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Nursing Education in The 21st Century for the United States :
Health Care and Professional Factors

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In both Japan and the United States (U. S.), dramatic changes are occurring in health care with a strong emphasis on balancing quality outcomes with the cost of such outcomes for individuals, families and communities. Nursing, as a profession, is confronted with numerous new opportunities and challenges generated by the new paradigms in health care. It is a new era of health care for the United States.

Vision, direction and focus are important attributes for the profession and discipline. Vision is required to creatively take advantage of the many opportunities, which have been generated, for the profession. Nursing is posed to contribute to health care in new and stronger ways and is capable of shaping and informing the rapid changes in health care and health policy. The dramatic shifts in health care, focus on many of nursing's historical strengths such as emphasizing health promotion across the life span for individuals, families and communities. In addition, the rapid evolution and generation of the science base required to guide nursing practice and shape health policy has placed nursing in a position of expertise in the new era of health care (Hinshaw, 1999a).

Multiple opportunities also engender numerous challenges. Many challenges confront nursing, such as balancing the quality of care provided with the cost of such care, shaping new models for health care in the community as well as in the acute care hospital settings, functioning in strong interdisciplinary teams of health care providers as both leaders and members, and proactively, informing and shaping health policy for the country. These challenges in health care also pose challenges for nursing education and nursing research in the United States. Nursing education must prepare professional nurses, advanced practice nurses, and nurses scientists, to assume new roles, integrate research with practice and generate knowledge, which will inform and shape health policy. The American Association of Colleges of Nursing summarizes the following challenges in the "Nursing Education Agenda for the 21st Century" for the United States :

- The entry-level professional nurse requires greater preparation in community-based primary health care with an emphasis on health promotion, maintenance and cost-effective coordinated care responding to the needs of culturally diverse individuals,

families and communities in all settings.

- Nurses in advance practice must have graduate preparation. The advanced practice may focus on primary care, case management, specialization, education or administration across multiple health care locations.
- Nurse scientists need preparation in advanced practice or have a strong experience base in practice to generate research that focuses on the interventions and outcomes needed for individuals, families and communities.
- Schools of Nursing must redefine the scholarship role and reward system to include practice in order to offer opportunities for students to integrate the missions of education, research and service.

(AACN, 1993b)

This paper will examine the multiple opportunities and challenges confronting nursing education in the United States from several perspectives :

- The numerous dramatic changes in health care which comprise the new era, and
- The impact of the rapidly expanding body of knowledge generated through the discipline's research programs.

The New Health Care Era in the United States

Dramatic changes in health care have brought about a new era in the U.S. These changes include :

- New models of health care are evolving with managed care at the heart of the shifts that are occurring.
- Community care or primary care is increas-

ing as greater numbers of individuals and families are treated at home and in community agencies.

- Health promotion and risk reduction are being emphasized in addition to the curative model of care.
- Chronic illnesses are more prevalent across the life span but particularly in the rapidly growing elderly population.
- Acuity of patients in the hospitals has increased substantially.
- Health care providers of diverse types are required to meet the needs of clients served by the community and hospital systems.

These changes are accompanied by an ever increasing shortage of nurses for the multiple opportunities and positions that have evolved. Thus, the demand for nurses is high at the same time that the possibilities for nursing's contribution to health care have increased. For each of the major health care changes, let's consider the new directions that are available for nursing education.

New Models of Care : Managed Care

Multiple economic and societal forces have motivated the evolution of managed care in the U.S. However, without a doubt, the major force has been the rising costs of health care. In 1996, health expenditures were projected to top \$1.7 trillion dollars or 18.1% of the gross domestic product (GDP) by the year 2000. This cost escalation quickly commanded the attention of both private and public health care purchasers.

While the quest for effective control of health care costs has been the dominant force behind the growth of managed care, other pressures have had a significant impact. Demands for value and accountability are heard, as more and more are purchasers of health care, particularly employees, seek hard evidence on the quality, effectiveness, and appropriateness of health care (Shortell and Hull, 1996). An equal demand for higher levels of continuity, coordination, and comprehensiveness is evident.

Broadly defined, managed care includes health care organizations whose core concept is the intent to control health care costs by "managing" and "streamlining" health care services. These include Health Maintenance Organizations (HMO), Preferred Provider Organizations (PPO), and Point of Service (POS) Organizations which are "managed fee-for-service" plans. The greatest challenge is to balance protecting the interests of patients and providers, with the need to allow managed care the freedom to develop innovative cost-effective approaches to providing health care services (Hinshaw, 1999a).

These new models of care required strong leadership and case management knowledge and skills from professional nurses. In addition, the ability to function with interdisciplinary teams of health care providers is critical since decreasing costs of care requires new ways of functioning across professions. These team models for providing care require strong collaboration and negotiation knowledge and

skills, as well. The case management abilities of nurses have become central to many managed care organizations. These integrated care organizations include acute care hospitals, community clinics, home health care agencies and nursing homes. Patients move across these different sections of the organization and nurses need to coordinate or "manage" that care. In addition, the managed care and integrated care organizations rely heavily on sophisticated information systems for tracking clinical data and treatment outcomes across the different sections.

The curriculums in Schools/Colleges of Nursing have increased content for the basic professional nurse in leadership, collaboration and negotiation processes, case management and informatics. Critical reflective thinking, self-directed learning and creativity, has become critical given the rapidly changing health care environment. In essence, these characteristics for the professional and advanced practice nurse have become mandated expectations for health care providers in the twenty-first century (O'Flynn, 1996 : 430).

Health Care in the Community

An increasing amount of care is being delivered in the community through community clinics, private offices, and home care. The level of acuity, which is being handled by health care professionals in the community, is also increasing. Hospital stays have shortened dramatically. People are not less sick they are simply in the community in more acute states.

According to the PEW Health Commission Report: "Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century" (1995), the new era of health care will be built around primary care provided in the community by multiple types of providers. The focus of care will be on communities and populations of people as well as the orientation to individuals and families. The report also recommended specifically to the nursing profession that community based care would require greater numbers of baccalaureate prepared nurses, while primary care would demand greater numbers and types of nurse practitioners.

Nursing has a long history of providing community care for individuals, families, and populations. Such experiences have been part of most undergraduate curriculums for several decades. In addition, community health is an area of specialization in most graduate programs. However, a number of Schools of Nursing are revising their undergraduate curriculums to include more community knowledge and experience. Traditionally, nursing has provided such experiences mainly through Public Health Departments and Visiting Nurse Associations. The current expansion of community clinicals involves greater diversity in locations, e. g., schools, churches, shopping malls, and others (Yoder, Cohen and Gorenberg, 1998). Many of these revisions also involved interdisciplinary experience in the community as well (Oneha, Sloat, Shoultz, and Tse, 1998). Graduate programs have expanded their program offerings to include Adult Primary

Care, Pediatric Primary Care, and Family Nurse Practitioner programs in addition to clinical specialist programs in community care, which is the more traditional program.

A number of Schools of Nursing sponsor Nurse Managed Clinics in which nurse practitioners and faculty provide primary care to a community. The University of Michigan School of Nursing sponsors three such clinics, each in communities where a substantial number of vulnerable populations reside, e. g., individuals and families with limited resources. These clinics provide access to health care for those who usually are underserved due to financial resources or whose cultural backgrounds require a particularly sensitive type of care. Gary and colleagues (Gary, Sigsby, and Campbell, 1998) suggest that preparing professional nurses to provide culturally competent care is critical for the next century since the demographic predictions in the United States suggest that the people of color will increase dramatically in the next several decades. The nurse managed clinics also provide an educational site for undergraduate and graduate nursing students illustrating a community partnership or nursing model for delivering care in the community.

Health Promotion/Risk Reduction

Nursing has a long history in the United States with emphasizing health promotion and risk reduction for individuals, families, and communities. The American Nurses Association's, "Nursing Agenda for Health Care Reform" in the early 1990's clearly reaffirmed

the profession's commitment to this orientation (1991). As a profession, nursing has always taken a preventative approach to illness rather than a curative approach from very early history, i. e., Florence Nightingale's work in the Crimea.

Health promotion has dominated nursing research for a number of years. In the early days of the National Institute of Nursing Research at the National Institutes of Health, over 60 percent of the research grant portfolio focused on health promotion or behavioral science studies. Among the health professions, nursing is known for its emphasis on health promotion with many disciplines teaching and studying models such as Pender's *Health Promotion for Nursing Practice*. The health promotion studies are across the life span, e. g., prevention of low birth weight infancy for mothers and families, risk reduction for cardiovascular and heart disease in school age children, prevention of women's health risks such as breast cancer and osteoporosis, and prevention of falls and hip fractures in the elderly through exercise programs (Hinshaw, 1996).

The change to emphasizing health promotion has led to several curricular enhancements for nursing. Health promotion and risk reduction are cited as core knowledge and content for both undergraduate and graduate programs in the AACN's policy guidelines on the "Essentials" for nursing education (1996, 1998). In undergraduate programs, the strengthening of community experiences has been coupled with

a stronger knowledge and skill base in interventions used to promote health and reduce the risk of illness. At the graduate level, entire Divisions or Departments within Schools of Nursing are organized around faculty with expertise in health promotion and risk reduction. Clinical specialties for advanced practice nurses are offered in this area while the basic orientation for nurse practitioners in adult or pediatric primary care is on promoting health and reducing the risk of illness. The School sponsored nurse managed clinics have strong "wellness" orientations and provide health promotion experiences for undergraduate and graduate students. Many of the programs also include interdisciplinary courses with students from multiple health professions.

Chronic Illness Across the Life Span

An increasing number of individuals and families in the U. S. are experiencing and living with chronic illnesses of some type and sometimes multiple chronic illnesses. Particularly as the population "ages", a greater incidence of chronic illness is evident. Callahan, in his classic article, "Ethics and Health Care : The Next Twenty Years" (1985), predicted the current shift in health care from the orientation on acute, crisis conditions in which high level technology serves a limited number of individuals ; (e. g., heart transplant) to an emphasis on dealing with more chronic long term conditions facing both the very young and very old in greater numbers. He suggested that this shift is more than changing demographics. In his view, the moral values guiding U. S. society also evidenced a collective shift

from a strong emphasis on the individual in the 1960s and 1970s to a resurgence of concern with the "common good". Callahan suggested the distinctive moral feature of chronic illness is that "there is no hope for a cure" and that health care essentially targets how best to treat through the extended period of "having the illness". Characteristically chronic disease differs from acute disease in that it is labor intensive in terms of contact and requires patience and theoretical grounding in the social/behavioral aspects of health care. Clearly these are clinical and scientific requirements which are in nursing's purview and areas of expertise.

Nursing education has had a strong focus on helping individuals and families adapt and live with chronic illnesses. Roy's Adaptation Model (1974) outlining the stress and adaptation processes that are involved in experiencing illness was one of the early theoretical models developed in the discipline. Currently, multiple curricular experiences focus on facilitating individuals and families as they manage chronic illnesses such as high blood pressure, diabetes, asthma, and others. In the U. S., the profession is experiencing a shortage of nurses once again, particularly in the area of gerontological nursing. Graduate programs offering master's specialties in this area have decreased due to lack of enrollment. Given the predicted demographics of the U. S., this is of special concern. The difficulty is the lack of well-paying positions for these specialists. The U. S. nursing homes do not reimburse nurses at a reasonable level given their

educational preparation. Such reimbursement should occur in the future as the number of older individuals become more apparent. Many of the older individuals in the 21st Century will have financial resources. In the U. S., this means they will be active and effective in influencing policy makers such as the Congress. Isn't this a problem that Japan and the U. S. share?

Acuity Levels in Hospitals

Acuity levels of patients in hospitals have increased substantially. This has occurred primarily because individuals enter the agencies either quite ill or on the day of planned surgery and return home to the community-home or convalescent-home as soon as they are judged non-critical. Lengths of stays in hospitals have shortened considerably in the past decade. Some suggest the acute care agencies are critical care or step-down units totally with limited general units. Over 60% of nurses still have positions in hospital settings.

For nursing education, these changes have fostered several initiatives. Undergraduate programs have been revised to emphasize critical thinking, evidence-based practice skills and informatic concepts and skill. Graduate programs have developed advanced practice nursing specialties in acute care adult and pediatric nursing. These individuals are taking positions in acute care settings as practitioners working closely with physicians and bringing the ability to do clinical management from the nursing perspective.

Diversity of Health Care Providers

The 1995 PEW Health Professions Commission Report recommended that multiple health care providers be prepared across several health professions in order to open access and deliver the primary and acute care needed for the end of this century and into the next century. The Commission further recommended that nursing education increase the number of master's programs providing advanced practice nursing degrees as such nurses would be needed in multiple roles. Advanced practice nursing is defined as professional health care activities that "focus on clinical services rendered at the nurse-client interface using a nursing orientation which have a defined but dynamic and evolving scope and are based on competencies that are acquired through graduate nursing education" (Brown, 1998). The AACN (1996) strongly supported the new opportunities and educational needs for advanced practice nurses and stated unequivocally that these practitioners would be prepared at the master's level.

Multiple types of advanced practice nursing programs exist in the educational systems, i. e., nurse practitioner, nurse-midwife, nurse anesthetist, and clinical nurse specialist. In addition, the nurse practitioners are educated in multiple specialties: family nurse practitioner, gerontology nurse practitioner or specialist, adult or pediatric primary care nurse practitioners, women's health nurse practitioner, nurse-midwife, adult and pediatric acute care practitioner, nurse anesthetist and mental health practitioners (O'Flynn, 1996).

Students major in one or several of these programs during their master's degree. Majoring in several of the programs enhances their opportunities for positions but also elongates their programs.

The master's program is outlined in the AACN's position statement on the "Essentials of Master's Education for Advance Practice Nursing" (1996). The fundamental model recommended for the master's nursing curriculum is shown in Figure 1 (AACN, 1996 : 5).

The "Essentials" document also recommends the curriculum elements, which need to be included. They are as follows :

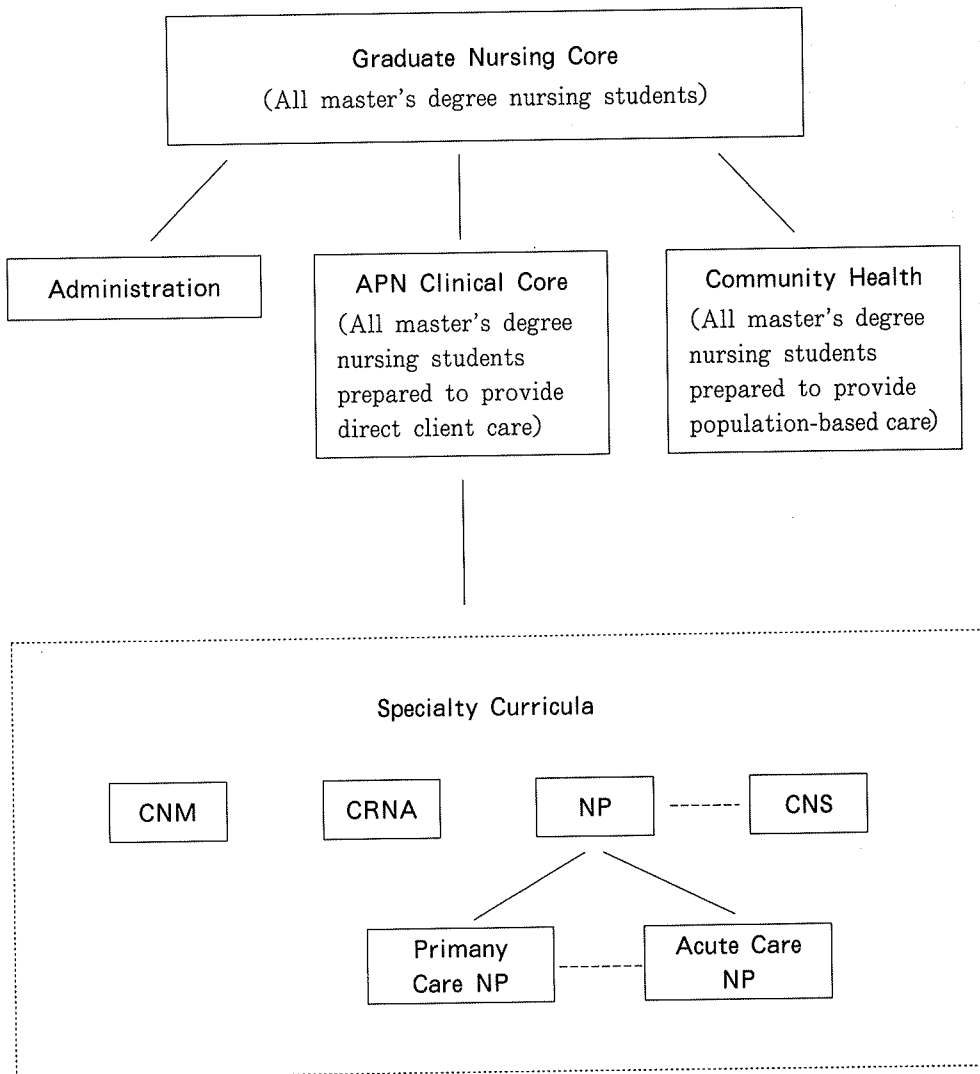
Graduate Core Curriculum Content

- I. Research
- II. Policy, Organization, and financing of Health Care
 - A. Health Care Policy
 - B. Organization of the Health Care Delivery System
 - C. Health Care Financing
- III. Ethics
- IV. Professional Role Development
- V. Theoretical Foundations of Nursing Practice
- VI. Human Diversity and Social Issues
- VII. Health Promotion and Disease Prevention

Advanced Practice Nursing Core Curriculum

- I. Advanced Health/Physical Assessment
- II. Advanced Physiology and Pathophysiology
- III. Advanced Pharmacology

Figure 1 : Model of Master's Nursing Curriculum*



* A dotted line depicts an evolving relationship between these entities.

An additional element of the curriculum is the extensive clinical experience taken in the specialty area of the student's choice. The various clinical areas for clinical nurse specialists and nurse practitioners were cited earlier.

In the 21st century, nursing education in the U. S. will be confronted with several challenges concerning the advanced practice nursing programs and graduates. First, the number of APN programs have increased dramatically but the issue of quality and faculty preparation is problematic. There are programs without properly prepared faculty, which jeopardizes the graduate's ability to be certified through national examinations by the certifying professional organizations, when the advanced practitioner is a nurse practitioner. This is less of a problem for the clinical nurse specialist. Second, the distinctions between clinical nurse specialists and nurse practitioners need to be delineated for curricular purposes as well as for visibility and clarity with the public (Rasch and Frauman, 1996 ; Lindeke, Canedy and Kay, 1997). Third, large numbers of programs foster a strong competitive environment among nursing schools both in recruiting students and for quality clinical placements and experience. Fourth, the market for primary and acute care advanced practice nurses may saturate in a short time and fewer graduates be required, which means the Schools of Nursing must make 3-5 year plans to decrease their APN programs and possibly specialize in offering a select number ; whichever programs

compliment the School's strengths in research and scholarship. For example at the University of Michigan, the research strengths are in neurobehavioral science or cognitive functioning (including gerontology), health promotion with children and adolescents and women's health. The School may need to focus the APN programs in the same areas in order to achieve the integration of research and have the clinical programs solidly based in science. Fifth, a related problem to market saturation is achieving reimbursement directly to nurse practitioners for the care provided. The physician is still the major individual the federal and state governments and insurers view as the focus of health care reimbursement. Slowly, through congressional action and demonstration of value to insurers, reimbursement for advanced practice nurses is becoming possible. But it is still a major challenge and limits the number of available positions for graduates.

Nursing Research's Influence on the Educational Programs

In the U. S. there has been a virtual explosion of nursing research. About 20 to 25 Schools of Nursing are considered research intensive in the sense that there are strong, multiple faculty with major research programs and Centers of Excellence. These are programs with solid extramural funding from the federal government, foundations or professional organizations. The explosion has occurred with the establishment of the National Institute of Nursing Research at the National Institutes of Health and the increase in funding for

nursing research and research training.

New traditions have evolved for the discipline and the community of nurse scientists (Hinshaw, 1999b). Nurses now spend their entire careers in teaching, research, and influencing policy. They may do some middle administration positions but many do not become Deans or Directors of Nursing because their commitment is to generating knowledge. These individuals have research programs in which they conduct a series of studies in an area of clinical interest and for which they have multiple funded grants and awards. Post-doctoral experience is now a norm for individuals seeking strong research positions. This allows faculty to start their independent research programs with a mentor and enter academic positions with a strong beginning on seeking resources. Centers of Excellence have been developed in Schools of Nursing to facilitate a critical mass of investigators with common research interests. These Centers provide not only resources, but also a forum for intellectual discussion and challenge—a meeting place for senior and junior faculty as well as doctoral and post-doctoral students with similar scientific challenges.

An explosion of knowledge for nursing practice and changing health care systems has resulted from the increased resources for nursing research and increased number of nurses who are doctorally and post-doctorally prepared. Further, the knowledge has been generated in relation to major public health problems for the U. S. For example, there are

now substantiated sets of studies and findings related to the prevention of low birth weight infants, health promotion for adolescents, adherence strategies for preventing cancer, and the transition of individuals from the hospital to community with lower risk, higher quality of care and less cost. Nursing research has focused heavily on promoting the health of individuals, families and communities, ameliorating the consequences of disease and its treatment as well as restructuring and developing new health systems to achieve higher quality of care with less cost (Hinshaw, 1999b). This explosion of knowledge, which is still only early in the development of a science base for nursing, has had major implications for the educational programs of the profession.

Baccalaureate Programs and Nursing Research. In the United States, as in Japan, research has been an integral part of the undergraduate curriculum for some time. The focus has been on the ability to critique and apply research and research findings to the daily practice of nursing. In the "Essentials of Baccalaureate Education for Professional Nursing Practice" published by the AACN, the statement is made that "nursing roles derived from the discipline of nursing" (AACN, 1998 : 4). This means that nursing practice and other roles in nursing are built on nursing knowledge, theory and research, as well as knowledge from a number of other fields.

There are three aspects of nursing research within the baccalaureate curriculum which

need to be discussed: the focus on research in preparing the professional nurse, the strong emphasis on critical thinking and research, and latest orientation to evidence-based nursing practice. The research focus in baccalaureate programs has been on preparing the professional nurse to critique and apply research and research findings to their daily practice. This preparation has been accomplished through a variety of strategies such as research courses, critique of research for inclusion in assigned patient or family care plans, and research practicums (Cole, 1995; Wheeler, Fasano and Burr, 1995; Michel and Sneed, 1995). Evaluation studies suggest that the strategy with the longest-term impact is involving the student in faculty research as with a research practicum (Cole, 1995).

In the United States, critical thinking as part of clinical reasoning has been a major focus of baccalaureate curriculums (AACN, 1998) and a central aspect of the national accrediting criteria from the National League for Nursing (NLN, 1992). As Haffer and Raingruber state: "It is no longer acceptable to assure that graduates have sufficient formal knowledge. Educators must establish that new nurses can use knowledge in uncertain, rapidly changing, complex clinical situations" (1998: 61). According to Berger, critical thinking is a "special (cognitive) human characteristic that includes the organization of new information and the reorganization of previously learned material into forms leading to new responses that can then be generalized to new situations" (Saucier, 1995: 351). Two

aspects of the process are reasoning and imagination. Specific processes that relate to critical thinking include defining a problem, recognizing stated and unstated assumptions, formulating and selecting relevant and promising hypotheses and drawing valid conclusions, as well as judging the validity of inferences. Educational studies indicate that critical thinking does improve for some students across the four years of a baccalaureate program; however, not at the level desired (Colucciello, 1997). More studies are needed with more sensitive measures of critical thinking.

With a stronger, more relevant clinical knowledge base from nursing research, critical thinking and the ability to diagnose problems and predict outcomes from interventions, has sharpened dramatically. More specific linking of critical thinking with the knowledge base from nursing research, leads to the current concept of evidence based practice. Evidence based practice or decision-making, has its "roots" in England from British epidemiologist Archie Cochrane. Evidence based refers to multiple types of evidence not just research, but also clinical experience and intuition. This is an orientation to clinical practice which has been used by medicine for several decades (Estabrooks, 1998).

Evidence based practice often refers to practice for which systematic guidelines have been developed based on the knowledge available, primarily research. It encompasses the process of research utilization but goes beyond

in terms of tailoring the practice using research, experience, critical thinking, and intuition. There is not good understanding for how these different factors interrelate within evidence based practice to provide optimal, predictable outcomes for patients. Some Schools of Nursing are explicitly planning and implementing strategies for evidence based teaching within both undergraduate and graduate education (University of Michigan School of Nursing, 1999). Faculty development workshops will be needed to introduce new strategies for the teachers in Schools of Nursing for facilitating the integration of the multiple processes involved in evidence based teaching. Such challenges will need to be surmounted prior to implementation of the concept of evidence-based teaching or practice in the U. S.

Master's Programs and Nursing Research.

Since the master's degree programs build on the baccalaureate program, the same foundational issues are present. However, for the master's graduate, there is stronger preparation in conducting evaluation studies for quality assurance purposes and participating in research as a member of the investigator teams. The clinical nurse specialist, particularly, is expected to conduct evaluation studies of new evidence based clinical protocols as they are implemented in a health care setting. Nurse practitioners, who are primarily focused on clinical management from the nursing perspective, is prepared for using and tailoring knowledge in diagnosing and implementing treatments. Advanced practice nursing is

meant to be strongly integrated with nursing research. The master's program is the stage of specialization for nurses in the U. S. so they are expected to be experts in the research base affiliated with their clinical area of choice.

Doctoral Programs and Nursing Research.

All of the doctoral nursing programs in the U. S. are heavily focused on research. There are both Doctor of Philosophy and Doctor of Nursing Science programs. The basic difference in the two programs is the Doctor of Philosophy focuses on generating knowledge while the professional doctorate focuses on the application and evaluation of knowledge in practice.

The explosion of knowledge from nursing research has greatly influenced the doctoral programs. Early in the program development, the core courses primarily included the processes of theory development, research methodology, and statistical analysis with a number of courses taken from other disciplines. Today, the doctoral programs offer multiple substantive courses, even concentrations which are a sequence of courses in one nursing content field (Ketefian, 1993). For example, Schools of Nursing offer concentrations in women's health, health policy, symptom assessment and management such as with pain or fatigue, cognitive functioning for older people, health promotion and risk reduction, restructuring of health care/nursing care systems, and others. These concentrations are built on the faculty's research program and

other clusters of studies with substantiated results.

Several challenges confront nursing education in the United States in relation to the doctoral programs. One of the most serious difficulties is assuring or controlling the quality of the programs. Quality of doctoral education is dependent on the presence of multiple faculty with strong, extramurally funded research programs within a college or university which also provides strong scholarly interdisciplinary colleagues. Farren (1991) and others have shown in their studies that research productivity for graduates is closely correlated to their scientific experience in their doctoral programs. This definition of quality was further defined by the AACN in the 1993 position statement, "Indicators of Quality in Doctoral Programs in Nursing." There are 75 programs in existence, of which only about 20 to 25 of them provide research-intensive environments (Hinshaw, 1997). This is of major concern to nursing educators. The problem is compounded by the fact that most of the graduates of the research-intensive schools are employed by other research-intensive schools. There are limited numbers of these graduates who are employed by non-research intensive schools. Thus the problem of quality is perpetuated.

A second challenge for doctoral programs is how to balance their focus among research, teaching and service (Norbeck, 1998). Graduates of the doctoral programs primarily accept positions in academic settings as

faculty with the three-pronged mission of education, research, and service. The doctoral programs in the U.S. are strongly focused on research and scientific inquiry and all its characteristics (NAS, 1995). Little emphasis has been given to the knowledge and skills required for teaching or service. How to balance these roles while acknowledging that research is the primary focus for this level of educational preparation.

The third challenge facing nursing education for doctoral programs is how to facilitate the progression of younger individuals through scientific preparation (Hinshaw and Ketefian, 1996). The average age of Assistant Professors, the first position level in academic nursing in the U.S., is 49.5 years of age. Most individuals in the United States retire around 65 years of age. With only 15 years of productive time as a doctorally prepared person, the profession and discipline is handicapped. The science base of nursing needs such individuals to build a program of research in which one study flows into another; thus, building a specific area of knowledge, which can facilitate nursing practice. The profession needs these individuals to build their field of scholarly expertise and assume leadership at the state, regional, and national health policy arenas to shape the health care processes and systems for the country. This is a difficult challenge for individuals with only about 15 years of productive career. In order to generate the science needed for the discipline and provide the leadership required at the health policy levels, new models for doctoral education are

needed which provide strategies and incentives for nurses to progress through doctoral study earlier in their career patterns.

Post-Doctoral Education and Nursing Research. Post-doctoral education for nurses is a new tradition in the discipline since the late 1980's in the U. S. (Hinshaw, 1993). Currently, the research-intensive schools place a priority on employing individuals with post-doctoral education. They have their research programs initiated, have an excellent sense of focus and progression for the research, and are able to balance the multiple role responsibilities of the faculty position much faster. Post-doctoral preparation consists of one to two years of study with a mentor in a specialized area of study. It is the opportunity for nurse scientists to pursue and initiate their independent research program under the guidance and facilitation of a senior investigator who generally has resources to help finance their research.

The challenge is to increase the number of individuals selecting post-doctoral study given their opportunities to enter faculty positions at more lucrative salaries. In addition, because many individuals are completing doctoral study at an older stage of life, it is difficult to commit one to two more years to education. The issue is again one of motivating individuals to enter doctoral and post-doctoral education at an earlier point in their career.

Conclusion

The opportunities for nursing education in

the United States for the 21st century are exciting and challenging. During a time of rapid change in health care for the country professional nurses need to be well prepared with critical thinking processes, creativity and team processes as well as the knowledge and skills required for optimizing the health care of individuals, families and communities. The master's graduate needs to be able to exert clinical expertise in providing leadership within the rapidly changing health care system while the doctoral graduate and post-doctoral fellow are generating the knowledge base required to guide nursing practice and shape health policy in the country. Nursing educators will be challenged to shape the rapid health system changes through the educational programs of the Schools of Nursing. The opportunities and challenges in both Japan and the U. S. are stimulating and will push the profession and discipline in both countries to excel during the 21st century.

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