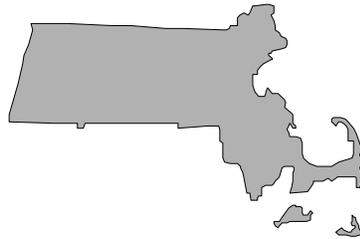


**Massachusetts Association of Colleges of Nursing
(MACN)**

*The Voice for Baccalaureate and Higher Education in Nursing Throughout the
Commonwealth of Massachusetts*



**Ensuring an Educated Nursing Workforce
for the Commonwealth**

Executive Summary

Ensuring an Educated Nursing Workforce for the Commonwealth

Nursing Shortage

Massachusetts in 2005 needs 70,621 nurses, but has a shortfall of 4,820 nurses or 7%. This shortage is expected to grow to 12% in 2010 to “an unacceptably dangerous shortage” acknowledged by The Massachusetts Public Higher Education Initiative on Nursing and Allied Health Education. Although nursing enrollments in Massachusetts are growing, admissions still have not reached levels achieved before the downturn in nursing school enrollments that began in 1997.

The single most important contributing factor to the nursing shortage is because of the faculty shortage. Five hundred and eighty three (583) qualified applicants were denied admission to nursing schools in Massachusetts in 2003. The projected Massachusetts nursing faculty vacancy rate of 8% in 2006 will continue to limit enrollment in associate, baccalaureate and higher degree programs at a time when nursing schools need to increase enrollments to meet future workforce demands.

The Need for Baccalaureate and Higher Degree Education

A more highly educated nursing workforce is essential to assure higher quality and safer, healthcare for Massachusetts citizens. Nurses comprise the largest single component of hospital staff, are the primary providers of hospital patient care and deliver most of the nation’s long-term care. Healthcare is one of Massachusetts’ largest employers, accounting for over 400,000 jobs. Nurses prepared with the baccalaureate and higher degrees provide better patient outcomes (Aiken et. al, 2003), have lower levels of medication errors and procedural and practice violations (Milbank Memorial Ford, 2001), stronger critical thinking and leadership skills (Good, 2001), and stronger communication and problem solving skills (Johnson, 1988). Federal policy advisors to Congress and the U.S. Secretary for Health and Human Services on nursing issues, have urged that at least 66% of the nation’s nursing workforce hold baccalaureate and higher degrees in nursing by 2010 (National Advisory Council on Nursing Education and Practice (NACNEP), 1996). Currently, 49.7% of nurses in Massachusetts are prepared at the baccalaureate or higher degree level.

Strategies to Expand Educational Capacity to Address Nursing Shortage

To address the nursing shortage in Massachusetts, strategies must:

- 1) increase the percentage of baccalaureate and higher degree nurses to 66% of all nurses through partnerships that enhance resources for baccalaureate and higher degree education in nursing.
- 2) remove the three major barriers to increasing the number of graduates: a shortage of qualified faculty, inadequate instructional facilities and equipment, and growing competition for access to clinical learning sites.

Ensuring an Educated Nursing Workforce for the Commonwealth

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Massachusetts Association of Colleges of Nursing (MACN)

Ensuring an Educated Nursing Workforce for the Commonwealth

I. Introduction

The Massachusetts Association of Colleges of Nursing (MACN) is the voice for baccalaureate and graduate nursing programs in the Commonwealth of Massachusetts (www.massnursing.org). The organization represents 21 colleges and universities (Appendix A) that educate over 6,670 baccalaureate, master's-level and doctoral nursing students each year (MACN, 2005). Of these, approximately 4,700 are enrolled in baccalaureate or master's programs preparing for RN licensure, and the remainder are RNs seeking baccalaureate, master's or doctoral degrees. Twelve (12) of these nursing programs are private and educate approximately 50% of nursing students in the state and nine (9) are public programs, educating the remaining 50%. An additional private college will launch a nursing program in fall 2005.

MACN recognizes that a highly educated nursing workforce is essential to assure high quality and effective health care for Massachusetts' citizens. MACN's member institutions provide the Commonwealth with graduates who pursue careers as professional nurses, advanced practice nurses, nurse managers and administrators, educators and scientists. Our graduates are the nurse leaders who critically analyze and define professional practice to improve care for patients and consumers. As educators, they strive to replenish nursing's significantly depleted workforce.

Baccalaureate and graduate nursing education is central to the state's healthcare industry. Nursing is the single largest discipline within the healthcare sector. Many healthcare agencies prefer or require a minimum of a bachelor's degree for their nursing staff. Without a nursing workforce educated in evidence-based practice, healthcare agencies cannot provide cutting-edge care nor meet current and future healthcare needs. In addition, baccalaureate and graduate nursing education is an important factor in the economics of the state. In Massachusetts, the equal mix of private and public nursing schools results in a significant economic savings for the state.

MACN plays a pivotal role in supplying the Commonwealth with appropriately educated nurses to care for its citizenry. Unfortunately, due to multiple, complex reasons the state's nursing workforce is dwindling in size. One of the predominant reasons is that the state is not producing enough new graduate nurses each year to meet new demands. The purpose of this paper is to summarize the relationship between the nursing shortage and nursing education in Massachusetts and to put forth strategies for expanding educational capacity so that demand for an appropriately educated nursing workforce is met, now and into the future.

II. Nursing Workforce in Massachusetts: Scope and Significance of the Problem

Several nursing workforce factors intersect to create both the demand for nursing care and the inadequate supply of registered professional nurses. Recruitment, education and retention of nursing professionals, both nationwide and in Massachusetts, are interdependent activities. These workforce factors are summarized below.

A. Supply and Demand of Professional Nurses: National and Massachusetts Projections

National Supply and Demand of RNs

The National Center for Health Workforce Analysis (Health Resources and Services Administration [HRSA], 2002) developed and applied a complicated demand and supply model for the nursing workforce. This model used empirical data and input from healthcare experts to analyze how the healthcare system operates and the role of nurses in care delivery. The model was applied to create national and state projections of current and future supply and demand of professional nurses. In 2000, the national supply of full time equivalent (FTE) registered nurses was estimated at 1.89 million. The demand was estimated at 2 million, revealing a shortage of 110,000, or 6%. Based on past trends in supply and demand of nurses, the shortage is expected to grow slowly until 2010, when it will reach 12%. At that time demand will begin to exceed supply at an accelerated rate and by 2015 the shortage of nurses will quadruple to 20%. If current trends continue and the shortage is not addressed, it will grow to an unprecedented 29% by 2020 (HRSA, 2002).

Massachusetts Supply and Demand of RNs

The National Center for Health Workforce Analysis (HRSA, 2002) has provided state-by-state projections for the supply and demand of nurses. More recently, the Massachusetts Public Higher Education Initiative on Nursing and Allied Health Education (2004) acknowledged that an “unacceptably dangerous shortage of skilled nurses will exist in Massachusetts by 2010.” Table 1 shows the projected supply and demand for full-time equivalent registered nurses in Massachusetts. These projections, based on current estimates of new being prepared, clearly show that the growing shortages will worsen from 2010 through 2030.

Table 1. Massachusetts RN Supply and Demand Projections for FTE Registered Nurses 2000-2020 (HRSA, 2002, pp. 14-18)

<u>Year</u>	<u>Supply</u>	<u>Demand</u>	<u>Shortage</u>	<u>% Shortage</u>
2000	59,884	66,919	-7,035	-11
2005	65,801	70,621	-4820	-7
2010	65,937	75,033	-9,096	-12
2015	63,816	80,595	-16,779	-21
2020	60,983	86,365	-25,382	-29.4

B. Baccalaureate and Graduate Nursing Enrollment Trends: National and Massachusetts

National Nursing Enrollments

According to a survey of 590 nursing schools in 2003 and 2004, nursing enrollment in 2004 increased nationwide by 14.1% (American Association of Colleges of Nursing [AACN], March 8, 2005). These national data, which include Massachusetts colleges and universities, indicate that total enrollment in all nursing programs leading to the baccalaureate degree in 2004 was 147,170, up from 126,954 in 2003. Furthermore, 112,180 students were enrolled in entry-level baccalaureate nursing programs. This is the fourth consecutive year of increases in national enrollment; nursing enrollment increased 16.6%, 8.1%, and 3.7% in 2003, 2002, and 2001, respectively. Prior to the increases that began in 2001, baccalaureate nursing programs had experienced a six-year period (1995-2000) of declining enrollments.

The AACN also found that graduations from entry-level baccalaureate nursing programs increased significantly from 2003 to 2004, by 14.1%. This increase translates into 27,378 new graduates available for practice in the nursing workforce. The recent 14.1% rise in baccalaureate nursing graduations follows much lower increases of 4.3% and 3.2% in 2003 and 2002, respectively. This upward trend was preceded by a six-year period of graduation declines from 1996 through 2001 (AACN, December 15, 2004).

Massachusetts Nursing Enrollments

Admissions to Massachusetts educational programs that prepare graduates to sit for the RN licensure examination have increased in each of the last 3 years (Massachusetts Board of Nursing, 2004a). Total admissions to RN programs were 3,161 and 3,673 in 2003 and 2004, respectively, a 16% increase in this one-year period. Baccalaureate admissions totaled 1,352 (36.8%) and generic master's¹ admissions totaled 253 (7%) of all RN admissions in 2004.² Although admissions have increased over the past two years, enrollments have still not returned to levels that existed before the downturn began in 1997.

While admissions to nursing schools are increasing, the trend in graduations is not as robust. The number of students who graduated in 2004 from all RN programs in Massachusetts was 2,031. Of these, 660 (36%) graduated from baccalaureate programs, and 185 (9%) graduated from generic master's programs³. The total number of 2004 nursing graduates represents a 16% increase over 2003, but baccalaureate graduates only increased 5%. The steady increase in RN admissions will continue to impact graduations positively for the next two years. However, these graduation rates indicate an annual shortfall of more than 800 students compared to the rates prior to 1996.

MACN (2005) conducted a survey of baccalaureate and graduate nursing programs in public and private colleges and universities for the academic year 2004-2005. Of the 9 public and 13 private colleges and universities surveyed in Massachusetts, 21 responded (response rate = 95%). The survey data indicated that 6,670 students are enrolled in baccalaureate and graduate level nursing programs: 5,258 in baccalaureate nursing programs, 1,294 in master's programs, and 118 in doctoral programs.

Degree Completion Times: Comparing ADN and BSN

The time needed to complete the BSN degree has frequently been considered much longer than that to complete the Associate Degree in Nursing (ADN). The assumption is that an ADN degree can be completed in half the time needed to complete a baccalaureate degree. However, in response to the increasingly complex healthcare environment, associate degree nursing education has significantly changed over the years, resulting in overall longer ADN programs. The traditional 60-credit requirement for the ADN has increased to 75-80 credits. Many associate degree nursing programs note in their program materials that the ADN requires at least 3 years of full-time study.

Baccalaureate nursing programs have built the professional nursing curriculum on a traditional liberal arts foundation, thus retaining a four-year college curriculum. Additionally, some accelerated baccalaureate and all generic master's degree nursing programs have developed curricula for individuals with a degree in a field other than nursing. The generic master's degree programs typically prepare individuals for licensure in 12-24 months and award either a second baccalaureate degree or a certificate of completion as a component of a master's degree program. These accelerated baccalaureate and master's degree programs attract talented, experienced students who can complete their education quickly and be readily deployed into the nursing workforce. Such programs prepare one of the fastest growing cohorts of new nurses in Massachusetts.

C. Shortage of Faculty to Teach in Schools of Nursing

National Faculty Shortage: Impact on Enrollment

As mentioned earlier, enrollments in entry-level baccalaureate programs in nursing increased by 14.1% from 2003 to 2004 (AACN, March 8, 2005). This promising news is counterbalanced by the fact that nursing colleges and universities turned away 30,000 qualified applicants from baccalaureate and graduate nursing programs, including 3,000 students who could potentially fill faculty roles (AACN, March 8, 2005). The reason for not accepting qualified applicants, cited by over 75% of the nursing schools responding to the AACN survey (March 15, 2005), was faculty shortages. According to a *Special Survey on Vacant Faculty Positions* (AACN, July 2004), there were 717 faculty vacancies at 395 nursing schools offering baccalaureate and graduate degrees (68.6% response rate). In addition to these vacancies, schools cited the need to create an additional 122 faculty positions to accommodate student demand. These data show a national

¹ Generic master's-degree programs in nursing enroll students who already possess a bachelor's degree in a field other than nursing and have curricula that combine general nursing courses with preparation for an advanced nursing role. Students are eligible to sit for the NCLEX-RN licensure exam after passing the curriculum requirements for general nursing, before they have fulfilled the additional requirements for the master's degree. Upon completion of the program, the student is awarded a master's degree.

² The remaining admissions are to associate degree and diploma programs in nursing that lead to RN licensure.

³ The remaining 55% were graduates of associate degree and diploma nursing programs.

nurse faculty vacancy rate of 8.1%, which translates to approximately 2.9 faculty vacancies per school. Most of the vacancies (54.3%) were faculty positions requiring a doctoral degree (AACN, October 20, 2004). Currently, only 50% of the nursing professoriate is prepared with doctoral degrees. Those prepared with master's degrees often have advanced practice skills and have not been formally prepared for the faculty role (AACN, December 23, 2003).

According to the AACN (December 23, 2003), eight factors contribute to the faculty shortage: retirement, decision to leave academic life, dissatisfaction with faculty role, alternative career choices, cost of nursing education, decreasing enrollment in nursing schools, decreasing graduation rates, and doctoral student age. The predominant reason for the shortage of faculty is the large numbers who have reached retirement age, coupled with an insufficient pool of younger replacement faculty. The second-most common reason is faculty departure from academic life to clinical services, private practice, or the corporate sector. Other factors are dissatisfaction with faculty role demands and alternative career choices in primary care. Because faculty salaries have not been competitive with the clinical marketplace, nurses with doctorates often chose other career alternatives. In addition, when nurses with master's degrees decide to pursue doctoral education, they typically experience a reduction in salary. Tuition and fee burden, as well as a diminishing pipeline of enrollees and graduates also contribute to the current nursing faculty shortage.

Another major factor that affects the faculty shortage is the age of current nursing doctoral students. Almost half are between the ages of 45 and 54 years. Fewer than 6.8% are younger than 35 years, which is in sharp contrast to the median age of 33 for all research doctorate awardees. The average age at retirement for full-time nursing faculty was 61.5 years in 2002. This retirement age suggests that a nurse who graduates with a doctorate at an advanced age would have a short window of time for a productive research and teaching trajectory. Furthermore, the average time from enrollment to degree completion for nursing doctorate awardees is 8.3 years, in comparison to 6.8 years for all research doctorate awardees. The median time lapse from entry into a master's degree program to completion of a doctoral program for nurses is almost twice that of other fields, 15.9 years versus 8.5 years.

Massachusetts Faculty Shortage: Impact on Enrollment

Despite the increasing number of applicants to nursing faculty positions in Massachusetts (Massachusetts Board of Registration in Nursing, 2004a), the majority of Board-approved nursing education programs operated with fewer budgeted FTE faculty positions and more FTE faculty vacancies in 2004 compared to 2002 (Massachusetts Board of Registration in Nursing, 2004b). However, the number of FTE positions in diploma and associate degree programs increased. More than 20% of basic nursing education programs in Massachusetts could not meet goals to increase admissions to their programs due to faculty vacancies.

Based on student enrollment projections in Massachusetts, an estimated 671-1,118 clinical nurse educators will be needed at RN programs statewide during the academic year 2005-2006. Thus, the faculty vacancy rate in 2006 is projected to be 8%, which parallels the national forecast.

A total of 1,751 students graduated in 2003 from all types of RN programs in Massachusetts. Of these, approximately 60% were graduates of an associate degree program, while 35% graduated at the baccalaureate level. Furthermore, only 13% of Massachusetts nurses held master's degrees in 2001 and most did not plan to seek additional nursing education in the next two years (Massachusetts Colleagues in Caring Collaborative, 2001).

High quality clinical education for nursing students depends on the education and experience of the clinical faculty. The current shortage of nursing faculty within the state and the low percent of master's-prepared nurses in Massachusetts threaten the quality of clinical instruction in schools of nursing. The inability to fill full-time faculty positions has forced nursing programs around the state to rely on an increasing number of part-time faculty. Because all graduate education in nursing (master's and doctoral levels) occurs at four-year colleges and universities (MACN-member schools), inadequate funding of these programs will have long-term consequences across the entire nursing education sector.

State regulations governing nursing education in Massachusetts require that nursing faculty hold at least a master's degree in nursing. Due to difficulties experienced by schools of nursing in filling part-time faculty positions, this regulation may be waived by the Board of Registration in Nursing (BRN) under three conditions. These waivers allow directors of nursing programs to hire clinical instructors with a baccalaureate degree in nursing if they qualify for one of the following waivers:

- Waiver 1. Baccalaureate in nursing and matriculated into a graduate nursing program with an expected graduation date within five years
- Waiver 2. Baccalaureate in nursing and a related non-nursing graduate degree
- Waiver 3. Baccalaureate in nursing and a minimum of five years full-time experience or its equivalent within the last eight years.

Ten (10) of the baccalaureate and higher degree programs in Massachusetts are using one or more of the waivers. In 2005, the BRN received 71 waiver applications from programs at all levels of nursing education (associate, diploma and baccalaureate). Seventy waivers were granted. The average number of waiver applications per program was 7.1, with a range of 1-17. Twenty (20) applications related to waiver #1, 9 to waiver #2, and 42 to waiver #3. The large number of applications for waiver #3 indicates the severe shortage of individuals with a MS degree or in graduate school who are interested in the faculty role (personal communication, C. Silveria, 2/28/05).

III. Impact of Faculty Salaries

Faculty salaries continue to be a major factor in the recruitment of qualified faculty for nursing programs. Salary was cited as the most significant factor affecting faculty recruitment to 21 of 31 Massachusetts nursing education programs, followed by competition with clinical settings and other academic institutions (Massachusetts Board of Registration in Nursing [BORN], 2004). Nursing programs depend on part-time clinical faculty to maintain the intensive 10:1 student to faculty ratio in clinical sites required by the Massachusetts BORN. These nurses work on a per course/per diem basis, with salaries ranging from approximately \$4000-\$7000 for a 3-credit course, depending on the clinical focus, for one clinical day over 14 weeks. These positions typically do not offer benefits. Nursing programs rely extensively on these clinical faculty to

assume responsibility for ensuring patient safety as well as the teaching clinical skills to student nurses.

Faculty in higher degree nursing programs are typically required to have a doctoral and/or master's degree in nursing. The average calendar-year salary in 2003 for doctorate-prepared nursing faculty in higher degree programs in the north Atlantic region ranged from \$80,549 (associate professor) to \$69,161 (assistant professor) to \$56,866 (instructor). Non-doctoral (master's-degree prepared) faculty salaries ranged from an average of \$68,814 (associate professor) to \$63,100 (assistant professor) to \$55,725 (instructor) (AACN, 2004, Salaries of Instructional and Administrative Nursing Faculty). These salary ranges contrast sharply with the average 2003 salary of \$73,592 for mastered-prepared nurse practitioners in Massachusetts (Advance for Nurse Practitioners, 2003).

A salary differential between nursing faculty and practicing nurses nationwide was also reported in 2003 as ranging from \$4000 to \$16,000. In a white paper addressing faculty shortages in baccalaureate and graduate programs in nursing, the AACN suggested that salary might be a factor in the employment decisions of nurses completing graduate education (AACN, 2003). Furthermore, the report indicated that when these graduate-degreed nurses compared the responsibilities and salaries of various job opportunities, the faculty role might not be as appealing.

Average salaries for clinical positions have continued to rise, while faculty salaries have been constrained by the salary structures in university/college settings; the latter have not kept pace with the salary increases in other roles for nurses. For example, the median calendar-year salaries for master's-degree prepared nursing faculty ranged from \$55,262 (assistant professor) to \$60,556 (associate professor) (AACN, 2003). Head nurses, nurse managers and nurse practitioners (generally master's degree-prepared) earned \$68,194, \$69,416, and \$69,407 respectively. For doctorally prepared faculty positions, salaries ranged from \$65,212 (assistant professor) to \$74,556 (associate professor). This range contrasts with that for nurse practitioners with doctoral degrees, who earned an average of \$77,243 a year. Additionally, nurse practitioners working in academic settings are reported to earn a much lower average salary of \$62,865. These statistics suggest that nurse practitioners with doctorates are finding financially attractive employment in settings outside of educational institutions (Advance for Nurse Practitioners, 2003).

Salaries for educational program administrators are also not competitive. Nursing directors and vice presidents for nursing earned from \$93,344 to \$113,100. The median calendar-year salaries of educational program directors with doctoral preparation ranged from \$71,313 to \$78,852 (AACN, 2003). The most recent salary data for faculty in the north Atlantic region are presented in the following chart.

Table 2: Calendar-Year Salary for Full-Time Instructional Nurse Faculty in the North Atlantic Region (AACN, 2005)

Rank	Professor		Associate		Assistant		Instructor	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Doctoral	\$106,147	\$28,722	\$81,501	\$12,851	\$71,451	\$9,328	\$65,585	\$11,572
Nondoctoral	\$97,856	\$45,053	\$70,986	\$13,251	\$63,584	\$9,803	\$58,060	\$9,834

While faculty salaries have risen in the last two years, they still are not competitive with the salaries reported in 2003 for nurse managers and nurse practitioners. The next salary survey for nurse practitioners will be released by Advance for Nurse Practitioners in January 2006. Identified salary differentials may impact the decision of nurses to return to graduate study at the master's and doctoral levels. As nurses calculate the cost of education and the financial return on their investment, they may decide that choosing a nursing education career does not provide enough benefits to merit their dedication to an academic/faculty role.

IV. Relationship Between Education of Nursing Workforce and Nurses' Impact on Patient Care

Education has a significant impact on the knowledge and competency of nurses. Nurses with BSN degrees are well prepared to meet the demands of today's healthcare settings. BSN-prepared nurses are highly valued for their skills in critical thinking, leadership, case management and health promotion, as well as their ability to practice across a variety of inpatient and outpatient settings. Nurse executives, federal agencies, the military, leading nursing organizations, healthcare foundations, "magnet" hospitals, and minority nurse advocacy groups all recognize the unique value that baccalaureate-prepared nurses bring to the practice setting (AACN, October 9, 2003). The AACN provides a comprehensive summary of national opinion, which clearly validates the impact of education on nursing practice, and the differences recognized among graduates of diploma, ADN, and BSN-programs (AACN, February 10, 2004). The following provides a brief summary of these opinions and positions.

A. Higher Levels of Nursing Education Linked to Better Patient Outcomes

A growing body of evidence shows that baccalaureate nursing graduates bring unique skills to their work and play an important role in the delivery of safe patient care. Dr. Linda Aiken and colleagues (Aiken et al., 2003) at the University of Pennsylvania identified a clear link between higher levels of nursing education and better patient outcomes. They found that surgical patients have a "substantial survival advantage" if treated in hospitals with higher proportions of nurses educated at the baccalaureate or higher degree level. They also found that in hospitals where the proportion of nurses holding baccalaureate degrees increased 10%, the risk of patient death and failure to rescue decreased by 5%. These nurse researchers recommended that the goal of publicly financed nursing education should be to shape the best prepared workforce to meet the needs of the population. The authors also called for nurse employers to encourage and support registered nurses to pursue education at the baccalaureate and higher degree levels.

B. The American Organization of Nurse Executives (AONE): Practice and Education Partnership for the Future

AONE, a subsidiary of the American Hospital Association, is the nation's leading organization of nurses in executive practice who design, facilitate, and manage care. They recently advocated for the higher educational preparation of nurses to meet the complex challenges of the future (AONE, 2005). "The educational preparation of the nurse of the future should be at the baccalaureate level. This educational preparation will prepare the nurse of the future to function as an equal partner, collaborator and manager of the complex patient care journey that is envisioned by AONE" (pg. 1). AONE has invited the partnership of practice, education and research to frame the next steps in realizing this future. Nurse employers have expressed a clear preference for hiring experienced BSN graduates for nursing management and RN specialty positions (National Council of State Boards of Nursing, 2002).

C. Nursing Education: A Factor in Patient Safety and Quality of Care

Significantly more medication errors and procedural violations are committed by nurses prepared at the associate degree and diploma levels than at the baccalaureate level (Fagin, 2001). These findings, cited in a report released by the Milbank Memorial Fund, come from two separate studies conducted in 1996 in New York and Texas and are consistent with findings from reference studies conducted in Arizona, Colorado, Louisiana, Ohio and Tennessee (Delgado, 2003). These data supports the importance of educational pathways for nurses with associate degrees and diplomas that continues professional development through baccalaureate and higher degree programs.

D. Differences in Competencies Cited Among Baccalaureate Nurses

Nurses' competencies have been recognized by chief nurse officers (CNO) at university hospitals as distinctly different, based on education. Most nurse leaders (72%) surveyed in 2001 (Good et al., 2001) cited stronger critical thinking and leadership skills in BSN-prepared nurses than in those with an associate degree or hospital diploma. Moreover, nurses prepared at the baccalaureate level have been reported to have stronger communication and problem solving skills (Johnson, 1988) and a greater ability to make nursing diagnoses and evaluate nursing interventions (Giger & Davidhizar, 1990) than nurses with less education.

E. Public and Private Support for Baccalaureate Prepared Nurses

The federal government, the military, nurse executives, healthcare foundations, nursing organizations, and practice settings have acknowledged the unique value of baccalaureate-prepared nurses and advocated for an increase in the number of BSN nurses across clinical settings (AACN, October 9, 2003).

F. American Association of Colleges of Nursing (AACN)

In the interest of improving patient safety and providing better care, the AACN has long advocated for a more highly educated nursing workforce. Only 43% of the current registered nurse workforce possesses baccalaureate, master's and doctoral degrees (AACN, 2004). This problem is further compounded by the fact that very few nurses prepared in associate degree programs continue their education once they enter the workforce. According to the National Sample Survey of Registered Nurses by the U.S. Department of Health and Human Services (2001), only 16% of associate degree-prepared nurses obtain post-RN nursing or nursing-related degrees. "Nurses sign a social contract with patients to provide the best care possible and fulfilling that contract means acquiring the knowledge and expertise needed to get the job done right," said Dr. Geraldine Bednash, the AACN's Executive Director. "As [Aiken's] study shows, experience is no substitute for rigorous baccalaureate and higher degree education. The AACN will continue to encourage registered nurses prepared at pre-baccalaureate levels to advance their education and will work with employers and fellow nurse educators to create a more highly educated nursing workforce" (AACN, 2004).

G. The National Advisory Council on Nursing Education and Practice

The National Advisory Council on Nurse Education and Practice (NACNEP), policy advisors to Congress and the U.S. Secretary for Health and Human Services on nursing issues, concurs that the increased complexity of the scope of practice for RNs requires a workforce with the capacity to adapt to change, critically think and problem solve. In addition, a sound foundation across a broad range of basic sciences, knowledge of behavioral, social and management sciences, and the ability to analyze and communicate data are necessary for quality nursing care. The NACNEP has urged that at least two-thirds of the nurse workforce hold baccalaureate or higher degrees in nursing by 2010 (AACN, October 9, 2003).

H. The Military

For the purpose of providing the best patient care and leadership by its nurse corps officers, the U.S. Army, U.S. Navy and U.S. Air Force all require the baccalaureate degree to practice as an active duty registered nurse. Commissioned officers within the U.S. Public Health Service must also be baccalaureate-prepared (AACN, October 9, 2003).

I. The U.S. Department of Veteran's Affairs (VA)

The VA is the nation's largest employer of registered nurses. In 2005 the VA established the baccalaureate degree as the minimum preparation its nurses must have for promotion beyond the entry level, and has committed \$50 million over a five-year period to help VA nurses obtain baccalaureate or higher nursing degrees (AACN, October 9, 2003).

J. Minority Nurse Organizations

The National Black Nurses Association, Hispanic Association of Colleges and Universities, and the National Association of Hispanic Nurses, as representatives of minority nurse organizations, are committed to increasing the number of minority nurses with baccalaureate and higher degrees (AACN, October 9, 2003).

K. The Pew Health Professions Commission

The Pew Health Professions Commission (1998) has called for a greater emphasis on producing baccalaureate and higher degree nurses. This Commission, an interdisciplinary group of healthcare leaders, legislators, academics, corporate leaders, and consumer advocates, was created to help policymakers and educators produce healthcare professionals able to meet the changing needs of the American healthcare system.

L. The Helene Fuld Health Trust

The Helene Fuld Health Trust, the nation's largest private foundation devoted exclusively to student nurses and nursing education, announced in November 2001 that it would preferentially fund programs that offered BSN and higher degrees in nursing. The foundation cited "the increased complexity of and sophisticated knowledge required for healthcare delivery" as reasons for setting its funding priorities at the baccalaureate level (AACN, October 9, 2003). More recently, The Helene Fuld Health Trust (2004) has awarded grants totaling \$5,475,000 to 10 baccalaureate nursing programs. In June 2003, the Trust issued Requests for Proposals to 15 selected nursing schools with well respected baccalaureate nursing programs, with the stated intent of awarding up to 10 grants to create endowments to provide continuing financial aid to students seeking a baccalaureate degree in nursing (Helene Fuld Health Trust, 2004).

V. Nurses' Contributions to Improving Healthcare through Research

Nurse researchers conduct clinical and basic research to establish a scientific foundation for care of individuals and families across the life span. The focus of nursing research ranges from health promotion and reduction of risk of disease and disability, to management of patients during acute and chronic illness, including promoting quality of life in those with chronic illness, to care for individuals at the end of life. Nurse researchers also study and develop means to improve the clinical settings in which care is provided and to translate new scientific advances into cost-effective health care. Nurse researchers, many of whom are nursing faculty in university-based nursing programs, conduct research in community and home settings, as well as in more traditional hospitals.

VI. Impact of Nursing Workforce on Economy: National and Massachusetts Profile

National Economic Profile of Nursing

Nursing is the nation's largest healthcare profession, with more than 2.7 million registered nurses nationwide. Of all licensed RNs, 2.2 million, or 81.7%, are employed in nursing. With more than four times as many RNs as physicians in the United States, nursing delivers an extended array of

healthcare services. These include primary and preventive care by advanced practice nurses in such areas as pediatrics, family health, women's health, and gerontology. Nursing's scope also includes services by certified nurse-midwives and nurse anesthetists, as well as care in cardiac, oncology, neurologic, gerontologic, obstetric/gynecologic, neonatal, and other advanced clinical specialties (AACN, February 2004).

Nurses comprise the largest single component of hospital staff, are the primary providers of hospital patient care, and deliver most of the nation's long-term care. Most healthcare services involve some form of care by nurses. In 1980, 66% of all employed RNs worked in hospitals. By 2000, that number had declined to 59% as more health care moved to sites beyond the hospital, and nurses increased their ranks in a wide range of other settings, including private practices, health maintenance organizations, public health agencies, primary care clinics, home healthcare, nursing homes, outpatient surgical centers, nursing-school-operated nursing centers, insurance and managed care companies, schools, mental health agencies, hospices, the military, industry, nursing education, and healthcare research (AACN, February 2004).

Massachusetts Economic & Demographic Profile of Nursing

The healthcare sector is one of Massachusetts' largest employers, accounting for over 400,000 jobs. Of these jobs, an estimated 18.2% are nursing positions, with 61,290 at the bedside and 12,040 in other positions. By 2008, number of RN jobs is likely to increase to 84,410 (Nursing Career Ladder Initiative, 2003). This number amounts to an annual increase of 2,270 new openings each year. As of January 2005, 100,592 RNs held current Massachusetts's licensure. Because the Board of Registered Nurses in Massachusetts is not funded to collect and analyze employment data from its licensees, the most current data regarding licensed RNs comes from a 2001 survey of over 9,000 RNs licensed in Massachusetts and living in Massachusetts or the surrounding states (Massachusetts Colleagues in Caring, 2001). As illustrated in Tables 3 and 4, the state's RNs are overwhelmingly white and female, 50% have less than a baccalaureate-level education, over 80% are employed in Massachusetts, over 50% are employed full-time, and 35% are employed part-time.

Table 3. Massachusetts Colleagues in Caring Collaborative RN Survey – Demographics (2001; N=9000)

Licensed RNs in MA	Percent
Gender	
Male	3.1
Female	96.9
Ethnicity	
White	95.7
Mean Age (years)	45.7
Educational Preparation	
Doctoral degree	0.6
Master's degree	13.2
Baccalaureate degree	35.9
Associate degree	22.2
Diploma	28.3

Table 4. Massachusetts Colleagues in Caring Collaborative RN Survey – Employment Information (2001; *N*=9000)

RN Employment Status	Percent
Employed in MA	80.7
Employed out of state	6.5
Employed outside of nursing	10.9
Unemployed	1.9
Employed for more than 10 yrs.	33.4

VII. Conclusions

The following conclusions can be drawn regarding the relationship between the nursing shortage and nursing education:

- Baccalaureate and graduate nursing education provided by the member schools of the Massachusetts Association of Colleges of Nursing (MACN) is essential to assure high quality and effective health care for Massachusetts' citizens.
- Complex factors create both a demand for nursing care and an inadequate supply of registered professional nurses in Massachusetts. These factors include an increasing demand for professional nurses that is quickly outpacing nurse supply, an increasing demand for a more highly educated nurse workforce, an increasing demand for nursing faculty coupled with a shrinking faculty supply, and the impact of faculty shortage on nursing enrollment.
- Supply and demand projections for registered professional nurses in Massachusetts parallel the national trends and reveal a growing demand and worsening shortage of nurses, leading to a deficit of 25,000 nurses by the year 2020.
- Approximately 2,000 nurses graduated in 2004 from all nursing programs (baccalaureate, master's and associate degree) in Massachusetts, representing a 16% overall increase from the previous year. Of these graduates, 37% received baccalaureate degrees, 7% generic master's degrees, and 56% associate degrees. The number of baccalaureate degrees increased only 5% from the previous year.
- The national shortage of nursing faculty tremendously affects nursing enrollment. The AACN reports that 30,000 qualified applicants were turned away from nursing colleges and universities in 2004; 3,000 of these represented potential faculty.
- The current shortage of nursing faculty in Massachusetts threatens the quality of clinical education for nurses and is significantly impacted by the low percentage of master's-prepared nurses in Massachusetts.

- Increasing the number of master's- and doctorate-prepared nurses through graduate education provided by the MACN member schools is essential to filling the statewide faculty deficit. Appropriate funding of nursing graduate programs, both now and in the future, is critically important.
- Education significantly impacts the knowledge and competency of nurses. Baccalaureate-prepared nurses are well prepared to meet the demands of today's healthcare settings.
- The American Organization of Nurse Executives and numerous other nursing, healthcare and private organizations, branches of the military, and the Veterans Administration have called for nurses to be prepared at the baccalaureate level.
- With more than four times as many RNs as physicians in the U.S., nursing will increasingly be relied upon to deliver an extended array of healthcare services. Most health services involve some form of care by nurses.
- The healthcare sector is one of Massachusetts' largest employers, with nursing accounting for 18.2% of the state's 400,000 healthcare jobs.
- In Massachusetts, RN jobs are likely to increase to 84,410 by 2008, amounting to an annual increase of 2,270 new job openings.
- Strategies to address the nursing shortage in Massachusetts must focus on resolving the long-term challenges of educating nurses. Initiatives focused solely on producing the largest number of nursing graduates in the shortest time frame will not resolve the faculty shortage.
- To ensure an adequate and highly educated nursing workforce, Massachusetts must produce sufficient numbers of master's- and doctorate-prepared nursing educators for the year 2015 and beyond.

VIII. Recommendations and Strategies

To educate a knowledgeable and highly competent nursing workforce in Massachusetts, the following goals and strategies are recommended.

Recommendation 1. Meet the healthcare needs of the citizens of the Commonwealth, increase the percentage of baccalaureate and higher degree nurses practicing in Massachusetts to 66%.

Strategies:

- Collaborate with the Massachusetts Board of Higher Education on its Nursing Education Initiative to strengthen baccalaureate and higher degree nursing programs through technology, capacity-building and clinical training resources.
- Develop successful partnerships between healthcare facilities and nursing schools to expand and prepare additional faculty and clinical resources to support increased enrollment.

- Support current and proposed state legislation to create nursing scholarships and fund faculty development in schools of nursing (both private and public).
- Initiate a “call to action” with key stakeholders to address the barriers confronting baccalaureate and higher degree education in nursing.
- Partner with community colleges to increase the enrollment and graduation of RN to BSN students in Massachusetts and to assist in the development of nursing faculty across all levels of nursing education.

Recommendation 2. Increase the number of nurses who are qualified as nursing faculty and retain them in nursing education programs at all levels.

Strategies:

- Increase the enrollment and graduation of master’s- and doctorate-prepared nurses in Massachusetts.
- Increase the rate of progression to doctoral in nursing by designing curricula that allow and encourage students to enter doctoral programs within five years after completing the baccalaureate degree and to complete doctoral programs within a five-year period.
- Secure private and public funding to develop, implement and accelerate the opening and growth of doctoral programs in nursing.
- Partner with key stakeholders on a statewide campaign to recruit nursing faculty through public and professional education that informs nurses about academe and faculty career options, including qualifications, preparation, and graduate nursing preparation.
- Conduct a study to assess interest in, as well as barriers to pursuit of academic positions by master’s- and doctorate-prepared nurses in Massachusetts.
- Collaborate with the Massachusetts Organization of Nurse Executives (MONE) to create a database for benchmarking faculty salaries to salaries of nurses in clinical practice with comparable education and experience.
- Examine retirement policies in universities with nursing programs to identify and eliminate unnecessary restrictions to continued nurse faculty service, particularly mandatory retirement ages and financial penalties for retired nurse faculty who return to work.

Recommendation 3. Examine partnership models between the public and private sectors for faculty and clinical nursing education.

Strategies:

- Create academic-service partnerships to increase the involvement of service-based, graduate-prepared nurses in the instruction of nursing students.
 - Develop “RN-on-loan” programs to increase the number of clinical faculty from the service sector.
 - Provide staff development programs about clinical teaching and educational evaluation for nursing staff in the clinical agencies.
 - Import clinical education strategies such as simulation to redistribute faculty and clinical resources.
 - Adopt creative course scheduling that benefits students and faculty, and maximizes use of clinical resources.

- Participate in educational consortia to coordinate clinical training sites.
- Develop a marketing plan to communicate information to clinical agencies about the conditions, costs, and benefits of serving as a clinical education site.
- Partner with MONE and other healthcare facilities to develop policies and procedures that will decrease the burden of clinical clearance for faculty and students.

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Acknowledgements

The Massachusetts Association of Colleges of Nursing wishes to acknowledge the commitment, diverse perspectives and collective thought of the members without whom this paper would not have been completed.

Kathleen B. Scoble, EdD, RN, Lead Writer and Project Coordinator

Nancy Hoffart, PhD, RN

Eileen Breslin, PhD, RN

Doreen Harper, PhD, RN, FAAN

Margery Chisholm RN, EdD, CS, ABPP

Greer Glazer, RN, CNP, PhD, FAAN

Antoinette Hays, PhD, RN

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The Massachusetts Association of Colleges of Nursing also wishes to acknowledge the American Association of Colleges of Nursing, the national voice for America's baccalaureate- and higher-degree nursing education programs, which assists deans and directors across the country by providing educational, research, governmental advocacy, data collection, publications, and other programs that work to establish quality standards for bachelor's- and graduate-degree nursing education.

APPENDIX A

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