependent variables). Internal validity refers to whether an observed relationship between variables is indeed causal or, in the absence of a relationship, that indeed there is no causal link. Construct validity of putative causes and effects refers to whether the causal relationship between two variables is indeed “the one” and tries to refute the possibility that a confounding variable may explain the presumed causal relationship. External validity refers to the generalizability of an observed causal relationship “across alternate measures of the cause and effect and across different types of persons, settings, and times” (Cook, T., & Campbell, 1979, p. 37). Validity of any type is not a yes/no issue of whether or not it is present. Rather it is a matter of degree, determined by the extent
to which the researcher has tried to cope with
the various potential threats to each type of
validity.

Ivo L. Abraham
Lynn I. Wasserbauer

Exploratory Studies

Exploratory studies are those that investigate
little-known phenomena for which a library
search fails to reveal any significant examples
of prior research. These kinds of studies have
been very useful in nursing research in finding
out more about nursing-related problems
that occur in all areas of clinical practice,
administration, and academe. Typically, an
exploratory study will use a small sample and
will focus on one particular area of interest
or on one or two variables. The following
are the kinds of research questions that might
indicate an exploratory study in nursing:
What is it like being a pregnant teenager?
What kinds of patients need home care? What
health-promoting behaviors do cafeteria
workers engage in? What is the lived expe-
rience of military widows?

Since the intent of exploratory research is
to find out and explore unknown phenom-
ena, it is considered Level I research (designed
to elicit descriptions of a single topic or popu-
lation) and is reflected in many of the early
research studies in nursing. An examination
of the kind of research designs that were used
in nursing just 25 to 30 years ago reveals
a predominance of exploratory studies and
includes such examples as (a) staff nurse be-
haviors and patient care improvement (Gor-
ham, 1962), (b) the self-concept of children
with hemophilia and family stress (Garling-
house & Sharp, 1968), and (c) women’s be-
iefs about breast cancer and breast self-ex-
amination (Stillman, 1977).

Exploratory studies are still very useful.
They can be found in nursing journals and
are often thought of as an initial step in the
description of a researchable problem. There
are many reasons for an exploratory study.
Such studies are particularly useful when the
investigator seeks to gather baseline informa-
tion on a particular variable, like loneliness,
widowhood, anxiety, or culture. Other re-
searchers may wish to investigate a process
about which little is known, such as the types
and meanings of caring behaviors among el-
terly nursing home residents or the meaning
of loss of a nursing role. Exploratory research
may focus on one concept that has not been
described in any great detail in the literature,
such as isolation or comfort, or researchers
may initiate an exploratory study to deter-
mine the feasibility of or need for a more
extensive study or to establish baseline infor-
mation that could lay the groundwork for a
future study.

Regardless of the intent of exploratory re-
search, a flexible design that enables the re-
searcher to investigate and examine all as-
pects of a phenomenon is encouraged. Flexi-
bility in the design allows the researcher to
explore all kinds of emerging ideas and to
change direction, if needed, as data are col-
clected and analyzed. Thus, exploratory re-
search is not limited to one particular para-
digm but may have either a quantitative or
qualitative design. Studies that propose a hy-
pothesis and seek to provide a measure of a
phenomenon as a description employ a quan-
titative design. One example of an explor-
atory study that used a quantitative design is
described by Schaefer, Swavely, Rothen-
berger, Hess, and Williston (1996). In this
study the researchers described the nature
and frequency of sleep pattern disturbances in
patients who were recovering from coronary
artery bypass graft (CABG) surgery.

Qualitative or naturalistic designs gener-
ally explore phenomena in the natural setting
in which they occur and are commonly car-
rried out by using semistructured or open-
ended interviewing techniques and by obser-
vation. There are multiple approaches associ-
ated with qualitative research, but they all
focus on those aspects of human behavior
that are difficult to measure in numerical
terms. One example of an exploratory qualitative study that used a grounded theory approach is that by Fleury, Kimbrell, and Kruszewski (1995). In this study the investigators sought to describe the healing experiences of 13 women who recovered from an acute cardiac event. Verbal transcripts were analyzed to find out more about the important issues and concerns of women during the recovery process.

Any critique of exploratory research would include the facts that these studies are limited in scope and focus, are not generalizable to a larger population, and cannot be used as a basis for prediction. In spite of these limitations, however, exploratory studies are useful to uncover or discover information about little-known phenomena or single concepts, to explore the existence of relationships between and among variables, to find out more about human behavior in a naturalistic setting, to lay the groundwork for more systematic testing of hypotheses, and to determine the feasibility for a more in-depth study.

Kathleen Huttlinger
Factor Analysis

Factor analysis is a multivariate technique for determining the underlying structure and dimensionality of a set of variables. By analyzing intercorrelations among variables, factor analysis shows which variables cluster together to form unidimensional constructs. It is useful in elucidating the underlying meaning of concepts. However, it involves a higher degree of subjective interpretation than is common with most other statistical methods. In nursing research, factor analysis is commonly used for instrument development (Ferketich & Muller, 1990), theory development, and data reduction. Therefore, factor analysis is used for identifying the number, nature, and importance of factors, comparing factor solutions for different groups, estimating scores on factors, and testing theories (Nunnally & Bernstein, 1994).

There are two major types of factor analysis: exploratory and confirmatory. In exploratory factor analysis, the data are described and summarized by grouping together related variables. The variables may or may not be selected with a particular purpose in mind. Exploratory factor analysis is commonly used in the early stages of research, when it provides a method for consolidating variables and generating hypotheses about underlying processes that affect the clustering of the variables. Confirmatory factor analysis is used in later stages of research for theory testing related to latent processes or to examine hypothesized differences in latent processes among groups of subjects. In confirmatory factor analysis, the variables are carefully and specifically selected to reveal underlying processes or associations.

The raw data should be at or applicable to the interval level, such as the data obtained with Likert-type measures. Next, a number of assumptions relating to the sample, variables, and factors should be met. First, the sample size must be sufficiently large to avoid erroneous interpretations of random differences in the magnitude of correlation coefficients. As a rule of thumb, a minimum of five cases for each observed variable is recommended; however, Knapp and Brown (1995) reported that ratios as low as three subjects per variable may be acceptable. Others generally recommend that 100 to 200 is advisable (Nunnally & Bernstein, 1994).

Second, the variables should be normally distributed, with no substantial evidence of skewness or kurtosis. Third, scatterplots should indicate that the associations between pairs of variables should be linear. Fourth, outliers among cases should be identified and their influence reduced either by transformation or by arbitrarily replacing the outlying value with a less extreme score. Fifth, instances of multicollinearity and singularity of the variables should be deleted after examining to see if the determinant of the correlation matrix or eigenvalues associated with some factors approach zero. In addition, a squared multiple correlation equal to 1 indicates singularity; and if any of the squared multiple correlations are close to 1, multicollinearity exists. Sixth, outliers among variables, indicated by low squared multiple correlation with all other variables and low correlations with all important factors, suggest the need
for cautious interpretation and possible elimination of the variables from the analysis. Seventh, there should be adequate factorability within the correlation matrix, which is indicated by several sizable correlations between pairs of variables that exceed .30. Finally, screening is important for identifying outlying cases among the factors. If such outliers can be identified by large Mahalanobis distances (estimated as chi square values) from the location of the case in the space defined by the factors to the centroid of all cases in the same space, factor analysis is not considered appropriate.

When planning for factor analysis, the first step is to identify a theoretical model that will guide the statistical model (Ferketich & Muller, 1990). The next step is to select the psychometric measurement model, either classic or neoclassic, that will reflect the nature of measurement error. The classic model assumes that all measurement error is random and that all variance is unique to individual variables and not shared with other variables or factors. The neoclassic model recognizes both random and systematic measurement error, which may reflect common variance that is attributable to unmeasured or latent factors. The selection of the classic or neoclassic model influences whether the researcher chooses principal-components analysis or common factor analysis (Ferketich & Muller).

Mathematically speaking, factor analysis generates factors that are linear combinations of variables. The first step in factor analysis is factor extraction, which involves the removal of as much variance as possible through the successive creation of linear combinations that are orthogonal (unrelated) to previously created combinations. The principal-components method of extraction is widely used for analyzing all the variance in the variables. However, other methods of factor extraction, which analyze common factor variance (i.e., variance that is shared with other variables), include the principal-factors method, the alpha method, and the maximum-likelihood method (Nunnally & Bernstein, 1994).

Various criteria have been used to determine how many factors account for a substantial amount of variance in the data set. One criterion is to accept only those factors with an eigenvalue equal to or greater than 1.0 (Guttman, 1954). An eigenvalue is a standardized index of the amount of the variance extracted by each factor. Another approach is to use a scree test to identify sharp discontinuities in the eigenvalues for successive factors (Cattell, 1966).

Factor extraction results in a factor matrix that shows the relationship between the original variables and the factors by means of factor loadings. The factor loadings, when squared, equal the variance in the variable accounted for by the factor. For all of the extracted factors, the sum of the squared loadings for the variables represents the communality (shared variance) of the variables. The sum of a factor’s squared loadings for all variables equals that factor’s eigenvalue (Nunnally & Bernstein, 1994).

Because the initial factor matrix may be difficult to interpret, factor rotation is commonly used when more than one factor emerges. Factor rotation involves the movement of the reference axes within the factor space so that the variables align with a single factor (Nunnally & Bernstein, 1994). Orthogonal rotation keeps the reference axes at right angles and results in factors that are uncorrelated. Orthogonal rotation is usually performed through a method known as varimax, but other methods (quartimax and equimax) are also available. Oblique rotation allows the reference axes to rotate into acute or oblique angles, thereby resulting in correlated factors (Nunnally & Bernstein). When oblique rotation is used, there are two resulting matrices: a pattern matrix that reveals partial regression coefficients between variables and factors and a structure matrix that shows variable to factor correlations.

Factors are interpreted by examining the pattern and magnitude of the factor loadings in the rotated factor matrix (orthogonal rotation) or pattern matrix (oblique rotation). Ideally, there are one or more marker variables, variables with a very high loading on
Failure to Thrive (Adult)

Adult failure to thrive (FTT) syndrome is defined as a lower-than-expected level of functioning associated with nutritional deficits, depressed mood state, and social isolation. This definition is derived from numerous theoretic, clinical, and research sources (Newbern & Krowchuk, 1994; Verdery, 1996). Clinically, FTT has been used interchangeably with the terms cachexia, frailty, dwindling, nonspecific presentation of illness, and decompensation. Although it has been discussed primarily in relation to the elderly (Egbert, 1996), based on the above definition, it is likely that the syndrome crosses age boundaries and exists in other chronically ill patient populations, for example, adults with multiple sclerosis, AIDS, or diabetes.

In the International Classification of Diseases, 10th revision (ICD-10), FTT is most frequently classified as a pediatric diagnosis. In children, FTT is very broadly defined as deviation from an expected growth pattern in terms of norms for age and sex (Frank & Zeisel, 1988). Pediatric FTT is generally classified as organic, in which there is a known underlying medical condition; nonorganic, in which the causes are psychosocial; or mixed. Advances in pediatric research also have produced a theoretical framework in which malnutrition is of fundamental importance, either as a primary cause of failure to thrive or a secondary symptom of a chronic illness.

Based on several years of clinical and research experience with the elderly, Verdery (1996) proposed two interesting ideas about the etiology of adult FTT. The first is that the syndrome may occur in response to an event that triggers a more rapid than normal rate of decline. The idea that a trigger event may be a precursor to FTT needs further investigation but it is intuitively believable from both a clinical and research perspective: an event could be physiological in nature (for example, a hip fracture), environmental (for example, a change in residence), psychological (for example, death of a spouse), or a combination of all three. Verdery’s second proposition is that there are two categories of adult FTT. This first is primary adult FTT, where the reasons for the patient’s decline are ambiguous or obscure. In secondary adult FTT, the reasons are diagnosable and potentially treatable and there is a wide range of possible underlying factors: (a) medical history and treatment, for example, immune function or polypharmacy; (b) psychological problems, primarily depression; (c) nutritional factors, including eating disorders; and (d) social and/or environmental factors such as isolation or alcohol intake. Although many of the factors in the secondary category of adult FTT have been investigated in relation to health behaviors and outcomes, few have been examined from within a theoretic framework of adult FTT. The framework is in its early stages, and unlike pediatric FTT, there is no consensus on the critical concepts and their relationships, nor are there objective criteria that can be used to evaluate deviation from the norm.

There also is relatively little published research on adult FTT, particularly in the last 5–7 years. Methodological approaches have varied and, without a dominant model of adult FTT, studies have used different defini-
tions of the syndrome, as well as various defining criteria. The following brief summaries of four articles illustrate this feature of our current state of knowledge about adult FTT. In one of the earliest reported studies, Mersert, Kurlanzik, and Thorning (1976) identified adult FTT through documentation of a cluster of symptoms in five adult patients diagnosed with neurological disorders (age range = 24–67, mean = 49 years). All of the patients had irreversible weight loss despite high caloric intake, wide variations in body temperature, decreased level of consciousness, unexplained rapid development of decubitus ulcers, and sudden death. A second study examined characteristics of 62 male patients admitted with a medical diagnosis of FTT (Osato, Stone, Phillips, & Winne, 1993), using retrospective chart review. The patients had a wide age range (37–104 years), an average of seven medical diagnoses, required an average of five medications, and 62% had low levels of serum albumin (< 3.5 g/dL). A third study retrospectively examined the medical records of 82 elders admitted with a diagnosis of FTT (Berkman et al., 1986) and used factor analysis to group FTT factors into three categories: patient care management problems, functional problems, and patient coping problems. A fourth study followed 252 subjects for 2 years after new hip fracture (Fox, Hawkes, Magaziner, Zimmerman, & Hebel, 1996). Subjects were generally older (mean = 77 years) and FTT was defined as a decline in walking 6–12 months post-fracture after subjects had achieved an initial gain in mobility. Results were mixed: those classified as FTT (n = 26) were significantly worse off than the “no decline” group (n = 226) in their cognitive decline, number of hospitalizations at 12 months, and self-reported health at 24 months. No statistically significant differences were found between the two groups on the variables of social interaction or depression scores, mortality, physician visits, or nursing home stays.

Although the literature has yet to produce a universally accepted definition, it appears that adult FTT is a multidimensional concept more accurately defined as a syndrome rather than a medical diagnosis (Verdery, 1997). And although it is frequently thought of as a precursor to death, there is also support for the idea that adult failure to thrive is not normal aging, the unavoidable result of chronic disease, or a synonym for the terminal stages of dying (Egbert, 1996).

PATRICIA A. HIGGINS

Failure to Thrive (Child)

Failure to thrive is a term used to describe a deceleration in the growth pattern of an infant or child that is directly attributable to undernutrition (Steward, D. K., Ryan-Wenger, & Boyne, 2003). Typically, the deceleration is a growth deficit whereby the rate of the child’s weight gain is below the 5th percentile for age, based on the National Center for Health Statistics (NCHS) standardized growth charts. Undernutrition, or caloric inadequacy, and thus a deceleration in a child’s growth pattern, can occur for any number of physiological reasons, such as nutrient malabsorption or transient weight loss due to acute illness. When a child’s lack of weight gain is attributed to psychosocial factors and developmental concerns rather than organic or disease related factors, the term nonorganic failure to thrive (NOFTT) is used.

Traditionally, the failure to thrive syndrome has been classified into three categories: organic, nonorganic, and mixed. Although the term NOFTT frequently is used in contemporary literature, most researchers agree that the classification is not so clear, especially since all cases of failure to thrive have an organic etiology (i.e., undernutrition). NOFTT is a common problem of infancy and early childhood, and researchers have documented a dramatic increase in its incidence since the late 1970s. NOFTT accounts for 3%–5% of the annual admissions to pediatric hospitals and about 10% of growth failure seen in outpatient pediatrics (Schwartz, I. D., 2002). Infants with NOFTT typically present not only with growth failure, but also with developmental and cogni-
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In the mid-1950s, a number of case reports were published in the psychiatric literature that documented depression, malnutrition, and growth failure in infants living in intact families. These case studies were the first to report feeding and interactional difficulties between the mothers and their infants. Feeding episodes for the mothers were anxiety-provoking, which led the mothers to decrease both the frequency of infant feedings as well as their contact with the infants. Ethnologists and child development experts began studying institutionalized and noninstitutionalized infants to further define the concepts of maternal deprivation and failure to thrive. On the basis of several studies, researchers then concluded that decreased maternal contact directly lead to failure to thrive in the infants. From these works, the maternal deprivation framework for failure to thrive was established, and the mother’s role in the infant’s well-being became a central focus. Support for this framework grew as data accumulated documenting the association between maternal neglect and failure to thrive in infants.

The maternal deprivation framework dominated the literature until the late 1970s, when a transactional framework was developed to explain the psychosocial correlates of NOFTT. The transactional framework proposes that an infant’s growth and development is contingent upon the quality of parental care, the nature of parent and infant interactions, and the ecological conditions impinging on the family. Furthermore, the transactional model recognizes that the quality of the parent-infant interaction reflects infant characteristics as well as parent characteristics (Bithoney & Newberger, 1987). Historically, the emotional deprivation component of NOFTT has been investigated more than the nutritional deprivation component. Although NOFTT experts would agree that undernutrition is the primary biologic insult, systematic studies investigating this element are lacking.

Nutritional deprivation again became the focus of NOFTT research in the early 1970s, when some researchers disputed the hypothesis that maternal deprivation was the princi-
pal cause of NOFTT. More recent evidence suggests that the environmental deprivation may occur before the undernutrition. Although the primary cause of NOFTT may never be fully understood, it is apparent that nutritional deficits are dependent on the environmental context in which they occur.

Nurse researchers developed the ecological model to describe parent-child interactions, and the model is used to explain NOFTT (Barnard & Eyres, 1979; Lobo, Barnard, & Coombs, 1992). The ecological model focuses on the three major interaction components of the parent-child relationship: those of the child, the parent, and the environment. These interactions are synchronous and reciprocal. Barnard and her colleagues (1989) emphasized the importance of the parent’s and child’s physical and emotional characteristics, as well as the supportive or non-supportive nature of the environment in understanding the interactions.

Researchers have examined parent-child interactions by means of direct, structured observations during feeding and other situations, and found that NOFTT infants demonstrated more difficult behaviors, were less vocal, exhibited negative affect, and had more gaze aversion than infants who were not failing to thrive (Steward, D. K., 2001; Lobo et al., 1992). Furthermore, parents of NOFTT infants were less able to determine their infants’ needs, showed a decreased ability to discriminate infant cues, and exhibited less social interactiveness with their infants when compared to parents of healthy infants (Steward, D. K.). These studies supported that interference with the reciprocal process of the parent-child relationship disturbs the opportunity to attain optimal growth and development. Since growth problems, such as NOFTT, in infancy place a child at significant risk for developmental delays as a toddler, it is important to recognize the interactional problems between parents and their infants so that interventions aimed at improving interactions can begin.

**Falls**

A fall is an unintentional slip, trip, or drop from an upright position resulting in the person landing on the ground or furniture. In older adults, a fall often leads to fear of falling that may contribute to restriction of daily activities or requests for assistance in performing these activities (Howland et al., 1998). The inactivity contributes to deconditioning and disability that place an older adult at an even greater risk for falls. Injury, disability, and death are serious consequences of falls, making this a critical issue for older adults.

Falls are multifactorial in nature and represent the interplay between personal and environmental factors whose pattern of interrelationships varies among individuals and settings. Often falls occur because of a mismatch between these factors. Although being female and over 65 years of age consistently have been found to be risk factors for falls across all settings (community, long-term care, and acute care), these are not sensitive enough for identifying those at greatest risk because all older adults would be considered at risk for a fall. Moreover, these demographic characteristics are not amenable to intervention and provide no direction for interventions to reduce the risk for falls. Although certain diseases and medications have been found to be risk factors, consistency in findings across studies and settings have not been found, and these factors may be of little use in clinical practice to identify those at greatest risk for a fall (Lord, Sherrington, & Menz, 2001) and provide little direction for intervention except for changes to pharmacologic treatments. Although fear of falling has been found to be a risk factor for falls (Harada et al., 1995), this fear may be attributable to poor balance, gait, and muscle strength (Kressig et al., 2001) that also have been related to falls and are more amenable to intervention than demographic characteristics.

Much of the early epidemiological and clinical research on falls focused on environmental factors, while more recent research
focuses on personal risk factors. Inconsistencies of findings related to environmental factors among studies and settings abound. Clinical and research interventions targeted to environmental factors were designed to educate older adults about how to eliminate these risks. These environmental interventions and education of older adults were marginally successful at best. In some studies, community-dwelling older adults often were reluctant to make the recommended environmental changes and were more interested in interventions to reduce the risks related to personal factors. In contrast, clinicians and architects used the clinical and research information to design health care facilities and have begun to examine the effects of environmental factors, such as carpeting, on personal factors (Dickinson, Shroyer, & Elias, 2002).

Balance, gait, and muscle strength emerged from more recent research as significant risk factors for falls. The Physiologic Profile Assessment (PPA) consists of physiologic factors associated with balance control (vision, muscle strength, postural sway, reaction time, and peripheral sensation) (Lord, Menz, & Tiedemann, 2003). Using the Internet, the results of the PPA can be compared to a normative sample. Many screening tools contain similar information and have strong sensitivity and specificity in predicting falls (Perell et al., 2001). Consensus regarding the assessment of risk and determination of risk profiles is needed before clinically useful screening tools appropriate for various settings are widely used.

In 1991, the American Geriatrics Society and the American Academy of Orthopedic Surgeons Panel on Falls Panel (2001) put forth an evidence-based tiered approach to screening. The initial screen includes the Get Up and Go test that had good specificity and sensitivity (Perell et al., 2001; Shumway-Cook, Brauer, & Woollacott, 2000) and assesses the older adult for instability or inability in getting up from a chair without using their arms, walking a known distance, and sitting down. If the Get Up and Go (Podsiadlo & Richardson, 1991) is abnormal, the panel recommends a comprehensive assessment that includes medical history, medications, evaluation of balance, gait, vision, and cardiovascular and neurological status. Other measures with good sensitivity and specificity were the Elderly Fall Screening Test (Cwikel, Fried, Biderman, & Galinsky, 1998), and the STRATIFY (Oliver, Britton, Seed, Martin, & Hopper, 1997).

Risk factors for falls are multifactorial, and interventions also must be multidimensional. Interventions must target the deficits of the older person that place them at risk for a fall and compensate for nonmodifiable factors. Consideration of the capabilities of the older adult and the setting are essential in selecting interventions. Comprehensive descriptions for interventions can be found in Falls in Older People: Risk Factors and Strategies for Prevention (Lord et al., 2001) and Falls in Older People: Prevention and Management (Tideiksaar, 2002).

The American Geriatric Society Panel on Falls Prevention (2001) recommended guidelines for interventions. Reducing medications, exercise, and treatment of disease were most effective in community-based interventions. Reducing environmental hazards in the home, comprehensive assessment of fall risk, and education were not effective. Exercise, aerobic and muscle-strengthening, was the most effective single intervention. The concurrent management of visual impairment and reduction of environmental hazards increased the effects above those attributed to exercise alone (Day et al., 2002). The panel found that staff education, reduction of medications, and comprehensive assessment significantly reduced falls in long-term care facilities. The panel found no significant multifactorial interventions for the hospital setting where shortened hospital stays preclude some interventions (e.g., exercise). Environmental interventions, medication management, and treatment of disease or injury may be the most effective in the hospital setting.

No matter the setting, the acceptability of the intervention to the older adult and their ability to use the intervention are significant factors in adherence. Strategies to increase acceptability and adherence, particularly for
exercise interventions, have achieved limited success. The most potent strategies are engaging older adults in the selection of relevant interventions and assisting them to remove barriers and to increase support for using the intervention.

BEVERLY L. ROBERTS

Family Care

Family care is defined in many ways, dependent on the study and approach and how it is applied in health care system policies or regulations affecting support to family members. The role of the family in providing care is considered a normative family role with the obligations and responsibilities that go with such roles. Family care as a normative role includes that of a person caring for a child or the usual role relationships with other members, such as a spouse. Family care however, is also care that goes beyond such a role and takes on the role of a health care provider as the family member assists the individual with the tasks, duties, and responsibilities required of one with a chronic illness, injury, or disability.

Research on family care includes the normal parenting for the growth and development of children, care of children with disabilities, care of children with chronic illness such as cancer or asthma, care of an ill spouse, care of an aging and frail parent, caring for brain damaged adults, caregiving for adults with dementia, and grandparents caring for children. The care role activities and demands on family members vary markedly depending on age, relationship, and patient problems.

The parental care of an infant or child is considered a normative patient role. Research in the normative areas examines mother-infant bonds or father-infant bonds and relationships, parenting, and the role of the parent in growth and development. Recent activities include the father more often, and examine the father-child bonds (Coleman & Garfield, 2004). Some work looks at the role of the single parent with infants and children, and follows the mother across time looking at parenting (Evans, M., 2004; McCreary & Dancy, 2004).

The role that is difficult and assumes the nonnormative role of the parent is caring for a child with low birth weight and infants and children with physical or developmental disabilities. There are also studies of parents with the provision of technological support. Decisions and normalization around children with disabilities and birth defects are also present in the literature. The effort of the patient then is to try to normalize the experience for the whole family (Deatrick, Knafl, & Murphy-Moore, 1999; Sullivan-Bolyai, Knafl, Sadler, & Gilliss, 2004; Sullivan-Bolyai, Sadler, Knafl, & Gilliss, 2003). Consideration of time away from school, social restrictions, fear of exacerbations, and uncertainty about treatment evolve. Child, parent caregiver, and family outcomes in general may be examined. Parental concerns are about time management, child status, finances, and family relations. Family hardness, family functioning, family stressors, and family need for knowledge to reduce uncertainty, are areas reviewed in family care research.

Formal professional caregivers must work in partnership with family members of a child with a chronic and long-term illness. Much of the research on family care of children with chronic disease is related to the child with asthma, cancer, or diabetes. Health care professionals support the family by providing thorough advice, helping them to cope, assessing perceptions, encouraging expression of feelings, and securing resources (Kurnat & Moore, 1999). The environment, child, family view of health, attitudes toward illness, everyday routines, and social network are important. The chronic illness must be normalized so that both the family and child can have a positive quality of life (Miles, M. S., 2003). Although a lot of the research is related to quality of life of the parent and child, coping, and adjustment, some recent models look at family strengths, assets, and resilience rather than negative dimensions of care. Care responsibilities of parents include managing
illness, coordinating resources, maintaining the family unit, and maintaining themselves (Sullivan-Bolyai et al., 2003).

Recent research includes studies on grandparents caring for grandchildren. Many of these studies are descriptive and identify the distress experienced by those who provide care. Grandparents often care for grandchildren with developmental disabilities, chronic illness, or HIV/AIDS. Others care for children from dysfunctional families where a parent is not responsible, abuses substances, abuses or neglects the children, and those whose parents are divorced. Many of the grandparent family caregivers are older and have chronic illnesses themselves, which puts them at risk for additional health problems. In addition, the multiple roles add to their stress and distress. Grandparents who live on fixed incomes may lack support and respite, as well as experience emotional and financial strains (Green, S., 2001; Fuller-Thompson & Minkler, 2001) from their care role.

For the spouse of the adult with chronic illness, literature is limited for the younger spouses, although there is some work in cancer, especially bone marrow transplants and hematological cancers (Langer, Abrams, & Syrjala, 2003). Most of the spouse literature focuses on the female spouse and relates to the older patient with chronic illness. Most of that research relates to dementia, stroke, and degenerative diseases such as multiple sclerosis and Parkinson’s disease, with cancer being a more recent focus (Palmer, S., & Glass, 2003; Bakas, Austin, Jessup, Williams, & Oberst, 2004). The definition of this care usually calls the person a family carer, and is defined as one who provides assistance with health-related tasks for someone who is frail or chronically ill. Recent work includes other family relationships, including men who care (Kramer, B., & Lambert, 1999; Kramer, B., & Thompson, 2002). The tasks of care provided by family members sort out those that are direct tasks, and those that are subjective or less direct, such as supervision for patient protection. A variety of conceptual models have been used to examine family care of the adult, but most have been built on the stress and coping literature. There is concern that families may benefit from skill building, which may be more beneficial than information and support (Farran, Loukissa, Perraud, & Pann, 2004).

Literature also includes increasing research on younger family members who care for the older parent or parent-in-law. Most research on family care examines the role of the adult daughter (Chumbler, Grimm, Cody, & Beck, 2003). Few studies exist that look at sons caring for parents (Kramer & Thompson, 2002). The mix of task and care activities and response to that care seem to differ by gender, relationship, and age of the caregiver. Care tasks provided by family members and concerns may center around competency to perform tasks (Farran et al., 2004; Schumacher, Stewart, Archbold, Dodd, & Dibble, 2000). Males may not be comfortable with cooking, cleaning, or community services, but females may find these activities normative. Models for the adult children caring for a parent are likewise built around stress and coping, although a few models look at role theory (Sherwood, P., et al., 2004). The problem with family care literature is that most of the outcomes for all ages to date have been coping, adjustment, and mental health issues such as burden or depression. Only recently has there been research to examine the health practices, health promotion, health status, and skill requirements of the adult family member providing care. Recent research has begun to examine the long-term effect on family members who provide care, and indeed, the mortality rate is higher than for the noncaregiver (Schultz & Beach, 1999). The distress that family members experience for parent care is determined by gender and age. Women more than men and younger persons more than older persons who are involved in family care, report more distress.

Methodologically, most of the early studies of family care are descriptive and cross-sectional, and many still are. Recent studies of families providing health care are beginning to include intervention studies. These studies often do not include a family frame-
work as a guide to the research, but are based on stress, coping, and/or role theory. At times, some family dimensions are added to the studies as the antecedent variable, but not a family focus in general.

Data is collected increasingly from both patients and family members who provide care, even if they are children. Often, however, function and family dynamics are not a part of family care data collection, but data is collected about individuals. Most do not examine the family as a unit. Tools to evaluate family processes after the major insult of these problems are inadequate and need further development. Ethnicity and socio-economic status are not adequately examined in the family context.

There are many untapped areas for research to help understand how the family as a unit contributes to or hinders family members’ health. More work is needed on the areas of family care so that nurses can provide the support to family members that they need to be able to continue their care. The family must be considered as a unit of care since it is essential to the outcomes of the care of individuals or illness—especially in chronic illness at a time of restricted health care resources.

Interventions are needed to relate psychological factors to facilitate coping, family and parent education about disease and treatment to reduce uncertainty, and assist the family member to mobilize resources for the unity of the family.

SUZANNE L. FEETHAM
BARBARA GIVEN

Family Caregiving to Frail Elders

Family caregiving to frail elders refers to the informal caretaking by immediate and extended family of older adults needing assistance due to physical or cognitive impairments. Family caregiving is an important concept for nurses because many older adults will receive some help with activities of daily living and/or in-home care for acute or chronic health problems, including end-of-life care. Such care is frequently provided informally by family members and supplemented by formal care arrangements. The family caregiver does not always live in the same home as the care recipient, and although there is no minimum amount of time that family must provide care to be considered family caregivers, many researchers use 5 hours of care per week as a criterion.

Women are more likely to assume the role of family caregiver to elders, in part due to their traditional caregiving roles in families. Balancing competing responsibilities as a caregiver, employee, spouse, parent, and family and community member is a challenge often faced by midlife women. At what point in one’s life caregiving occurs may influence the effects of caregiving (Moen, Robison, & Dempster-McClain, 1995). Some studies suggest that initiating caregiving is especially stressful because it requires many adaptations, but that continued caregiving may be viewed as less difficult as it becomes more routine. Family caregivers often report both burden and reward from the caregiving experience. Whether adult children experience more burden than do spouses is not conclusive. There appear to be ethnic differences in burden from caregiving, with minority caregivers likely to report less burden. Instrumental support from other family members has been associated with less burden.

Family caregiving affects the entire family, regardless of whether the caregiver and care recipient live in the same home. Caregiving requires an investment of resources (time, energy, money) that are diverted from other activities. In one study of caregivers of frail elders (Covinsky et al., 2001), 22% of caregivers either quit a job or reduce work hours. Minority care recipients and those with lower ADL function, dementia, or a history of stroke were more likely to have family who reduced or quit work; daughters and daughters-in-law of the elder were likely to quit working (Covinsky et al.). Minority caregivers were more likely to care for frail elders at home (Cagney & Agree, 1999).
Maintaining the health of family caregivers is a priority, and caregiver health has been the focus of considerable research. Caregivers are often older adults themselves (spouses, siblings, or friends of the care recipient), prone to muscle and back injuries from lifting and other activities, and may neglect their own health in the process of caregiving. Many studies examining the health of older adults have been cross-sectional, and thus evidence about the long-term consequences of caregiving is scanty. In general, caregivers who report greater stress and burden and less mastery tend to report worse health, more health problems, and more depressive symptoms. Most studies have used self-report rather than objective or direct measures. Few studies have followed caregivers after they cease caregiving, although the Canadian Study of Health and Aging Working Group (2002) found that caregivers to healthy elders reported fewer health problems than caregivers to impaired elders, but that death or institutionalization of the elder did not have a consistent impact on caregiver health. Understanding the consequences of caregiving is complicated by the need to disentangle the effects of caregiver aging from any effects of caregiving burden or activity.

In many situations, formal, paid support services (meal service, home health, respite care) supplement the family’s caregiving efforts. Such formal assistance often is associated with less caregiver depression and better self-assessed health, although one longitudinal study (Musil, Morris, Warner, & Saeid, 2003) found that an increase in formal support over 2 years was associated with worsening self-assessed but better muscular-skeletal health. Caregivers may seek outside support from formal services if they need to compensate for their own deficits, but lack of help may cause wear and tear from the physical burdens of caregiving. Current research is examining ethnic differences in the use of services, including formal care and respite services.

Little is known about how the support from the care recipient’s health care provider (nurse practitioner, physician) affects family caregiving, although provider support has been shown to influence the perceived rewards of caregiving (Musil et al., 2003). An emerging area of interest involves the types of provider interactions that are viewed as supportive by caregivers, or at what points in the caregiving trajectory various interactions are viewed as beneficial by family caregivers.

Family caregivers to frail elders participate in caregiving not only in-home, but across transitions to other facilities, including hospitals, nursing homes, long-term care, and hospice. Involvement in discharge planning is important for the caregiver and care recipient well-being; caregivers who were more involved in discharge planning for their elder care recipient reported better health and greater acceptance of their caregiving role 2 months post discharge (Bull, Hansen, & Gross, 2000). Recent trends include predicting when families will seek nursing home placement. Coordination of care between informal and formal caregivers with nurse and physician providers is advocated in the literature but often difficult to achieve in practice.

A number of recent studies have looked at interventions to support caregivers’ work, maintain or improve caregiver health, or increase caregiver knowledge of the care recipient’s disease processes. Intervention studies have examined the effects of support groups, telephone support, computer support, and RN and Advanced Practice Nurse interventions (Dellasega & Zerbe, 2002). In a meta-analysis of 26 intervention studies, Yin, Zhou, and Bashford (2002) found positive effects for group and individual interventions to reduce caregiver burden. Another line of intervention research focuses on interventions to assist caregivers in their daily care of impaired elders. Interventions focus on caregiver activities, such as toileting and feeding impaired elders; maintaining care recipient nutritional status, mobility, and skin integrity; dealing with confusion, verbal outbursts, wandering, and falls; and participation in adult day-care situations.

Increasingly, current research examines family caregiving from different cultural perspectives, including international compari-
sons of burden, stress, coping, and support. In addition, ethnographic methods illuminate similarities, differences, and the nuances of family caregiving within cultural groups. Such research is increasingly important. Other directions for future family caregiver research include the need for longitudinal perspectives and mixed-method designs incorporating qualitative and quantitative methods to better describe aspects of the family caregiving experience, including gender differences in caregiving. Additional work with interventions aimed at the caregiver and at the care recipient is needed.

CAROL M. MUSIL

Family Caregiving and the Seriously Mentally Ill

Approximately eleven million adults in the United States live with serious mental illness and about three million dependent children suffer from a severe emotional disturbance (Dean, 2003). The United States currently spends over $70 billion per year on mental health treatment. Effective care of the mentally ill and their families requires early community intervention using a variety of integrated approaches including mental health and social service teams. Effective mental health treatment must encompass sick individuals and their families and take into account the complex relationship between mental illness and unemployment, homelessness, drug addiction, and involvement in the criminal justice system.

The importance of alliance building between family caregivers, the mentally ill member and the health care team was described by Kempe (1994). Families are continuing to ask health professionals to communicate with them in a reciprocal way (Biegel, Robinson, & Kennedy, 2000). As mental health care continues to become more community-based, the family is required to assume more responsibility and care of their mentally ill member, yet families are not getting the direction and support that is needed (Levine, 1998). Family caregiving for the mentally ill involves the family steadfastly assisting the mentally ill family member with basic physical and emotional needs as well as maintaining a positive relationship and environment that nurtures a sense of self and belonging and allows the mentally ill person to strive towards educational and vocational goals. The roadblocks facing families attempting to care for their ill family member continue to be: (a) laws, policies, and regulations affecting care, (b) attitudes of health care providers in caregiving, and (c) consumer misinformation and stigma.

From the 1960s through the 1990s caregiving studies identified several negative issues such as burden and related stressors (Maurin & Boyd, 1990). Caregivers were identified as needing much social support. Since 1990, these burdensome issues continued to exist but many positive aspects also have been described. It has now been concluded that health care professionals must develop the theoretical flexibility to accommodate the diverse situations which family caregivers face in caring for their ill members. Encouraging family caregivers to listen to experiences of others in caregiving roles and then learn to think creatively about themselves and their experiences has been a strategy that is helpful (Doornbos, 2002).

Levine (1998) identified that families want information about mental illness and how to cope with the situation. It was also found that family caregivers value a positive relationship with health care providers, which includes respect and nonjudgmental approaches (Rose, K. E., 1998a). In addition, Biegel, Robinson, and Kennedy (2000) found that families also wanted dialogs within groups and individualized whole family support. Those studies reported that families continue to experience difficulties with the mental health system and financial issues.

Chronic mental illness can effect the family in many ways, including changes in familiar roles, changes in subsystems within the family, possible isolation of family members, increased need for problem-solving skills, and adjustments with adaptability to family role
changes. Caregivers experience more distress as the number of tasks they must complete increases and the ill member’s depression increases. The social support required is really a large affirming social network of support that includes professionals participating in the care of the mentally ill person (Margliano et al., 1998).

More research that focuses on family caregivers of the mentally ill is needed. Researchers need to focus on how to remove barriers that impede access to quality care. Long-standing barriers include: mistaken public policy, insufficient health insurance coverage, money, the attitudes and practices of health care providers, and the attitudes and preferences of health care consumers. One necessary research need is to determine ways to convince the political system of the need for parity in reimbursement for mental illness from insurance providers.

Doornbos (2002) summarized the many difficulties experienced by families as they provide care for their mentally ill members. She found that the issues that families and their mentally ill members must cope with include stress, powerlessness, physical health issues, financial problems, and the enormous burden borne by nonprofessionals attempting to provide care for the mentally ill. Finding a better way to meet the many needs described by family members with a mentally ill member is also an important contribution needed in nursing. Meeting these needs may best be accomplished through research and development of a health care model for all mental health professionals.

Alice Kempe

Family Health

No universal definition of family has been adopted by the legal and social systems, family scientists, or the clinical disciplines that work with or study families. How the family is defined determines the factors that will be examined to evaluate the health of individual family members and the family unit. In addition to the biological family, when examining health in the context of the family, the family can be defined as constituting the group of persons acting together to perform functions required for the survival, growth, safety, socialization, and health of family members. These functions include supporting health and caring for ill and disabled members. Research on health has focused primarily at the level of the individual and has demonstrated the interdependence between the health of the individual family members and the family (Feetham, 1999).

Factors influencing family health include (a) genetics; (b) physiological and psychological responses of individual family members; (c) cultural influences; and (d) the physical, social, economic, and political environments, including resources. Researchers have shown that health and risk factors cluster in families because members often have similar diets, activity patterns, and behaviors, such as smoking and alcohol abuse, as well as a common physical environment. Identification of healthy families has focused on family interaction patterns, family problem solving, and patterns of responses to changes in the family system. These definitions and concepts of family health provide a framework for determining measurable outcomes of family health while also accounting for the diversity in family structure (Feetham, 1999, 2000).

In 2003 we entered the genomic era, with findings from genomic research and advances in genetic technologies requiring a reframing of how we think of the continuum of health and illness, and even the concept of disease. The way in which diseases are categorized, and ultimately how they are treated and managed, will change. No longer named by their symptoms (such as asthma), diseases will be more specifically identified by knowing the genetic and environmental causes leading to more focused treatments (Guttmacher & Collins, 2002). Individuals and families will be faced with reframing their concept and experience with diagnosis, treatment, and prevention to include the term “genetically-linked” disorder, with the blurring of the boundary between health and illness (Fee-
Genetic information may result in the need to extend the concept of “illness time” phases to include knowledge of a risk state, or in some cases, a presymptomatic phase (Rolland, 1999; Street, E., & Soldan, 1998). The risk state refers to the time before a statistical risk is known or acknowledged or the point in time when symptoms occur. The risk state may require interventions for individuals and families to respond to the increased awareness of risk, new genetic risk information, or even the earliest occurrence of symptoms. Families may need to begin to deal with anticipatory loss, accept increased surveillance, adhere to changes in health behaviors, or accept interventions that may potentially delay the onset or progression of the disease.

Effective interventions with families incorporate an understanding of what health means to individual family members and to the family as a unit, and how the environment influences their health actions. The family has been described as the primary social agent in the promotion of health and well-being; therefore, our knowledge of the family and its relationship to the health of its individual members is central to research related to health promotion and to families responding to risk information and experiencing illness and disability.

Suzanne L. Feetham

Family Satisfaction With End-of-Life Care

The nurse is uniquely positioned to provide the kind of care most needed by patients and families at the end-of-life transition—interventions that not only promote health and healing, but also promote comfort and emotional support for patients and their families. Applying the nursing model, the desired outcome at end-of-life is a good death. Given the lack of research available about the needs of dying patients and their families, nurses are not adequately equipped to provide interdisciplinary leadership in establishing evidence-based practice guidelines for caring for patients and families at this critical transition. This review reports on the evidence that exists to guide practice and what knowledge gaps need to be addressed. Specifically, this review focuses on family perspectives regarding end-of-life care: how is the quality of patient care measured and evaluated by the family at end of life; how satisfied are decedents’ families with communication and support received at end of life; what are the needs of families and patients and how well are these needs addressed.

Teno and others (2004) evaluated the United States dying experience at home and in institutional settings. A sample of 3,275 was generated from death certificates in 22 states. A total of 1,578 actual telephone interviews resulted to provide national estimates of the dying experience for a target population of 1.97 million deaths in the year 2000. The setting was predominately patients dying in an institution (hospital or nursing facility) (67.1%) but also included patients who died at home (32.9%). Of the group who died at home, 12.5% received nursing services, 38.2% did not receive nursing services, and 49.3% received hospice services. The study concluded that one third of respondents cared for by a home health agency, nursing home, or hospital reported insufficient emotional support for the patient and/or one or more concerns with family emotional support, compared with about one fifth of those receiving home hospice services. Of all categories, nursing home residents were less likely to have been treated with respect at end of life. Of family members of patients who received hospice services, 70.7% rated care as “excellent” compared with less than 50% of family members of those dying in an institution or with home health services. The researchers noted that even within hospice care there is a need for improvement, as 1 in 4 respondents reported unmet needs in the management of dyspnea and in the emotional support provided.

Baker and others (2000) examined family satisfaction regarding patient comfort, communication, and decision making at end of
life. The participants were surrogate respondents (97% were family members) for 767 seriously ill hospitalized adults who died. The study design was a prospective cohort study with patients randomized to either usual care or to an intervention that included clinical nurse specialists to assist in symptom control and facilitation of communication and decision making. The intervention was drawn from the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments (SUPPORT), which evaluated interventions that increased attention to pain, provided objective estimates of patient prognosis, facilitated communication among medical staff, patients, and their surrogates, and increased patient or surrogate involvement in decision making. The patient settings were five teaching hospitals in urban areas distributed throughout the United States. The study examined family members’ ratings of patient comfort and communication/decision making in end-of-life care using telephone interviews conducted 4 to 10 weeks after the date of death. The study found that 84% of family members expressed no dissatisfaction with patient comfort, and 70% expressed no dissatisfaction with communication and decision making. Examination of data revealed that the hospital site was the only factor that was significantly related to both measures of satisfaction. The researchers suggested that because the structure of care and practice affected patient satisfaction, defined quality indicators could be used to improve satisfaction. Also, the study found that satisfaction with patient comfort decreased with increasing impact of the patient’s illness on family finances. The findings suggested that those with less financial resources might have received less comfort care. The SUPPORT interventions were significant primarily for those patients who died after their index hospitalization. Respondents for those that died after the index hospitalization and had not received the interventions were significantly less satisfied than those who had received the SUPPORT intervention. The study concluded that male family members were less satisfied, but greater satisfaction was seen when patients were in less pain (Baker et al., 2000).

Steinhauser and others (2000) gathered descriptions of the components of a good death from patients, families, and care providers through focus-group discussions and in-depth interviews. The sample consisted of 75 participants and included physicians, nurses, social workers, chaplains, hospice volunteers, patients, and recently bereaved families. Six broad components of a good death were identified: pain and symptom management, clear decision making, preparation for death, completion, contributing to others, and affirmation of the whole person. The study found that for patients and families, psychosocial and spiritual issues are as important as physiologic concerns. For all categories, professional role distinctions were more influential to attitudes than sex or ethnic differences. Physicians’ groups’ views differed the most from the other groups and offered the most biomedical approach. A weakness of this study was that researchers did not report specifics about other professional focus groups such as nurses. Also, as the researchers pointed out, although all socioeconomic, educational, and age groups were represented, most patients were recruited from a Veterans Affairs medical center and were mostly men, and as a result, these findings may not generalize to other groups.

This literature review revealed a paucity of research on the topic of family satisfaction and end-of-life care. It was heartening to find that in the study by Baker and others (2000), in many areas family and patient needs are being well met. However, satisfaction levels were not high across the board, and other research pointed to areas where changes in practice are needed. The research by Steinhauser and others (2000) begins to build a consensus of what constitutes a good death, but a more comprehensive random sample of patients and families (as opposed to health care professionals) is needed to truly define this concept. The results from such a study could be incorporated into a subsequent study that evaluates how often a good death is actually experienced by the dying and their
families. After evaluating the dying experience against a well-defined universal benchmark of what constitutes a good death, it would make sense to apply various independent variables, such as those that have been touched on in the study by Baker and others. The independent variables might include testing the effect of SUPPORT interventions, examining the differences between structure of care provided by same-type institutions and then versus other types, and then determining precisely which elements of hospice care make it so much more effective in meeting the needs of dying patients and their families. Another variable to be examined is how professionals in various disciplines are educated (or not) to address the needs of the terminally ill. This variable was touched upon in the study by Steinhauser and others, but much more could be done to better understand the impact of this component.

Caring for the terminally ill is an essential aspect of professional nursing, and this review indicates that much research still needs to be done to understand and appropriately care for the dying and their families.

Karen Corcoran

Family Theory and Research

Family refers to any group whose members are related to one another through marriage, birth, or adoption. E. Burgess’s (1926) description of a family as a unit of interacting personalities is still relevant to how families are viewed today. Because of the variety of family forms, theorists and researchers should provide their own definitions of family.

Nursing has long been interested in families as the context for individual members and has focused more recently on the family as a whole. Families have been a component of studies of psychiatric illness, caregiving, violence, adaptation to chronic illness in both children and adults, and cardiac conditions and other acute illnesses. Family transitions, including grieving, transition to parenthood for adolescent mothers and married couples, and adaptation to divorce, remarriage, and stepfamilies, also have been studied. Nurses have published reports in major family journals as well as in nursing research and specialty journals and the new Journal of Family Nursing.

Scholars from various disciplines have studied families, using diverse approaches. Theories presented here (except for stress theory) are based on descriptions provided by Klein and White (1996).

The central focus in exchange theory is on the individual and what motivates his or her actions. Individuals are viewed as rational and self-interested, seeking to maximize rewards and avoid costs. Individuals compare their own situation to others in the same circumstances and to others in different circumstances. In exchange theory the family is viewed as a collection of individuals. The family group is considered to be a source of rewards and costs for individual members. Exchange theory could be used by nurse researchers to investigate the processes of family negotiation and problem solving.

Like exchange theory, conflict theory assumes that individuals are motivated by self-interest. Individuals compete for scarce resources, which include knowledge, skills, techniques, and materials. Resources provide a potential base for the exercise of power. Conflict within the family is seen as the result of inequity of resources among individuals. Because conflict is both endemic and inevitable, a primary focus in the study of families is how they manage conflict.

Concepts of symbolic interactionism include interaction patterns, meanings and definitions, symbols, sense of self, and role expectations. Socialization is the process by which individuals acquire the symbols, beliefs, and attitudes of their culture. Individuals construct a sense of self and meanings for events and things through interactions with other people and with the environment. Role involves each person’s adjusting behavior to what he or she thinks the other person is going to do. Children and adults have particularly significant interactions in the context
of the family. Likewise, roles that develop within the family are a crucial component of the individual's self-image.

The family as a whole is the focus of family systems theory. All parts of the system are interconnected, and therefore, changes in one part of the system influence all other parts of the system. Subsystems are smaller units of the system, such as individuals and dyads. Boundaries define who participates in the family and who participates in each subsystem. Boundaries exist between family members, between subsystems, and between the family system and the external environment.

The degree of permeability of boundaries (open or closed) refers to the extent of impediments to the flow of information and energy. A homeostatic system dynamically maintains equilibrium by feedback and control.

The central concept in the ecological approach is adaptation. The child always develops in the context of family-type relationships, and that development is the outcome of the interaction of the person's genetic environment with the immediate family and eventually with components of the environment. The individual is embedded in four nested systems. The microsystem is the immediate setting in which the person fulfills his or her roles, such as family, school, or place of employment. The mesosystem refers to the interrelations between two or more settings in which the developing person actively participates. The exosystem consists of external settings that do not include the person as an active participant but instead include systems (such as the legal system) that affect the person's immediate settings. Macrosystem refers to culture. Bishop and Ingersoll (1989) used the ecological framework in their research on the effects of marital conflict and family structure on self-concepts of children.

Family development theory focuses on systematic changes experienced by families as they move through stages of their life course. Family stage is an interval of time in which the structure and interactions of role relationships in the family are noticeably distinct from other periods of time. Shifts from one family stage to another are called transitions. Family development theory emphasizes the dimensions of time and change. Using family development theory, Mercer, Ferketich, DeJoseph, May, and Sollid (1988) investigated the effect of stress on family functioning during pregnancy.

The double ABCX model is an extension of R. Hill's (1958) original ABCX family stress model, in which A refers to the stressor event and related hardships, B refers to resources, and C to perception of A (McCubbin & Patterson, 1983). The crisis, X (the amount of disruptiveness or disorganization), emerges from the interaction of the event, resources, and perception of the event. The family's accumulation of life events and added stressors over time (Aa, pileup of demands) influences family adaptation both directly and indirectly through Bb (adaptive resources) and Cc, which is the perception of X, Aa, and Bb. J. Austin's (1996) study of family adaptation to childhood epilepsy is based on a modification of the double ABCX model.

Research on families typically is an effort to test theoretical propositions or to develop theory. Although family research reflects different theoretical orientations, a common concern is the most appropriate unit of analysis. Is the concept of interest a property of the individual, dyad, or the family as a whole? For example, can families as a whole or only individual members perceive? Another recurring issue in family research is how to construct family variables if discrepant reports are provided by different members of the same family. As family scholars address these problems, they can better explain the complexities of family life and ultimately provide guidance for intervention.

LINDA C. HABER

Fatigue

Fatigue is a universal symptom associated with most acute and chronic illnesses. It also is a common complaint among otherwise healthy persons, and often is cited as one of
the most prevalent presenting symptoms in primary care practices. Defining fatigue, however, has challenged scientists for years. No clear biological marker of fatigue has been identified and fatigue remains a perplexing symptom for all health care providers.

Not only was fatigue named one of the top four symptoms for study by an expert panel on symptom management convened by the National Institute of Nursing Research (NINR) in the early 1990s, but recently fatigue has been singled out as among the symptoms or health outcomes needing attention for standardized measurement in the National Institutes of Health (NIH) Roadmap for Research initiatives recently released. Because nursing is centrally interested in symptoms and symptom management, fatigue is of major concern for nurse researchers and clinicians alike.

The North American Nursing Diagnosis Association (NANDA) defines fatigue as: “An overwhelming sustained sense of exhaustion and decreased capacity for physical and mental work at usual level” (NANDA, 2003, p. 74). Although a number of nurse researchers have studied fatigue and offered various proposals for categorizing fatigue, most accept the NANDA definition of fatigue. An alternative view of fatigue as: The awareness of a decreased capacity for physical and/or mental activity due to an imbalance in the availability, utilization, and/or restoration of resources needed to perform an activity (Aaronson, L. S., et al., 1999) also has been proposed. This definition is not inconsistent with the NANDA definition; however, it adds a generic understanding of potential causes of fatigue that may differ in different situations, in order to facilitate studying the mechanisms of fatigue in different clinical conditions. This addition also allows for a clearer conception of fatigue as a biobehavioral phenomenon.

With increased recognition of the importance of studying symptoms within nursing, more work on fatigue has emerged. Both investigators and study participants have made distinctions between acute and chronic fatigue. In one qualitative study, participants distinguished acute fatigue from chronic fatigue in terms of origin (specific single event vs. long-term ongoing condition), onset (quick vs. slow), duration (brief vs. continuous), recovery (quick vs. slow) and control (yes over acute, no over chronic) (Aaronson, Pallikkathayil, & Crighton, 2003). These distinctions are similar to those put forth by Piper (1989), who identified acute fatigue as protective, linked to a single cause, of short duration with a rapid onset, perceived as normal, generally occurring in basically healthy persons with minimal impact on the person, and usually relieved by rest; whereas chronic fatigue is identified as being perceived as abnormal, having no known function or purpose, occurring in clinical populations, having many causes, not particularly related to exertion, persisting over time, having an insidious onset, not usually relieved by rest, and having a major impact on the person (see also Potempa, 1993, for a review of chronic fatigue).

In the research and clinical literature, fatigue related to childbearing (see Milligan & Pugh, 1994, for a review) and fatigue related to cancer (see Irvine, Vincent, Bubela, Thompson, & Graydon, 1991; Smets, Garssen, Schuster-Uitterhoeve, & de Haes, 1993; Winningham et al., 1994; and Nail, 2002, for reviews) have received the most attention. Even these areas, however, remain largely understudied and poorly understood. While fatigue has been studied in numerous chronic illnesses, such as AIDS, multiple sclerosis, and rheumatoid arthritis, cancer-related fatigue is somewhat unique in that it is often fatigue associated with the treatment for cancer (both radiation and chemotherapy) that is most troublesome in terms of distress to the individual. In fact, fatigue associated with cancer treatment has been cited as a major reason for prematurely discontinuing treatment.

Fatigue also has been consistently associated with fever and infectious processes, and one of the more puzzling manifestations of fatigue is what is currently called Chronic Fatigue Syndrome (CFS). CFS is a diagnosis
used for cases of severe and persistent fatigue for which no specific cause has been identified (see Fukuda et al., 1994, for the current full case definition of CFS and Reeves et al., 2003, for recommended revisions to address the ambiguities in the current case definition). Under varying names (e.g., neurasthenia, myalgic encephalomyelitis, postinfectious or postviral syndrome, and chronic fatigue immune disorder syndrome, CFIDS), a syndrome of unexplained, chronic, persistent fatigue has been documented in the literature since the late 19th century. Preliminary evidence from controlled studies and extensive clinical descriptions point to both a hypothalamic-pituitary-adrenal (HPA) disorder (Demitrack et al., 1991) and an immune system disregulation (Bearn & Wesseley, 1994) as likely central mechanisms operating in CFS.

Difficulty studying, understanding, and consequently, treating fatigue is largely due to its ubiquitous nature and the unknown, but likely multiple, causes of fatigue. Untangling the relationship between fatigue and depression, in particular, further confounds investigations of fatigue. While fatigue is an identified symptom of depression, long-standing chronic fatigue, unrelated to an existing affective disorder, actually may precipitate depression. Evidence that the HPA axis is implicated in both CFS and depression, and that a different pattern of neuroendocrine disturbance in CFS from that seen in depression has been identified in at least one study (Ray, 1991), is encouraging for establishing an important distinction between fatigue that is a symptomatic expression of depression and fatigue due to other causes.

A lack of consistent, valid, and reliable measures of fatigue also contributes to problems studying and understanding fatigue. Early work focused on fatigue in the workplace and was conducted by industrial psychologists, hygienists, and the military. These measures focused on healthy individuals and fatigue experienced at the time of measurement. More recent concern about the debilitating and distressing health effects of fatigue in clinical populations has led to the development of other measures targeting fatigue in ill persons.

There are now a plethora of generic measures of fatigue, as well as a growing list of measures of fatigue in specific illnesses (e.g., cancer, AIDS). However, because there is no known biochemical test or marker for fatigue, and because fatigue is first and foremost a subjective symptom, these measures of fatigue generally rely on self-reports. This also has led to several studies that directly compare measures of fatigue within single samples (e.g., Hwang, Chang, & Kasimis, 2003; Meek et al., 2000).

A major problem with so many different measures of fatigue is that each taps into a somewhat different aspect of fatigue and, consequently, it is not clear whether they are all measuring the same thing. Some focus on the emotional and cognitive expression of fatigue; others include the physical expression of fatigue. Some attempt to quantify the amount of fatigue; others include attention to how fatigue interferes with activities of daily living. When different measures of fatigue are used in different studies, it is difficult to know if discrepant findings are due to real substantive differences in fatigue, or simply to the differences in the measures. This dilemma, in part, is why the NIH Roadmap for Research initiative aimed at patient-reported outcomes is concerned with identifying and standardizing self-report measures, including fatigue. Identifying a set of standardized measures of fatigue with strong psychometric properties that clearly address the different aspects of fatigue and its expression will go far in aiding future research on this elusive symptom.

There may well be many causes of fatigue and each may ultimately be traced to a specific disruption in the HPA axis, in the immune system, or in both. If so, then continued investigations into CFS, in particular, may lead to a better understanding of fatigue in other, more clearly diagnosed clinical problems. Until such work is done that also suggests specific treatments for fatigue, nursing intervention studies that target ameliorating fatigue in different clinical populations must
continue. Although rest generally alleviates acute fatigue, currently there are no known methods to eliminate the fatigue that plagues persons with various chronic illnesses or those whose fatigue is secondary to the treatments for their chronic illness. With the use of standardized measures of fatigue, this is a fertile area for nursing research.

LAUREN S. AARONSON

Feminist Research Methodology

Feminist research methodology refers to a perspective that espouses research on women, by women, and for women, with the use of rules for gathering evidence whereby feminist principles are applied to research. Feminist research methodology does not seek merely to be non sexist, but to take person’s lived experience as the methodological starting point for all knowledge-development efforts bearing on girls and women. This means refusing to rely solely on the loosely structured beliefs that pass for “givens” or “common sense” truths about the phenomenon under study.

By refusing to assume beforehand that any beliefs about women’s experiences are necessarily true, the expectation is that the researcher is better prepared to see clearly, to be critical, and to complete a systematic investigation of their diseases. In women’s health research it is difficult to rely on data from earlier studies of the menstrual cycle, exercise, or child rearing because of the many recent changes in the social context. For example, the notion that the “empty nest” is associated with depression in midlife women is a conceptualization that was embedded in a world where the majority of women did not work outside the family.

In the past 3 decades, women’s health research as a subset of women’s studies has become distinct and with it an emphasis both on conducting non sexist research (e.g., eschewing traditional biases) and on asserting a new sensibility that positively values women’s points of view and a holistic approach to health.

There has been much to critique in traditional research methods. Methods have not distinguished sex differences from gender-related differences (e.g., differences due to lack of opportunity rather than genetic ability) and have overemphasized gender differences when they account for relatively little variance. There has been a systematic preference for the so-called objective perspective of the (usually male) researcher over that of the female subject. The actor-observer effect, disclosed in tests of attribution theory, noted that actors make more use of situational attributions than do observers, so it is not surprising that male researchers have described some single mothers as “overprotective” when those mothers would have emphasized the demands placed on them by an absent father. Because women’s behavior has traditionally been explained in terms of male-as-norm theoretical frameworks, female behavior has been pejoratively labeled, describing as dependent the woman whose husband is the breadwinner and not labeling in that way the man whose wife bakes the bread, cleans, and cares for their children. Indeed, research on women has been defined largely in terms of childbearing and child-rearing.

Sometimes sample selection has been biased by using women employed in low-level positions and men employed in high-status professions to represent employed women and men. The possibility that the gender of the experimenter and choice of setting may have differential effects on women and men has been ignored; for example, young male interviewers in a “macho” cardiac rehabilitation setting may not be sensitive to how alien older women feel in such an environment. Inappropriate instruments have been used to evaluate women’s behavior, for example, the Masculinity-Femininity (Mf) scale of the Minnesota Multiphasic Personality Inventory to operationalize femininity in women when the validity items for establishing femininity originally involved a criterion group of gay men. Because “main” effects have been sought over “interaction” effects, women
have been excluded from research when they acted in unexpected ways.

Feminist research methodology has encouraged some new positive directions. Women have been encouraged to develop research careers. Federal guidelines now require women to be included as subjects in all studies related to their experience, and men are not to be excluded as subjects when the focus is on the traditional concerns of females. Context-stripping methods have been called into question because they ignore the extent to which social integration is associated with lower rates of disease and quality of life; grounded-theory methods have been encouraged because they permit the individual to discuss fully the lived experience. The emphasis is increasingly on doing research with women rather than on women.

Because one of its basic tenets is the person-environment fit, nursing has long been concerned about the importance of context in understanding health behavior. Nurses were among the first to question a preference for the so-called objective view of the researcher over the subjective view of the patient and to emphasize the lived experience. They took the lead in menstrual cycle research, which underscored the extent to which there is more to midlife women’s health than menopause, and in the use of the diary/health journal as a way to analyze the complexity of women’s reality. The establishment of the National Center for Nursing Research in 1986, along with the concurrent growth of doctoral nursing programs, meant that there were more women scientists to approach seriously women’s health and caregiving (rather than cure-finding) research. Nursing also has extended the notion of a feminist research methodology to include the development of a feminist pedagogy in teaching.

Although nonsexist research methods have gained ground when judged in terms of the most egregious biases, and the concerns of women are no longer automatically given short shrift, the prevailing scientific model still reifies an empiricist, positivist, objective paradigm. Feminist researchers have challenged the very nature of science and how we search for knowledge, but reductionism remains dominant in the sciences. It remains true that context-stripping methods are easier to implement, particularly for the beginning researcher who does not have the skills to handle multifactorial designs.

Matters are complicated by the fact that some qualitative researchers discuss their approach with more enthusiasm for their methods than specificity about why their methods are appropriate to explore a particular phenomenon. Even feminists have tended to treat women as a monolithic group, thus ignoring the special concerns of minority women, who are even more affected by contextual matters (e.g., poverty, violence, and racism) than their White sisters. There remains a significant discrepancy between the methods espoused by feminist researchers and those actually utilized. Nevertheless, the future will increasingly demand that health researchers use biopsychosocial models to frame their programs of study and develop new ways of analyzing human experience within interlocking contexts.

ANGELA BARRON McBRIDE
SARA CAMPBELL

Fetal Monitoring

Fetal assessment is part of the process of providing prenatal care. It involves early identification of real or potential problems and enables the achievement of the best possible obstetric outcomes. Fetal assessment involves low-tech and high-tech modalities such as fetal movement counting (kick counts), intermittent auscultation (IA), electronic fetal monitoring (EFM), nonstress tests (NST), vibroacoustic stimulation (VAS), auscultated acceleration (AAT), contraction stress tests (CST), amniotic fluid index (AFI), biophysical profiles (BPP), and Doppler velocimetry. The basis for all of these testing modalities is evaluation of certain biophysical parameters related to the developmental and health-related patterns of fetal behavior in utero. Adequate uteroplacental function is necessary for
these patterns of healthy behavior. Uteroplacental insufficiency (UPI) has been shown to be the cause of at least two thirds of antepartum fetal deaths (Gegor & Paine, 1992).

Electronic fetal monitoring is the basic intervention used in fetal assessment. Electronic fetal monitoring as an electronic data-gathering and data-processing device was developed during the 1960s. By the end of the 1970s almost all major obstetrical units had at least one monitor, and 70% of all women in labor in the United States were monitored (Bassett, K., 1996). K. R. Simpson (2000) reported that the use of EFM increased from 22.5% of women in labor in 1975 to 84.0% by 1998. In addition to its use in monitoring fetal status during labor, modifications of EFM have been developed for antepartum fetal assessment to determine optimal fetal development and diagnose conditions of actual or potential fetal compromise (e.g., NST, CST, VAS, and BPP).

Controversies still continue over the appropriate place of EFM in obstetric care. It was introduced into clinical practice on the basis of animal studies and became widely used, with no controlled assessment of its effectiveness in improving the outcome of delivery (Smith, M. A., Ruffin, & Green, 1993). It was supposed to provide more accurate fetal assessment with the accompanying prompt identification of fetal compromise. Early retrospective studies suggested that EFM was associated with fewer infants born with low Apgar scores, lower neonatal mortality rates, and better neurological outcomes (Smith et al.).

Schmidt and McCartney (2000) presented a thorough historical review and discussion of the development of fetal heart rate assessment. They found that expectations of the benefits of EFM exceeded and preceded research on outcomes, efficacy and safety. As knowledge accumulated through research and practice, the theories of correlation of causation and intrapartal events has changed. What were once considered to be significant intrapartal events cannot now be linked as conclusively to brain damage in neonates. Current research and improvements continue to report benefits of EFM: a decrease in neonatal seizures and decreased operative intervention for fetal distress, with improved analysis.

The major problem is still the risk of misinterpretation of the EFM tracing. Schmidt and McCartney (2000) included study results that, with a reassuring pattern, EFM can be a sensitive tool for identifying the well-oxygenated fetus. But it is not a specific tool for identifying the compromised fetus when a nonreassuring pattern is seen. Current concerns are focused on the best ways to prevent or reduce inappropriate use of EFM and develop the best ways to assess and monitor fetal development and safety in labor.

McCartney (2000) discussed the proposed benefits of automated EFM assessment (computer analysis): it is objective, standardized, and reproducible. She discusses the use of artificial intelligence (AI) and how it may prove to be of great value along with smart monitors and electronic databases in improving interpretation of EFM. M. L. Porter (2000) reported that the use of fetal pulse oximetry was approved by the FDA for clinical use in May, 2000 to provide more information about fetal oxygen status, especially in cases of nonreassuring fetal heart rate patterns.

The American College of Obstetricians and Gynecologists (ACOG) and the Association of Women’s Health, Obstetrical, and Neonatal Nurses (AWHONN) have developed standards and guidelines for practice concerning fetal assessment and the use of EFM and other modalities of fetal heart rate assessment. As cited in Schmidt and McCartney (2000), the ACOG Technical Bulletin No. 207 entitled Fetal heart rate patterns: Monitoring, interpretation, and management states that intermittent auscultation is a safe technique for monitoring low-risk births. AWHONN issued Basic, High Risk and Critical Care Intrapartum Nursing: Clinical Competencies and Education Guide in 1999 and the 2000 Position Statement entitled The use of fetal monitoring in support of laboring women. These standards of practice determine the accepted conduct of antepartal and intrapartal care and provide the core of safe practice. It is the responsibility of all nursing
and medical health care providers to be proficient in the use and interpretation of EFM and other intervention modalities employed in perinatal health care delivery. Other recommendations include using EFM as a diagnostic rather than a screening tool and not as a substitute for supportive health care personnel. Additionally, specific indications, such as oxytocin induction or augmentation of labor, an abnormal fetal heart rate by auscultation, twin gestation, hypertension or pre-eclampsia, dysfunctional labor, meconium staining, vaginal breech delivery, diabetes, or prematurity, as noted by Smith and others (1993), are still applicable.

Haggerty (1999) presented an extensive overview of the reliability, validity, and efficacy of EFM. Her work looks at both sides of the controversy, and includes the recommendations of ACOG, the United States Preventive Services Task Force (1996), and AWHONN that EFM and IA both have a place in fetal monitoring. Feinstein (2000) also researched the efficacy of IA, especially with low-risk pregnant women. Miltenr (2002) concluded that integrating supportive care provided by labor nurses with other direct and indirect care interventions (such as monitoring modalities) may offer the best model for providing high-quality intrapartum nursing care.

Further prospective studies should be conducted to try to determine the optimal balance of intermittent or continuous EFM and auscultation and the other modalities of fetal assessment and pregnancy management. Rigorous study protocols and close attention to the principles of scientific inquiry are needed so that study results will be reliable and valid. The major concerns of perinatal care should be optimal and cost-effective outcomes for mother and infant, without concern for protection of the caregiver from litigious actions.

SUSAN M. MIOVECH

Fever/Febrile Response

Fever is an abnormally high body temperature that occurs as part of a host response to pyrogens (fever producers). An alternate term for fever is pyrexia, with hyperpyrexia referring to high fever. It is misleading to define fever simply in terms of temperature elevation, however, because it emphasizes only the thermal manifestations of the nonspecific systemic host-defense called the acute phase response (APR). APR is triggered by endogenous release of cytokines, including interleukin-1 (IL-1), IL-6, and tumor necrosis factor (TNF), that cause a cascade of biochemical events, autonomic reactions, and immune responses including heat generation. Some promote immunostimulant properties against infectious disease and tumors.

Pyrogens readjust hypothalamic regulatory centers to a higher set-point range, so that body temperature is maintained at higher levels. In true fever, other cytokines, hormones, and endogenously produced biochemicals act as cryogens with antipyretic properties that limit temperature elevation in fever. Controlled temperature elevation and intact thermoregulatory function differentiate fever from hyperthermia, a potentially lethal condition in which unregulated thermoregulatory function can produce neurologically damaging high temperatures. Fever occurs in three phases, reflecting rise and fall of circulating pyrogens. Initially, the chill phase occurs when thermostatic mechanisms are activated to raise body temperature to the newly elevated set-point range. Vasoconstriction decreases skin perfusion, conserving heat but making skin feel cold. Shivering generates heat and is stimulated by sensory inputs that detect discrepancies between existing temperatures and the new set point. The plateau phase follows when body temperature rises to the new set point and warming responses cease. Finally, falling pyrogen levels lead to the defervescence phase, with diaphoresis and vasodilation.

Nurses have managed fever throughout history, yet the scientific evidence supporting care decisions is relatively recent. The lag between basic research findings and clinical application is evident in the reluctance of many nurses to change methods of care that have been used for the past century. Early traditions of cooling febrile patients were empiri-
cally based on the limited state of scientific knowledge and the erroneous fear that elevated body temperature was the cause, rather than the result, of febrile illness. Intervention was therefore geared toward lowering body temperature. Current knowledge confirms that fever is the host response to illness or invasion. Cooling the body is counterproductive, distressful to patients, and may cause compensatory overwarming. Evidence of fever’s host benefits led investigators to focus on methods to reduce distressful febrile symptoms rather than reducing temperature. Fever shivering is among the most distressful and energy-consuming symptoms of fever, particularly in immunosuppressed patients with opportunistic infections or those receiving antigenic drugs or blood products. Vigorous shivering is sometimes described by patients as “bone shaking.” Nonpharmacologic nursing interventions are based primarily on thermoregulatory dynamics to: (a) insulate thermosensitive areas of skin from cooling to reduce shivering, (b) facilitate heat loss from less thermosensitive regions without chilling, and (c) restore fluid volume and improve capillary blood flow to skin. Fear of neural damage due to protein denaturation during high fevers is justified at temperatures over 42°C. However, true fevers are usually self-limiting and remain well below this level. Body temperatures of about 39°C may have added immunostimulant and antimicrobial effects. These features make comfort the primary reason for treating low-grade fever with antipyretic drugs. Higher set-point levels raise sensitivity to heat loss, causing even mild cooling to stimulate shivering. Aggressive cooling with conductive cooling blankets and ice packs evokes vigorous shivering, raising energy expenditure 3 to 5 times resting values. As the consistent clinical observer of patient body temperatures, nurses find that issues of measurement, febrile patterns, physiological correlates, and sensory responses are of significance to practice and research (see Thermal Balance).

Febrile symptoms are nonspecific responses to both infectious and host defense activities so that many symptoms and interventions are generalizable. Contrasted with studies of fever management in other disciplines that center primarily on pharmacologic control of underlying infection, nursing research focuses on symptom management of fever responses regardless of etiology. Nurse researchers began studying interventions in the early 1970s to cool the body during fever without causing shivering or temperature “drift.” By the late 1980s, concern grew about metabolic and cardiorespiratory effects of fever on vulnerable patients with cancer or HIV infection (Holtzclaw, 1998). The “set point” theory of temperature regulation was central to these intervention studies, but as discoveries of the 1990s identified and clarified mechanisms of endogenous pyrogens, cytokines and other biological messengers offered new measurable biomarkers of fever as a host response. Nurse scientists contributed significant scientific information about the febrile response using human and animal models (D. McCarthy, Murray, Galagan, Gern, & Hutson, 1998; Richmond, 2002; Rowsey & Gordon, 2000).

Responsible nursing research on fever draws on principles from physiology, physics, biochemistry, and psychoneuroimmunology. It is often interdisciplinary and diverse in nature, varying from laboratory studies of humans and animals to clinical studies in hospitals and homes. Circadian variations in temperature are well-documented (Bailey & Heitkemper, 2001), but there are few recent studies that confirm that daily temperature screening in hospitals adequately detects fever in persons with abnormal cytokine expression, such as those with HIV/AIDS. A study of febrile-symptom management in patients with cancer tested interventions to suppress drug-induced febrile shivering (Holtzclaw, 1990) showed that insulating thermosensitive skin regions during the chill phase of fever not only reduced shivering (see Shivering) but improved comfort. This preliminary work provided the basis for a comprehensive febrile-symptoms management protocol, tested in hospitalized and home-care HIV-infected persons with febrile illness (Holtzclaw, 1998). In a controlled trial, the
intervention of insulative coverings to suppress shivering was shown to be effective. Body water loss and dehydration were monitored by body weight, serum osmolality, and urine specific gravity in hospitalized patients, while a fever diary and home visits reported changes in patients at home. No patients with insulative wraps shivered, while controls experienced both shivering and higher peak temperatures. Systematic oral fluid replacement was not effective in replacing loss despite metabolic, cardiorespiratory, and fever-related fluid expenditures, because fever suppressed thirst. Findings documented the negative effects of fever on hydration and febrile shivering on cardiorespiratory effort. Higher fatigue levels, lower thermal comfort, higher rate pressure product (RPP) and respiratory rate (RR) were experienced by those in the control group who shivered. A growing awareness that cooling measures exert distressful and sometimes harmful effects has stimulated inquiry surrounding procedures commonly used to “cool” patients. The practice of sponge bathing with tepid water to cool down febrile (38.9°C) children was studied in a group of 20 children, ages 5 to 68 months, seen in an emergency room and randomly assigned to acetaminophen alone or acetaminophen with sponge bathing (Sharber, 1997). Although the sponge-bathed children cooled faster during the 1st hour, rapid cooling evoked higher distress and no significant temperature difference between groups over the 2-hour study period. There is evidence that a gradual, less drastic reduction in body temperature evokes fewer adverse responses during aggressive fever treatment with cooling blankets. Warmer settings effectively lower body temperature as well as cooler levels, without inducing shivering (Caruso, Hadley, Shukla, Frame, & Khoury, 1992). Two studies demonstrate that in comparisons of sponge baths, hypothermia cooling blankets, and acetaminophen (Morgan, S., 1990) and of cooling blankets vs. acetaminophen (Henker et al., 2001), no temperature-lowering advantage was seen in the physical cooling treatment, which required more nursing time, caused shivering, and was distressful.

Today’s nurse scientist is prepared to investigate many of the questions that remain unanswered in fever care. As investigators acquire skills and resources for these biological measurements, they can be used to quantity and qualify the effects of fever and results of intervention. Research is needed to demonstrate effects of elevated body temperature, cooling interventions, and measures to support natural temperature-stabilizing mechanisms. Fever may provide study variables, with body temperature, cytokines, and biochemical correlates being the outcome of interest. The febrile episode itself may be the context of other questions for study. Psycho-neuroimmunological factors surrounding sleep, irritability, and tolerance of febrile symptoms remain untapped topics. Likewise, the metabolic toll of fever on nutritional variables, effects of intravenous fluid on endogenous antipyresis, and measures of energy expenditure are important, but relatively untouched, areas of research for nursing.

Barbara J. Holtzclaw

Fitzpatrick’s Rhythm Model

Fitzpatrick (1989) presented a rhythm model for the field of inquiry for nursing. Person, environment, health, and nursing are defined and related to the model. All of these elements have been linked to the idea that meaning is essential to life. Meaning is seen as the most crucial piece of the human experience and necessary to enhance and maintain life. Fitzpatrick incorporated Rogers’ (1983) postulated correlates of human development as the basis to differentiate, organize, and order life’s reality.

Fitzpatrick (1989) recognized the importance of information systems as part of the field of inquiry within her rhythm model for nursing. By asserting that nursing knowledge is fundamentally inseparable from the strategies and structures that represent it and that nursing informatics comprises a new focus to
manage the technologies involved in nursing, Fitzpatrick suggested that information systems be linked to nursing knowledge development.

Rogers’s (1983) correlates of shorter, higher frequency waves that manifest shorter rhythms and approach a seemingly continuous pattern serve as Fitzpatrick’s (1989) foci for hypothesizing the existence of rhythmic patterns. Rogers’ position that the human life span approximates transformation with human development aimed toward transcendence has been incorporated within Fitzpatrick’s descriptions of life perspective. The developmental correlate whereby time seems timeless represents a beginning of Fitzpatrick’s theorizing regarding temporal patterns. Motion patterns have been developed from Rogers’ proposal of motion seeming to be continuous with development. Consciousness patterns are aligned with Rogers’ idea that one progresses from sleep to wakefulness and from there to a pattern that is beyond waking. The correlates of “visibility” becoming more ethereal in nature and “heaviness” approaching a more weightless phase serve as the basis for Fitzpatrick’s perceptual patterns.

Fitzpatrick’s (1989) definitions of person and environment are from her interpretations of Rogers’ (1983) developmental correlates and explanations of person and environment. Envisioned as patterns within a pattern, or rhythms within a life rhythm, Fitzpatrick’s rhythm patterns serve as the specifications for person and environment. Occurring within the context of rhythmical person/environment interaction, indices of holistic human functioning are identified by Fitzpatrick as temporal, motion, consciousness, and perceptual patterns. Fitzpatrick’s writings are consistent with Rogers’ position regarding person and environment being open systems in continuous interaction.

Fitzpatrick (1989) has asserted that the four indices of human functioning are intricately related to health patterns throughout the life span, and these indices are rhythmic in nature. In a projection of Rogers’ (1983) principle regarding the continuous interaction of persons and their environments, Fitzpatrick postulated the dynamic concepts of congruency, consistency, and integrity as complementary with rhythmic patterns. The nonlinear character of patterns noted by Rogers has supported Fitzpatrick’s incorporation of Rogers’ specifications regarding four-dimensionality. Fitzpatrick stated that health is a basic human dimension undergoing continuous development. She offered heightened awareness of the meaningfulness of life as an example of a more fully developed phase of human health. The ontogenetic and phylogenetic interactions between person and health are regarded as the essence of nursing. Fitzpatrick attended not only to relationships within or between these interactions but also included latent relationships external to person and health. Nursing interventions were interpreted as facilitating the developmental process toward health. Fitzpatrick stated that nursing interventions can be focused on enhancing the developmental process toward health so that individuals might develop their human potential.

Because person and environment are integral with one another and have no real boundaries, environment is applied when the term person is used. The human element is treated as an open, holistic, rhythmic system that is described by temporal, motion, consciousness, and perceptual patterns. Fitzpatrick’s (1989) conception of person is augmented by awareness of the meaningfulness of life or health. The meaningfulness of life is manifest through a series of life crisis experiences with potential for growth in one’s meaning for living. Nursing’s central concern is focused on the person in relation to the dimension of meaning within health.

Fitzpatrick’s (1989) conceptualizations have been investigated by graduate students in nursing at the master’s and doctoral level. Studies looking at temporality in combination with adult and elderly populations, temporality in association with psychiatric clients, temporality in pregnant adolescents, and temporality in relation to terminally ill individuals provide a base for the existence of temporal patterns. However, from a holistic perspective of life span, use of the model is
absent in nursing research focused on infants’ and children’s notions of temporality.

Both younger and elderly groups have been addressed in investigating motion (Roberts & Fitzpatrick, 1983). Nevertheless, patterns of consciousness have been examined exclusively in older age groups (Floyd, 1982).

Different types of perceptual patterns, including for example, perception of color and music, have been investigated. Because one’s perception would seem to be dependent on present pattern of consciousness, these studies seem to be related to patterns of consciousness.

Empirical support for the existence of non-linear temporal patterns emerged from a number of research endeavors and helped to identify the need to generate questions about ways to measure the experience of time. The prevalence of temporal distinctions on the basis of differences in development were apparent in at least one study (Fitzpatrick & Donovan, 1978). A sense of timelessness was described as being characteristic of behaviors identified among the dying.

Pressler, Wells, and Hepworth (1993) investigated methodological issues relevant to very preterm infant (< 30 weeks gestation) outcomes based on the idea of the existence of microrhythms within some larger rhythmic pattern. By applying time series techniques and fuzzy subsets to the analysis of longitudinal data collected in the neonatal intensive care unit (NICU) environment, this study examined single-subject results for generalization across individuals. In general terms, the sequelae and risks associated with the NICU for very preterm neonates indicate that information processing deficits, attention deficit, and hyperactivity disorders are not uncommon during the preschool and school-age years. It is speculated that these problems might reflect these infants’ inabilities to cope with stressors or care received while in the NICU environment. Shiao (1993) investigated perceptual patterns of low birth weight infants in neonatal intensive care in terms of routine care interrupting breathing, oxygen saturation, and feeding rhythms. Yarcheski and Mahon (1995) examined human field patterns (as described by Rogers) in relation to perceived health status in healthy adolescents and found results consistent with the life perspective rhythm model. More recently, numerous qualitative researchers have used Fitzpatrick’s model to compare and contrast their findings, particularly in phenomenological studies that examine participants’ experience of phenomena (see Chiu, 1999; Cowan, C., 1995; Criddle, 1993; Montgomery, 2000, 2001; Moore, S. L., 1997; Pasquali, E. A., 1999; Ross, 1996).

Borrowing from some of her own ideas about temporality, Fitzpatrick (1989) has hypothesized the field of inquiry for nursing knowledge development by outlining nursing inquiry of the past. She has traced major historical milestones of nursing research and identified important events leading up to present-day research in nursing.

In cooperation with two colleagues, Fitzpatrick (Fitzpatrick, Wykle, & Morris, 1990) attempted to specify the field of inquiry for nursing in the area of geriatric mental health. Through the development of collaborative, interdisciplinary teaching, research, and practice relationships, Fitzpatrick and colleagues (1990) described how organizational theory could be used to support the development of a collaboration model for promoting the mental health of elderly persons across care settings. Intervention research with elderly populations was used to determine ways for improving the understanding, treatment, and rehabilitation of the mentally ill. The significance of Fitzpatrick’s ideas lies in how rhythmic methodologies might be used to develop nursing knowledge and provide external validity to the model.

Formal Nursing Languages

The National Institute of Nursing Research Priority Expert Panel on Nursing Informatics (1993) defined nursing language as
... the universe of written terms and their definition comprising nomenclature or thesauri that are used for purposes such as indexing, sorting, retrieving, and classifying varied nursing data in clinical records, in information systems (for care documentation and/or management), and in literature and research reports. ... Determining the way that nursing data are represented in automated systems is tantamount in defining a language for nursing. (p. 31)

This report also differentiated between clinical terms, which represent the language of practice, and definition terms, which represent the language of nursing knowledge comprising theory and research. The distinction between language that supports practice versus language that supports theory and research is blurring as the state of the science in this area moves toward definitional, concept representations that can be processed by computer algorithms and shared among heterogeneous information systems (Henry & Mead, 1997).

The research on standardized language to represent nursing concepts reflects four generations of inquiry. Initial research focused on the development of standardized coding and classification systems that represented the phenomena of clinical practice. Testing of systems for multiple clinical and research purposes by persons other than the developers followed. As confidence grew that the nursing-specific systems that had been developed reflected the domain of nursing and the drivers for multidisciplinary care and care systems grew, some investigators evaluated the extent to which terminologies not developed for nursing had utility for nursing practice. Currently, with the increasing sophistication in terminological science and the need for data sharing across heterogeneous information systems, nursing terminology developers, standards experts, and nursing informatics researchers have collaborated to conduct research toward the goal of semantic interoperability, i.e., that data collected in one information system using one terminology can be understood in another information system that uses a different terminology.

Also reflective of the current generation is the integration of nursing-specific terminologies into large concept-oriented terminologies such as SNOMED Clinical Terms (CT) (Bakken et al., 2002) and the Logical Observation Identifiers, Names, and Codes (LOINC) database (Matney, Bakken, & Huff, 2003).

Standardized language for nursing developed within the framework of the nursing minimum data set, comprising five data elements specific to nursing: (a) nursing diagnosis, (b) nursing interventions, (c) nursing outcomes, (d) intensity of care, and (e) unique RN provider number (Werley, Devine, & Zorn, 1988). Early research on standardized terminologies focused on the creation of language systems that represented nursing practice in various settings (Table 1). For example, the North American Nursing Diagnosis Association Taxonomy I (NANDA) (NANDA, 2004), Nursing Interventions Classification (NIC) (McCloskey & Bulechek, 2000), and Patient Care Data Set (PCDS) (Ozbolt, 1996) were initially developed for the acute care setting, the Omaha System for the community setting (Martin & Scheet, 1992), and the Home Health Care Classification (HHCC) for the home care setting (Saba, 1992).

The advent of computer-based nursing documentation systems was only one motivation for standardization of nursing language; others were to document nursing practice, articulate nursing contributions to patient care outcomes, and seek reimbursement for nursing care. Consequently, a number of studies evaluated whether a particular nursing terminology was useful in a particular clinical domain. For example, J. Carter and associates (J. Carter, Moorhead, McCloskey, & Bulechek, 1995) demonstrated the usefulness of NIC in implementing clinical practice guidelines for pain management and pressure ulcer management. Parlocha (Parlocha & Henry, 1998) reported the usefulness of the HHCC for categorizing nursing care activities for home care patients with a diagnosis of major depressive disorder. Several studies demonstrated the capacity of the
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¹Formerly the Home Health Care Classification

ANSA: Recognized by the American Nurses Association
UMLS: Included in Unified Medical Language System
HL7: Registered with Health Level 7
SNOMED: Included in SNOMED Clinical Terms

Omaha system to predict service utilization (Marek, 1996) and outcomes of care (Martin, Schect, & Stegman, 1993). Moreover, instead of creating new terminologies from scratch, groups such as the Association of Perioperative Registered Nurses (AORN) adopted some terms from existing terminologies and augmented as needed for their specialty practice (Perioperative Nursing Data Set) (AORN, 1997).

Other investigators provided evidence that nursing terminologies were useful to retrospectively abstract and codify patient problems and nursing interventions from sources.
of research data such as care logs (Naylor, Bowles, & Broome, 2000) or patient records (Holzemer et al., 1997). In another investigation, Holzemer, Henry, Portillo, and Miramontes (2000) based the documentation of their nursing-delivered adherence intervention on HHCC in order to determine the dose of the nursing intervention in a randomized controlled trial.

Complementary to the research that was being conducted, the American Nurses Association played a significant policy role in “recognizing” nursing language systems (Table 1) that met specific criteria not only related to utility for nursing but scientific rigor (McCormick et al., 1994). This process facilitated the inclusion of selected nursing terminologies into the Unified Medical Language System (UMLS) (Table 1) (Humphreys, Lindberg, Schoolman, & Barnett, 1998).

Several research studies examined whether or not standardized terminologies not designed specifically for nursing were useful for encoding nursing-relevant content such as diagnoses, interventions, goals, and outcomes. The Current Procedural Terminology (CPT) comprises more than 7,000 codes designed for reimbursement of health care services provided by physicians; as such, these terms are present in numerous state and federal databases (American Medical Association, 2000). Studies by Griffith and Robinson (1992, 1993) provided evidence that nurses perform many CPT-coded functions and that some functions are performed multiple times in a single day. Henry, Holzemer, Reilly, and Campbell (1994) demonstrated that the Systematized Nomenclature of Human and Veterinary Medicine (SNOMED) was more comprehensive than NANDA to describe the problems of persons living with HIV/AIDS. In another study, Henry and colleagues (1997) compared the frequencies with which 21,366 nursing activity terms from multiple data sources (patient interviews, nurse interviews, intershift reports, and patient records) could be categorized using NIC and CPT codes. There were significantly (p < .0001) greater numbers of nursing activity terms that could be categorized in NIC than in CPT, thus providing evidence for the superiority of NIC in representing nursing activity data.

In recent years, consistent with the state of terminological science and the clear indication that a single terminology could not meet all needs (Cimino, 1998), the focus of inquiry related to nursing language has been on the creation of computable representations of nursing concepts and on the subsequent integration with concept-oriented terminologies with broad coverage for the domain of health care.

The core of a concept-oriented terminology is the reference terminology model. A number of nurse researchers focused on developing and testing models for nursing diagnoses and nursing actions (Bakken, Cashen, Mendonca, O’Brien, & Zieniewicz, 2000; Hardiker & Rector, 1998; Hardiker & Rector, 2001; Henry & Mead, 1997; Moss, Coenen, & Mills, 2003). Under the leadership of the International Council of Nurses and the Nursing Special Interest Group of the International Medical Informatics Association, and with input from many including the Nursing Terminology Summit (Ozbolt, 2000), the International Standards Organization developed an international standard for a reference terminology model for nursing diagnoses and nursing actions (Bakken, Coenen, & Saba, 2004). These models facilitated the integration of selected nursing terminologies (Table 1) into SNOMED CT, a concept-oriented health care terminology that is currently available for free use in the U.S.

SNOMED CT is an evolving national standard for clinical terminology. Selected nursing assessments, goals, outcomes, and standardized measurements have also been integrated into LOINC, a national standard for observation names (Matney et al., 2003). In addition, a number of the nursing terminology developers have registered their terminologies with the Health Level 7 standards organization (Table 1) for use in messaging among information systems (Bakken, Campbell, Cimino, Huff, & Hammond, 2000).

This evolution in nursing language research is important because concept-oriented
Functional Health terminologies are an essential component of the evolving National Health Information Infrastructure (NHII) and to the four goals of the related NHII framework for strategic action: 1) inform clinical practice, 2) interconnect clinicians, 3) personalize care, and 4) improve population health (Thompson, T. G., & Brailer, 2004). Consequently, it is vital that nursing as well as medical terms are included. Moreover, the significant progress through nursing language research has laid the foundation for other types of research including clinical decision support and data mining for nursing knowledge development.

**SUZANNE BAKKEN**

**JEYYAE CHOI**

**Functional Health**

Functional health is a requirement for independent living and is the ability to engage in daily activities related to personal care and socially defined roles. Performance of these activities is integral to quality of life and to living independently and safely. Although functional health represents well-being, most nomenclature reflects deficits in this health. Terms include disability (Nagi, 1991), frailty (Lawton, 1991), functional limitation (Johnson, R. J., & Wolinsky, 1993), and handicap (World Health Organization). Often these terms are used to refer to other concepts that lead to confusion in nomenclature and theoretical definitions. The World Health Organization definition of disability lacks conceptual clarity and theoretical consistency, and this makes operationalization and establishing relationships difficult. In the disablement model (Johnson & Wolinsky), functional limitations are sometimes confused with factors affecting these limitations, and perceived health is used as a proxy for functional limitations. Leidy (1994) proposed nomenclature and definitions of functional status and other concepts related to this status that add to the conceptual confusion in this area.

In spite of the confusion related to nomenclature, Nagi’s (1991) model of disability has been supported by an extensive research and is useful to guide research, because disability in this model is conceptually clear, logically consistent, and useful in interpreting current and past research. Disability (poor functional health) is the result of a sequence of factors with temporal relationships. Pathology or lifestyle contributes to functional impairments that are anatomic, physiological, and psychological abnormalities causing functional limitations at the level of the whole person (e.g., poor memory or inability to get up from a chair). Functional limitations then lead to disability, which is the inability to perform daily tasks or roles independently. Risk factors and external and internal factors were added to this model to increase its explanatory capacity (Pope & Tarlov, 1991; Verbrugge & Jette, 1994). Another significant addition to Nagi’s model was the notion that upper-extremity limitations were more related to personal care activities of daily living, while lower-extremity limitations were more relevant for instrumental activities of daily living (e.g., shopping, housework, meal preparation) (Verbrugge & Jette). Unique to Nagi’s model is the notion of thresholds, where a certain amount of change must occur before change in a subsequent concept is observed. For example, impairments in mobility emerged when the strength of leg muscles was below a certain threshold (Rantanen et al., 1999; Rantanen et al., 2001).

Lacking in these models is the influence of decision making on disability. Persons engage in activities that they believe they have the ability to do without risk of injury or excessive exertion. Evaluative judgments about the environment and personal competencies affect decisions about what activities to participate in and how. Although the congruence between actual and perceived physical competencies is modest at best, little is known about how these affect disability (Roberts, B. L., 1999).

Since functional health is the ability to engage in everyday activities, a plethora of research has focused on daily activities related
to personal care (ADLs) and tasks related to providing food and shelter and caring for the home (IADLs), because impairment in these contributes to excessive dependency, morbidity, mortality, and poor quality of life. Health care costs and personal and social resources needed to manage disability are substantial, particularly as the baby-boom generation enters older adulthood when the proportion and number of older adults are expected to increase greatly as well as the associated financial, personal, and societal costs.

In 2000, 41.9% of elders had at least one disability with nearly 60% of them being women (Waldrop & Stern, 2003). While only 9.5% had self-care deficits, 20.4% had difficulty going outside, and women were more disabled in this activity than men (23.0% and 16.8%, respectively). Racial and ethnic differences exist, with only 40.4% of non-Hispanic whites being disabled compared to 52.8% of African Americans. In 1997, 38% of older adults reported severe disability with 14% and 22% requiring assistance with ADLs and IADLs, respectively (Administration on Aging, 2003). In the last year of life, dependency increases (Covinsky, Eng, Lui, Sands, & Yaffe, 2003; Lunney, Lynn, Foley, Lipson, & Guralnik, 2003).

ADLs are hierarchically structured by the complexity of the motor skills required (Spector, Katz, Murphy, & Fulton, 1987). IADLs are dependent on some of the same motor skills as ADLs but are more dependent on cognitive capabilities. ADLs and IADLs are highly related and may represent a continuum of the same construct (Johnson & Wolinsky, 1993; Thomas, V. S., & Hageman, 2003).

Early empirical indicators were self-report, whose accuracy cannot be verified and can be biased by cognitive impairment, social desirability, or minimization of dependency. Although observational measures reflect what a person is able to do, they may not reflect what a person actually does. Gait, dynamic and static postural stability, and muscle strength are physical factors affecting ADLs and IADLs (Guralnik et al., 2000; Roberts, L., 1999). Upper-body function (e.g., muscle strength and range of motion of the arms) was related to ADLs, while lower-body function (e.g., muscle strength of the legs) were associated with IADLs (Lawrence & Jette, 1996). Although the effects of exercise on strength, balance, and mobility are well established, exercise has had little to no effects on ADLs or IADLs (Latham, Bennett, Stretton, & Anderson, 2004).

Recently, biomarkers of increasing dependency associated with frailty have emerged. Biomarkers of catabolic protein metabolism, pro-inflammatory cytokines, and other hormones were related to dependency, frailty, and loss of muscle mass and strength (Chevalier, Gougeon, Nayar, & Morais, 2003; Ferrucci et al., 2002; Roubenoff, 2003). An understanding of their roles may lead to new assessment strategies and interventions.

Relevant psychological factors include cognitive impairment and depression. Certain types of social support are factors that can contribute to dependency in daily activities (Seeman, Bruce, & McAvay, 1996), while men and women use different types of social support in response to limitations in ADLs and IADLs (Roberts, B. L., Anthony, Matejczyk, & Moore, 1994). The role of the environment has not been well established, except for the increase in dependency noted during hospitalization and long-term residence in a nursing home. Although there is beginning evidence that the relationship between actual abilities and perceptions of them is low, how these perceptions influence decisions people make about what activities to perform and how have not been well studied.

More research is needed to identify thresholds in factors related to functional health where declines in this health occur, and to identify factors and processes by which people make decisions about performing daily activities. This knowledge may provide directions for assessment in populations at risk of poor functional health and may lead to more sensitive assessment strategies. A greater understanding of the interplay between environmental and personal factors with functional health may lead to multidimensional interventions that may be more effective than the
Historically, assessment tools were developed to assess clinical populations, frequently duplicating medical information. The lack of a consistent nursing assessment framework resulted in inadequate data and limited information about nursing’s judgments and contribution to care outcomes. The National League for Nursing was the first to support a movement away from nursing’s task focus to one that was patient-centered and problem-based. Forty schools of nursing participated in a survey that generated a classification list of nursing’s 21 problems (Abdellah, 1959). Later, in 1966, Henderson classified 14 basic needs related to patient care. This work identified human needs, articulated nursing functions, and helped direct nursing care toward patient responses.

Gordon’s (1982) typology of the 11 functional health patterns provided a structure for organizing and documenting patient behavior over time. The FHP framework offered nurses a consistent framework for identifying human responses that resulted in autonomous nursing interventions and linked evidence-based patient outcomes. This focus continues to be consistent with the Professional Standards of Nursing Practice and Nursing’s Social Policy Statement (American Nurses Association, 2003).

The FHP framework provides nurses with an opportunity to know the patient in a unique way. Through a series of semi-structured interview questions, each of the 11 functional health patterns is assessed as the individual’s story unfolds. When additional information is required, the nurse uses branching questions to elicit new perceptions. This descriptive approach to data collection is then subjected to analysis where data bits (or cues) are isolated and data are synthesized, leading to the formulation of tentative diagnostic statements that reflect phenomena of concern to nursing.

Many clinical investigations have used the FHP framework as a structure for data collection, patient problem identification, and evaluation of care outcomes. These studies described high-frequency nursing diagnoses and isolated patient responses to phenomena.

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(e.g., eating disorders, sleep disturbances) and linked intervention strategies to specific nursing diagnoses. Other investigations have used the FHP framework to validate cues associated with a particular nursing diagnosis. Nurses working in clinical specialties (e.g., ambulatory surgery, oncology, rehabilitation, and cardiovascular nursing) have used the FHP framework to identify patient responses (nursing diagnoses) throughout illness experience and recovery at home. Nurse administrators, using data from FHP assessments, reported that findings help predict nurse and patient mix, help identify patient problems, link nursing interventions with evidence-based outcomes, and ultimately help cost out care more accurately. Nursing educators have used FHP assessment data to evaluate clinical reasoning skills and diagnostic accuracy (Lunney, 2003).

Currently, research continues to clinically test an assessment screening tool using the 11 functional health patterns to generate screening questions. The Functional Health Pattern Assessment Screening Tool (FHPAST) is a patient-completed, functional health screening instrument (Foster & Jones, 2003). The tool contains 58 items and organizes responses to each item on a 4-point scale. Psychometric properties of the tool have been established with well adult populations. To date, data analysis reveals the emergence of four factors: Interpersonal Perception, Risk/Threat to Function, Health Promoting Behaviors/Beliefs, and Health Protecting Behaviors. The FHPAST is a reliable and valid assessment screening tool. The FHPAST assesses data across all pattern areas and is easily administered. The tool offers a quantitative measure of patient responses and identifies cues that guide further assessment by the nurse.

The FHPAST has been used in the United States with a variety of populations across settings, including same day surgery with patients with congestive heart failure in an outpatient program. The tool has also been used to evaluate health perceptions and behaviors in black Caribbean populations. In addition, the FHPAST has been translated into several languages including Portuguese, Spanish, and Japanese. In clinical practice, it has been used in England with HIV males, and as a screening tool to assess adults in medical inpatient units in Sao Paulo, Brazil. Nurse researchers identified the tool’s ease of administration and the ability of the tool to isolate functional health patterns requiring further assessment and evaluation as positive strengths.

Movement toward the use of standardized nursing language and continued refinement of standardized nursing language classifications (NANDA, NIC, NOC, and the International Classification of Nursing Language, ICNP) will promote the use of a consistent database for communicating nursing assessments, diagnoses, interventions, and outcomes across countries. The continued testing and refinement of the FHPAST will improve the use of a valid and reliable instrument to measure patient’s functional health over time. The use of the FHP framework can expand nursing knowledge, isolate human experiences in illness and wellness, promote creative interventions, and help articulate evidence that is nurse-sensitive.

DOROTHY A. JONES
FRANCES FOSTER

**Funding**

Funding is the provision of money or other resources to carry out a research proposal, usually for a specific period of time. Resources may be money, time, or people to carry out the scientific work. Funding may be intramural (coming from an individual’s place of employment, such as a university) or extramural (coming from a source that is external to the recipient or the recipient’s place of employment, such as a federal or state agency or a private foundation). Extramural funding almost always is preceded by a scientific or technical review for merit by experts who are considered peers of intended applicants. At times there is also a second-level review made to determine the goodness of fit between the proposed project and the
Funding

program that will fund it. Many research institutions also have instituted internal peer review of scientific merit for intramural funding.

In addition to scientific merit, proposals are usually reviewed for human subject safety, animal welfare if animal models are proposed, and the reasonableness of the scientific return for the overall cost of the research to be undertaken. This last focus is designed to provide opportunity for consideration of cutting-edge research in comparison to research that may be very well designed but may not provide new knowledge. It also provides opportunity for discussion of new, highly innovative research that may lead to future advances. Organizations that fund research are looking for scientifically superb proposals focused on cutting-edge health problems and issues where the expenditure is reasonable given the complexity of the study.

Funding sources for nursing research are numerous and varied. Such support could be funding for the conduct of research or for research training and career development for nurse scientists interested in a mentored research experience. The National Institute of Nursing Research at the National Institutes of Health (NIH) is the principal federal source. It announces its research interest areas on the NIH homepage and through the literature. However, other NIH institutes and offices that fund clinical research with a specific focus, such as cancer, heart disease, or complementary therapies, are also important resources for nurse investigators. All the institutes at NIH accept and encourage investigator-initiated research. Therefore, it is advisable not to wait for publication of information about an exact topic; if the general topic is related to the institute’s mission, contact them to discuss specific ideas. These and similar sources with specific interests should be pursued because their use enlarges the resources available for nursing research.

Information about research interests of the NIH and its institutes can be found through the NIH homepage at http://www.nih.gov. The Centers for Disease Control and Prevention are an important source for prevention and health promotion research and demonstration projects and can be contacted at http://www.cdc.gov. Also, the Agency for Health Care Policy and Research funds research on general health services, care delivery models, outcomes, and health care costs. Information about its research interests can be found at http://www.ahcpr.gov. Generally, federal agencies make their research interests known through their homepages or through contacts with staff listed on the homepages. Also, some agencies provide access to information about funded research. The NIH provides this through the Computer Retrieval of Information on Scientific Projects (CRISP) database, available through the NIH homepage under grants and contracts. Other nonpublic sources of funding are foundations, product and drug companies, and business corporations.

Foundations usually have highly targeted interest areas or specific populations of interest. For example, the W. T. Grant Foundation is interested in children; the Robert Woods Johnson Foundation is interested in end-of-life care, home care, and economics of health care projects, among others. Many foundations have homepages; for example, Robert Woods Johnson’s is http://www.rwjf.org. The Foundation Directory and various online programs available through libraries are good sources of information on national, regional, and local foundations. Product and drug companies frequently seek clinical investigators to assist with human testing, and nurse investigators have been active in this area. There are research grant programs available for small businesses to test products and to transfer technology into useable health products. The NIH, the Food and Drug Administration, and other federal agencies that fund clinical research are sources for these funds. Funding from entities that may have a vested interest in a particular outcome from the research they support requires special consideration that offices of university-sponsored programs usually can provide.

PATRICIA MORITZ
Gastroesophageal Reflux Disease

Gastroesophageal reflux disease (GERD) is a common occurrence affecting 15% to 20% of older adults (Braunwald et al., 2001) and more than 40% of U.S. citizens (Hill, C., 2004), resulting in a lowered quality of living and health complications. Quality-of-life issues stem from esophageal complaints and other symptoms presented in the primary-care setting, including aspiration pneumonia. GERD can result in an overwhelming use of antacids, which often negate the effects of medications used to manage chronic diseases common to older adults (Meiner, 2003).

GERD includes a wide array of illnesses that stem from the retrograde flow of gastric contents into the esophagus. Symptoms of GERD include globus pharyngitis, chronic cough, asthma, hoarseness, laryngitis, chronic sinusitis, dental erosions, dyspepsia, belching, heartburn, regurgitation, and delayed gastric emptying (Sermon et al., 2004; Lackey & Barth, 2003; Williams, J. L., 2003).

The association between GERD and patient’s complaints of ear, nose, and throat symptoms has led to several new research studies that look at the phenomenon while attempting to identify a diagnostic feature (Sermon et al., 2004; Vaezi, Hicks, Abel, son, & Richter, 2003). These studies include an in-depth look at dental erosions caused by GERD (Lackey & Barth, 2003; Van Roekel, 2003).

Chronic abnormal gastric reflux results in erosive esophagitis in up to 60% of patients diagnosed with GERD. Esophageal stricture, Barrett’s esophagus, and esophageal adenocarcinoma are the most serious complications of GERD (Williams, 2003). If unchecked, simple complaints can progress to terminal illness.

Causes of GERD include gastric acid hypersecretion, impaired gastric motility, weakened pressure of the lower esophageal sphincter (LES), transient lower esophageal sphincter relaxations (TLESRs), ineffective esophageal peristalsis, and loss of the integrity of the esophageal mucosa. Increased gastric volume after meals, incorrect positioning that allows gastric contents to remain close to the LES, such as bending over or lying down, and obesity or wearing tight clothing add to the causes of GERD (Storr, Meining, & Allescher, 2000).

Swallowing abnormalities associated with GERD can cause a complex interaction between the various nerves and muscles with involuntary and voluntary patterns of control and the upper airway (Mokhlesi, 2003). These swallowing abnormalities range from dyspepsia to aspiration of esophageal contents resulting in a chronic cough. While the association between GERD and asthma has been previously established (Mujic & Rao, 1999), the relationship between GERD and chronic obstructive pulmonary disease (COPD) is still being studied due to the complex interactions of symptoms, including the use of bronchodilators. Data does indicate that the presence of GERD in patients with COPD is higher than in normal populations (Mokhlesi). Further study is needed to establish the association between the swallowing dysfunction of GERD and stable and acute episodes of COPD.
A progressive increase in the prevalence of severe erosive esophagitis was observed with each decade of life until greater than 37% of patients over age 70 were identified as being affected (Johnson, D. A., & Fennerty, 2004). These researchers found that heartburn is an unreliable indicator of the severity of erosive disease among older adults. This lead to the recommendation that more aggressive investigation and treatment may be needed for older adult patients with or without complaints of heartburn (Johnson, D. A., & Fennerty).

Following the recent establishment of international control values for diagnostic (scintigraphic) gastric emptying assessment, an improvement in the ability to diagnose GERD-associated symptoms from the delay in gastric emptying can be identified (Buckles, Sarosiek, McMillin, & McCallum, 2004). The significance of this research is to identify a subgroup of patients that may have GERD without having the cardinal symptoms, but are at risk for pathophysiology. The “gold standard” study for confirming or excluding the presence of abnormal gastroesophageal reflux that continues to be used most widely across the U.S. is the 24-hour ambulatory esophageal pH monitoring test (Szarka, DeVault, & Murray, 2001). The best marker for the ability to heal erosive esophagitis with any drug is the ability to keep the gastric pH above four. The longer any dose of any drug can keep the pH above four (pH 4), the more likely it is to heal erosive esophagitis (Hatalbakk, 2003).

The introduction of fiberoptic instruments and ambulatory devices for continuous monitoring of esophageal pH (24-hour pH monitoring) has led to great improvement in the ability to diagnose reflux disease and reflux-associated complications. Treatment options include lifestyle changes, medication, and surgery. Polypharmacy and changes in renal, hepatic, and gastrointestinal function can complicate treatment. Due to the large number of medications taken by older adults for comorbidities, drug interactions and treatment responses must be carefully assessed in this population (Ramirez, F. G., 2000).

Lifestyle changes are the cornerstone for effective patient education and an understanding of GERD treatment. Further nursing research is needed to identify behavior modifications that are more likely to be sustained over time. Future nursing studies that may produce long-term lifestyle changes will need to include the following elements that are known to reduce GERD: (a) dietary modifications designed to avoid foods and fluids that lower LES pressure (e.g., tomatoes, peppermint, licorice, alcohol, and caffeine-containing foods and drinks such as coffee, tea, chocolate, and colas); (b) providing a comprehensive history with defining characteristics to the primary health care provider at the onset of ambulatory care; (c) weight loss, when obesity is a factor; (d) elevating the head of the bed 4 to 6 inches with blocks (raising the entire angle of the bed); (e) eliminating all food and fluids for the 2 hours before bedtime; and (f) smoking cessation.

GERD is a chronic problem among many adults. Well-controlled trials are beginning to glean information related to successful lifestyle modifications, improved diagnostic evaluations, and treatment protocols. Nursing research should be undertaken to study ways of improving adults’ willingness to make long-term lifestyle and dietary changes. Studies that investigate symptomatic control may provide the foundation for improvement in the quality of life of patients with GERD. Studies that identify drugs and foods that increase inappropriate LES relaxation are needed. Obtaining a thorough past history of illnesses, current symptoms, with past and current medication use including over-the-counter drugs, is a key factor to being able to identify hypotheses for nursing research.

SUE E. MEINER

Gender Research

Gender is an old term used in linguistic discourse to designate whether nouns are masculine, feminine, or neuter. It was not normally used either in the language of social sciences
or nursing until after 1955, when the psychologist-sexologist John Money adopted the term to serve as an umbrella concept distinguishing femininity, or womanliness, and masculinity, or manliness, from biological sex (male or female). By using the word gender he believed he could avoid continually making qualifying statements about the hermaphrodites he was studying, such as “John was in a male sex role except that his sex organs are not male and his genetic sex is female” (Money, 1955). Sex, in his research, belonged more to reproductive biology than to social science, romance, and nurture, whereas gender belonged to both (Money & Ehrhardt, 1972). By using a new term to describe a variety of phenomena, Money opened up a whole new field of research. It was a field ripe for exploration because it appealed to the increasingly powerful feminist movement (Bullough, 1994).

Even as Money was putting forth his ideas about the influence of sociopsychological factors (nurture) during critical periods of child development, he was strongly criticized by Milton Diamond, another psychologist active in sex research. Diamond (1965) indicated that gender decisions for hermaphrodites, about whom Money had originally drawn his data, were perhaps not as clear-cut as Money implied. Diamond hypothesized that an individual hermaphrodite might be receiving mixed biological signals, which allowed him or her to conform to the assigned gender rather than change it. He charged that Money was in danger of de-emphasizing biology, or nature, and over-emphasizing nurture.

The argument over nature versus nurture continues although both sides recognize the influence of both factors and it remains an argument over degree. At their scientific best, most biologists and social or behavioral scientists agree that the coding of gender is multivariate, sequential, and developmental, reflecting a complex interaction across the boundaries of disciplines and across biological and social variables.

Ann Constantinople (1973) questioned the assumption that masculinity was the opposite of femininity and suggested that the identification of masculine traits might be independent from, rather than the opposite of, the identification of feminine traits. The “both/and” concept of psychological identification quickly replaced the “either/or” notion that had dominated thinking on the matter since Lewis Terman developed his scales of masculinity and femininity. Sandra Bem (1974) developed a gender identity measure, the Bem Sex Role Inventory, that treated identification with masculine traits independently of identification with feminine traits. Spence and Helmreich (1974) found wide variation in gender traits, although they also found that stereotypical masculine personality traits in males were correlated with self-esteem, which reflects just how much influence society and culture have on self-esteem. However, the difficulty remains because the scales are based on observable patterns without any attempt to evaluate whether there are behaviors that must be distinctly limited to males or to females.

Bonnie Bullough held that the formation of gender identity and sexual preference included three steps: (a) a genetic predisposition, (b) prenatal hormonal stimulation that might follow or interfere with the genetic predisposition, and (c) socialization patterns that shape specific manifestation of the predisposition (Bullough & Bullough, 1993). This theory would allow for wider variations in gender behavior than those of some other theorists. For example, Nancy Chodorow (1978) noted out that infants, both males and females, generally have the most contact with their mothers and initially identify and form intense relationships with their mothers. For girls, this identification is never completely severed, but boys must relinquish their identification with their mothers as they take on masculine roles.

Chodorow maintained that this differing experience produced distinct coping strategies for males and females in dealing with the world. Specifically, women emphasize relationships with others, whereas men focus on their own individualism and independence from others. Gilligan (1982) pointed out that to hold this view limits personality develop-
ment. A woman (or for that matter, a man) who views herself only in relationship to others (e.g., wife or mother but not an individual in her own right) may limit her own independent development. The man (or woman) who views himself only in terms of his own achievements and independence (boss, owner, director, sole author) may handicap his capacity for intimate connections with others. Obviously, conceptions of gender influence the way we think about what men and women can accomplish or achieve.

Probably most nursing theorists have followed Gilligan (1982), although a minority have emphasized the unique nature of being a woman. This is particularly true of some of the caring theorists. Dorothy Johnson (1959), who wrote before the concept of gender was fully developed, distinguished between caring and curing, and emphasized the caring aspects of nursing. This influenced Jean Watson in the establishing of caring centers. The concept of caring also became part of the basic educational mission of nursing.

The caring theory fits well into traditional concepts now associated with gender, but the problem is that one faction of nursing interpreted caring as a uniquely feminine quality and in the process ignored most of the mainstream research on gender. Nurses are involved in gender research, but only a few nurses have really done the quantitative studies needed to challenge the persistence of earlier stereotypes both within and outside of the profession.

Vern L. Bullough

Genetics

The genomic era of health care began in April, 2003, with the completion of the sequencing of the Human Genome. The Human Genome uses four proteins: adenosine, cytosine, guanine, and thymine that replicate indefinitely. This double helix is the basis of DNA and, along with RNA, which substitutes uracil for thymine, makes up approximately 20 different amino acids. These proteins constitute just about everything in the body. It is these coded scripts that determine the entire life of an individual (Guttmacher & Collins, 2002). Clinicians can now determine if people will have certain genetic conditions in utero and hereditary conditions can actually be predicted using Mendelian Inheritance Theory. Nurses are understanding the significance of how using the correct questions regarding genetic history during patient admission assessments will assist in preparing a customized treatment and health promotion plan for each patient (Lea, 2003).

Genetic research by nurses is in the infancy stage. Recently multiple opportunities for nurse scientists to conduct biological and behavioral studies in genetics, either individually or in multidisciplinary teams, have become available. The National Institutes of Health (NIH) guide: Opportunities in genetics and nursing research (NIH, 1997) identified the following topics regarding genetics in need of research: holistic and community approaches, role of biopsychosocial factors in health and illness, managing and diagnosing cardinal symptoms of chronic conditions, cognitive decision making and learning skills, family education and counseling, risk behavior symptoms and reduction, and health promotion. Genetics offers nursing multiple research opportunities relating to biological and behavioral studies that could advance nursing science. Nurse clinicians need more research-based evidence to impact practice in every area, especially pharmacology, the neurological and immune systems, genetic testing and screening, and health promotion strategies. Nurse educators must study curriculum program outcomes to insure that Core Competencies in Genetics (National Coalition for Health Professional Education in Genetics [NCHPEG], 2001) are included.

The National Institute of Nursing Research (NINR) and the National Human Genome Research Institute (NHGRI) offer support to nurse scientists studying the clinical implications of human genetics research. Cashion (2002), a nurse faculty member at the University of Tennessee, is studying the effects of genetics and environment on disor-
ders such as obesity, diabetes mellitus, and transplantation. Her study, *Genetic Markers of Acute Pancreas Allograft Rejection*, is funded by NINR and focuses on identifying patients who might experience rejection given their genetic make-up prior to actually manifesting the symptoms. One study about the use of genetic testing (Giarelli, 2003) generated important clinical relevance regarding patients’ perceptions that they had gained significant health knowledge about either their own or a family member’s genetic illness or predisposition.

Nurses need to become more involved in researching ways to promote health and decrease disease by using genetics, study ethical and legal concerns of genetic health, and become involved in advocating for people with genetic risk factors. Also they should participate in developing evidence-based protocols for identifying genetic risk factors to delay or prevent the onset of chronic illness, and develop methods to positively impact patient and families involved in decisions influenced by genetic conditions by disseminating important information regarding genetics.

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**JUDITH A. LEWIS**  
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### Geriatric Interdisciplinary Teams

A recent report from the Institute of Medicine of the National Academies (IOM) challenges all health care professionals to recognize the need for effective interdisciplinary team care (Institute of Medicine, 2001). The sense of urgency implied by the IOM report is related to the growing body of evidence that effective interdisciplinary team care prevents medical errors and leads to improved patient outcomes (Boult et al., 2001; Cohen, H., et al., 2002; Sommers, Marton, Barbaccia, & Randolph, 2000).

Geriatric interdisciplinary team care has been shown to be essential to manage the complex syndromes experienced by frail older adults (Cohen, H., et al., 2002; Regenstein, Meyer, & Bagby, 1998). Providing comprehensive care to geriatric patients with multiple illnesses, disabilities, increased social problems, and fragmented care requires skills that no one individual possesses; therefore, older adults are best cared for by a team of health professionals (Baldwin, 1996; Pfeiffer, 1998; Regenstein et al., 1998). Geriatric interdisciplinary team care improves older adults’ functional status (Sommers et al., 2000), perceived well-being (Boult et al., 2001; Knaus, Draper, Wagner, & Zimmerman, 1986), mental status, and depression (Eng, Padulla, Eleazur, McCann, & Fox, 1997). Geriatric interdisciplinary team care has also been shown to be cost effective by reducing patient readmission rates and number of physician office visits (Burns, R., Nichols, & Martindale-Adams, 2000).

The most recent report demonstrating the positive outcomes of team care came from a large, randomized trial of 1,388 frail patients 65 years of age or older who were hospitalized at 11 Veterans Affairs medical centers (Cohen et al., 2002). Participants were randomly assigned according to a two-by-two factorial design to receive either care in an acute inpatient geriatric unit or usual acute inpatient care, followed by either care at an outpatient geriatric clinic or usual outpatient care. The interventions involved teams that provided geriatric assessment and management according to Veterans Affairs standards and published guidelines. The primary outcomes were survival and health-related quality of life, measured with the use of the Medical Outcomes Study 36-Item Short-Form General Health Survey (SF-36), 1 year after randomization. Secondary outcomes were the ability to perform activities of daily living, physical performance, utilization of health services, and costs. The results demonstrated significant improvements in scores for four of the eight SF-36 subscales, activities of daily living (p < .001), and physical performance of those patients cared for by a geriatric interdisciplinary health care team as inpatients (p < .001). Neither the inpatient nor the outpatient intervention had a significant effect on mortality (21% at 1 year overall), nor were