

# NCMJ

NORTH CAROLINA MEDICAL JOURNAL

a journal of health policy analysis and debate

## Future of Nursing in North Carolina

### Also in this issue

Cost analysis of ED use for primary care services

Presence of automated defibrillators in NC schools

### plus

Call for applications, nominations for NCMJ editor in chief

1993 Advanced practice nurses become eligible for direct reimbursement from insurance companies



Clara Adams-Endler

2010 Full implementation of new curriculum achieved in NC Community College System's 55 ADN programs

1987 NC A&T School of Nursing grad Clara Adams-Endler appointed chief of Army Nurse Corps

1981 NC becomes only state where Board of Nursing members are elected by nurses rather than appointed by governor

1976 MSN program at UNC-Greensboro School of Nursing begins

1970 UNC Dept of Public Health Nursing Chair Margaret Dolan and others create one of nation's 1st NP programs



Margaret Dolan

1966 NCCU School of Nursing Dean Helen Miller is 1st African American to be appointed to NC Board of Nursing

1965 Charlotte College Dept of Nursing (now UNC-Charlotte School of Nursing) welcomes 1st students

1964 Eloise Lewis appointed 1st dean of UNC-Greensboro School of Nursing



Eloise Lewis

1959 NC General Assembly authorizes creation of School of Nursing at East Carolina College (now ECU College of Nursing)

1957 Duke School of Nursing unveils nation's 1st clinical masters program in nursing

1950 UNC-Chapel Hill School of Nursing is founded



Ruth Hay

1941 Ruth Hay tapped to establish Dept of Public Health Nursing at UNC School of Public Health; is university's 1st female professor

1902 Creation of NC Nurses Association

1894 Under guidance of Mary Lewis Wyche, 1st NC nursing school opens



Mary Lewis Wyche

1923 Fayetteville's Carrie E. Broadfoot leads creation of professional association for African American nurses



Carrie E. Broadfoot

1876 NC's 1st civilian hospital opens in Charlotte, largely through efforts of Jane Wilkes



Jane Wilkes

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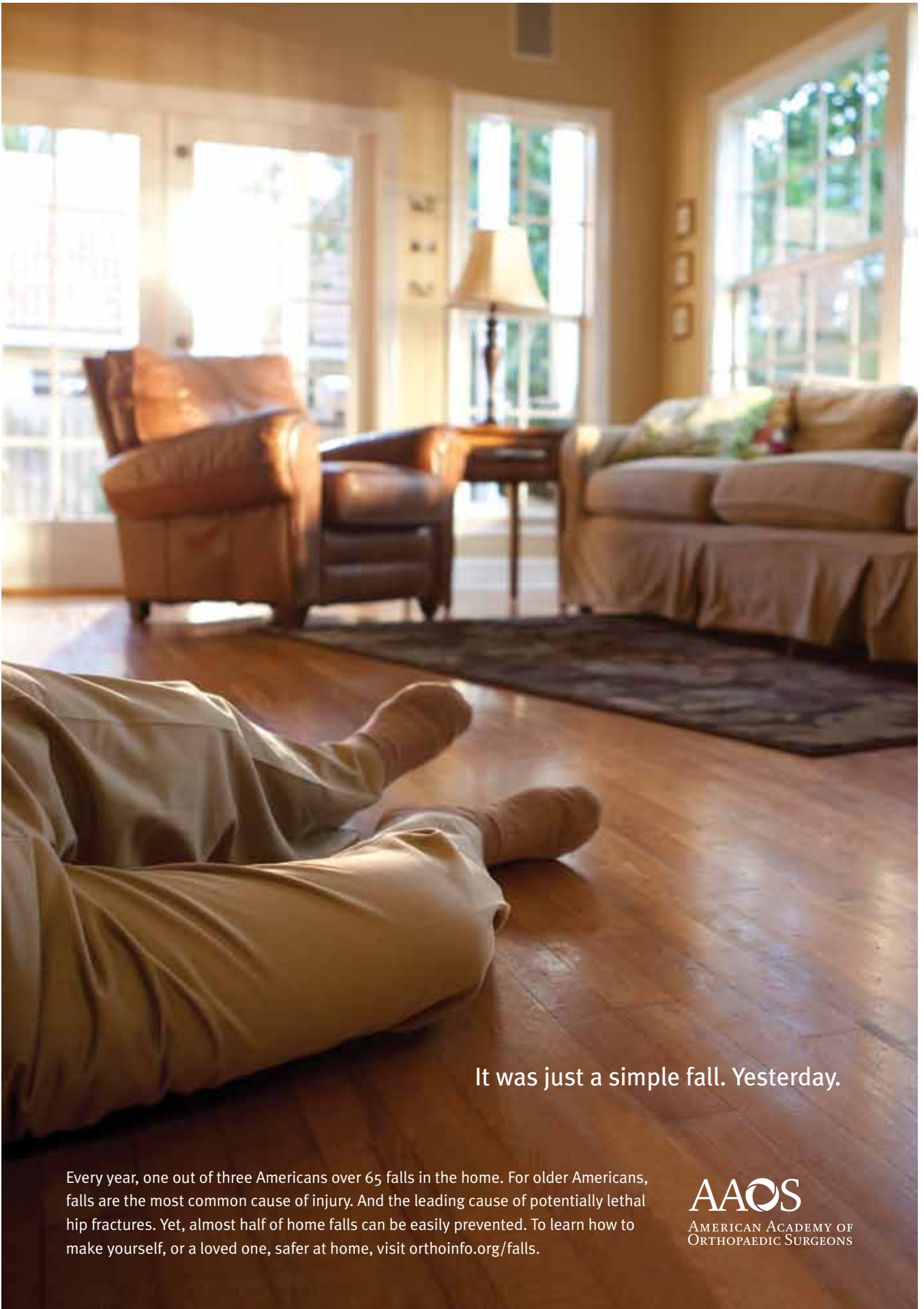
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**On the cover.** We are grateful to Tina Gordon, Phoebe Pollitt, and John Wilson for their assistance with the images. Of note, John obtained the image of Wilkes from the NC Division of Archives and History; the image of Hay from the UNC-Chapel Hill Gillings School of Global Public Health; the images of Dolan and Broadfoot from the NC Nurses Association; and the image of Lewis from the UNC-Greensboro School of Nursing. Information in the time line was accessed from the Web sites of Appalachian State University (<http://www.nursinghistory.appstate.edu/>), UNC TV (<http://www.unctv.org/ncnursing/index.html>), and schools of nursing throughout North Carolina.

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The North Carolina Institute of Medicine and The Duke Endowment seek candidates for the position of editor in chief of the NCMJ. The position is part-time, includes a stipend, and runs for a term of 3 years, beginning in January 2012. Nominations of and applications from qualified candidates will be accepted. The deadline for receipt of nominations is September 30, 2011; the deadline for receipt of applications is October 28, 2011.

The mission of the NCMJ is to disseminate health policy content among North Carolina health professionals, policymakers, and interested lay persons by publishing authoritative commentaries and original research on an array of health-related subjects. The NCMJ was founded as the North Carolina Medical Journal in 1849 by the North Carolina Medical Society. Since 2002, the NCMJ has been published by the North Carolina Institute of Medicine and The Duke Endowment. Six issues are published annually, with a circulation of 30,000.

The editor in chief is responsible for overseeing NCMJ content, including identifying topics for theme issues, recruiting expert contributors, and reviewing contributions for accuracy and quality. The editor in chief plays an important role, along with the publishers and the managing editor, in strategic and operational planning. Candidates must have broad understanding of the North Carolina health system and knowledge of the efforts of leading health care professionals, researchers, and policymakers across the state; candidates should have previous editorial experience with scholarly and/or quasi-scholarly publications and must be able to contribute the time and leadership necessary for timely publication of high-quality content.

Nominations should include a short description of the relevant qualifications of and contact information for the candidate(s). Applications should include a brief summary of the candidate's background, as well as a short discussion of the candidate's perspectives on the current status of the NCMJ, opportunities for the NCMJ's growth and enhancement, and plans for capitalizing on these opportunities. Materials should be saved as a pdf document and should not exceed 2 pages.

Please e-mail materials to Dr. Pam Silberman, president and chief executive officer of the North Carolina Institute of Medicine, at [ncmedj@nciom.org](mailto:ncmedj@nciom.org).

# Tar Heel Footprints in Health Care

*A periodic feature that recognizes individuals whose efforts—  
often unsung—enhance the health of North Carolinians*

## Monica Parker, RN, MS, CDE



Monica Parker has dedicated her career to working with poor populations in rural North Carolina. In the early 1990s, Parker and East Carolina University joined forces with Religious Community Services in New Bern, North Carolina. A nursing assessment clinic was established and provided underserved individuals with health assessments, medication reviews, referrals, and other primary care needs. In 1994, a survey of patients found that many were uninsured and received most of their health care in emergency departments. Parker and others had found a great need in the community to address.

The MERCI Clinic, the creation of which is described by Parker's colleagues as her greatest achievement, was founded in 1996, in part, because of the survey. According to her colleague Elaine Scott, another reason for the creation of the MERCI Clinic was Parker's dedication to her students, particularly in terms of improving their learning experience. The clinic provides services to uninsured individuals in Craven, Jones, and Pamlico counties who have low incomes and are ineligible for Medicaid or other benefits. Martha Engelke, a colleague at East Carolina University, acknowledges Parker's hard work in creating the clinic and says she "is very quiet but committed and persistent in helping a lot of people without requiring a lot of recognition." Parker has a very good reputation at the clinic with her peers and her patients. Nancy Alexander, executive director of the MERCI Clinic, says, "As a faculty member, [Parker] is well versed. As a peer, she is very affirming, knowledgeable, and approachable. As a friend, she is genuine person and always willing to help."

Parker is also praised by her colleagues for her work in diabetes education. As a clinical diabetes educator, Parker has helped many patients manage their diabetes, especially those with limited resources to do so. Engelke describes her as "always active in working with people with diabetes and great at getting vendors to give resources for those not able to afford them."

Parker was inspired by her older sister to become a nurse. When Parker was 14 years old, she went to visit her sister, who was in nursing school, and accompanied her sister on some home visits. She realized that there is more to nursing outside of hospital and institutional settings and that she wanted to practice nursing in the community. Parker has since inspired many students to follow in her footsteps. Scott says that Parker has successfully conveyed "to hundreds of nursing students that health starts in the community."

Parker received a bachelor of science in nursing degree from Fitchburg State College and a master of science in nursing degree from Boston College. She has served as a coordinator for the special need medical shelters and as a member of the local committee of the American Association of Diabetes Educators.

Parker enjoys her new retirement by watching Formula One racing, the Boston Red Sox, and East Carolina University sports when she is not busy volunteering at the clinic. NCMJ

*Contributed by Rachel E. Williams, MPH, research assistant, North Carolina Institute of Medicine,  
Morrisville, North Carolina (rachel\_williams@nciom.org).*

# Cost Analysis of the Use of Emergency Departments for Primary Care Services in Charlotte, North Carolina

Andrew McWilliams, Hazel Tapp, Jolene Barker, Michael Dulin

**BACKGROUND** Patients often inappropriately seek emergency services for ambulatory care-sensitive conditions (ACSCs). The unnecessary use of emergency departments (EDs) is an expensive burden on hospitals and payers. Here, we identify factors influencing ED visits for ACSCs and analyze the costs of such visits for EDs and primary care clinics.

**METHODS** Age, race, sex, and insurance data from 2007 for 3 primary care safety net clinics and 4 EDs in Charlotte, North Carolina, were analyzed using the New York University (NYU) algorithm to identify ACSC diagnoses. Cost analyses used hospital charge data and net margins as surrogates for payer and hospital system costs.

**RESULTS** A total of 113,730 (59.4%) of 191,622 ED visits were for ACSCs. Factors that increased the number of ACSC-related visits included lack of insurance coverage; receipt of Medicaid insurance; age of less than 2 years; African American, Hispanic, or Native American race or ethnicity; and female sex. Charges in the EDs were 320%-728% higher than those in the primary care clinics, allowing for a potential savings of 69%-86% had ACSCs been treated in primary care clinics instead of in EDs.

**LIMITATIONS** The NYU algorithm may have inherent weaknesses in the categorization of ACSC-related visits and the accuracy of cost assignment, especially for vulnerable patients, such as those with comorbidities or those aged less than 2 years.

**CONCLUSION** The majority of conditions treated during outpatient ED visits are treatable in primary care clinics or even preventable. Some groups are at higher risk for inappropriate use of EDs. Solutions to this complex problem will require payers and hospital systems to design and invest in novel targeted interventions.

In the current debate over health care reform, much emphasis has been placed on health care costs. A bipartisan consensus exists in Congress to develop tangible solutions that encompass cost savings, improved access, and improved quality of care by seeking out areas of waste and poor quality. Use of the emergency department (ED) for the care of nonurgent illnesses treatable in primary care settings is one area of systemic inappropriate use of resources that deserves attention. Unnecessary ED use is associated with increased overall health care costs, diversion of attention from true emergency cases, and decreased quality of services [1, 2]. Over the past 15 years, ED overcrowding has been recognized as a growing problem, with the number of ED visits in 2007 totaling approximately 116.8 million [3-5].

Research has shown that a significant number of ED visits are for ambulatory care-sensitive conditions (ACSCs), a term that indicates conditions that are either treatable or preventable in a primary care setting. A 2001 study in Utah identified that 4 of 10 ED visits are for ACSCs [6]. Similarly, a study of ED use in New Jersey reported that 47% of outpatient ED visits were for conditions that were treatable in non-emergent settings [7]. Previous studies have correlated ED overuse with several demographic characteristics, including female sex, older age, African American race, low income, and poor health status [8, 9].

The potential scope of the effects that ACSC-related visits have on health care costs is reflected by the report from

Utah, which found that such visits accounted for \$131 million of the state's \$281 million total ED-related hospital charges [6]. However, the amount of potential savings in diverting ACSC-related visits from the ED is debatable, with studies showing anywhere from marginal to dramatic savings [6, 10, 11]. Calculations of savings are difficult and depend on the methods of analysis, the perspective from which the calculations were performed (ie, payer vs medical provider), and the different allocations of costs within a hospital's departments [12-14]. Despite these difficulties, considerable interest exists on the part of payers and providers to investigate solutions that curb increasing costs and solve problems associated with ED overcrowding. Interventions that effectively keep ACSC-related visits within a primary care setting or prevent such visits entirely have remained elusive [9]. While such interventions are admirable, they do not address current and projected shortages of primary care physicians. A solution is likely multifactorial and should be tailored to a specific area and population.

As the third-largest vertically integrated health care sys-

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tem in the United States, the Carolinas HealthCare System (Charlotte, NC) provides a unique opportunity to explore patterns of ED use and possible solutions to the problem of ED overuse. Carolinas HealthCare System is the largest provider of emergency and indigent care in Mecklenburg County, North Carolina, and maintains an extensive inpatient and outpatient database that allows for in-depth analysis of visit types, charges, and patient demographic characteristics [15]. The Mecklenburg Area Partnership for Primary Care Research was created in 2004 to study health care delivery among underserved populations in Charlotte. The primary goal of this network is to develop and implement interventions that increase the efficacy of health care delivery for underserved populations.

In this study, the Mecklenburg Area Partnership for Primary Care Research set out to identify factors that influence ED visits for ACSCs and to compare the costs of such visits to those of the same type of visit in a primary care setting. The overarching goal of this study is to provide baseline and supportive data to payers and providers for mutual investment in novel and robust interventions targeted at specific high-risk populations.

## Methods

This study was approved by the Institutional Review Board of the Carolinas HealthCare System.

**Data collection.** Data from 2007 for 3 primary care safety net clinics and 4 EDs in Carolinas HealthCare System were analyzed using Access software (Microsoft). The inclusion criteria were as follows: (1) the patient must reside within Mecklenburg County; (2) the ED visit was an outpatient visit or resulted in an "observation" admission that lasted less than 24 hours (we were particularly interested in very easily avoidable ED visits); and (3) a diagnosis code associated with the visit was on record. Of the 304,575 total visits (including visits that resulted in an inpatient stay), 191,622 met the inclusion criteria and were used for analysis.

**Classification of diagnoses.** Diagnoses from the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) were used to classify visits. To categorize the primary ICD-9-CM diagnosis at each visit and determine the probability that the patient's condition required care in the ED, we used an algorithm developed by the New York University (NYU) Center for Health and Public Service Research [16, 17]. NYU researchers, with consultation from a panel of ED and primary care physicians, abstracted 5,700 ED charts and classified associated ED visits into one of 4 categories: nonemergent (ED1); emergent, but the condition could have been treated successfully in a primary care setting (ED2); emergent, but the condition was likely preventable or avoidable had timely care been received in a primary care setting within 12 hours (ED3); and

**TABLE 1.**  
**Demographic Characteristics Associated With 191,622 Emergency Department (ED) Visits**

Characteristic	ED visits, no. (%)	Percentage of county residents <sup>a</sup>	Percentage difference <sup>b</sup>
<b>Race</b>			
African American	107,888 (56.30)	30	87.67 (86.72-88.62)
White	50,702 (26.46)	64	-58.66 (-59.04 to -58.28)
Hispanic	25,347 (13.23)	10	32.30 (30.55-34.05)
Other	7,679 (4.01)	4	0.25 (-2.50 to 3.00)
<b>Payer</b>			
Insurance	59,416 (31.01)	54	-42.57 (-43.03 to -42.11)
Self	63,870 (33.33)	18	85.17 (83.60-86.74)
Medicare	17,677 (9.22)	8	15.25 (12.93-17.57)
Medicaid	50,658 (26.44)	20	32.20 (31.07-33.33)
<b>Sex</b>			
Female	106,840 (55.76)	51	9.33 (8.78-9.88)
Male	84,782 (44.24)	49	-9.71 (-10.28 to -9.14)
<b>Age</b>			
≤2 y	18,895 (9.86)	5	97.20 (96.25-98.15)
3-18 y	32,999 (17.22)	21	-18.00 (-18.85 to -17.15)
19-40 y	80,183 (41.84)	35	19.54 (18.70-20.38)
41-64 y	48,736 (25.43)	31	-17.97 (-18.21 to -17.73)
≥65 y	10,809 (5.64)	8	-29.50 (-31.19 to -27.81)

<sup>a</sup>Data were determined on the basis of US census data for Mecklenburg County.

<sup>b</sup>Data are percentage difference (95% confidence interval) between the percentage of county residents and the percentage of ED visits.



**TABLE 2.**  
**Frequency of Emergency Department (ED)**  
**Visits, by Visit Category**

Category	Visits, no. (%) (N = 191,622)
ACSC related	
ED1	54,294.71 (28.33)
ED2	47,397.86 (24.74)
ED3	12,037.00 (6.28)
Overall	113,729.57 (59.35)
ED4	21,407.43 (11.17)
Injury related	39,905.00 (20.82)
Unclassified <sup>a</sup>	12,674.00 (6.61)
Drug or alcohol related	2,069.00 (1.08)
Psychiatric	1,837.00 (0.96)

Note. Visits were classified on the basis of an algorithm developed by the New York University Center for Health and Public Service Research [16, 17]. ED1, nonemergent; ED2, emergent, but the condition could have been treated successfully in a primary care setting; ED3, emergent, but the condition was likely preventable or avoidable had timely care been received in a primary care setting within 12 hours; ED4, emergent, and the condition could not have been prevented or treated successfully had timely care been received in a primary care setting within 12 hours.  
<sup>a</sup>Conditions were categorized as unclassified if the diagnosis codes were not included within the algorithm.

emergent, and the condition could not have been prevented or treated successfully had timely care been received in a primary care setting within 12 hours (ED4). The algorithm places visits related to drugs and/or alcohol use, psychiatric conditions, and injury in separate categories. Visits are categorized as unclassified if the diagnosis codes are not included in the NYU algorithm.

For each ICD-9-CM diagnosis, the algorithm determines the probability of classifying the diagnosis in one of the categories of ED visits; probabilities are calculated for each ED visit category, with the 4 probabilities summing to 1.0. The probabilities take into consideration that, with many diagnoses, some proportion of people truly need emergent care. For example, while abdominal or chest pain are often benign, such complaints can indicate serious medical conditions requiring emergency care. For this study, we grouped ED1, ED2, and ED3 together into a category referred to as ED123. The ED123 category encompasses all of the visits for ACSCs. Visits categorized as ED4 were considered necessary emergency care. Visits classified as related to drug or alcohol use, psychiatric conditions, or injury, as well as those that were unclassified, were also considered to be necessary emergency care.

We linked all ED and primary care clinic visits to the respective primary ICD-9-CM discharge diagnoses. The NYU algorithm was then used to assign category probabilities to each visit. We calculated the percentages of diagnoses in each category, by 4 demographic characteristics:

race, payer type, age, and sex. All races other than African American, Hispanic, and white were combined into a category termed "other." Demographic data related to ED visits were compared to US census-based demographic data for Mecklenburg County.

**Outcome measures.** Data on hospital charges (defined as the fee hospitals charge patients for their services) and net margins (defined as the hospital's average profit or loss) were used as surrogate markers for costs. Charge data may more accurately reflect the actual cost to the payer (defined as individual or third party payers), while net margins reflect the actual cost to the provider. Total charge data were taken from the actual hospital system's charges but do not include ED physician charges. Hospital and clinic charge data were then used to calculate average visit costs and net margins for each NYU category and demographic characteristic. The net margin, defined as the hospital's profit or loss, was calculated using the hospital's accounting system, which allocates fixed and variable costs on a per-visit basis. For comparison, we determined the top 10 ACSCs diagnosed in the ED between 8 AM and 5 PM and then extracted data on all clinic visits in 2007 during which these same 10 diagnoses were recorded. Charge data were used to calculate average clinic and ED costs for each of the 10 diagnoses.

**Statistical analyses.** SAS software, version 8.2 (SAS Institute), was used to perform  $\chi^2$  analysis; a P value of .05 or less was considered to be statistically significant. Standard statistical methods, including calculation of means and standard deviations, were used to analyze data. 95% CIs were calculated with SAS, using either bootstrapping or normal approximation. Multiple logistic regression was used to examine the effect of risk factors—race, sex, payer type, and age (stratified as 3-18 years, 19-40 years, 41-64 years, and  $\geq 65$  years)—on the probability of having an ACSC-related visit. Odds ratios and 95% CIs were calculated for each risk factor to determine whether they were statistically significantly different from a chosen reference value.

## Results

A total of 191,622 ED visits met the inclusion criteria. The demographic characteristics associated with these ED visits are provided in Table 1. Comparison of these characteristics with county population census data revealed that African Americans, Hispanics, people without insurance, Medicaid and Medicare recipients, and people aged 19-40 years or younger than 2 years were overrepresented in the number of outpatient ED visits.

By use of the NYU algorithm, we found that 113,730 ED visits (59.4%) were for ACSCs, 21,407 (11.2%) were classified as necessary emergency care, and 39,905 (20.8%) were related to injury (Table 2). The absolute numbers and percentages of ACSC-related ED visits were calculated for each demographic characteristic, using a denominator of total ED visits per demographic characteristic (Table 3). Percentage deviations from the population mean (ie, 59.4%) showed

**TABLE 3.**  
**Comparison of the Frequency of Emergency Department (ED) Visits for**  
**Ambulatory Care-Sensitive Conditions (ACSCs), by Patient Characteristic**

Characteristic	ACSC-related ED visits, % <sup>a</sup>	Percentage difference <sup>b</sup>	Odds ratio (95% CI)
<b>Race</b>			
African American	63.44	7.53 (7.21-7.85)	1.63 (1.56-1.70)
White	49.18	-16.64 (-17.03 to -16.25)	1 (reference)
Hispanic	63.31	7.31 (6.54-8.08)	1.28 (1.19-1.37)
Other	55.94	-5.19 (-5.47 to -4.91)	1.17 (1.05-1.29)
<b>Payer</b>			
Insurance	52.26	-11.42 (-11.63 to -11.21)	1 (reference)
Self	60.71	2.90 (2.38-3.42)	2.00 (1.91-2.09)
Medicare	52.12	-11.66 (-11.90 to -11.42)	1.31 (1.21-1.41)
Medicaid	68.47	16.05 (15.88-16.22)	1.66 (1.56-1.76)
<b>Sex</b>			
Female	59.07	0.12 (-0.12 to 0.36)	1.34 (1.29-1.39)
Male	40.93	-30.63 (-30.87 to -30.39)	1 (reference)
<b>Age</b>			
≤2 y	73.76	25.02 (24.37-25.67)	Not done
3-18 y	59.81	1.37 (1.18-1.56)	2.52
19-40 y	59.22	0.37 (0.09-0.65)	1 (reference)
41-64 y	56.16	-4.81 (-5.10 to -4.52)	0.7
≥65 y	48.11	-18.46 (-19.19 to -17.73)	0.56

<sup>a</sup>Data are percentage of ED visits that were for ACSCs.

<sup>b</sup>Data are percentage difference (95% confidence interval) between the percentage of ACSC-related ED visits and the population mean of 59.4%.

that being African American or Hispanic, having Medicaid insurance, or being younger than 2 years old were each associated with an above-average proportion of ACSC-related ED visits. At the same time, being white, having private insurance or Medicare, being male, and being older than 65 years were each associated with a below average proportion of ACSC-related ED visits. The percentage of ACSC-related ED visits was significantly higher for African Americans and Hispanics (63% for both groups), compared with the percentage for whites (49%;  $P < .001$  for both comparisons).

Although the 4 EDs in this study serve individuals who reside inside or outside Mecklenburg County, only patients from inside Mecklenburg County were included in this study. Two EDs serve the urban core of Charlotte, whereas 2 serve the more suburban populations in the northern and southern parts of Charlotte and Mecklenburg County. Although the large central and northern EDs serve different geographic areas, their number of ACSC-related visits and demographic characteristics were similar. These 2 hospitals served approximately 40,000 ED patients in 2007, or approximately 75% of the total patients who sought ED care during this period. The patient demographic characteristics differed for the ED in the southern part of the area, which served 30,000 ED patients in 2007 and included the largest proportion of white patients, and the lowest percentage of ACSC-related visits (50%). The smaller of the 2 central

EDs served almost 25,000 patients and had the largest proportion of African Americans and the highest percentage of ACSC-related visits (63%). Geographically, patients using the ED for ACSCs were concentrated in neighborhoods within 4 miles of the city center on the western, northern, and eastern sides. This concentration explains the greater number of ACSC-related visits to EDs in the urban core and northern area.

The total charge for ACSC-related ED visits (not including ED physician charges) was \$124,967,120, with an average per-visit charge of \$1,099 and a net margin of \$68. On the other hand, the total charge for ED4 visits and injury-related visits combined was \$100,971,019, with an average per-visit charge of \$1,647 and a net margin of \$187.

Total hospital charges and net margins were calculated across demographic characteristics for all ED visits categorized as ACSC related (Table 4). Privately insured patients (54% of the county population) and uninsured patients (18% of the county population) accounted for 31% and 33% of all ED visits, respectively, with total charges of \$41,226,649 (\$1,327/visit) among insured patients and \$37,158,128 (\$958/visit) among uninsured patients. The hospital system's estimated net margin for uninsured patients' ACSC-related ED visits was -\$5,981,219, or -\$154 per visit.

A comparison was also made between ED and clinic charges for the top 10 ACSC-related diagnoses that occurred

in the ED between 8 AM and 5 PM. (Table 5). Charges in the ED were 320%-728% higher than those in the clinic, allowing for potential savings of 69%-86% had ACSC-related visits been treated in clinics instead of in EDs.

## Discussion

Our study highlights that certain demographic factors are associated with overuse of the ED for ACSC-related diagnoses, which is consistent with results of prior research [4, 8, 9, 18]. Findings that African Americans, Hispanics, and uninsured individuals are more likely to have ACSC-related ED visits may be explained by socioeconomic disparities and a lack of timely, affordable access to health care. Rust and colleagues [9] suggested that access itself is a broad category. Among American adults reporting a usual source of primary care, barriers to timely access, such as “no transportation” or “couldn’t get through on phone,” lead patients to use the ED as an alternative to primary care. Patient perceptions of illness severity and the potential diagnostic capabilities of an ED versus that of a primary care office are also likely factors in the complex decision about where a patient chooses to seek care.

Low numbers of ACSC-related visits and total frequencies of outpatient ED visits were seen in the group of patients with private insurance and the group of patients who were older than 65 years, suggesting a potential link between ease of primary care access and appropriate ED use. Also, most private insurance companies and Medicare use cost-sharing

mechanisms in which patients pay higher copayments if an ED visit does not result in an inpatient admission. While one would expect Medicaid to also provide for access to primary care, receipt of Medicaid correlated with comparatively higher proportion of ACSC-related visits. This discrepancy may be explained by confounding factors such as associated socioeconomic status, a higher-risk patient population, and the effects that more-limited primary care reimbursement rates have on access. The lack of admitted patients in the study cohort could explain the trend toward lower rates of ACSC-related visits among certain subgroups (eg, individuals aged >65 years) who are discharged from the ED.

ACSC-related ED visits were expensive for payers (ie, insurance companies and individuals), with total ED charges of \$125 million. Charges for the same diagnoses were found to be 69%-86% lower in primary care clinics, with potentially significant savings if these settings had been used for care. Hospital margins for ED visits were also much higher for emergency care than for ACSC-related care (\$187/patient vs \$68/visit), suggesting that hospitals benefit more when EDs are focused on providing emergency care. Overuse of the ED by uninsured patients was also a large expense to the hospital system in this study, which lost \$6 million treating ACSC-related ED visits. The demonstrated expense to both payers and providers suggests that collaborative innovations and interventions may result in significant savings.

Several successful evaluations of public-private collaborative interventions have taken place. In Guilford County, North Carolina, Guilford Child Health, a not-for-profit organization that collaborates with High Point Regional Health System, Moses Cone Health System, and the Guilford County Health Department, ensures that each Medicaid patient in the county is assigned to a primary care physician who is available (at least by phone) 24 hours per day. Evaluation of the program showed that the overall frequency of ED use among the pediatric Medicaid population decreased by 24% and that the frequency of nonurgent visits decreased by 37% [19]. Other ED interventions involving Medicaid recipients reduced nonemergent ED visits by over 10% [20] and, among frequent users, from a median of 26.5 visits per year to 6.5 visits per year [21].

One primary limitation inherent to examining ED costs is that hospitals offer a large number of services that are interconnected, with variations across hospitals in the methods used to allocate costs to departments, which makes finding actual costs extremely difficult [10, 11, 22, 23]. By using different economic models, 2 studies arrived at 2 different and distinct conclusions, highlighting the aforementioned difficulties [10, 11]. The first study reported the marginal cost of nonurgent and semiurgent visits as \$24 and \$67 (in 1992 dollars), respectively. In a separate study, previous costs were considered underestimates because EDs do not follow the principles of economies of scale [11]. Consequently, the estimated cost of additional visits is closer to the average cost of all visits. Bamezai and colleagues [11] reported

**TABLE 4.**  
Hospital Charges and Net Margins Associated With Emergency Department Visits for Ambulatory Care-Sensitive Conditions

Characteristic	Charges, \$	Net margin, \$
<b>Race</b>		
African American	69,414,411.60	2,150,730.61
White	35,911,120.84	4,944,096.43
Hispanic	14,966,088.76	107,352.12
Other	4,673,582.96	574,901.63
<b>Payer</b>		
Insurance	41,226,648.64	12,844,814.71
Self	37,158,127.84	-5,981,218.56
Medicare	16,948,755.48	-355,623.82
Medicaid	29,633,587.86	1,268,835.74
<b>Sex</b>		
Female	78,382,627.58	5,351,787.06
Male	46,584,492.24	2,425,021.02
<b>Age</b>		
≤2 y	7,813,743.00	539,681.25
3-18 y	14,718,046.80	1,335,042.44
19-40 y	51,710,068.76	2,602,061.06
41-64 y	39,742,005.51	3,337,048.99
≥65 y	10,983,255.75	-37,025.66

**TABLE 5.**  
**Comparison of Costs Between Clinic and Emergency Department (ED) Settings for the Most Common Ambulatory Care–Sensitive Conditions (ACSCs) Treated in EDs**

ACSC	ACSC-related ED visits, no.	Average charge in \$, by setting		Percentage increase <sup>a</sup>	Percentage savings <sup>b</sup>
		Clinic	ED		
Abdominal pain	4,447	247	1,378	558	82
Upper respiratory tract infection	3,259	102	553	542	82
Headache	2,078	189	1,219	645	84
Chest pain	2,061	284	846	298	66
Urinary tract infection	1,638	227	1,368	603	83
Vomiting	1,632	127	861	678	85
Sore throat	1,561	188	575	306	67
Limb pain	1,305	232	777	335	70
Ear infection	1,271	98	429	438	77
Oral soft-tissue disease	1,189	118	432	366	73

<sup>a</sup>Data are percentage increase in costs associated with treatment of ACSCs in ED rather than in clinics.

<sup>b</sup>Data are percentage savings in costs had ACSCs been treated in clinics rather than in EDs.

costs of \$295 and \$412 per visit (in 1998 dollars), respectively, for nontrauma- and trauma-related ED visits. Here we report actual charge data and used the hospital system's own accounting allocation system to determine fixed and variable costs, as well as predicted payments by payees. This provides the most transparent and accurate accounting of costs possible. The degree to which charges accurately reflect actual cost to the payer is arguable; by using charge data, we potentially inflate cost data.

Also, the NYU algorithm may have inherent weaknesses in the categorization of ACSC-related visits, especially with regard to vulnerable patients, such as those with comorbidities or those aged less than 2 years. Similar diagnoses are more critical for some patients than for others and may merit an emergency classification rather than the ACSC classification. The algorithm does not distinguish these cases. However, our estimates should be conservative because we included only ED visits involving patients with low-acuity conditions that were treated and discharged from the ED or required observation for less than 24 hours. Consequently, even for a presenting symptom such as wheezing or fever, outpatient management should be possible for the majority of individuals in this selected patient population. The NYU algorithm has been used in studies of ED overuse in Houston, New Jersey, and Taiwan. ACSC-related ED visits in the United States were strongly correlated with the rate of uninsurance and poverty, age of 4 years or less and traditionally underserved populations. In Taiwan, ACSC-related ED visits were associated with older females without major illness [7, 24, 25].

Attempts to qualify ED visits as emergent or nonemergent are often criticized for overlooking or minimizing the fact that seemingly benign complaints may actually be

clues to a serious medical emergency. The NYU algorithm addresses this criticism by factoring in the potential of severity for any given diagnosis, as described above in the Methods section. Furthermore, even with the exclusion of chest pain and abdominal pain (two of the more controversial ACSC-related diagnoses) from our comparison of clinic and ED visit costs, the substantial cost differences are still present for the remaining diagnoses. Beyond this, studies of hospitalizations among Medicare recipients have shown that the NYU algorithm is an effective predictor of subsequent hospitalization and an effective tool for reducing visits among nonimmigrants [17, 26].

Another limitation is that the cohort of patients who seek care at an ED is different from their counterparts who seek care at a primary care clinic. Therefore, a direct comparison of the costs in these care settings, as provided in Table 5, should be interpreted with caution. Last, we do not attempt to quantify the quality of care in clinic and ED settings. Quality is potentially compromised both for the patient receiving care for ACSCs inappropriately in the ED, as well as for the patient attempting to receive necessary emergency care in an overwhelmed, overcrowded ED.

Solutions to the complex problem of inappropriate ED use will require payers and hospital systems to work together to design and invest in novel, targeted interventions. Our charge data and the lower cost of clinic charges, compared with ED charges, make a case for payers (public and private) to encourage patients to establish a primary care practice as a medical home, thereby fostering a cheaper alternative than the ED for care access. Furthermore, the higher margins for emergent care, compared with ACSC-related care, and the significant loss attributed to ACSC-related visits by uninsured individuals bolster the same argument for hospi-



tal systems. As demonstrated by Guilford Child Health, an effective solution lies within a framework of collaboration between all stakeholders [19].

Furthermore, our data suggest that simply providing health insurance alone may not be a panacea. Health care reform must focus on the external factors that also influence inappropriate ED use. These factors include continued investigation into the best use of cost-sharing mechanisms, liability reform that limits the defensive practice of medicine, and altered reimbursement algorithms to encourage a more robust outpatient model that is centered on access and quality. By using identified risk factors for ACSC-related ED visits, population-specific interventions should be used and rigorously studied to demonstrate their effectiveness. **NCMJ**

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# Presence of Automated External Defibrillators in North Carolina Public Middle Schools

Karl B. Fields, Jacob Bright

**BACKGROUND** Automated external defibrillators (AEDs) have been used in the school setting to successfully resuscitate students, staff, and visitors. All public high schools in North Carolina have an AED. However, the number of North Carolina public middle schools with an AED is unknown.

**OBJECTIVE** The purpose of this study was to determine the presence of AEDs at public middle schools in North Carolina and to estimate the cost associated with providing an AED to all public middle schools currently without one.

**METHODS** All 547 middle schools in North Carolina's 117 public school systems were surveyed in 2009 via e-mail, fax, and, when necessary, telephone about whether an AED was present on site. For middle schools without AEDs, we estimated the cost of purchase and for 1 year of maintenance.

**RESULTS** A total 66.6% of public middle schools responded to 1 of 3 survey mailings. The remaining schools were contacted by telephone, so that 100% were included in data collection. At the time of the survey, at least 1 AED was present in 334 schools (61.1%). Of the 213 schools without AEDs, 57 (26.8%) were in school systems in which some middle schools had AEDs, and 156 (73.2%) were in systems in which no middle school had an AED. On the basis of a start-up cost of \$1,200 per AED, the cost of providing an AED to each school without one is approximately \$255,600.

**LIMITATIONS** These data are based on self-report, and we could not verify whether AEDs were functional. Cost estimates do not include charges for ongoing maintenance and staff training.

**CONCLUSIONS** Two hundred and thirteen North Carolina public middle schools (38.9%) do not have an AED on site.

Several major medical organizations have recommended the placement of automated external defibrillators (AEDs) in major public gathering places, including all health and fitness clubs [1, 2]. The American Heart Association, the American Academy of Pediatrics, the American College of Emergency Physicians, the American Red Cross, and several other medical, nursing, emergency medical, and public health organizations endorse guidelines for treating cardiac arrest in schools where the presence of an AED is recommended. However, these recommendations propose having an AED in a school only if at least one of the following criteria is met: there is a reasonable probability of AED use within 5 years after AED placement and training of lay rescuers, there are children attending and/or adults working at the school who are at high risk for sudden cardiac arrest, or an emergency medical services call-to-shock interval of less than 5 minutes cannot be reliably achieved [3]. The American Medical Association has also adopted a resolution pledging its support to state legislation and educational policies, encouraging each high school and college that has an athletic program to have an AED and appropriately trained personnel, and encouraging high school athletic coaches, sports medicine personnel, and student athletes to be trained and certified in cardiopulmonary resuscitation (CPR) and AED use [4]. Currently, no organizations have guidelines that address AED placement in middle schools.

Lives saved with AEDs at airports [5] suggest that inexperienced individuals can successfully use the devices, since

untrained samaritans performed over half of AED resuscitations. Public schools often function as the site of school-sponsored activities, including athletic events, celebrations, and meetings (such as those involving the Parent Teachers Association), and non-school-sponsored activities, including community events (such as voting). Numerous successful cardiac resuscitations of spectators, students, and athletes by use of AEDs at athletic events and functions held at high schools and colleges have been documented [6-9], and there are anecdotal reports of resuscitations of students from middles and elementary schools.

Without a mandatory reporting system, historical estimates probably underestimate the prevalence of sudden cardiac arrest (SCA) and sudden cardiac death among children and young adults. In Minnesota, a statewide survey suggested an annual incidence of approximately 1 SCA per 200,000 young athletes [10]. The estimated annual incidence of SCA for students in Seattle and King County, Washington, is 0.18 cases per 100,000 students [11]. A more-recently published study suggests that 5.05 SCAs per 100,000 person-years occur outside of hospitals among

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children and adolescents, which is approximately equivalent to 1 case per 20,000 children and young adults [12]. Before the implementation of a national screening program, the registry for the Veneto region of Italy displayed a ratio of 1 sudden cardiac death per 28,000 young athletes [13].

Because of the recommendations to place AEDs in public gathering places such as schools and the recent epidemiologic data on SCA and sudden cardiac death among youths, we sought to document the current availability of AEDs in North Carolina public middle schools and to use this information to estimate the cost of placing an AED in each middle school that lacks the device.

## Methods

In the summer of 2009, all 117 public school systems in North Carolina were surveyed regarding the presence of AEDs in their middle schools or schools housing middle-school-aged children (ages, 11-14 years) (Figure 1). Responses were recorded in a database containing the name of each school system, the names of the middle schools in each system, the name and title of the superintendents at each school, the AED status at each school, and the name and contact information of personnel at a central office or specific middle school who provided the appropriate information. The study was determined to be exempt from review by the institutional review board at Moses Cone Hospital. All respondents were aware of our intention to publicize survey data.

Initially, every superintendent of a North Carolina public school system was asked on June 16, 2009, via e-mail to fill out an online survey or complete and fax a paper survey. A total of 41 school systems responded within 2 weeks after this initial correspondence was sent. The remaining 76

school systems were contacted a second time via e-mail, on July 2, 2009, approximately 4 weeks after the initial attempt. This second attempt yielded responses from 22 additional school systems (total responses to this point, 63 school systems).

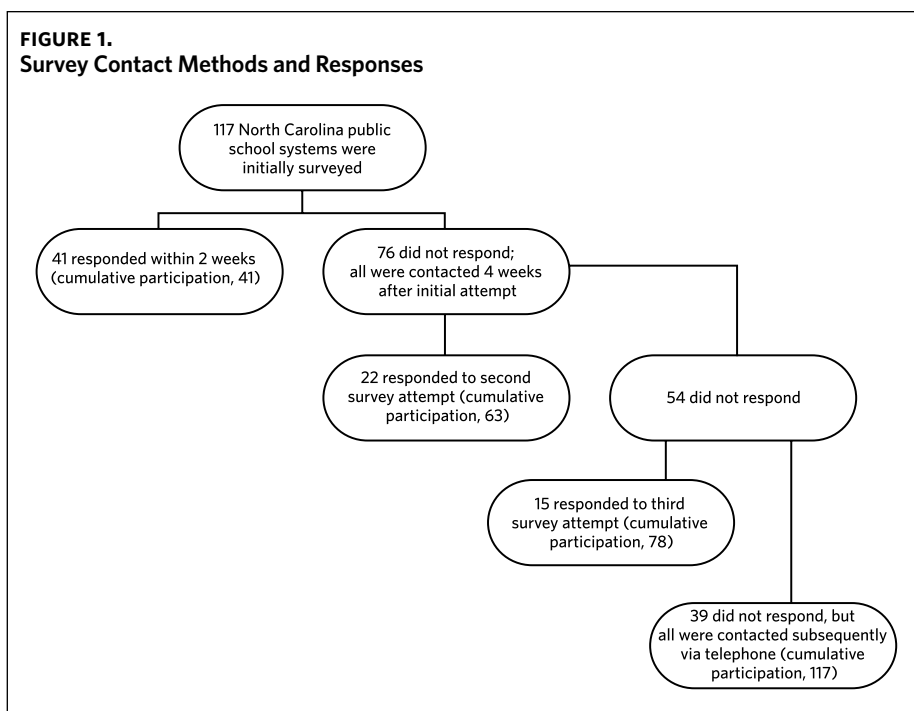
The remaining 54 school systems were contacted a third time via e-mail, on August 10, 2010, approximately 8 weeks after the initial attempt. The third attempt yielded responses from 15 additional school systems, bringing the total number of surveyed school systems to 78. The remaining 39 school systems were contacted on a school-by-school basis via a telephone conversation with a principal, assistant principal, or school nurse to determine the presence or absence of an AED at the school. Ultimately, AED status was obtained for all 547 middle schools in these school systems.

Cost data for AED placement and maintenance for the first year of operation were obtained by contacting 6 vendors who supply AEDs throughout North Carolina.

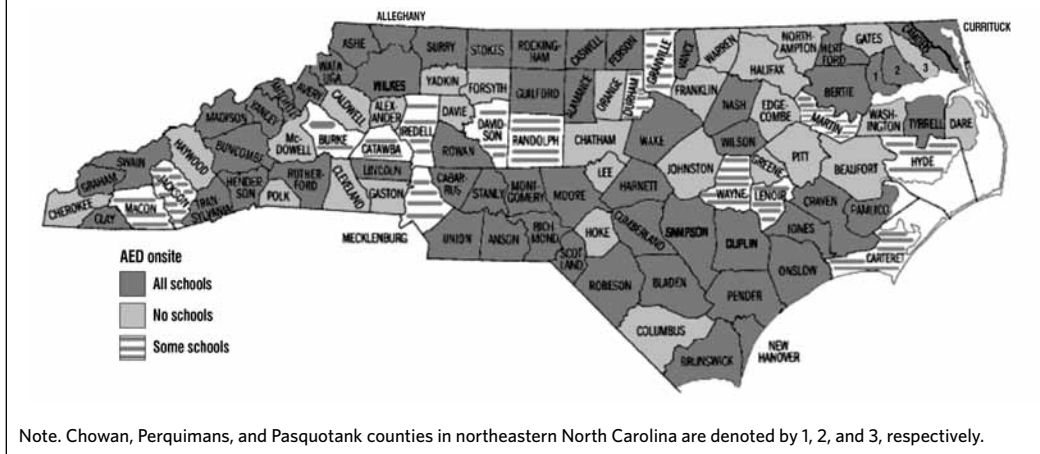
## Results

The North Carolina Public School System covers 100 counties with 117 school systems, each of which has at least 1 middle school. Figure 2 shows AED presence by county and demonstrates no clear pattern associated with urban or rural counties.

Sixty-three school systems (53.9%) had an AED in all middle schools, and 39 (33.3%) had an AED in no middle schools (Table 1). A total of 334 public middle schools (61.1%) had an AED, of which 57 were in a school system in which some schools had an AED. Of the 213 middle schools (38.9%) with no AED, 57 were in a school system in which some schools had an AED.



**FIGURE 2.**  
**North Carolina Public Middle Schools With an Automatic External Defibrillator (AED) on Site**



Costs for 6 different AEDs ranged from \$1,095 to \$1,595, including maintenance for the first year of operation. The warranty duration for 4 of the units was 5 years, with 2 having a 7-year term. Batteries for these units, which are the most expensive parts to replace, are guaranteed for an average of 4 years.

### Discussion

This study found that 38.9% of North Carolina public middle schools lacked an AED. Geographic mapping did not demonstrate a clear pattern by region or by urban versus rural status that explains AED placement. While the majority (53.9%) of school systems had AEDs in all middle schools, some systems (12.8%) had them only in some schools, and many (33.3%) had them in no schools.

Several states have passed legislation mandating that an AED be present and properly maintained in public schools [14]. Florida and Georgia currently require an AED and appropriately trained personnel in all public high schools with athletic programs. Maryland, Ohio, and South Carolina require every school in the state to have an AED on the premises and at all school-sponsored athletic events. Nevada and New York require an AED in schools that meet certain population requirements, whereas Tennessee requires an AED in all schools “within current budgetary limits” [14].

The argument against AED placement in public schools is based on the assertion that the initial purchase places a financial burden on the school and/or school system. This initial cost has deterred many states and school systems from mandating that every school has at least 1 properly functioning AED [15, 16]. We contacted 6 AED vendors and found that the median cost of purchasing 1 AED and training a lay person to use it is \$1,200 (range, \$1,095-\$1,595). On the basis of these data, it would cost \$255,600 ([213 schools] × [\$1,200 per AED]) to provide an AED to all public middle schools and schools housing middle-school-aged students in North Carolina.

Of note, the startup cost of \$1,200 per AED includes training and, for AEDs purchased through state-controlled agencies, initial quality checks. The price of the AED alone, without training, is estimated to be \$1,000. Many school systems coordinate with local emergency medical services and or hospital emergency services to provide ongoing training and monitoring of schools’ AED readiness and emergency action plans (Karen Dehart, North Carolina High School Athletic Association, written communication, January 13, 2009). The start-up cost data do not reflect the ongoing expenses associated with replacing pads and batteries and providing service to the AEDs after the initial year of placement.

Resuscitation data suggests that AEDs are effective in school settings and that the presence of an AED leads to a higher survival proportion among individuals who experience SCA. Between December 2006 and November 2007, 13 (65%) of 20 high school athletes who had SCA while participating in athletic competitions were successfully resuscitated at the scene of the SCA, of whom 11 survived and were discharged from the hospital. This accounts for a 55% survival proportion associated with use of defibrillation following SCA among school-aged children [6].

Children and adolescents who experience SCA typically have no history of cardiac illness. Statistically, the percentage of patients who survive SCA and are discharged from the hospital gets significantly lower for those who do not immediately receive CPR and defibrillation shortly after an incident [3]. The chance of surviving SCA decreases by 7%-10% for every minute defibrillation is delayed; immediate CPR following SCA results in survival proportions only decreasing by 3%-4% per minute [17, 18]. The problem of rapid access to care for individuals who experience SCA is compounded in rural North Carolina counties where health care providers are limited, and the distance between a school and the nearest clinic or hospital may exceed 30 miles. The federal government acknowledged the delays in emergency



**TABLE 1.**  
**Presence of Automated External Defibrillators (AEDs) in North Carolina Public School Systems**

AED presence	School systems, no. (%) (N = 117)	Middle schools in school system, no. (%) (N = 547)
All middle schools	63 (53.9)	277 (51.0)
Some middle schools	15 (12.8)	114 (20.8)
No middle schools	39 (33.3)	156 (28.2)

Note. A total of 213 middle schools (38.9%) had no AED, of which 57 were in school districts in which some middle schools had an AED.

response in states with rural populations by passing the Rural AED Act as a part of the Public Health Improvement Act [19].

Recent studies suggest that SCA among adolescents is much more common than previously estimated. The only prospective data that includes urban, suburban, and rural settings was reported by the Resuscitation Outcomes Consortium, which studied 11 US and Canadian communities serving 23.7 million people. The consortium reported an incidence of pediatric SCA to be 8.04 cases per 100,000 person-years during a 15-month period (December 2005-March 2007) [12]. If data for infants are excluded and data for children (3.73 cases per 100,000 person-years) and adolescents (6.37 cases per 100,000 person-years) are averaged, the rate of pediatric SCA is 5.05 annual cases per 100,000 person-years. While the number of SCAs that occur outside of school settings would not be affected by the AED placement in the schools, the overall higher frequency of SCA among children and adolescents, as well as the improved survival rates among resuscitated individuals, suggest that AED placement in middle schools has a potential survival benefit [12].

Without stronger data delineating the risk of SCAs that occur in school settings, as opposed to nonschool settings, we cannot confidently calculate the costs, in terms of the number of student lives saved, associated with placing AEDs in middle schools. However, the overall number of lives saved by placing AEDs in middle schools would be expected to be higher than the number based solely on the student population, as adults in a school setting have a 25-fold greater risk [11] of sudden cardiac arrest than students.

For AEDs to be effective in schools, several additional steps must be taken by school systems, including (1) creating an emergency action plan that stresses early CPR and defibrillation [15]; (2) creating a team of individuals within the school system who know the emergency action plan and are trained in CPR and AED use; (3) providing CPR training as part of the high school health curriculum; (4) ensuring that AEDs are present at school public gatherings, including sporting events; and (5) performing geographic mapping of campuses to ensure that an AED can be accessed in less than 5 minutes from any location on campus. On the basis of information from earlier studies, this type of coordinated

emergency action plan is lacking in many schools, which limits the effectiveness of AEDs in these settings [15].

Research shows that AEDs are effective in that high rates of survival and discharge from the hospital among students who experience SCA cannot be achieved without quick defibrillation. Properly equipping every public middle school in North Carolina with an AED and training an appropriate number of personnel to effectively use the equipment have the potential to create a safer environment in North Carolina public middle schools for all students, faculty, staff, and visitors. **NCMJ**

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Odds of a child becoming a professional athlete: 1 in 16,000


Odds of a child being diagnosed with autism: 1 in 110

**Some signs to look for:**

No big smiles or other joyful expressions by 6 months.	No babbling by 12 months.	No words by 16 months.
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**To learn more of the signs of autism, visit [autismspeaks.org](http://autismspeaks.org)**





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# POLICY FORUM

## *Future of Nursing in North Carolina*

### Introduction

*Everything that rises must converge.*

Pierre Teilhard de Chardin

The policy forum in this issue of the NCMJ centers on the profession of nursing and its place among the health professions in the United States. In the articles, there is a pervasive sense of both aspiration and frustration as nursing tries to take on the problems facing health care professionals of all types. Nurses seek to rise to the challenge society has given them to improve health care amidst the realities of the complex economics of health care. The aspirations of nurses and nursing have changed dramatically in the recent past and are beginning to converge with medicine. This convergence is due to the shared need to bring the best and most-efficient means to making a healthier society when many forces run counter to that goal. Nursing is rising to the challenge.

“Everything that rises must converge” is a quotation from Pierre Teilhard de Chardin and the title of a short story by Flannery O’Conner. Teilhard de Chardin was describing how humans evolved in a way that underlined the unity of all living things. In that sense, we are seeing both a rising in our ability and capacity to affect the health of people and cure disease, as well as a blurring of roles and responsibilities across health professions. O’Conner’s story is more about how we must recognize the need to come together in a moral sense but also how this change is hard for some to understand.

The rules have changed in health care, and the social structure of the health professions have changed under the pressure of economic factors and the convergence of missions. We have begun to see that there is a unity to what we wish to achieve in making a healthy society and caring for and curing those who become ill. That moral quest has compelled us to change our views about who we can and cannot keep apart. Nursing has for many years stayed apart from medicine and other healing professions, and the other professions have kept nursing at a distance as they built their own places in society and the economy. Nursing asks that this separation be dismantled. There are no more valid reasons (or “evidence,” as we now say) to maintain such separation. There are no good reasons why we cannot begin to share roles and responsibilities.

But nursing itself has its hierarchies and its separating forces. These are driven by the education and training structures that generate barriers within the profession. The same lessons of convergence should apply here. The articles in the policy forum provide us with examples of what has been achieved and what can become more normal as we see our structures of health care come together to do what they all profess: to make us healthier, safer, able to lead better lives.

For those who are interested, here is the quotation from Teilhard de Chardin, drawn from *The Phenomenon of Man*: “Remain true to yourself, but move ever upward toward greater consciousness and greater love! At the summit you will find yourselves united with all those who, from every direction, have made the same ascent. For everything that rises must converge.” NCMJ

*Thomas C. Ricketts III, PhD, MPH*  
*Editor in Chief*

# The Future of Nursing and the Health of North Carolinians: The North Carolina Summit

Margaret C. Wilmoth

Nurse leaders in North Carolina convened the **Statewide Summit for Creating the Future of Nursing and Health Care in North Carolina on April 11, 2011**. This article summarizes the summit and lays out the way ahead for implementing, in North Carolina, recommendations from the report on the future of nursing recently published by the Institute of Medicine of the National Academies (IOM). A synopsis of the commentaries composing the policy forum of this issue of the NCMJ follows, linking them to the IOM report.

**M**ore than 200 thought leaders from across North Carolina convened at the McKimmon Center on the North Carolina State University campus on April 11, 2011, to discuss the future of the profession of nursing in our state. The Statewide Summit for Creating the Future of Nursing and Health Care in North Carolina was convened by nursing leaders from across the state to both review and discuss with key stakeholders *The Future of Nursing: Leading Change, Advancing Health*, a report recently published by the Institute of Medicine of the National Academies [1].

Attendees included former Governor James Hunt, chief executive officers of health care systems and professional organizations; physicians; state legislators; other health care professionals, such as dentists; state and local government policy advocates; business owners, and nurse leaders from across the state. Nurse attendees included practitioners, educators, and military service members assigned to posts and bases in North Carolina. Attendees were assigned to preselected seating at tables to ensure diversity of views for facilitated discussions that would take place during the day.

The day began with Donna Havens from the University of North Carolina (UNC)-Chapel Hill opening the summit and orienting attendees to the agenda. She introduced Governor Hunt, who spoke on the health challenges currently facing North Carolinians and the urgent need for nurses, who are educated to care for them. He advocated for removal of licensure limits that restrict the ability of advanced practice nurses to practice at the top of their education and of barriers to reimbursement by insurance companies. Governor Hunt linked the lifting of these impediments to practice to improving access to quality care for all. He also urged

the audience to support increasing the level of education required for nurses in North Carolina to more effectively meet the health needs of our citizens. He spoke about not only increasing the numbers of nurses educated at the baccalaureate level, but also the numbers educated at the master's and doctorate levels, for the sake of the health of North Carolinians.

Leah Devlin, visiting professor at UNC-Chapel Hill, presented an overview of the IOM report and the National Call to Action that arose from the work of the committee that authored the IOM report. She highlighted 2 unique aspects of this IOM report. The first is the report's call for broad, multisector action to improve the nations' public health by using nurses in a different, more diverse manner. The IOM report called for societal intervention to strengthen nursing so all will benefit. The second unique aspect of the report is the involvement of the world's largest health foundation, the Robert Wood Johnson Foundation, in enacting the report's findings. This IOM report differs from their other work in that the AARP is linking with the Robert Wood Johnson Foundation to move the recommendations in the report to definable action. This unique linkage of the report to an action coalition underscores the critical nature of the profession of nursing to the health of the nation and the effectiveness of the US health system.

Elaine Scott of East Carolina University followed with a review of the 4 key messages from the report and the 8 recommendations that, if all enacted, would greatly enhance the profession's ability to impact health care access, quality, and costs. Next, a panel presented current initiatives already taking place in North Carolina that are related to the report's recommendations. Panelists included Pam Silberman, president and chief executive officer of the North Carolina Institute of Medicine (NCIOM), who reviewed the NCIOM's 2004 report on nursing [2]. The NCIOM report recommended that

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60% of North Carolina nurses be prepared with a bachelor of science in nursing for entry into practice; the IOM report sets the bar at 80% for each state by 2020 [1]. This standard has 2 inherent challenges. One is to create new paradigms for seamless educational pathways to move nurses beyond their entry-level education. The second is to reduce the resistance toward increasing the educational preparation by both graduates and faculty in the community college system. Increased emphasis needs to be placed on the positive impact that greater levels of nursing educational preparation has on patient outcomes, while not negating the role of community colleges in the initial entry of many nurses into the health care workforce [3].

Erin Fraher from the Sheps Center for Health Services Research at UNC-Chapel Hill addressed the type of workforce that is necessary to achieve the desired health outcomes among individuals at patient-centered medical homes in the state. Brenda Causey from Asheville-Buncombe Technical Community College spoke about the efforts to increase the numbers of nurses prepared with a bachelor's degree through the Regionally Increasing Baccalaureate Nurses (RIBN) project. The chief nursing officer at Randolph Hospital, Tremonte Crawford, presented her hospital's successful "transition to practice" project that helps new graduates transition from student to practicing nurse. Finally, Gale Adcock, director of corporate health services at SAS Institute, reported on the work of the North Carolina Board of Nursing in the area of advanced practice nursing.

After the morning panel, attendees were guided through a discussion of the IOM report, its recommendations, and which of the report's 8 priority recommendations should be emphasized for future action in North Carolina. By use of interactive technologies, each participant selected 3 IOM recommendations that they believed would advance nursing in North Carolina. The 4 recommendations with the most votes were then identified for group discussion during and immediately after lunch. Each attendee was assigned to one of 4 rooms, with each room assigned one of the top 4 recommended priorities, to develop strategies for implementing the assigned recommendation in North Carolina. The 4 recommendations that were discussed in detail and will form the basis for work following the summit were to remove barriers to practice (recommendation 1), expand opportunities for nurses to lead (recommendation 2), increase the proportion of nurses with a bachelor of science in nursing (recommendation 4), and prepare and enable nurses to lead change (recommendation 7). All groups then shared their proposed strategies to move the 4 recommendations forward in North Carolina.

Catherine Gilliss, dean of the School of Nursing at Duke University, closed the summit. She reminded attendees that reforming the health care system to achieve the goals of high-quality, cost-effective, accessible care will require leadership from every sector. All of the health professions must be at the table to reform the system; when the voice

of the largest of the health professions—nursing—is absent, the system and the patients, who are at the center of the system, suffer. Gilliss shared with the audience that a coalition of organizations led by the Foundation for the Future of Nursing Education will be applying to the Robert Wood Johnson Foundation to become a "regional action coalition" to ensure a coordinated, collegial effort in moving these recommendations forward in North Carolina.

Gilliss closed the summit by saying,

As we look toward addressing these issues we are reminded that we will be best served by keeping the well-being of the public in the center of our screen. Health is broadly conceived and health status is the result of many factors, including economic well-being, community resources, the environment, access to good nutritional choices and the opportunity to exercise safely. Health care services are delivered by many and most patients require a range of services during the course of their lives. Our goals should be to make the needed services accessible for them when they are needed.

The policy forum of this issue of the NCMJ highlights current work consistent with the goals of the IOM report that is already underway in North Carolina, as well as work that remains. Susan Hassmiller [4] of the Robert Wood Johnson Foundation opens the forum by providing a national perspective on the changes coming to the nursing profession from this seminal report.

Four commentaries address the IOM recommendation of increasing the educational preparation of nurses. R. Scott Ralls [5], president of the North Carolina Community College System, discusses the role of this system in preparing nurses at the associate's degree in nursing level, the first of many rungs on the educational ladder. Mary "Polly" Johnson, Vincent Hall, and Brenda Causey [6] highlight the RIBN model as one innovative pathway for a seamless progression between community colleges and universities among individuals who have an associate's degree in nursing and desire baccalaureate preparation. Elaine Scott and Helen Brinson [7] discuss barriers that have precluded more nurses in the state from moving from the associate's degree in nursing to graduate-level preparation and present some thoughts on how to move forward. Eileen Kohlenberg [8] discusses the state of nursing education in North Carolina at present and recommends 9 innovations in nursing education that are urgently needed to ensure that the citizens of our state are cared for by well-qualified nurses.

Several other articles round out challenges facing nursing education early in this century. Polly Johnson, Joyce Roth, and Pamela Jenkins [9] highlight the current work being done to provide an evidence-based transition-to-practice model for nursing. Elaine Scott [10] thoughtfully addresses the topic of preparing nurses to be leaders. Nursing must join other professionals by being intentional about developing leadership skills and in a way that builds from one level of educational preparation to the next. A recently published editorial by Cleeter [11] describes national efforts to develop leadership skills in nursing faculty. North Carolina must not lag behind these national efforts.

Advanced practice nurses have a long history of providing quality and cost-effective care but are often limited by statutes and regulatory agencies in their ability to practice to the full extent of their education and training. The first of the IOM recommendations addresses this very issue. Three commentaries in the policy forum discuss advanced practice nursing and the barriers they face in North Carolina in providing care. Bobby Lowery and Deborah Varnum [12] provide an overview of the limitations that current regulations governing supervision and insurance reimbursement place on the ability of nurse practitioners in our state to practice at the top of their license and training. An article by Eileen Kugler, Linda Burhans, and Julia George [13] discusses work being done by an advisory committee to move North Carolina nurse practitioners to more autonomous practice. Victoria Soltis-Jarrett [14] rounds out the discussion of nurse practitioners by highlighting the innovative psychiatric nurse practitioner program offered at UNC–Chapel Hill.

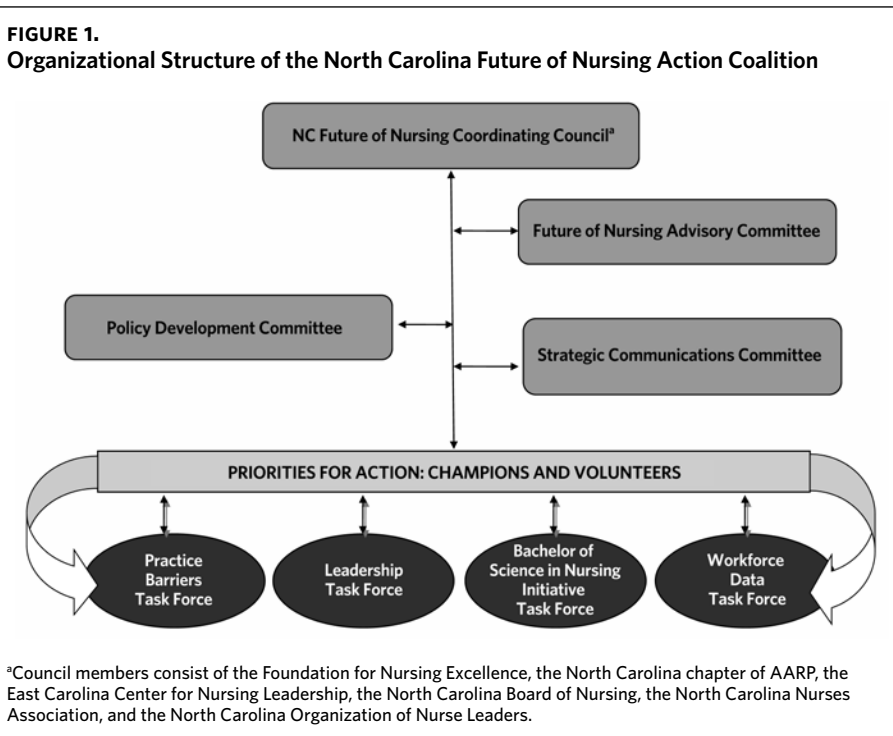
Leadership is critical to ensuring that nurses are prepared to partner with other health professionals in designing health care delivery systems. Without leadership development, nurses will remain in the shadows, and their physician colleagues will hire others to do nurses' work. Connie Mullinix [15] provides a provocative view on the effects of gender and gender politics on the nursing profession. She also suggests that the quality outcomes mandated by the Affordable Care Act that affect the financial viability of hospitals is dependent on expert nursing preparation and the acceptance of nurses as full partners in working to achieve quality outcomes. Delivery of quality care is also dependent on nurses who are skilled in health information technology

and knowledgeable about how to use basic statistics to analyze health outcomes of panels of patients with defined chronic diseases. In her commentary, Jane Peace [16] discusses health information technology and its role in measuring health care outcomes.

Recommendation 8 in the IOM report refers to building a workforce database that will provide for collection and analysis of interprofessional health care workforce data. Erin Fraher and Cheryl Jones [17] discuss the importance of developing such a system to ensure an adequate nursing workforce in North Carolina.

The theme of the 2011 Nurses Week was "Nurses: Trusted to Care." Gallup polls continue to identify nursing as the highest-ranked profession valued for the integrity and high ethical standards of its workforce. Trust, in its most basic form, can be defined as the assured reliance on another individual [18]. Covey [19] takes this further and asserts that it is trust that enables one to be an influential leader. He suggests that trust is the enabling power of leadership influence. Nurses must leverage their position as members of the most trusted profession to lead the improvements in nursing and health care for the benefit of individuals who receive their care.

The Future of Nursing Coordinating Council will be leading the way in North Carolina to ensure that (1) North Carolinians will have an effective, educated nursing workforce; (2) education for nurses is accomplished through a seamless educational process; (3) nurses can practice to the full extent of their education and training; (4) nurses are full partners in redesigning health care in North Carolina; and (5) there is an effective and comprehensive health care workforce planning system in the state (Figure 1). NCMJ





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# Evidence-Based Transition to Practice: Developing a Model for North Carolina

Mary P. "Polly" Johnson, Joyce W. Roth, Pamela R. Jenkins

To enhance patient safety and increase retention of new nurses, structures and processes should be developed to ensure that newly licensed nurses are afforded the opportunity to gain confidence and competence as they enter the workforce. This commentary provides an overview of the work performed to date in North Carolina to build an evidence-based transition-to-practice model.

Successful transition of newly licensed nurses into practice is essential for safe patient care. Unlike for most other health professions, there is no formalized internship or required residency period to support the transition of a newly licensed nurse from student learner to competent and confident health care professional. The first 6 months of practice for new nurses is a time of high stress related to adjustment to the workplace, development of competence and confidence, and risk for errors [1]. It is also when health care agencies can have the greatest impact on retaining newly licensed nurses. Before the current economic downturn, national studies estimated that 33%-69% of new nurses changed positions within a year after graduating and that more than 50% changed jobs within the first 2 years of initial employment as a licensed nurse [2-4]. One issue is how best to transition newly licensed nurses into the work setting in a manner that safely supports development of their competence and confidence and retains them in the workforce. North Carolina has no standardized approach to the preparation of nurse preceptors, who guide these new nurses during the critical first weeks and months of their employment, and orientation programs vary greatly in time and content from one employment setting to another.

The need to study the options to improve this school-to-work transition period was identified by the North Carolina Institute of Medicine in 2004 as a priority recommendation [5]. The report acknowledged that the existing gaps between the educational experience of the student and real-world work expectations have potentially detrimental effects on the provision of safe patient care, as well as on the retention of nurses.

Following the North Carolina Institute of Medicine report, the Foundation for Nursing Excellence (FFNE), a nonprofit organization created by the North Carolina Board of Nursing and now an independent entity committed to enhancing the

practice of nursing, convened a group of key nursing leaders to study how improvements could be made in the transition from school to work for newly licensed nurses.

## Phase I: Gathering Evidence About Current Transition-to-Practice Activities in North Carolina

**Background.** Representatives from the North Carolina Center for Nursing, the North Carolina Area Health Education Centers, and the North Carolina Board of Nursing, as well as experts in nursing education and practice, formed the steering committee for the FFNE's evidence-based transition-to-practice project. An advisory panel composed of North Carolina health care employers, staff development specialists, educators, regulators, professional associations, philanthropic foundations, newly licensed registered nurses (RNs), and the public offered unique perspectives from across the state. Generous funding for the project was provided by the Blue Cross Blue Shield of North Carolina Foundation, The Duke Endowment, and the Kate B. Reynolds Charitable Trust.

An invitational research development conference, held in 2005 with support from the Agency for Healthcare Research and Quality, was the first step in our journey to build a transition-to-practice model for North Carolina. Consensus was reached on 32 core competencies needed by newly licensed nurses. These became the basis for a competency-assessment scale developed by the National Council of State Boards of Nursing and further refined for use in our North Carolina transition-to-practice project. The conference report and the list of these competencies are posted on the FFNE Web site (available at: <http://www.ffne.org/reference-library>).

The next step was to gather information on current orientation practices across North Carolina health care systems. A survey was designed to examine the perceived development of competence and confidence among newly licensed RNs in 3 different types of orientation programs currently offered

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in North Carolina hospitals and to identify preceptor characteristics that affect the development of competence and confidence for new nurses. Twenty-nine hospitals agreed to participate and were placed in 1 of the following 3 comparison groups, according to the type of transition support they offered their newly licensed nurse employees: a standardized, nationally used competence assessment and development system (group A); an individual, employer-developed, formal transition-to-practice program (group B); and an employer-developed orientation program that does not include a formal transition-to-practice program (group C).

The survey on newly licensed RNs provided self-reported and preceptor-reported information related to competence development, practice errors, risk for practice breakdown, and confidence development among the new nurses. The sample consisted of newly licensed nurses and their preceptors, who were surveyed in 3 rounds of data collection, at 2-month intervals, during the first 6 months of the new nurses' employment, between August 2007 and February 2008.

**Survey findings.** One hundred eighty-eight newly licensed RNs participated in this study in 1, 2, or 3 of the data-collection rounds, with 42 completing all 3 rounds of the survey. A total of 73.4% of these new RNs held an associate's degree in nursing (ADN), 42.7% held a baccalaureate in nursing (BSN), and 1.9% held a diploma in nursing. A total of 242 preceptors participated in 1, 2, or 3 of the data-collection rounds, with 39 preceptors completing all 3 rounds. On average, preceptors had more than 7 years' experience in precepting, with 62.8% holding an ADN, 32.2% holding a BSN or higher degree, and 2.2% holding a diploma in nursing.

The one statistically significant finding across all 3 rounds of data collection was the relationship between the quality of the partnership with the preceptor and the new nurse's self-reported competency score. The better the quality rating of the new nurse-preceptor relationship, the higher the perceived competence of the new nurse. Of equal importance was the finding that a higher competency score reported by the new nurse correlated with fewer practice errors 4 and 6 months after initial employment. The data indicated a low competence score in clinical reasoning and judgment by the new nurses in all 3 rounds of data collection; across all 3 data-collection points, more than 75% of the responding new nurses (ie, 123 of 158 in round 1, 62 of 82 in round 2, and 63 of 83 in round 3) reported that risks for practice breakdown occurred at least once during the previous month. At each survey round, more than 19% of the new nurses reported that they "often" or "always" felt overwhelmed by client care responsibilities. The average overall self-reported competency scores for the new RNs revealed no significant differences between the 3 comparison groups. Thus, no single group was superior for the development of the new nurses. Twenty-nine newly licensed nurses resigned their positions and left the agency (1 left nursing altogether), and another 15 were terminated within the first 6 months

after employment. The average length of the orientation program across all comparison groups, as reported by the new nurses, was 8 weeks [6].

## Phase II: The Role of the Preceptor in Transitioning Newly Licensed Nurses into Practice

On the basis of the findings in phase I and an extensive literature review of role development among preceptors and its impact on transitioning the new nurse into practice, 2 invitational working conferences were convened in 2009. The first conference focused on the preparation and development of preceptors, and the other addressed use of simulation to assess new-nurse competence. Participants identified essential content and concepts that should be included in a preceptor preparation program (Table 1).

On the basis of evidence from the literature and the feedback obtained from the invitational conferences, new-nurse focus groups, and a review of the few currently available preceptor educational programs, the steering committee decided to create a preceptor educational program that used the most-current concepts and delivery modalities. The preceptor package consists of 3 Web-based modules and 3 low-fidelity simulation experiences. The learning modules were developed by staff educators who prepare preceptors in both rural and urban health care facilities and address (1) dimensions of the preceptor role, (2) communication in the preceptor role, and (3) the transition process of new nurses. These self-paced learning tools are interactive, integrate reflective exercises, and include Web links for supplementary resources, such as TeamSTEPs [7]. The simulated scenarios, which are intended to reinforce, through role play, the basic preceptor concepts addressed in the Web-based modules, focus on patient handoffs, response(s) to an adverse event, interprofessional communication, prioritization of care, and generational differences. The operational framework for the preceptor learning

**TABLE 1.**  
Essential Elements of a Nurse Preceptor Preparation Program

Element(s)
Organizational support for preceptors
Preceptor competencies and performance evaluation tool
Ongoing preceptor education for all preceptor experience levels
Preceptor recognition and appreciation
Basic educational needs
QSEN competencies and patient safety
Novice-to-expert concepts
Preceptor roles and responsibilities
Communication and relationship strategies
Teaching, learning, and evaluation strategies
Preceptor and caregiver self-care
Simulated experiences to practice and assess skills

Note. QSEN, Quality and Safety Education for Nurses.

package is based on the core competencies for all health professionals outlined in a 2001 report from the Institute of Medicine of the National Academies [8], the pioneering work of the Quality and Safety Education for Nurses project [9], and the team-development initiatives set forth by the Agency for Healthcare Research and Quality. The goal of this structured learning program was to provide the preceptor with the basic knowledge and skills needed to effectively support the development of competence and the retention of newly licensed nurses during their initial period of transition from school to work.

### Phase III: Piloting Preceptor Development Tools

Nine hospitals, representing both rural and urban regions and ranging in size from 58 to 712 in-patient beds, were selected to help evaluate the effectiveness of the preceptor educational tools and the impact of preceptor development on the safe transition of new nurses into practice. Before the initial employment of newly licensed RNs in 2010, 180 preceptors in these facilities completed the Web-based modules. Seventy-five of these preceptors then participated in an additional day of on-site learning, using the simulated scenarios. Evaluation data were collected from preceptors on completion of each learning module and by both facilitators and participants in the simulation experiences, to identify the effectiveness and gaps in both the structure and the content of the learning modalities. Additional evaluative data were collected from the trained preceptors, their preceptees, and nurse managers 2 months into the employment of the new nurse. Similar to the structure of phase I, data were also collected during the first 6 months of the new nurse's employment, to assess the perceived development of competence and confidence, risk for error, and retention of the new nurse in the workplace.

Although a full analysis of the data for phase III will not be completed until September 2011, initial evaluation of the Web-based modules and the simulation experiences indicated that they were effective development tools for preceptors. Both new and experienced preceptors reiterated the value of the modules' content, instructional methods, and simulation experiences.

Minor revisions were made to the Web-based learning tools on the basis of initial feedback, and, in February 2011, an electronic preceptor training package was made available for use by individual nurses, as well as by health care systems, as a cost-effective, easily accessible, standardized learning tool for preceptors. The steering committee is currently considering how best to package the simulated scenarios, which may be easily accessed by a broad base of users as an effective adjunct to the Web-based modules. Future refinements of these learning tools will be based on the full analysis of phase III data, as well as on ongoing feedback from users and on key findings from other similar projects across the country.

### Next Steps

It is the intention of the FFNE to develop a set of recommendations for best practices in transitioning newly licensed nurses into competent members of the health care workforce, using evidence from this and other studies across the country. In particular, much information has been gained through the University HealthSystem Consortium–American Association of Colleges of Nursing Residency Project [10], as well as through the Vermont Internship Project: Evidence Based Preceptor Development [11]. Additional information will be gained from the National Council of State Boards of Nursing transition project, which is being piloted in North Carolina and 2 other states during the next year. How these transition programs affect patient safety and outcomes; new-nurse turnover, satisfaction, and competency; and the effectiveness of preceptor training will help formulate the recommendations for an evidence-based transition-to-practice model for nursing in North Carolina. NCMJ

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# Removal of Legal Barriers to the Practice of Advanced Practice Registered Nurses

*Eileen C. Kugler, Linda D. Burhans, Julia L. George*

**A recent report from the Institute of Medicine of the National Academies (IOM) calls for states to amend regulations on the practice of advanced practice registered nurses (APRNs). This article reviews the roles of APRNs, the IOM recommendations, and efforts by national and state stakeholders to remove legal barriers to APRN practice.**

**A**dvanced practice registered nurse (APRN) professional classifications include certified nurse midwives (CNMs), clinical nurse specialists (CNSs), certified registered nurse anesthetists (CRNAs), and nurse practitioners (NPs) (Table 1). These classifications are regulated in a variety of ways in North Carolina. In fact, state statutes, administrative codes, and other regulations governing the practice of APRNs vary greatly across the United States. For example, NPs are afforded autonomous practice in 23 states, as well as Washington, D.C. The boards of nursing in these states have sole regulatory authority in scope of practice, without statutory or regulatory requirements for physician involvement (ie, mandated collaboration, direction, or supervision). Twenty states require physician collaboration, even though the boards of nursing in the states have sole regulatory authority. Three other states in which boards of nursing have sole regulatory authority require physician supervision. Finally, in the 4 remaining states, including North Carolina, NPs are jointly regulated by the board of nursing and the board of medicine [1]. In addition, the regulation of prescriptive authority for APRNs is complicated and varies between the states, with some requiring various levels of physician involvement and others allowing independence in this function. Requirements for physician involvement in APRN practice (ie, supervision or collaboration) usually include various types of agreements between APRNs and physicians, with stipulated content, as well as mandated meetings, on-site time by physicians, chart reviews, and restrictions in the numbers of APRNs a physician may supervise. These requirements prevent APRNs from practicing to the full extent of their qualifications, limit access to care, and restrict consumer choice [2].

O'Grady [3], in her work on APRNs and patient safety and quality, maintains that the current regulatory environment for APRNs includes numerous problems that may promote poor quality of care or impair patient safety. She

states that the "high degree of variation across the States for APN regulation has spotlighted the need to ensure that regulation serves the public, promotes public safety, and does not present unnecessary barriers to patients' access to care" [3]. Recently, this sentiment has become a resounding refrain, as several bodies have advocated for changes in regulatory requirements to allow APRNs to function to the full extent of their educational preparation, competencies, and experience [1-5]. Perhaps the most notable summons to unshackle APRN practice is found in a report on the future of nursing recently published by the Institute of Medicine of the National Academies (IOM) [4]. Recommendation 1 in the report calls for the removal of scope-of-practice barriers and advocates for APRNs to "be able to practice to the full extent of their education and training" [4p278]. The report further calls on Congress, state legislatures, the Centers for Medicare and Medicaid Services, the national Office of Personnel Management, the Federal Trade Commission, and the Antitrust Division of the Department of Justice to take specific actions within their jurisdictions to help ensure that the recommendation is implemented. The IOM committee, which was funded by the Robert Wood Johnson Foundation and conducted their study of the future of nursing over a 2-year period, "sees its recommendations as the building blocks required to expand innovative models of care, as well as to improve the quality, accessibility, and value of care, through nursing" [4p278].

To bring this discussion to the state level, the APRN regulatory landscape in North Carolina can be compared to a patchwork quilt. Each of the 4 APRN roles is regulated in a different manner. NPs are jointly regulated by the North Carolina Board of Nursing and the North Carolina Medical Board and are required to have physician supervision. CRNAs are regulated by the board of nursing, with no requirement for physician supervision. CNMs are regulated by the Midwifery Joint Committee, with independent statutory authority; however, CNMs are required to have physician supervision. Last, CNSs are not regulated and do not

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Address correspondence to Ms. Eileen C. Kugler, North Carolina Board of Nursing, 4516 Lake Boone Trl, Raleigh, NC 27607 (ekugler@ncbon.com). **N C Med J. 2011;72(4):285-288.** ©2011 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2011/72407

**TABLE 1.**  
**Components of the Definition of the Advanced Practice Registered Nurse (APRN)**

Component	Description
Education	Completed an accredited, graduate-level education program in 1 of the following 4 recognized APRN roles: certified nurse midwife, clinical nurse specialist, certified registered nurse anesthetist, and nurse practitioner
Certification	Passed a national certification examination that measures APRN, role, and population-focused competencies; maintains recertification
Direct care	Acquired advanced clinical knowledge and skills to provide direct care to patients, as well as a component of indirect care; however, the defining factor for all APRNs is that a significant component of the education and practice focuses on direct care of individuals
Practice	Practice builds on the competencies of registered nurses by demonstrating a greater depth and breadth of knowledge, a greater synthesis of data, increased complexity of skills and interventions, and greater role autonomy; APRNs are educationally prepared to assume responsibility and accountability for health promotion and/or maintenance, as well as the assessment, diagnosis, and management of patient problems, which includes the use and prescription of pharmacologic and nonpharmacologic interventions
Experience	Has clinical experience of sufficient depth and breadth to reflect the intended license
Licensure	Licensed to practice as an APRN in 1 of the 4 APRN roles
Accountability	Licensed practitioners, with no statutory requirement for supervision by, direction from, or collaboration with another health care professional, who are expected to practice within standards established or recognized by a licensing body. Each APRN is accountable to patients, the nursing profession, and the licensing board, to comply with the requirements of the state nurse practice act and the quality of advanced nursing care rendered; for recognizing limits of knowledge and experience and planning for the management of situations beyond the APRN's expertise; and for consulting with or referring patients to other health care professionals as appropriate

Note. Definition is from [6].

have title protection in our state. A foundational requirement for all North Carolina APRNs, regardless of role, however, is that all must have a current unencumbered registered nurse license issued by the North Carolina Board of Nursing.

The mandate for physician supervision and other restrictions stemming from the regulatory requirements for APRNs in North Carolina prevent advanced practice nurses from using their full complements of knowledge and skills and from being full participants in meeting the health care needs of North Carolinians, in both rural and urban areas. The IOM report states that “now is the time to finally eliminate the outdated regulations and organizational and cultural barriers that limit the ability of nurses, including APRNs, to practice to the full extent of their education, training, and competence” [4p145]. The report further asserts that “the

contention that APRNs are less able than physicians to deliver care that is safe, effective, and efficient is not supported by the decades of research that has examined this question....No studies suggest that care is better in states that have more restrictive scope-of-practice regulations for APRNs than in those that do not. Yet most states continue to restrict the practice of APRNs beyond what is warranted by either their education or their training” [4pp98-99].

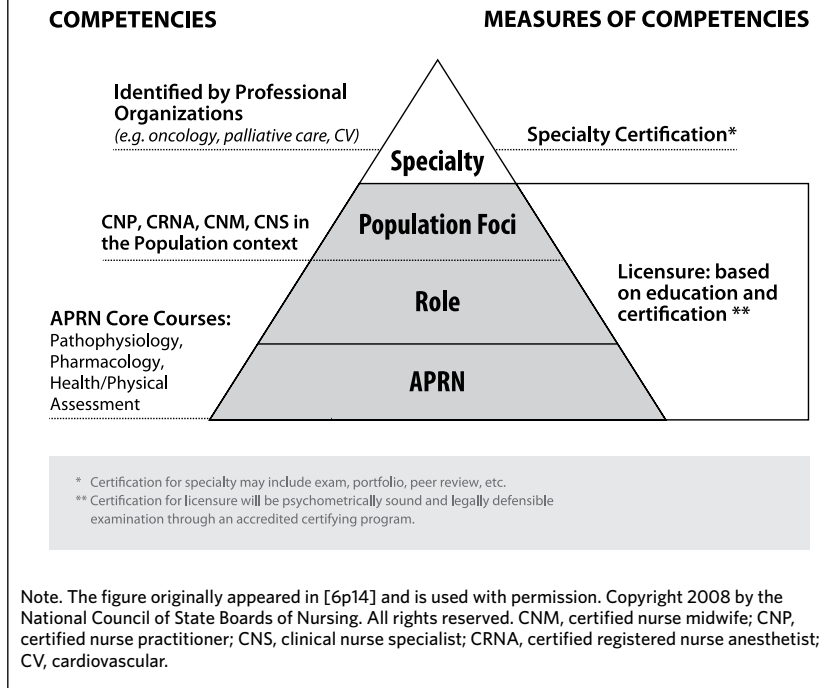
Efforts to broaden the legal authority of APRNs to provide a level of health care that matches their education, training, and competencies appear to be gaining momentum [4]. In July 2008, after an intensive 5-year process, members of a variety of nursing stakeholder groups, represented by the Advanced Practice Nursing Consensus Work Group and the National Council of State Boards of Nursing (NCSBN) APRN Committee, agreed to a comprehensive model for APRN regulation [6]. The primary goal of the consensus model is to bring clarity and uniformity to the ways that APRNs are educated, certified, and licensed, to promote patient safety and public protection [6]. The goals of this consensus process were to strive for harmony and common understanding in the APRN regulatory community, to promote quality APRN education and practice; to develop a vision for APRN regulation, including education, accreditation, certification, and licensure; to establish a set of standards that protect the public, improve mobility, and improve access to safe, quality APRN care; and to produce a written statement that reflects consensus on APRN regulatory issues [6].

The consensus model stipulates that advanced practice nursing consists of the 4 APRN roles and that the legal title for individuals practicing in these roles should be “APRN.” Nationally accredited educational programs educate APRNs at the graduate level in 1 of the 4 roles and in at least 1 of 6 population foci (ie, family/individual across the life span, adult-gerontology, pediatrics, neonatal, women’s health/gender related, and psych/mental health). Individuals who complete the approved educational programs must obtain national certification that is congruent with their educational preparation. The individuals will then be licensed by boards of nursing at the level of one of the APRN roles and in at least one of the population foci (Figure 1) [6].

In August 2008, following closely on the heels of the APRN consensus model, the NCSBN board of directors approved the Model APRN Act and the Model APRN Administrative Rules [7]. These documents translate the components of the APRN consensus model into legal statutory language, and they are now the national standards for APRN regulation. As a result, many states around the country are in the process of putting these standards into place, through various levels of rule and statutory changes. The IOM, as part of recommendation 1, calls on state legislatures to reform scope-of-practice regulations to conform to the model act and administrative rules and ties funding for nursing education programs to only those programs in states that have adopted the model act and rules [4].



**FIGURE 1.**  
**Relationship Among Advanced Practice Registered Nurse (APRN) Educational Competencies, Licensure, and Certification**



The North Carolina Board of Nursing has established the APRN Advisory Committee. The committee includes education and practice representatives from each of the 4 APRN roles, as well as representatives from the public and from employers of APRNs, and is composed of the following 14 members: Gale Adcock, Diana Hatch (public representative), James Hicks, Adam Linker (public representative), Bobby Lowery, Katherine Pereira, Dolly Pressley Byrd, Joy Reed (employer representative), Pamela Reis, Linda Sangiuliano, Nancy Shedlick, Victoria Soltis-Jarrett, Mary Tonges (employer representative), Susan Williams, Nancy Bruton-Maree (board member liaison), and Eileen Kugler (board staff liaison).

The purpose of the committee is to assist and support the board in issues related to APRN practice and regulation, including consideration in the consensus model, the model act, and the administrative rules. The committee charge for 2010-2012 is to study North Carolina APRN licensure, accreditation, certification, and education models; identify gaps with the national Consensus Model for APRN Regulation; and make recommendations to the board.

In moving forward with this charge, the committee has studied the consensus model, the model act, and the administrative rules; determined the major gaps between these documents and North Carolina laws and rules regulating APRN practice across the 4 roles; studied APRN regulatory models used in other states; reviewed the IOM report; and conducted a review of the literature pertaining to APRN practice as it relates to patient safety and quality of care.

The committee will provide recommendations to the board by December 2011.

## Conclusion

Many stakeholders in health care have affirmed the need to place a higher priority on the provision of high-quality, safe, and cost-effective primary care in this country. Many people will not be able to access needed health care, owing to the steep increase in the size of the aging population; a large increase in the number of individuals covered by health insurance, because of the implementation of health care reform; and fewer health care professionals choosing the primary care field [8]. The states—and North Carolina is no exception—need to find ways to meet this growing demand and use all health care professionals to the full extent of their preparation and skills. The IOM report recommends that scope-of-practice barriers be removed, to allow APRNs to practice to the full extent of their education and training and to assist in the important work of meeting the health care needs of the population. North Carolinians will certainly benefit from this approach. The North Carolina Board of Nursing’s APRN Advisory Committee is working toward providing recommendations on how this can be accomplished. NCMJ

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# Contribution of Nursing Education Programs to the Implementation of the Affordable Care Act in North Carolina

*Eileen Kohlenberg*

Registered nurses play an important role in ensuring the delivery of quality health care, and their education is one key to achieving the goals of the Affordable Care Act. This article explores the contributions that nursing education programs in North Carolina can make in helping this legislation achieve its objectives.

The Affordable Care Act, passed by the US Congress in March 2010, was enacted to expand health insurance coverage to greater numbers of people, to improve population health through prevention, to increase the supply of health professionals, to expand long-term care services, and to improve health outcomes [1]. Registered nurses (RNs) play an important role in ensuring the delivery of quality health care, and their education is one key to achieving the goals of the Affordable Care Act. This article explores the nursing resources that are needed in North Carolina to implement health care reform and the contribution that nursing education programs can make in helping this legislation achieve its objectives.

## Current Population of RNs and Nursing Students

In the United States, there are approximately 3.1 million nurses, or approximately 1 RN for every 100 people, based on a US population of 308,745,538 [2]. Nurses make up the largest and one of the more versatile groups of health care professionals: they effectively promote health, prevent illness and disease, detect early symptoms of disease, and provide nursing management for chronically ill and dying individuals.

There are currently 91,926 North Carolina-licensed RNs employed in nursing, 84,775 of whom work inside the state [3]. The ratio of nurses to residents in the state is roughly 1 to 112, based on a population of 9,535,483 [4]. According to the North Carolina Board of Nursing, 3,498 individuals successfully passed the National Council Licensure Examination for Registered Nurses in North Carolina in 2010 [5].

Many of these newly licensed RNs graduated from one of the 18 baccalaureate programs, 2 diploma programs, and 59 associate's degree programs that are dispersed across the state. Given that nursing students are actively engaged in clinical practice for at least 2 years of their undergraduate

education, at any given time approximately 7,000 undergraduate nursing students are practicing with faculty supervision in North Carolina communities, and more than 1,000 graduate nursing students are practicing in advanced roles.

Nursing students are being educated to conduct health assessments, provide vaccinations, assess dietary and exercise and activity patterns, teach health promotion, detect early symptoms of illness and disease, and manage acute and chronic illness. Increasingly, these interventions are being performed in community-based settings—such as preschools, schools, workplaces, public health clinics, mental health clinics, home health settings, faith-based communities, and long-term care settings—instead of in traditional, hospital settings.

## Levels of Educational Preparation Among Nursing Students

At present, nurses are prepared at the diploma, associate's degree, and baccalaureate levels; such nurses are considered to be generalists in nursing. At the master's level, students develop a clinical specialty or proficiency in a functional area, such as education or administration. At the doctoral level, scientists are produced in doctor of philosophy (PhD) programs. Advanced practice nurses undergo further professional development in doctor of nursing practice (DNP) programs.

Typically, nurses prepared with a diploma or associate's degree in nursing are qualified to practice with individuals, typically in hospital units or long-term care settings. Nurses with a baccalaureate are more broadly educated and work in these areas, as well as in community health settings. Nurses prepared with a master's degree typically include clinical nurse specialists, nurse practitioners, nurse anesthetists, nurse midwives, administrators, and educators, who practice in a variety of health care and educational settings.

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At the doctoral level, most PhD-prepared nurse scientists assume educator positions or lead research in practice settings; nurses prepared with a DNP practice in a variety of settings and sometimes teach.

Because of shortages of appropriately educated staff, nurses have often been employed in positions in practice and academic settings before they have attained the requisite level of education and/or experience. For instance, in North Carolina, nurses have been employed in community health positions before they attained a baccalaureate or completed coursework in community health nursing. Many clinical faculty members in the community college system have not yet attained a master's degree in nursing. A number of nurse managers assume management positions before having attained a master's degree in nursing administration. These situations produce an environment that is unfair to the nurse and to the client base they serve. Nurses also may not achieve the quality outcomes that are expected for their clients if their preparation for the role is inadequate.

With the impetus in health care reform for quality outcomes and accountability, nursing education programs must be rigorous in their preparation of nursing graduates, and employers must be expected to hire nurses who are appropriately credentialed for their positions. Appropriate educational level, licensure, and certification should be assessed in relation to the needs of the nursing position. Increasingly, evidence in the nursing literature demonstrates that more-highly prepared nurses will generate better health care outcomes.

The Institute of Medicine of the National Academies (IOM) has suggested that each state achieve a 4:1 ratio of nurses prepared with a baccalaureate to those prepared with an associate's degree and increase the number of nurses with advanced degrees [6]. The American Nurses Association has also endorsed the position that nurses prepared with an associate's degree or diploma in nursing should earn baccalaureate degrees within 10 years after earning the diploma or associate's degree [7].

North Carolina has been moving proactively in these directions, with the establishment of several demonstration projects whereby community colleges partner with baccalaureate programs to offer simultaneous degree work toward the associate's degree in nursing and the bachelor of science in nursing (BSN) degree. Public and private colleges and universities also have moved ahead with the addition of master's degree programs and PhD and DNP programs, to advance the education of nurses in specialty areas of practice and in education, administration, and research areas. The University of North Carolina system is currently evaluating the addition of several DNP programs to increase the education of advanced practice nurses.

The levels of education among working RNs in North Carolina are presented in Table 1. Currently, 49% of nurses in the state are educated at less than a baccalaureate level. To ensure that 80% of nurses are prepared with the bacca-

**TABLE 1.**  
**Education Levels Among Working Registered Nurses (RNs) in North Carolina**

Education level	RNs, no. (%) (N = 91,926)
Diploma in nursing	8,220 (9)
Associate's degree in nursing	36,661 (40)
Baccalaureate in nursing	29,969 (33)
Baccalaureate in other field	4,998 (5)
Master's degree in nursing	8,349 (9)
Master's degree in other field	3,030 (3)
Doctorate in nursing	313 (<1)
Doctorate in other field	377 (<1)
Unknown	9 (<1)

laureate as recommended by the IOM, an additional 27,926 nurses currently prepared with a diploma or associate's degree in nursing would need to be educated at the baccalaureate level, requiring substantial expansion of RN-BSN programs. To increase the supply of health professionals, expansion of generic baccalaureate nursing programs will also need to occur. With only 10% of nurses in North Carolina prepared with advanced degrees in nursing, growth of nursing programs offering a master's degree in nursing, a DNP, and/or a PhD is also vital for the implementation of health care reform objectives. The expansion of enrollment in nurse practitioner programs is particularly important to meet the Affordable Care Act goals for health promotion and prevention.

### Recommendations for Changes in Nursing Education

To meet the demands of an increasing population, a rapidly expanding older adult population in North Carolina, and the Affordable Care Act objectives, a number of changes in nursing education must be made.

Enrollment in baccalaureate nursing programs—both in generic, 4-year programs and in RN-BSN programs—needs to be expanded. The current ratio in North Carolina is 1 nurse to 112 people, compared with a ratio of 1 nurse to 100 people at the national level. Evidence in the nursing literature has demonstrated that appropriate levels of staffing with baccalaureate-prepared nurses lead to better patient outcomes. Compounding the current nursing shortage is an increasingly diverse population, particularly in the 55 and older age group. This population will require baccalaureate-prepared nurses who can meet the health care needs of older adults in a variety of environments in the community. Also, the recommendation by the IOM that 80% of nurses in the state are prepared with the baccalaureate must be addressed. This recommendation means that North Carolina will need a very large expansion of RN-BSN programs and innovative educational delivery systems, such as online enrollment and dual enrollment in associate's degree and baccalaureate programs.

Nurses will need to be educated to provide transitional care across many health care, home, and work environments. With a focus on health promotion and prevention, nurses increasingly will need to be prepared to practice in day care, schools, workplaces, public health settings, home health settings, mental health settings, long-term care settings, clinics, and other nonhospital-based places of care. Preparation for working in acute care settings will need to continue, but with a focus on transitioning the client to other nonhospital-based environments. Nursing education practicums should reflect the focus on health promotion and prevention, with particular attention to the needs of the aging population.

Nursing students should be prepared to use health care technology to promote health, prevent disease, teach clients, and document outcomes of care. As high-speed Internet services become more available across the state, these resources may be used to share health care information, to promote health and prevent disease. Appropriate health care teaching materials may be shared electronically with clients. Finally, electronic medical records will allow nurses to enter data into a common database that can be shared appropriately with the client and other health care professionals.

Nursing education programs, government agencies, the health care industry, and the private sector need to focus on achieving a common set of health care goals. The objectives of the Affordable Care Act and Healthy North Carolina 2020 must be widely disseminated to all stakeholders in North Carolina. To achieve a high standard of health care for all, collaboration among nurse educators, other health care professionals, government agencies, the health care industry, and the private sector must occur. Through their clinical practicums, nursing faculty, the 7,000-plus undergraduate nursing students, and the 1,000-plus graduate nursing students each year can make sizeable contributions to the effort to achieve the goals of the Affordable Care Act and Healthy North Carolina 2020.

Nursing students need to be educated to practice within the full scope of their practice. Nursing students educated at the baccalaureate level are broadly qualified to perform comprehensive health assessments of individuals and of community needs. They are well prepared to deliver primary, secondary, and tertiary care. Yet in practice, RNs oftentimes revert to the customs of the health care setting in which they work, limiting themselves to a circumscribed set of functions that does not fully recognize the full scope of the nursing role protected by the North Carolina Nurse Practice Act. During the education of nursing students, their autonomy as RNs must be reinforced to ensure they engage in the full scope of nursing practice that will improve the health of our citizens.

Enrollment in nurse practitioner programs must be expanded to meet the goals of the Affordable Care Act for health promotion, prevention, long-term care, and improvement of health outcomes. With the consistent growth of

the population, particularly in the 55 and older age group, and the increased number of people who will be covered by health insurance plans, programs preparing nurse practitioners must be expanded by at least 33% to meet the growing need for primary care delivery. The growth of DNP programs is particularly important for the production of highly prepared advanced practice registered nurses.

The growth of baccalaureate and graduate programs in nursing must go hand in hand with a sustained effort to prepare nursing faculty. An increased number of doctorate-prepared nurse educators are needed to teach students at the baccalaureate and graduate levels, and a continued effort must be made to ensure all faculty in associate's degree in nursing programs are prepared with at least a master's degree in nursing.

Continuing support and funding for nursing education programs should occur only when there is a consistent track record of full approval by the North Carolina Board of Nursing and accreditation by a specialized nursing accrediting agency. Program resources need to be provided to ensure that all existing programs can satisfy the state administrative law requirements and the requirements for specialized accreditation. Programs that fail to meet these requirements despite having been allocated adequate resources should be closed. When the requirements of the North Carolina Board of Nursing and the accrediting agencies are met, the outcomes expected of a quality nursing education program are being achieved.

Nursing research in graduate nursing programs should address health promotion and prevention in diverse populations across the lifespan. New models of health care delivery should also be examined, and those that are effective should be implemented. With a ratio of 1 nurse for every 110 people in North Carolina and the nursing profession's background of providing health promotion and preventive care, nurses are positioned to deliver health care with a different structure and focus than that of the acute care system that has dominated in the past. Comparative models of effective delivery of quality nursing care may be studied for quality, access, and cost outcomes.

In summary, nursing education programs in North Carolina are key stakeholders in preparing the future nursing workforce, which will help reach the objectives of the Affordable Care Act. The state faces challenges in the expansion of programs at undergraduate and graduate levels, which is desperately needed to implement health care reform. There is also the challenge to prepare enough qualified nursing faculty for all of the diploma, associate's degree, BSN, MSN, PhD, and DNP programs in North Carolina. Students must be educated to promote health across the lifespan and across care settings. Technological skills are paramount to effective delivery of quality care by nurses. All public, private, and governmental entities must work together to achieve the Affordable Care Act goals, with expectations for a particular set of outcomes. Finally, sub-

stantial growth in nursing education programs is needed, at present and in the future, to meet the growing needs of the population, particularly those of adults aged 55 years and older. *NCMJ*

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# Psych NP-NC: A Benchmark Graduate Nurse Practitioner Program for Meeting the Mental Health Needs in North Carolina

*Victoria Soltis-Jarrett*

**UNC-Chapel Hill's Psych NP-NC program prepares clinically and culturally proficient nurse practitioners to provide psychiatric and mental health care in North Carolina areas that are medically underserved and have a greater number of health disparities. This article reviews the program and the role of its graduates and makes policy recommendations for improving mental health care in the state.**

## Setting the Stage for a Perfect Storm

**T**here is an ongoing crisis in the mental health care system in North Carolina. It is a perfect storm, with multiple elements that are producing a culture of precarious, inadequate, and unsafe care. First, there is a disparate distribution and critical shortage of child, adult, and geriatric psychiatrists, both of which continue to prevail across the state, due, in part, to the state's rapid population growth, as well as to the declining number of specialty physicians [1-3]. Second, nearly two-thirds of North Carolina counties have also experienced a decline in accessible, affordable, and quality outpatient psychiatric services during the past decade, with many agencies opening up and then subsequently closing down across the state [2]. As a result, the number of admissions to the state psychiatric hospitals has increased, contrary to the goals and objectives of mental health reform outlined in 2001 by the North Carolina Department of Health and Human Services [4]. The overflow of patients who are not able to access or receive psychiatric treatment is then funneled into the emergency departments of North Carolina community hospitals, which are reporting burgeoning numbers of individuals with severe and persistent psychiatric illnesses. Such patients frequently wait an average of 63.1 hours, or 2.6 days, in the emergency department, because there are no available inpatient beds [5]. Third, providers and agencies who are approved by the North Carolina Division of Mental Health, Developmental Disabilities, and Substance Abuse Services and the Department of Medicaid Assistance to provide services are being inundated with individuals and families seeking mental health services, only to find that funding is limited or denied because of lack of state mental health funding. Providing safe, affordable, accessible, and high-quality mental health care is possible

and needs to be a priority in North Carolina for its future.

This brief commentary will present the essential role of psychiatric-mental health nurse practitioners (PMHNPs) as part of the health care team, whether it is based in the community or in the hospital and/or is integrated into primary care or specialty practices. It will argue that PMHNPs are ideally poised—through their ability to implement professional psychiatric-mental health assessment and management, particularly in rural and remote areas—to help alleviate some of the disparities in the mental health workforce that exist across North Carolina. Three sections will focus briefly on (1) the history and role of PMHNPs; (2) the PMHNP graduate program at the University of North Carolina (UNC)-Chapel Hill, as well as its necessity to North Carolina; and (3) recommendations to assist state policymakers to ensure that this crisis can recede and be managed more effectively by use of PMHNPs, now and in the future.

## The Advanced Practice Registered Nurse (APRN) and the Birth of the PMHNP: An Evolving Role Over the Course of 50 Years

The APRN in psychiatric-mental health was initiated in the 1950s, with a focus on the the unique interpersonal relationship that nurses developed with patients who were institutionalized in the psychiatric "asylums" [6]. The clinical nurse specialist (CNS) in psychiatric-mental health was the first APRN role at the graduate level in the discipline of nursing, and it has continued to evolve during the past 50 years. The role of a CNS builds on the generalist role of a nurse (which requires preparation with a bachelor of science degree in nursing and licensure as a registered nurse) with graduate, specialized education and training in psychiatric nursing, leading to the master of science in nursing (MSN).

In 1963, President John F. Kennedy introduced the Community Mental Health Act [7], an historic measure to provide community-based mental health care as an alterna-

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tive to institutionalizing patients in the large state psychiatric hospitals that were overflowing with patients, many of whom were stable and able to return to their home communities [7]. The CNSs were at the core and foundation of this movement, which facilitated their role as equal members of a multidisciplinary team. Throughout the 1960s and 1970s, the CNSs (and their associated multidisciplinary teams) discovered that they were unable to meet the needs of the increasing numbers of individuals who presented to the community mental health centers (CMHCs). The problem was not that the patients were being discharged from the state hospitals, but that the CMHCs were being inundated by individuals who had never before had access to mental health care and were now seeking it.

Unfortunately, during the past 20 years the United States has seen the fall of the Community Mental Health Act, owing to a lack of funding and the onset of managed care. Primary care providers (PCPs) have been the mainstay and portal of entry into the health care system in most areas across the United States, and for the most part, they have been able to manage their patients who presented with symptoms of depression and anxiety. If treatment was unsuccessful, PCPs were more readily able to refer patients with challenging conditions to psychiatrists and/or CMHCs, for specialty assessment and treatment—until now. As the number of psychiatrists declined, the population grew, and the CMHCs slowly disappeared, PCPs (including NPs and physician's assistants *without* psychiatric education or training) began to struggle with managing the huge influx of individuals with severe and persistent psychiatric illnesses and developmental disabilities, as well as substance abuse and dependence.

It was at this time that the CNSs in psychiatric-mental health nursing began to diversify, and in some states they were given prescriptive authority, particularly in rural and remote areas where there were no psychiatrists. Their unique education and training provided a safe and accessible option for mental health assessment and treatment—one that combined a foundation of general nursing with graduate-level specialty skills from psychiatry, including the ability to prescribe psychotropic medications.

Nationally, there was also an outcry, from the discipline of nursing and from professional organizations representing advanced practice psychiatric nurses, for the development of a new role [8]. In 2000, the American Nurses Credentialing Center offered the first board certification examinations for PMHNPs, as a way to meet the mental health needs of the nation, as well as to advance the role of the PMHNP. Programs specializing in educating PMHNPs were growing in numbers, and by 2009, there were approximately 150 graduate schools of nursing in the United States. As the Consensus Model for APRN Regulation: Licensure, Accreditation, Certification & Education is adopted and implemented nationally, board certification as a PMHNP will eventually be required, in all 50 states, to practice as a PMHNP [9].

## Psych NP-NC: An Innovative Program That Offers a Solution

The UNC-Chapel Hill School of Nursing has established and maintained a graduate PMHNP program since 2004. This innovative program, now coined "Psych NP-NC," was launched to provide, implement, and sustain a competency-based program of graduate study (MSN or post-MSN certificate) that rigorously prepares NP students to become culturally sensitive and clinically proficient. At the completion of the program, graduates are eligible to sit for board certification as a PMHNP. Specific recruitment strategies were initiated in 2004, and in 2006 they were strengthened to target counties across North Carolina that have a declining number of psychiatrists and to identify and encourage nurses of minority and disadvantaged backgrounds to apply and complete the program at the UNC-Chapel Hill School of Nursing (to increase diversity among professional mental health care providers and multidisciplinary teams across the state). The spirit of the role of a CNS was maintained, with the future of advanced practice psychiatric nursing embraced. The overarching goal of the Psych NP-NC program remains to recruit and educate nurses at UNC-Chapel Hill so that they will return to their home community or county to provide essential psychiatric and mental health assessment and treatment, including prescription of psychotropic medications.

Psych NP-NC students must successfully complete rigorous graduate courses in advanced pathophysiology, advanced pharmacology, advanced physical assessment and diagnostic reasoning, and psychopharmacology. They are also educated about concepts addressing health across the life span and about translating theory into practice, through clinical courses that focus on clinical competencies, such as psychiatric interviewing, psychiatric diagnosis, neurobiology, psychopharmacology, and individual, group, and family psychotherapies. Throughout the program, PMHNP students are assessed to determine their level of clinical competency and cultural sensitivity and learn to use models of peer supervision and continuing education, to enhance their lifelong professional skills as a PMHNP.

To this end, the Psych NP-NC program has been successful in targeting a total of 67 counties and graduating 74 new PMHNPs during 2004-2011. Much of its success is attributable to a hybrid distance-educational program that minimizes travel and encourages students to remain in their home communities: students attend monthly on-campus classes and regular teleconference classes (and clinical supervision) from home or work. Three Advanced Nursing Education Traineeships totaling >\$2 million from the Division of Nursing, Health Resources and Service Administration, US Department of Health and Human Services, have been instrumental in providing the fiscal support to make these sweeping curricular changes, as well as to recruit nurses into the program. Psych NP-NC has also partnered with (and

received funding from) North Carolina AHEC to explore, develop, and target the specific workforce shortages by linking with the Divisions of Nursing Education in nearly all of the North Carolina AHEC regions [10, 11]. The importance and success of this program for North Carolina has also been demonstrated by the North Carolina legislature's appropriation of scholarship funds for students who are enrolled and willing to commit to work in state-approved mental health agencies in the underserved targeted areas after graduation.

## Recommendations for the Future of Mental Health Care in North Carolina

Four overarching recommendations were presented in a recent report produced by the Institute of Medicine of the National Academies (IOM), with support from the Robert Wood Johnson Foundation [12]. North Carolina is in an ideal position to meet these recommendations and to work toward resolving the mental health workforce crisis that exists across the state, by acknowledging the role and practice of PMHNPs, as well as by removing the barriers that limit PMHNPs from practicing to the full extent of their education and training. The Psych NP-NC program has consistently achieved excellence through graduate-level nursing education and training, and its graduates are well suited to become full partners, with physicians and other members of the multidisciplinary team, so that mental health care can be redesigned, accessible, and affordable. To this end, the Psych NP-NC program can be replicated and sustained as a benchmark for other states. The following are recommendations that will foster the ongoing success of this innovative program, as well as that of the role and practice of PMHNPs, now and in the future.

First, barriers related to scope of practice must be removed by redesigning the outdated regulation of NP practice in North Carolina that requires NPs to be supervised and "tied" to physicians in order to practice; doing so will conform to the National Council of State Boards of Nursing Model Nursing Practice Act and Model Nursing Administrative Rules [9].

Second, third-party payers that participate in fee-for-service payment arrangements should be required to provide direct reimbursement to PMHNPs who are practicing within their scope of practice under state law.

Third, reimbursement codes should be developed for nontraditional settings (eg, primary care, pediatrics, women's health, and geriatrics programs) that can promote access to mental health care in mainstream health care, moving toward an integrative model of care.

## Conclusion

The number of board-certified PMHNPs is anticipated to grow as part of a sustainable competency-based curricu-

lum (ie, the Psych NP-NC program) at the UNC-Chapel Hill School of Nursing. PMHNPs are uniquely poised to be part of the swift change that is needed in North Carolina during the next decade to address the mental health disparities and workforce shortages. PMHNPs can provide safe, affordable, accessible, and high-quality mental health care in North Carolina now and in the future. **NCMJ**

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# Educational Preparation to Strengthen Nursing Leadership

Elaine S. Scott

**Two of the 8 recommendations in the Institute of Medicine of the National Academies report on the future of nursing call for increased leadership by nurses. While nurses alone cannot transform health care, they do need a stronger voice in health care systems, and they need better educational preparation as members of the health care leadership team.**

Are nurses the underused resource that can improve health through prevention and reduce disparities in health through access and affordability? According to the Institute of Medicine of the National Academies (IOM) and the Institute for Healthcare Improvement, the answer is yes [1, 2]. Nursing is the largest profession in health care, and nurses have an outstanding reputation of trust with consumers, but their impact on health care redesign and innovation has been limited in the practice settings where they work. Nurses are essential safeguards in hospitals, providing 24-hour surveillance and management of patients. Nurses are the primary group of health professionals responsible for running our public health system, they are the single largest portal of care for poor and underserved individuals, and nurse practitioners provide exemplary primary care, with research confirming that the care they deliver is comparable to that provided by primary care physicians [3]. Yet, nurses continue to have a silent voice in the health care system. To a large extent, this silence is attributable to a need for stronger development of leadership within the nursing profession.

Two of the 8 recommendations in the recently published IOM report on the future of nursing call for expanded leadership and leadership preparation for nurses [1]. Specifically, nurses are needed to lead innovation at the bedside, to work collaboratively with physicians and other members of the health care team to redesign care that is affordable and effective, and to serve on public and private boards related to health care [1]. The report also calls for expanded “opportunities for nurses to lead and manage collaborative efforts to conduct research and to redesign and improve practice environments and health systems” [1pS-9]. One recommended avenue for fostering leadership abilities is to increase the number of nurses with a baccalaureate to 80% by 2020 [1]. The best place to start educational-advancement initiatives is with nurses who are in formal leadership

positions. Well-educated nurses in management positions can better address the needs of patients and communities, support nursing staff in returning to school, and advocate for a better-educated nursing workforce in North Carolina.

While nurses alone cannot transform health care, they do need a stronger leadership presence in health care systems, and they need to be better prepared as collaborators and innovators on the health care team. For several years, a national survey has prioritized financial stability, health care reform implementation, government mandates, and quality and patient safety as the top 4 concerns of hospital administrators [4]. To address these concerns, the nursing perspective is essential [2]. There are significant differences between the perspectives offered by nurse leaders and those offered by chief executive officers and health care boards [5]. Chief nurse officers are more familiar with reports and research on quality and patient safety, and they have a different perspective on what needs to be done to improve quality in health care organizations [5]. Patient outcomes are influenced by nursing care and by nursing leadership that infuses the importance of quality and safety throughout the organization [6-9]. The survival of health care reform initiatives that eliminate reimbursement for hospital-associated adverse events and promote pay-for-performance standards also requires the involvement of nurses [2]. The voice of the nurse needs to be heard, particularly in the boardroom and at the executive team’s decision-making table [5]. Whereas the chief financial officer is skilled in viewing health system concerns in relationship to money, the chief executive officer ensures organizational sustainability, and the chief operating officer manages risk and operational integrity, the chief nurse officer provides the knowledge and skill to ensure patient safety, quality care, and beneficial outcomes.

Nurse leaders set the example for other nurses to follow, and they influence the policies health care organizations create to promote educational advancement, tuition reimbursement, and clinical ladder requirements. A well-edu-

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cated workforce of nurse leaders not only strengthens the profession's competency, it also improves patient outcomes. Research demonstrates that effective nurse leaders contribute to lower patient mortality [6], healthier work environments [7], and improved quality and patient safety [5]. An effective nurse leader must be well educated and well prepared. By requiring master's level education for senior nurse leaders and baccalaureate education for frontline and midlevel nurse managers, organizations can strengthen the team that addresses health care reform initiatives and patient safety.

The American Organization of Nurse Executives (AONE) endorses the recommendation that nurse leaders need to be prepared at least at the baccalaureate or master's level [10]. The AONE has developed competency recommendations for managers at all levels, including (1) communication and relationship building, (2) knowledge of the health care environment, (3) leadership, (4) professionalism, and (5) business skills. A more detailed description of these domains can be found in Table 1. In addition to academic degrees, another important indicator of competency for nurse leaders is national certification. The certifying examination for nurse executives, offered by the American Nurse Credentialing Center (ANCC), tests the nurse leader's abilities in 5 domains (Table 2). The ANCC requires that all nurses pursuing certification as a nurse executive must hold a bachelor's degree or higher in nursing, have had at least 24 months of administrative practice during the previous 5 years, and have completed 30 or more hours of continuing education in nursing administration within the past 3 years. If the candidate for certification has a master's degree in nursing administration, the last prerequisite is waived [11].

The ANCC oversees both the certification for nurse executives and the designation of magnet status for hospitals. Magnet status is an award given to hospitals that satisfy a set of criteria designed to measure the strength and quality of their nursing services [12]. Magnet hospitals demonstrate better patient outcomes, higher levels of nursing job satisfaction, and lower turnover rates among nursing staff [13]. Hospitals with magnet status promote nurse involvement in research, data collection, and decision making related to patient care delivery. "Recognizing quality patient care, nursing excellence, and innovations in professional nursing practice, the Magnet Recognition Program provides consumers with the ultimate benchmark to measure the quality of care that they can expect to receive. When *U.S. News & World Report* publishes its annual showcase of 'America's Best Hospitals,' being an ANCC Magnet organization contributes to the total score for quality of inpatient care" [12]. Recent data demonstrate that 51.7% of the nurse leaders in magnet facilities across the United States hold a master's degree or higher [14].

Graduate-level education in nursing administration prepares the nurse leader to achieve certification and to be competent to address the complex issues of organizing and

delivering nursing care in today's health system. A review of 57 nursing administration master's programs in the United States showed that content on finance, economics, organizational theory, outcomes evaluation and management, quality improvement, legal and regulatory issues, health

**TABLE 1.**  
**Nurse Manager Competencies and Skills**

Competency, skills
Communication and relationship building
Effective communication
Relationship management
Influence of behaviors
Ability to work with diversity
Shared decision making
Community involvement
Medical staff relationships
Academic relationships
Knowledge of health care environment
Clinical practice knowledge
Patient care delivery models and work design knowledge
Health care economics
Health care policy
Understanding of governance
Evidence-based practice
Outcome measurement
Patient safety knowledge
Utilization and case management
Quality improvement and metrics
Risk management
Leadership
Foundational thinking
Personal journey discipline
Systems thinking
Succession planning
Change management
Professionalism
Personal and professional accountability
Career planning
Ethics
Evidence-based clinical and management practices
Advocacy for clinical practice
Membership in professional organizations
Business
Health care finance understanding
Human resource management and development
Strategic management
Marketing
Information management and technology

Note. Competencies and skills are determined by the American Organization of Nurse Executives [10].

**TABLE 2.**  
**Content of the Nurse Executive Credentialing Examination**

Category	Practice domain	Questions, no. (%)
I	Delivery of care	56 (37.3)
II	Legal, regulatory, and ethical issues	31 (20.7)
III	Health care economics	14 (9.3)
IV	Health care environment	13 (8.7)
V	Professional practice	36 (24.0)
Overall	...	150 (100)

Note. The examination is given by the American Nurses Credentialing Center.

policy, and human resource management was essential in the curriculum for nurse leaders [15]. In contrast, the curriculum for an associate's degree in nursing (ADN) focuses on developing entry-level competency in the delivery of safe and effective clinical care to individuals. This is also true for baccalaureate-level education in nursing, although my review of the 10 largest bachelor's of science in nursing (BSN) programs in North Carolina found that 100% of these programs also provide courses in population health, leadership, and research. When nurses with an ADN return to school to achieve a BSN, the nursing courses required focus on content in 3 main areas: leadership development, community and population health, and evidence-based practice. While BSN programs across the state include basic instruction on leadership, clinical research, and elements of wellness and population health, the degree of competence nurse leaders currently need in these areas far exceeds these rudimentary educational frameworks for practice. Although BSN education equips nurses to function as charge nurses and assistant nurse managers, it clearly is inadequate for higher levels of administrative function in health care organizations. Master's level education is preferable if nurses are to acquire academic preparation in the areas in which the AONE and the ANCC recommend that nurse leaders must be competent and if nurse leaders are to partner in redesigning a safer, more efficient, and more effective care system for patients in North Carolina.

The East Carolina Center for Nursing Leadership was established at East Carolina University in 2006 to address the statewide need to advance leadership competency among nurses. With a mission to mobilize nurses to be effective partners and leaders in creating healthier communities in North Carolina, the center works to promote leadership development among nursing students, to advance research on nursing leadership, and to engage with community nurse leaders. One of the first workforce evaluations performed by the center was an examination of the educational levels of nurse managers in the state. A review of the 2009 North Carolina Board of Nursing database of nurses classified as administrators, supervisors, or head nurses revealed that, in contrast to nurse leaders in magnet facilities, only 11.7% of those in North Carolina held a

master's degree. The majority of nurse leaders in North Carolina are educated at less than a baccalaureate level, with 10.8% holding a diploma in nursing and 43.1% holding an ADN. Approximately 30% of North Carolina nurse managers have a BSN, and 4.3% have a baccalaureate in a field other than nursing. The center procured a number of grants aimed at providing an improved gateway toward advanced nursing degrees (ie, RN-BSN and MSN) for nurse leaders. Efforts included transitioning the master's degree in nursing leadership concentration to an online program, developing regional cohorts of nurses who want to return to school, mentoring ADN-credentialed nurse leaders in the educational process, and offering an annual emerging-leaders institute that introduced nurse leaders to online technologies for learning and shared evidence about how higher levels of education inform administrative practice in nursing. In response to these initiatives, the online administration program has grown from 6 to 85 students, 76 nurse managers have received 30 continuing education units for leadership training, and 8 student cohorts have been established across the state in hospital environments.

To advance the contribution that the nursing workforce can make to improve patient access and safety, improve quality, and promote innovation and cost containment, nurse leaders must be well educated and well prepared. Nurses need physicians, hospital administrators, and finance officers who see value in having an informed nurse leader to partner with as health care is transformed in North Carolina. Just as quality and patient safety cannot be improved without nurses, nursing cannot be improved without a shared vision among health care professionals and boards that a well-educated nurse leader is an asset to the clinical team, to the health care leadership team, and to North Carolina communities. **NCMJ**

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# Escalating the Pathway From the Associate's Degree in Nursing to the Bachelor of Science in Nursing and/or the Master of Science in Nursing: What Is Standing in the Way?

*Elaine S. Scott, Helen Brinson*

For more than 25 years, promoting higher levels of education for registered nurses (RNs) has been a strategic theme in national reports. Yet, only 42.2% of RNs in North Carolina hold a bachelor of science in nursing, a master of science in nursing, or a doctorate in nursing. Creating a seamless educational pathway for RNs is essential for achieving this goal.

For more than 25 years, promoting higher education for registered nurses (RNs) has been a theme in national reports [1, 2]. One reason for this recurring recommendation is evidence that nurses with a bachelor of science in nursing (BSN) more often pursue education at the master's and doctoral levels, an essential component for sustaining an adequate supply of nurse practitioners, midwives, and clinical nurse specialists, as well as nurse educators [3, 4]. Another justification for increasing education levels of RNs is the growing research that links patient safety and outcomes to the percentage of BSN-level nurses on a unit [5, 6]. Nurses, unlike all other health care professionals, can enter practice via 3 different degrees: a hospital diploma, a community college associate's degree in nursing (ADN), or a BSN. Graduates of all programs take the same licensing examination to practice nursing. Many historical factors have contributed to this situation, and many political factors make its resolution complex. Historically, nurses—who are predominantly white and female—were educated in hospital diploma programs. As nursing care became more complex and university education became a norm for women, the movement to a baccalaureate was recommended by the profession. At present, 20.4% of nurses in the United States completed a diploma program as their initial education [7]. In North Carolina, only 7.2% of nurses report having received a hospital diploma as their first degree [8]. Since 2004, less than 3.5% of new-entry nurses have graduated from diploma programs [7, 8]. As diploma programs closed, schools of nursing were created in universities; however, supply did not match the demand for nurses arising from World War II, from improvements in medicine, and from

an increased use of hospitals [9]. In response to the pressing need for nurses, a proposal for a 2-year, technical nursing degree was created, with the recommendation that the education takes place in community colleges [9]. The initial vision was for technically trained nurses to assist BSN-level nurses in practice, much in the same way that physical therapy assistants work with physical therapists. Instead, nurses with a 2-year ADN gained equal licensure status and soon became the largest pool of US nurses. In North Carolina, during 2004-2009, 21,052 new nurses entered practice. Of these, 14,073 (66.9%) graduated from ADN programs, 6,257 (29.7%) received a BSN, and 722 (3.4%) received a diploma in nursing [8]. On the national level, 45.4% of RNs begin practice with an ADN, compared with 34.2% who begin practice with a BSN [7].

Answering the current call by the Institute of Medicine of the National Academies (IOM) to increase the number of BSN-level nurses to 80% of the nursing workforce by 2020 will require tremendous effort, united vision among nurse educators and leaders, and major strategic commitment by organizations that employ nurses [2]. At present, only 42.2% of RNs in North Carolina hold a BSN, MSN, or PhD in nursing (Table 1). In North Carolina, during 2004-2009, only 2,998 ADN-level nurses used the RN-to-BSN articulation option to achieve a BSN [8]. On average, that is 500 ADN-level nurses per year returning to school, while an average of 2,345 new ADN graduates enter nursing practice. Nationally, only 16%-20% of ADN-level nurses go on to pursue a higher degree [4].

The IOM's recommendation that a seamless educational pathway be established for RNs has been a vision in North Carolina since 1991, when the University of North Carolina

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**TABLE 1.**  
**Degrees Held by Working Registered Nurses (RNs) in North Carolina**

Degree	RNs, no. (%) (N = 92,495)
Diploma in nursing	8,147 (8.8)
Associate's degree in nursing	36,843 (39.8)
Bachelor of science in nursing	30,263 (32.7)
Baccalaureate in other field	5,041 (5.5)
Master's degree in nursing	8,441 (9.1)
Master's degree in other field	3,043 (3.3)
Doctorate in nursing	327 (0.4)
Doctorate in other field	381 (0.4)
Unknown degree	9 (<0.1)

(UNC) president convened a nursing transfer study commission. Yet, only 32.7% of current nurses in North Carolina hold a BSN [8]. The university and community college systems have a comprehensive articulation agreement (CAA) that has existed for many years. However, there is not a statewide nursing articulation agreement. The CAA provides a readily accessible way to evaluate community college courses for university transfer credit. In 2001, the Helene Fuld Health Trust awarded a 2-year grant to the North Carolina Center for Nursing with the goal to create "a seamless articulation plan for North Carolina nursing education programs such that RNs who wanted to further their education were assured that previous learning and work experiences would be valued and recognized." A project steering committee formed, including representatives from community colleges, universities, the North Carolina Area Health Education Centers (AHEC), the North Carolina Board of Nursing, the North Carolina Nurses Association, and the North Carolina Association of Nurse Leaders. By 2003, the group had drafted a statewide nursing articulation plan; held a meeting to disseminate findings; and, using an RN-BSN consortium, developed a method for fully implementing the work. But funding issues and the dissolution of the North Carolina Center for Nursing challenged the development and continuation of the consortium (J. Kuykendall, personal communication, May 31, 2011).

After the work of the North Carolina Articulation Task Force, the North Carolina Institute of Medicine (NCIOM) convened a task force to address the North Carolina nursing workforce shortage. In 2004, the NCIOM task force released a report that included many recommendations and strategies made by the North Carolina Articulation Task Force [10]. Despite a lack of funding, AHEC, North Carolina educational systems, private nursing programs, the North Carolina Board of Nursing, and other organizations have collaborated on many of the recommendations. The AHEC program office and the AHEC Nurses' Council annually convene directors of RN/BSN/MSN nursing programs located at universities and community colleges to discuss and

review program developments. Many regional AHECs have annual advisory meetings to discuss strategies to increase enrollment of ADN-level nurses in BSN and MSN programs. In 2007, the NCIOM reviewed the recommendations from 2004 and provided a detailed update that outlined the legislative and organizational responsibilities needed to meet the recommendations [11]. The report noted that significant progress had been made but that there were still inadequate numbers of BSN-level nurses in North Carolina.

Numerous studies on the educational progression of ADN-level nurses demonstrate the common challenges facing students, including role strain, cost, access, and lack of rewards [12, 13]. Because the nursing workforce consists predominantly of women, role strain stems from competing priorities among the family unit, work, and school [12]. Another challenge is cost. Educational expenses for returning to school vary depending on the number of prerequisites that must be taken before entering the pathway from RN to BSN and/or MSN (hereafter, RN-BSN/MSN). Current economic conditions often make the RN the primary wage earner, and even when organizations provide financial support for education, the RN must find the funds to pay for the courses upfront. Before online education, geographical access was a major deterrent to RNs' return to school, particularly in rural areas. Even with the increased availability of online education, many nurses reside where Internet access and speed limit the use of this educational mode. A final significant barrier is the lack of rewards in health care organizations for advanced degrees [12, 13]. Offering financial incentives to pursue a higher degree strongly affects the decision to return to school [13]. RNs must consider the costs and benefits associated with continuing education, and often, there is no benefit to offset the cost. Even with the demonstrated improvement in patient safety and outcomes seen with higher ratios of BSN-level nurses, health care organizations rarely offer pay differentials for a BSN or an MSN. In September 2010, Eastern AHEC conducted a regional survey that evaluated nurses' interest in returning to school. Of 583 respondents, 39% indicated an interest in RN-to-BSN education. Only 3% desired a classroom-only program, with the remaining seeking a 100% online program or a blended (ie, classroom and online) program of study. Of the 122 responses from students who offered suggestions, 21% were related to finances. Sixteen of the 148 ADN-level nurses stated that excessive prerequisites and duplicate courses were major deterrents to returning to school. These findings parallel those in the literature and those determined by the 2001 task force in North Carolina. Barriers and facilitators in the ADN-to-BSN or ADN-to-MSN journey are summarized in Table 2. Despite continued interest in RN-BSN/MSN education and multiple efforts to achieve a seamless progression for RNs to return to school, limited success has occurred.

Creating a seamless pathway for the journey back to school for ADN-level nurses will take concerted effort.

**TABLE 2.**  
**Barriers and Facilitators to Progression From the Associate's Degree in Nursing (ADN) to the Bachelor of Science in Nursing (BSN) and/or Master of Science in Nursing (MSN)**

Area	Barrier(s)	Facilitator(s)
University	<p>Limited number of advisors for nursing students at both community college and university</p> <p>Wide variability in university and nursing program requirements related to transfer credits and general education courses</p> <p>Barriers and issues associated with online courses</p> <p>Communication between students and faculty</p> <p>Limited financial aid for part-time students</p> <p>Requiring timelines on transfer credits</p>	<p>24/7 online technical support</p> <p>Computer literacy aids</p> <p>Designated RN-BSN coordinators who are accessible to current and prospective students and who collaborate statewide</p> <p>Offering separate courses for RN students</p> <p>ADN program directors who encourage educational continuation and exposure</p> <p>Articulation agreement between the NC Community College System and the UNC System related to nursing</p> <p>Community college transfer counselors that understand RN-BSN education</p> <p>College Level Examination Program examinations</p> <p>Waiving timelines on previous course work</p>
Employment	<p>Employment situations that are not supportive of furthering education</p> <p>Inadequate tuition support or loans for returning to school</p> <p>Limited rewards for educational progression</p> <p>Lack of standard educational requirements for varied nursing roles, such as nurse manager, administrator, and vice president of nursing</p> <p>Health systems disregard for evidence-based practice standards in nursing staffing</p>	<p>Employers who provide tuition reimbursement and upfront financial aid or loans</p> <p>Increased RN salaries for additional degree attainment</p> <p>Educational requirements at the BSN or MSN level for nursing leadership roles in health systems</p> <p>Educational cohorts in health systems that have release time, support meetings, and mentors</p> <p>Celebration and acknowledgment of RNs who achieve higher degrees</p>
Personal	<p>Balancing priorities</p> <p>Financial obligations</p> <p>Family responsibilities</p>	<p>RN-BSN inclusion in the North Carolina Nurse Scholars Awards</p> <p>Internet-based modules on time management, financial aid, balancing work and school life, and school expectations</p> <p>RN-BSN/MSN mentors</p> <p>Online forum for RN-BSN/MSN students to discuss issues and share ideas that are successful</p>

Note. RN, registered nurse; UNC, University of North Carolina.

Aiken [3] notes that there is a need for education and practice policymakers to develop a unified plan that responds to the growing need for nurses and creates a nursing workforce that addresses chronic disease, health disparities, and patient safety. Unless organizations that employ nurses recognize and reward higher education, many RNs will determine that the benefit of another degree does not exceed the degree's cost [13]. ADN programs provide an affordable educational experience across North Carolina, and they are our greatest source for an ethnically diverse nursing workforce. ADN programs also provide nursing resources in communities that might otherwise suffer from chronic shortages. But achievement of the ADN must become, for a large number of nurses, only the starting point. Health care organizations must respond to the imperative that a better-educated nursing workforce reduces mortality and

decreases the risk of adverse events in health care facilities [5, 6]. If organizations require a BSN or higher degree for leadership positions, and if they reward direct care nurses who invest in educational advancement, then RNs will make the choice to return to school. Once that choice is made, the community college and university system must be prepared to facilitate their education.

To that end, many of the partially implemented recommendations from the NCIOM's 2007 update must be reexamined and implemented [11]. First, greater priority should be placed on increasing the number of BSN-level nurses, to achieve the overall goal of an 80% ratio in the workforce. This includes basic BSN educational programs and RN-BSN/MSN initiatives in North Carolina.

Second, the North Carolina General Assembly and private foundations need to explore new scholarship support for

nursing students, particularly those pursuing the RN-BSN/MSN pathway, as well as support for part-time students who are working full-time.

Third, the North Carolina General Assembly should increase funding to the Nurse Scholars Program, to expand the number and types of awards and amounts of support given.

Fourth, the CAA between community colleges and the UNC System (ie, the associate in arts degree), as well as the bilateral articulation agreements involving students with an associate of applied science in nursing degree and the UNC System, should be evaluated and improved so that students wishing to advance from one level of nursing education to another can transition without duplication of courses. This recommendation is critical to the escalation of RN-BSN/MSN programs. If universities accept the associate of applied science nursing degree and transfer ADN-level nurses as juniors, courses would transfer as a block, not individually. In keeping with this, ADN curricula should include nonnursing courses that are part of the CAA. Also, the UNC System and the North Carolina independent colleges and universities with BSN programs should establish (and accept for admission purposes, across the UNC System) general education and nursing education core requirements for RN-BSN/MSN students who completed their nursing education in North Carolina after 1999.

Many ADN-level nurses returning to school must take prerequisite courses at multiple community colleges to prepare for admission into an RN-BSN/MSN program. The lack of centralized systems for course availability and scheduling, the need for redundant community college admission applications and fees, and the lack of advisement for students in between the ADN and the BSN programs create a protracted system for achieving prerequisites and test the endurance of full-time nurses who are juggling a career and a family.

To successfully create a seamless educational pathway for ADN-level nurses to achieve a BSN or an MSN, nursing must receive support from patients, physician colleagues, nurse leaders, and policymakers to implement needed legislation, organizational practices, and simplified systems that successfully promote increases in the number of nurses with a baccalaureate or higher degree in North Carolina. Nurses must educate each other and our communities on the increased competency and capacity that educational advancement brings to patients, populations, and health care organizations. Physicians, realizing the value that educational advancement of nurses brings to the team, need to require that organizations meet the evidence-based standards that demonstrate a need for a higher proportion of BSN-level nurses at the point of care. Nurse executives must advocate for educational advancement, tuition reim-

bursement, and systems of support within health care organizations that aide RNs in returning to school. Additionally, these nurse leaders must create clinical ladders that require educational progression and reward academic achievement. North Carolina policymakers must promote the highest standards for nursing care delivery in the state, develop funding mechanisms for ADN-level nurses to return to school, and support community college and university system integration and articulation that make achieving a BSN a realistic goal for every ADN-level nurse in North Carolina. Working together, we can make this happen. **NCMJ**

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# Regionally Increasing Baccalaureate-Prepared Nurses in North Carolina: The RIBN Project

Mary P. "Polly" Johnson, Vincent P. Hall, Brenda Causey

**A more highly educated nursing workforce is needed to address the increasingly complex health care needs of our citizens and to expand the pool for future faculty and advanced practice nurses. North Carolina must create new partnerships between community colleges and universities to support seamless progression toward a baccalaureate degree. The RIBN model provides one option to meet this goal.**

Like the nation as a whole, North Carolina is facing a nursing workforce shortage, in both numbers and level of preparation that will negatively impact the delivery of safe and effective health care in our state. Nationally, the nursing shortage is projected to grow to 260,000 registered nurses (RNs) by 2025 because of a rapidly aging workforce and sustained population growth [1]. The most significant problem fueling the nursing shortage in the United States is the lack of faculty to educate the number of qualified individuals applying to nursing programs, with over 49,948 qualified applicants being denied admission to programs in 2008 alone [2].

In an effort to proactively address short- and long-term nursing workforce needs in North Carolina, in 2004 the North Carolina Institute of Medicine issued a hallmark task force report that listed 16 priority recommendations focused on development and sustainment of nursing faculty, recruitment and retention of nurses in the workforce, nursing education programs, and transition from graduate to RN to professional practitioner. In addition to increasing the numbers of nurses, a priority recommendation also addressed the need to increase the proportion of nurses with a bachelor of science in nursing (BSN) to 60% [3]. Most recently, the 2011 Institute of Medicine of the National Academies report on the future of nursing called for 80% of all nurses to have at least a BSN by 2020 [4].

The demand for an expansion of the educational preparation of nurses is being driven by a number of other forces in addition to the need to expand the pipeline for future faculty. With increases in chronic health conditions across all ages, the complexity of acute illnesses and treatment regimens, and care being provided in complicated and often frag-

mented health care delivery systems, nurses are required to have higher levels of critical thinking, problem solving, and patient-management skills. The minimum of a BSN is now being required for positions such as clinical leaders, patient-care managers and administrators, public health nurses, and school nurses. With our state's population growth and health care reform initiatives, the demand for advanced practice nurses, particularly as primary care professionals, also increases the need to expand the pool of BSN nurses who will then seek advanced degrees to help meet the health care needs of North Carolinians.

Certainly, the most critical requirement for ensuring that we have a future nursing workforce sufficient in number and preparation to care for the people of our state is an adequate supply of nursing faculty. In North Carolina, there is a current shortage of nursing faculty that prevents expanding admissions to nursing programs. In October 2009, 127 full-time and 74 part-time faculty positions were reported as unfilled in North Carolina [5]. A major component of the faculty shortage is the inadequate pipeline for nurses to earn a master's degree or higher and enter faculty roles; at a minimum, nursing faculty must have a master's degree in nursing, to meet accreditation standards.

Currently, there are 80 nursing education programs in North Carolina that lead to RN licensure: 59 are associate's degree in nursing (ADN) programs, of which 55 are in community colleges; 2 are diploma programs; 18 are baccalaureate programs; and 1 is an entry-level master's degree program. In a review of the highest earned degrees held by RNs with an ADN who were practicing in the state in 2008, 66% remained at the ADN level, with less than 15% having obtained a BSN or higher degree in the field [6]. Although North Carolina's nurse educators have worked diligently to facilitate articulation between ADN and BSN programs with 18 RN to BSN completion programs currently offered

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in the state, we continue to have insufficient numbers of ADN graduates continuing their education. Moreover, ADN nurses who complete a BSN degree may do so several years after completing their ADN. In 2009, 63.4% of nurses completing the ADN were in the age range of 20-30 years, whereas 68% of ADN-prepared nurses in BSN-completion programs were between 31 and 60 years of age [5]. This age discrepancy further limits the length of service potential for future nursing faculty, nurse administrators, and advanced practice nurses who begin their careers at the ADN level. Continuing these nursing education patterns will result in proportionally fewer nurses with a BSN or higher degrees. This trajectory has serious implications for the future of health care in our state.

Given the important role community colleges have in educating the majority of the North Carolina nursing workforce, it is imperative that we identify new ways for qualified nursing students entering community colleges to seamlessly progress to the completion of a baccalaureate degree at the beginning of their careers if we hope to increase the proportion of BSN-prepared nurses and build the necessary faculty pipeline to avert a severe workforce crisis. Implementation of a successful program that dually enrolls students in a seamless ADN and baccalaureate educational track provides one option to meet the goal of an adequate future nursing workforce.

### **The Western North Carolina (WNC) Regionally Increasing Baccalaureate Nurses (RIBN) Project**

The WNC RIBN Project is a component of a multiregional project funded in part by the Robert Wood Johnson Foundation, Northwest Health Foundation, the Jonas Center for Nursing Excellence, the University of North Carolina (UNC) general administration, and The Duke Endowment. In late 2008, Asheville-Buncombe Technical Community College (AB Tech), Western Carolina University and the Foundation for Nursing Excellence began the RIBN journey. With advice from a national team of experts, the WNC RIBN team shared strategies for curriculum and faculty development, including evaluation tools, with partners in metropolitan New York City. The WNC RIBN team adapted the Oregon Consortium for Nursing Education model for dual admission of qualified students into a community college and a 4-year university, yielding a seamless, 4-year educational tract [7]. The North Carolina model provides a framework for community colleges to regionally partner with private or public universities to offer an accessible BSN educational track to qualified applicants, particularly individuals who do not intend to leave their local communities to attend a traditional 4-year BSN program.

The WNC RIBN model is a dual-admission, rigorous, 4-year educational track approved by community college and university partners. The dual-admission requirements are more stringent than those for the community college ADN program and for general admission to most 4-year aca-

demic institutions. The RIBN student is home based at the community college for the first 3 years of the program and maintains admission status at the university by completing a university course each semester that meets the general requirements for completion of a baccalaureate. University courses are Internet based, which helps keep down the cost for the student. At the end of the third year of study, the student completes the ADN program and is eligible to take the National Council Licensure Examination for Registered Nurses. To matriculate into the upper division courses at the university in the fourth year of the RIBN track, the student must be licensed as a RN. Courses in the final year of study focus on professional nursing practice, leadership, gerontology, community/public health, and evidenced-based practice. The RIBN curriculum is concept based and uses teaching techniques such as unfolding case studies to support learning. Emphasis is placed on clinical reasoning and integration of didactic content with clinical experiences [8].

A critical retention point for students in the RIBN track occurs after the third year, when the student has achieved licensure as a RN and begins transitioning into practice. Only personal professional goals of achieving a BSN or higher degree and strong support for such achievement from both academic and employing institutions will keep the RIBN student from opting out of the final year of coursework for the BSN. Through planning with a local advisory board of regional health care leaders who advise and support the RIBN project and its students, the WNC RIBN team is currently exploring strategies to help retain students in the program during this transitional period.

Another key element of the RIBN project is the role of a student success advocate or advisor, who markets the RIBN program to area high schools and career counselors; advises students before, during, and after admission; and assists students in obtaining financial aid and accessing other academic services that support one's academic success. Of equal importance in attracting qualified applicants, the North Carolina Nurse Scholars Commission has approved the RIBN track as an official baccalaureate program, which opens the door for eligible students to receive up to 4 years of funding, in the form of a loan, through this state merit-based loan program. One year of the 4-year loan is forgiven for every year of employment as a nurse in North Carolina.

The first cohort of 16 students entered the WNC RIBN track in 2010, with a BSN completion date of 2014. Twenty applicants have been approved for the 2011 cohort. Twenty of the 100 slots for yearly admission to the AB Tech ADN program have been dedicated to eligible RIBN applicants. This number is expected to expand over time on the basis of demand and available resources.

The RIBN team has implemented ongoing data collection and evaluation to identify indicators of success for students and continued program development. Identified value-added components of this regional model to increase the proportion of BSN-prepared nurses include the following: (1)

the program draws on the strengths of the partnering academic institutions, (2) it promotes resource sharing among partner institutions, (3) it increases student access to BSN programs, especially in more rural areas, (4) it increases proportion of younger graduates entering workforce, (5) it includes 3 years of didactic and clinical nursing courses, (6) it provides an economically feasible option for earning a BSN, and (7) its graduates are more likely to practice in their home areas of the state.

### Expanding the RIBN Model Across North Carolina

Because the RIBN model builds on the current nursing programs in both the community college and university systems rather than depleting resources from either system, several nursing programs have expressed interest in implementing this model in various regions of the state. Employers have also expressed great interest in seeding this new educational track to meet their demands for a more BSN-prepared nursing workforce. Five additional regional partnerships between both public and private ADN and baccalaureate nursing programs are currently setting up the necessary academic agreements and processes to implement the RIBN educational track beginning in 2012. These regional partnerships include Centralina, composed of UNC-Charlotte, Gaston College, Central Piedmont Community College, and Carolinas College of Health Sciences; Hickory, composed of Lenoir-Rhyne University, Caldwell Community College and Technical Institute, Catawba Valley Community College, Western Piedmont Community College, Wilkes Community College, and Mitchell Community College; Eastern North Carolina, composed of East Carolina University, Lenoir Community College, Beaufort County Community College, Roanoke-Chowan Community College, and Pitt County Community College; Wilmington, composed of UNC-Wilmington and Cape Fear Community College; and Rural Piedmont, composed of Pfeiffer University and Stanly Community College.

Three of these partnerships involve more than 1 ADN program partnering with a university in their respective regions. Given this level of interest and exponential expansion, the goal of the Foundation for Nursing Excellence is to make the RIBN educational track available to student applicants across the entire state by 2016. Replication guidelines, along with dual admission criteria, curriculum, and sample

agreements between partnering institutions, are accessible on the Foundation for Nursing Excellence Web site (available at: <http://www.ffne.org/ribn-project>) [9].

To meet the challenge of significantly increasing the proportion of BSN-prepared nurses in North Carolina, all available opportunities for completing a baccalaureate education must be used to the fullest extent possible. The dual-entry RIBN track offers an additional and cost-effective educational option for North Carolina to meet this challenge and positively impact the delivery of safe, effective health care. **NCMJ**

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# The Role of the North Carolina Community College System in Nursing Education

R. Scott Ralls

**Two-thirds of nurses educated in North Carolina receive an associate's degree in nursing (ADN). Community college graduates work in health care areas and geographic regions in which recruitment and retention of employees are difficult. To enhance educational preparation for its graduates, the North Carolina Community College System has redesigned the ADN curriculum and encouraged partnerships for seamless transition to more-advanced nursing degrees.**

**T**he recent Summit for Creating the Future of Nursing and Health Care in North Carolina highlighted several critical messages related to the future of nursing and the important role nurses can (and should) play in redesigning our nation's health care system. As a key player in preparing North Carolina's nursing workforce, the North Carolina Community College System can and will rise to the challenge of preparing nursing professionals who are able to respond to the state's evolving health care needs, as long as our state and local partners continue to provide the funding and support necessary for these high-cost programs. Today, approximately two-thirds of the nurses educated in our state enter the profession with an associate's degree in nursing (ADN) [1].

Health care jobs lead the way in North Carolina job growth. As the state emerges from the recent recession, the North Carolina Community College System has made health care education a top priority for workforce development. That commitment has included (1) a comprehensive study of our nursing programs, conducted by the University of North Carolina (UNC)-Chapel Hill Cecil G. Sheps Center for Health Services Research; (2) an aggressive effort that sought and secured weighted funding for students in health care programs that are costly to deliver; (3) system support for the science programs that undergird our health care programs; and (4) a curriculum-improvement process that changed not only what we included in our curriculum but also the way we teach that curriculum to our students.

We at the North Carolina Community College System are proud of the fact that our colleges provide a qualified nursing workforce for all North Carolina communities. Fifty-five of our 58 community colleges are approved by the State Board of Community Colleges and the North Carolina Board of Nursing to offer an ADN. Between 2005 and 2010, these

colleges graduated more than 12,000 first-time takers of the National Certification Licensing Examination for Registered Nurses (NCLEX-RN).

The 2008 report by Fraher and colleagues [1] noted that graduates of ADN programs at North Carolina community colleges were more likely to be retained in our state's workforce, with 90% of our recent graduates joining the North Carolina workforce or continuing their pursuit of nursing education; more likely to be employed in health care areas, such as long-term care, home care/hospice, and mental health settings, in which recruitment and employee retention are difficult; and more likely to be employed in rural and underserved counties, with half of all community college graduates practicing within 13 miles of their program of enrollment [1]. All these facts weigh heavily in meeting our communities' and our state's demand for health care workers.

And the need for nurses and allied health professionals will continue to grow in North Carolina, given our aging population and the associated increase in health care needs, the influx or migration of new residents into our state, the "graying" of our workforce, and reforms to the health care system. During the next 20 years, the number of North Carolinians aged 65 years and older is expected to grow from 1.2 million to 2.1 million, and, in 71 of North Carolina's counties, it is likely that the number of people older than 60 years will be greater than the number younger than 17 years [2]. By 2019, it is anticipated that the state will need to significantly increase its health care workforce to meet the health care needs of the 1.1 million currently uninsured North Carolinians who are projected to receive insurance through the Affordable Care Act [3].

Additionally, as Fulcher and Mullin [4p4] recently noted, "(1) The majority of the nation's new RNs [registered nurses] are educated in [ADN] programs. (2) All schools of nursing teach students the competencies necessary for RN practice, as measured by NCLEX pass rates. (3) ADN programs provide the nation the greatest numbers of minority RNs. (4)

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Employers are equally likely to hire ADN and BSN [bachelor of science in nursing] prepared RNs. (5) ADN programs educate the majority of RNs in rural settings."

In the United States and North Carolina, the ADN is the most frequent route for entry into practice. A 2010 report from the Health Resources and Services Administration [5] indicated that, among registered nurses, the initial nursing degree was the ADN for 45.4%, a bachelor's degree or higher for 34.2%, and a diploma for 20.4% [5]. In 2010, the US Bureau of Labor and Statistics projected a national increase of 581,500 new registered nurse jobs by 2018, with more than 400,000 additional jobs opening up by that time because of the retirement of registered nurses currently in the workforce [6].

In short, demographic data, study findings, and real-world experiences seem to confirm that quality ADN programs, such as those in the North Carolina Community College System, are critical in meeting our state's and our nation's nursing needs. But how do we, as a system, continue to move forward in meeting these needs, given the balance we must achieve between the high cost of these programs and the fiscal concerns at both the state and the local levels, as well as the growing call for more nurses who have a bachelor of science in nursing? This last point is illustrated by a key recommendation set forth by the Institute of Medicine of the National Academies (IOM) [7], and also discussed at North Carolina's statewide summit, to increase the proportion of nurses with a baccalaureate to 80% by 2020.

The North Carolina Community College System has several initiatives in place to support this goal, including the redesigned ADN curriculum, accelerated or bridge programs, articulation agreements, university centers on community college campuses, and participation in the Regionally Increasing Baccalaureate Nurses (RIBN) project.

One of these initiatives also addresses another recommendation in the IOM report, which states that educational programs should "prepare and enable nurses to lead change to advance health" [7p282]. Our colleges began driving our programs in this direction during our 2-year curriculum-improvement project, which included nursing faculty from 55 community colleges. This project, which started in 2006, evaluated and redesigned the ADN curriculum, resulting in a new concept-based curriculum standard and new nursing courses for our community colleges. The nursing faculty identified 49 concepts that have been intertwined into the 2-year ADN program. They also identified best practices, through literature reviews and interviews with nursing faculty in other states, and incorporated these best practices into the program. During the redesign of the curriculum, standards and recommendations from the National League of Nursing, the IOM, the North Carolina Board of Nursing, Healthy People 2010, local workforce advisory boards, and many other entities were incorporated into the curriculum.

In this redesigned curriculum, graduates of ADN programs in the North Carolina Community College System

receive an education that is steeped in concepts from areas that include medical and surgical nursing; maternal and child health; psychosocial care; health, wellness, and illness; patient safety; health care systems; evidence-based practices; quality improvement; management of care; interdisciplinary team process; informatics; and decision making. Client care is individualized and presented in a practical and theoretical approach, with the ethnic and racial diversity of clients as a focal point of the education of students in the ADN program. The new curriculum was implemented by the 55 ADN programs as of fall 2010, with nearly 4,000 students well on their way to becoming the nurses and nursing leaders our state needs.

To maximize access to nursing programs, our colleges have created pathways for allied health students who desire to enter the ADN program. For example, some colleges have developed and implemented accelerated or bridge programs for the licensed practical nurse or the medic or paramedic who wishes to pursue an ADN. The accelerated or bridge program may provide the student advanced placement in some courses on the basis of work experience, licensure, and competency testing. And pathways to the nursing profession work both ways, with a significant number of new community college nursing students entering their programs as college graduates. In the fall of 2010, 14% of students in the North Carolina community college nursing program already possessed bachelor's degrees or higher levels of academic credentials.

The North Carolina Community College System provides 2 pathways for students who desire to complete a baccalaureate in nursing. One pathway is through the comprehensive articulation agreement between our system and the UNC system, which includes 2 years of undergraduate study at the community college, followed by 2 years of professional preparation in a school of nursing at one of the UNC campuses. The other pathway is an articulation agreement involving the progression from the ADN program to a bachelor of science in nursing program, which allows graduates of the ADN program to transfer to a university to complete 2 years of general college course work and capstone nursing courses.

A goal of the North Carolina Community College System is to collaborate with the UNC System to foster degree acceleration and student retention through the development of university centers on community college campuses. Many community colleges have developed partnerships with universities to provide baccalaureate-completion courses on the community college campus. For example, the Winston-Salem State University School of Nursing has off-site programs on 7 community college campuses (ie, Rowan-Cabarrus Community College, Surry Community College, Davidson County Community College, Rockingham Community College, Wilkes Community College, Cleveland County Community College, and South Piedmont Community College).

Asheville-Buncombe Technical Community College,

Western Carolina University, and the Foundation for Nursing Excellence adapted the Oregon Consortium for Nursing Education model for admission of nursing students into a seamless, dual-campus 4-year educational program. In the fall of 2010, they admitted their first cohort of nursing students into the Western North Carolina RIBN project. The students will complete their first 3 years of education on the community college campus (completing general studies and nursing courses), while also taking 1 course per semester with the university. After successful completion of their first 3 years of study, they receive an ADN and will be eligible to take the NCLEX-RN examination. The fourth year of study will be located on the university campus and will emphasize community health nursing, nursing leadership, and gerontology. In 2014, at the completion of their fourth year of study, they will obtain their baccalaureate in nursing [8].

Five additional RIBN collaborative partnerships between community colleges and universities have been identified in the state. These RIBN partnerships are expected to admit their first cohorts of students in fall 2012.

These innovations occurred in the throes of the recent recession, at the same time our community college “family”—including presidents, trustees, faculty, staff, and administrators—supported our collaborative efforts to make health care education a top priority and to secure weighted funding for our colleges, from College of the Albemarle to Tri-County Community College, which are working to meet the call of our citizens, our health care professionals, and our state. North Carolina is fortunate that our state’s leaders heard that call and responded with funding to support a weighted approach to providing these in-demand health care programs to our students.

Our nearly 50-year-old system of colleges was built to respond to the industrial education and training demands of our state’s business community. Our founding fathers and mothers might be surprised to learn that, in 2011, we are ful-

filling that same mission, but during the next 50 years, we will continue to meet our state’s escalating demand for high-quality health care professionals. North Carolina needs our colleges’ health care programs and our graduates, and our system is committed to working collaboratively to seek out efficient, innovative educational approaches and to continue to stretch our funding dollars, as much as possible, to meet that need. **NCMJ**

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# Physician Supervision and Insurance Reimbursement: Policy Implications for Nurse Practitioner Practice in North Carolina

*Bobby Lowery, Deborah Varnam*

The presence of regulatory requirements that physicians supervise nurse practitioner (NP) practice and of policies that affect insurance reimbursement policies create barriers that limit North Carolina NPs from practicing to the full extent of their licensure, education, and certification. This article reviews these barriers and offers policy recommendations to ensure that NPs are equal partners in health reform innovations.

Nurse practitioners (NPs) are advanced practice registered nurses (APRNs) who have provided safe, effective health care in the United States since 1967 [1]. Wide variations in the regulations of NPs limit the full use of these proven health care professionals. The presence of regulatory requirements that physicians supervise NP practice and of policies that affect insurance reimbursement create barriers that limit NP mobility, consumer choice, and access to health care and sustainable reimbursement [2-5].

The purpose of this article is to examine physician supervision and reimbursement policies related to NP practice in North Carolina. The evolution of the NP profession and a summary of the national regulatory environment, with an emphasis on southern states, are discussed as context. While some NPs practice in specialty settings, the focus of this article will be limited to NPs working in primary care settings. Policy recommendations that ensure that these primary care professionals are equal partners in health care reform are discussed.

## Evolution of the NP Profession

The first NP educational program was piloted at the University of Colorado in 1965 by a physician, Dr. Henry Silver, and a nurse, Dr. Loretta Ford, as a nondegree program [1] and was intended to meet the primary health care needs of vulnerable pediatric populations and to fill the gap caused by a shortage of primary care physicians. In this program, a nursing model was used to guide the delivery of health promotion and disease prevention. Since then, the NP profession has had rapid growth, with a current NP workforce of more than 150,000 in the United States [6].

**NP practice in North Carolina.** The first NP degree-granting program, initially an experimental family NP certificate program, was established at the University of North Carolina (UNC)-Chapel Hill. This program began in September 1970 with 7 nurses, all of whom completed the program in May 1971 (Nancy D. Lamontagne, associate director of communications, School of Nursing, UNC-Chapel Hill, e-mail, August 26, 2011). North Carolina led the nation in regulatory policies to expand the role of nursing and was the first state to establish statutes, rules, and regulations defining the scope of NP practice [7, 8].

Early successes in NP regulation in North Carolina required political compromises that led to use of a medical model with statutorily required physician supervision of NP practice, rather than the autonomous advanced practice nursing model proposed in the original NP demonstration project, to define the scope of NP practice [1, 7-9]. This compromise resulted in a joint regulatory model whereby NP practice in North Carolina is regulated through a joint subcommittee of both the nursing and the medical boards, creating an unusual hierarchal relationship in which the medical profession is involved in the supervision of advanced practice nursing professionals [7-9].

Joint regulation remains in only 5 states (Florida, Mississippi, North Carolina, South Carolina, and Virginia). NP practice in Florida and Tennessee is regulated by the board of nursing in each state but still has statutory requirements for physician supervision. The remaining 43 states and the District of Columbia regulate NP practice solely through their respective boards of nursing, without a statutory requirement for physician supervision [6].

**APRN model regulation.** Wide variations in state regulation of NP practice erect barriers that limit NPs from practicing to the full extent of their licensure, education, and

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**TABLE 1.**  
**National Council of State Boards of Nursing Consensus-Model Regulation Goals**

Goal
Promote quality APRN education
Develop standardized, national APRN regulation, including education, accreditation, certification, and licensure
Establish a set of standards that protect the public, improve mobility of APRNs, and improve consumer access to safe, effective APRN care

Note. Information is from [10]. APRN, advanced practice registered nurse.

certification [4-6]. The National Council of State Boards of Nursing recommends uniform, model regulation that is based on licensure, accreditation, certification, and education [10]. Consensus-model goals are listed in Table 1. Uniform, model APRN regulation needs to be effectively aligned to ensure continued patient safety while expanding patient access to NP-delivered care [10].

### Physician Supervision

Collaboration and consultation, when clinically appropriate, is expected of professionals. NPs are accountable in legal and regulatory senses for their own practices. Requirements for physician supervision unnecessarily limit where NPs can serve because they tie NPs and their practice to a physician's willingness and availability to supervise [4, 5]. Because no evidence suggests that physician supervision is associated with improved patient safety and outcomes, it is poor use of physicians—a valuable health care resource—to require them to supervise NPs [2, 4, 6].

The Healthcare Integrity and Protection Data Bank (available at: <http://www.npdb-hipdb.hrsa.gov>) specifies the total number of adverse action reports, civil judgments, and/or criminal convictions associated with health care. NPs consistently have lower liability claims than do their physician colleagues [6]. No difference has been seen in NP report rates in states with joint regulation, compared with states that do not require physician supervision of NP practice. Rates were extrapolated for comparable complexities in patient populations. These NP safety rates demonstrate that the use of safety concerns to justify the requirement that physicians supervise NP practice is baseless [6].

**Safety and efficacy of NP practice.** Substantial evidence from over 4 decades demonstrate that NPs provide health care outcomes that are comparable to or better than those provided by other clinicians with similar scopes of practice [4, 11, 12]. Rigorous educational preparation acquired through completion of at least 2 nursing degree programs, supervised clinical education, licensure, national certification, and competency maintained through ongoing education and training ensure these documented outcomes [2, 4-6, 10].

**Local politics.** Wide variations in NP regulation continue to allow for statutorily required physician supervi-

sion in North Carolina and other southeastern states [2, 6]. Sociopolitical context underscores the regulatory dynamics in these regions. Continued supervision requirements for NP practice have been cited as examples of regulation used for proprietary interests and economic defensiveness, rather than for patient safety or consumer interests [5].

**Impact of physician supervision.** The requirement that physicians supervise NP practice threatens NP mobility, consumer choice, and access to care. If NPs must be tied to physicians through supervision, NPs are limited with respect to where they can serve. This places limits on consumer access to primary care providers, as noted in case study 1 in Table 2.

Previous studies have documented variations in NP regulation that are based on sociopolitical norms, proprietary interests, and economic defensiveness [5, 9]. Data regarding the cost of physician supervision are poorly documented. Anecdotal information, however, suggests a cost of \$500-\$3,000 per month for physician supervision of NP practice. This cost is passed on to consumers, without any apparent improvement in patient safety or health care outcomes [2, 4, 6]. Furthermore, states with requirements for physician supervision of NP practice are more likely to have restrictive managed-care contracting policies [2, 4].

### NP Reimbursement

Medicare, Medicaid, commercial indemnity insurers, and commercial managed care organizations are the third-party payers that reimburse NP services [13]. The following discussion shows how current reimbursement policies threaten the sustainability of NP practices, confound health care outcome and workforce data, and limit consumer choice.

**Medicare.** Medicare recognizes NPs as primary care providers, reimbursing NPs at 85% of the physician rate for the same services delivered in the same settings. Medicare does allow incident-to billing, in which the NP may be reimbursed 100% of the physician rate if the NP services are billed under the physician's provider number and if care is rendered under the direct supervision of the physician [13]. Incident-to billing requires the patient to see a physician for new problems and at established intervals. This process obscures NP-delivered care and limits consumer choice, because provider selection is dictated by reimbursement policies. Furthermore, Medicare reimbursement policies create barriers to home health and hospice care management for NPs [14]. Common reimbursement-related barriers are listed in Table 3.

**Medicaid.** Medicaid fee-for-service plans reimburse NPs at 100% of the physician rate. However, some states reimburse NPs at a reduced rate [13]. Furthermore, Medicaid policy limits consumer choice by reimbursing family and pediatric NPs but failing to specify reimbursement for adult, geriatric, or other NPs with specialty certification.

Medicaid managed care plans differ from Medicaid fee-for-service plans because there is variability in enrollment

**TABLE 2.**  
**Case Studies of Adverse Outcomes Associated With Physician Supervision and Insurance Reimbursement for Nurse Practitioners (NPs)**

Variable	Case study
Physician supervision	A thriving NP-owned practice in rural western North Carolina, with 2,000 patients is managed by 2 NP partners and a small staff of 8 employees. The practice is the only practice in the small, rural town. The NPs contract for physician supervision, as required by North Carolina statutes [8]. The physician is remotely located and visits the practice for the twice-yearly meetings required for the quality improvement process. The practice manager drives 60 miles round-trip once per week to deliver and pick up paperwork that requires a signature from the physician who supervises the NP-delivered care. The physician is paid \$25,000 annually to supervise the NP practice. During a busy practice day, the NP practice receives notice from the North Carolina Board of Nursing that their supervising physician no longer has an active medical license and that the practice has 30 days to find another supervising physician or they will have to close their practice. The NP practice is threatened with closure because of the absence of statutorily required physician supervision. Two thousand health care consumers are threatened with loss of access to health care and choice of health care professionals. A new supervising physician is secured only 5 days before the office would have been forced to close.
Insurance reimbursement	J.D., a family NP, owns an established, rural primary care practice in North Carolina that serves Medicaid, Medicare, and indemnity plan clients across the life span. J.D. contracts with a physician for supervision, as required by North Carolina statutes [8]. J.D.'s supervising physician decides to relocate and gives notice that he will be resigning as the supervising physician for the practice. A different supervising physician is hired, requiring another contract with the indemnity insurer. The insurer refuses to renew the contract with this NP and practice, although many of the clients in this practice are covered by the plan. When the insurer is questioned about why it will not renew the contract, it replies that it does not contract with NPs. The insurer is unable to explain how the NP had been able to contract with its office previously. The clients with this insurer have to find another health care professional or pay out of pocket for their care at J.D.'s practice. The viability of the NP practice is threatened by inconsistent reimbursement policies that tie the NP to physician practice and limit consumer choice.

and selection of panels of beneficiaries for participating practitioners, depending on the company. Generally, only those providers admitted to the plan's provider panel are eligible for reimbursement [13, 14].

A 2009 study revealed that nearly half of all major managed care organizations in the United States do not credential or contract with NPs as primary care professionals [3]. Of those who do not credential NPs, 4% stated that they would make an exception if the NP provided care to rural or Medicaid beneficiaries. As long as NPs are viewed as providers of last resort, equity in credentialing and reimbursement will remain elusive [3].

**North Carolina reimbursement realities.** The 1993 third-party reimbursement legislation mandates direct reimbursement to NPs for services within their scope of practice, when reimbursable to another provider. Moreover, the 2001 managed care patients' bill of rights prevents discrimination against NPs who want to apply for managed care organization empanelment [13]. Despite this legislation, wide variations in NP reimbursement policies exist, even within the same insurance companies, resulting in consumer barriers to access to NP care, as described in Table 2.

**Indemnity insurers and commercial managed care organizations.** Indemnity insurers reimburse health care providers on a fee-for-service basis, whereas commercial managed care organizations provide coverage for bundled, aggregate services. Each company has its own policy regarding reimbursement of NP-provided services. The policies vary and include payment at the physician rate, without requirement for admission to a provider panel; reimbursement at a reduced rate; reimbursement under the physician employer's name; and outright denial of payment for NP services [3, 13].

Insurance industry policies requiring physician endorse-

ment for NP reimbursement are more restrictive than state requirements. Restrictive reimbursement policies create barriers to NP practice by unnecessarily tying the NP to physician employers or supervisors. This association increases health care costs, which are passed on to the consumer. Furthermore, lack of parity in reimbursement creates inequities in sustainable reimbursement.

### Policy Implications

Restrictive state regulation that requires physician supervision of NP practice unnecessarily limits NP practice and consumer access to proven primary care providers, with no improvement in health care outcomes [2, 5, 9]. Moreover, physician supervision of NP practice obscures NP care and confounds workforce data by crediting NP care under physician data. Last, more-restrictive reimbursement policies are noted in states that require physician supervision of NP practice [2].

Variability in reimbursement policies creates an unsustainable payment system for NPs [4, 13]. When insurers adopt more-stringent policies than are required by state law, consumer choice is limited and health care costs are increased [3]. Last, requirements for physician supervision and restrictive reimbursement policies create barriers for NPs as full partners in current and future innovations in health care delivery, including medical homes, insurance exchanges, and accountable care organizations [4].

### Policy Recommendations

The policy implications of physician supervision and insurance reimbursement are crucial to the discussion of health care reform and to retooling the health care workforce in North Carolina. Efforts that increase patient access

**TABLE 3.**  
**Common Reimbursement Barriers to Nurse Practitioner Practice and Forms Requiring Physician Signature**

Variable (statute)	Barrier
Physician supervision	Physician supervision is linked with more-restrictive reimbursement policies
Handicap placards (20-37.6)	Commonly used in primary care; delays care for consumer and increases cost by physician involvement
Private provider vaccine agreement (130A-152)	Required for childhood vaccine administration
Physicians' request for medical exemption of vaccines for children (130A-156)	Physician signature required
Medicare home health/hospice	Physician signature required to order
Variability in insurance reimbursement	Specialty rates charged to consumers seeking primary care services from pediatric nurse practitioners; increases consumer cost

to the full primary care workforce and that allow patient choice in provider selection must be supported [2, 4]. To achieve sustainable reimbursement, reimbursement systems must be reengineered to reflect the true costs of care in all practice settings [3]. Furthermore, to ensure accountability and collection of accurate workforce data, health care outcomes should be linked to specific professionals, thereby eliminating the obscurity of NP data being assumed under the supervising physician's name. NP-led practices and NPs should be included as full partners in medical homes, accountable care organizations, insurance exchanges, and other developing innovative models of care [4, 15]. Last, outdated legislative and regulatory barriers that impede the full use of NPs should be removed [2, 4, 5]. Consensus-model advanced practice registered nurse regulation is standard for uniform, consumer-centric regulation [10].

### Conclusions

North Carolina has a rich history of collaborative relationships between health care thought leaders who are focusing on measures to provide consumer access to safe, effective, accountable health care. As health care continues to evolve, efforts are required to move beyond the status quo and critically evaluate new and innovative models of care, to meet current and future workforce needs. NPs have a demonstrated record of safe, accountable, effective health care delivery. Recent studies support a uniform regulatory model based on licensure, accreditation, certification, and education [4, 10]. Removal of regulatory and reimbursement barriers that limit NPs and other health care professionals from practicing to the fullest extent of their qualifications is foundational to maximize the health and the future of North Carolina. Our citizens deserve nothing less! *NCMJ*

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# Making Nurses Full Partners in Redesigning Health Care in North Carolina

Connie Mullinix

**The Institute of Medicine of the National Academies recommends that nurses take a lead in reforming health care but recognizes significant barriers to nurses assuming such roles. In North Carolina, nurses must be on hospital boards, active in health policy debates, and empowered at the bedside and must lead financial decisions that improve care and keep hospitals financially viable.**

**T**he Institute of Medicine of the National Academies (IOM), in association with the Robert Wood Johnson Foundation, has made a recommendation about the future of health care, suggesting that nurses should be prepared and enabled “to lead change to advance health” [1p14]. The recommendation suggests that nurses have knowledge that health care organizations and policymakers need in order to make decisions that improve health care. For this recommendation to be implemented, North Carolina nurses and health care systems must overcome significant barriers. Nursing has a history of valuing subservience, order, and not questioning authority. As a result, nurses’ voices are often silent, when the insights they gain by close contact with patients could contribute to health care decisions. New reimbursement regulations require hospitals to provide quality care. Doing so will depend on nurses being empowered to share their knowledge.

## Emerging From Subservience

Nursing is a “women’s profession,” with 93.4% of its workforce being female [2]. It is a profession that, historically, has taken “women and turned them into girls” [3]. Criteria used by early nursing schools to select students stressed traditional female behavior (eg, modesty), physical characteristics (eg, plain appearance), and subservience as desirable qualities. These traits brought to the nurse’s role all of the gender-specific characteristics of nonassertiveness—and their consequences. Add these qualities to the hierarchical society of the military and of religious orders, where nursing had its beginnings, and the stage was set for nurses to take orders, fail to question, and not offer their insights [3].

The reasons for nurses not taking on leadership roles are thus steeped in both gender and history and are hard to overcome. But today, it is recognized that the absence of nurses

from leadership positions poses a risk to patients and to the future of health care. Since the IOM’s disclosures in the early 2000s about injuries and deaths from unsafe hospital environments [4], no one can argue that health care does not need improvement. If nurses continue to subordinate their talents and insights and fail to help create solutions to these problems, it will only perpetuate the current, substandard level of care that is in desperate need of improvement.

## Leadership and Decision Making

**Legislature.** Health policy in the state is established by the North Carolina legislature, which has benefited from the knowledge and experience of very few registered nurses. Until November 2010, North Carolina had elected only 1 registered nurse, Sammy Lee Beam, to its legislature. Beam was elected in 1982 and served for 2 terms in the North Carolina House of Representatives [5]. In 2010, Diane Parfitt, educated as a registered nurse, was elected to represent Fayetteville (House district 44). But at the same time, a retired registered nurse running in House district 103 was defeated when a group that did not want a registered nurse in the House infused \$75,000 into the campaign of the nurse’s opponent. The majority of other states have registered nurses in their legislatures. In 2007, there were only 11 states (including North Carolina) without a registered-nurse legislator, while some states had as many as 6 nurses serving in their legislatures (C. Mullinix, unpublished data).

The advantage of having nurses as legislators is that, when health care delivery and financial decisions are made, voices with intimate knowledge of direct patient care are present. For example, the 2011 North Carolina legislature is deciding whether in-home services for disabled adults should continue to be reimbursed by the state’s Medicaid program. A nurse’s knowledge of both in-home and institutional care could inform the discussion about the quality of life in these 2 settings, as well as discussions about the cost differences between them. Nurses could explain that

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institutionalization of an adult who is disabled costs North Carolina's Medicaid program almost twice as much as home care (\$1,400 vs \$750 per month) (Association for Home and Hospice Care of North Carolina, personal communication, June 3, 2011). Formal studies have confirmed the cost-efficiency of home care [6].

**Hospital boards of directors.** One consulting firm, advising hospitals on how to deal with the new reimbursement policy, states that the Centers for Medicare and Medicaid Services' "recent actions, assuming the new administration does not attempt to reverse the NCDs [national coverage determinants], gives a clear signal for other payers to use the Medicare NCDs and adverse conditions as a benchmark. This may create a national quality-of-care initiative that, if not responded to by providers, could prove disastrous for financial projections of patient revenue, undermine the credit ratings of hospitals, and establish a national standard of care that traditionally has been left to the local or state courts" [7].

In other words, currently for Medicare—and starting July 1, 2012, for Medicaid—reimbursement for patient care, which will eventually include private insurers, will be dependent on quality outcomes [8]. The costs associated with "never events," such as surgery on the wrong body part, and adverse events, such as hospital-acquired infections, will not be reimbursed [9]. The end result is that hospitals will need to work harder to prevent errors and ensure patient safety in order to be financially viable.

The key to making this happen lies in nursing care. Nurses are the major care providers who make the observations that can quantify the cost of patient care. Yet, many hospitals do not have nurses on their boards of directors, where these important decisions are made. In North Carolina, a survey of chief nursing officers revealed that, although some chief nursing officers attended board meetings, only 20% of hospital boards had decision-making positions filled by a nurse (C. Mullinix and D. Eslinger, unpublished data). This situation is similar to that in many other states [10] and means that knowledge of how best to prevent medical errors and translate these efforts into savings is absent for the majority of hospitals.

A North Carolina statute recognizes the value of nurses' knowledge [11]. The statute specifies that there must be a nurse (along with a physician and a dentist) on every county board of health, to advise health departments on policy. A survey of health policy leaders affirmed that nursing knowledge is also needed for health policy decision making in other settings, but such knowledge is rarely available or consulted because nurses are rarely at the table for such deliberations [10, 12]. The coming changes in funding for patient care effectively demand that this situation be changed.

**Bedside.** Nurses are often not empowered to provide the systemic solutions to improve patient care that are so needed by hospitals. Studies have documented the ways in which nurses repeatedly solve the same problems associated with care-related inefficiencies and potential harms to patients, resulting in discouragement among nurses, who nevertheless continue to try to provide quality care [13,

14]. The way nurses most often cope is via work-arounds, making do despite the lack of the kinds of resources they need—supplies, medications, and staff—to give the highest-quality patient care. One solution to this problem would be to systemically empower nurses to solve the problems they encounter every day, allowing them to be leaders at the bedside and capable of making necessary changes.

## Ensuring the Financial Health of Hospitals

Nursing care is often not appropriately factored into financial decisions. Granted, there are few, if any, good measures of the resources needed to provide care. The commonly used metric of hours per patient day simply divides the total number of hours of care by the number of patients. It does not include a measure of acuity, increased work by nurses because of complex transitions in admissions and discharges, or the expertise of the care provider. Hospitals have refined their ability to calculate hours per patient-day by computerizing the variables and calculating the value for each shift. However, although hours per patient-day can be calculated with increased precision, this value gives little information about the quality of the care that is being provided. Yet, the changes in health care financing are being driven by such issues.

Nursing care is the key to improving the quality of health care and preventing adverse events. Important factors to consider are the number of additional nurses that are needed to prevent an adverse event and how the cost of an additional nurse compares with a forfeited reimbursement if an adverse event occurs. The exact amount that a hospital will *not* be reimbursed varies by hospital and cannot be estimated here. What is important is that, at this point, most hospitals have not considered it either. Most of them have not factored in this calculation as they prepare to adapt to the new rules for reimbursement. The challenge for hospitals' future financial health and viability is to learn how much and what kinds of additional nursing care can prevent errors. For instance, can 2 additional registered nurses—one for days and the other for nights—prevent the cases of ventilator-associated pneumonia for which the hospital will not be reimbursed?

Medicare and Medicaid are aware that, to get around the new rules, providers may try to hide adverse events by not requesting reimbursement for them [8]. However, new methods of calculating the quality of care by tracking costs for an individual Medicare or Medicaid recipient across settings will detect hidden costs. An alternative to trying to game the system would be to look at internal operations, determine what amount of nursing care is needed to prevent the most common adverse events, and then staff to minimize those events. This kind of prevention and delivery of quality care is, in fact, the intent of the new rules for reimbursement [8]. Currently, the prevention of adverse events is typically addressed in very general terms. For instance, infection-control staff and nurses who provide care are told

to “decrease infections,” as if merely relaying this message will accomplish the goal. In the scenario being promoted by the new rules for reimbursement, a nurse leader would study varying staffing patterns and adjust staffing to prevent infections, and this would, in turn, be the key to the individual hospital’s financial viability. In the future, for hospitals to be reimbursed, staffing must be tied to quality, just as quality will be tied to finances.

Even after the new rules take effect (the Medicare changes have already been implemented; the Medicaid changes will begin July 2012), nurses’ insights will be needed to plan and implement the new structures in health care delivery. The next challenges for reimbursement will draw on the nurse executive’s current skill set to plan and implement accountable care organizations [15]. Nurse executives are already experienced in providing continuity of care, including patients and families in care decisions, and designing systems with consumer involvement.

### Conclusion and Recommendations

North Carolina has significant challenges to overcome if hospitals are to remain financially viable. For the good of patients, North Carolina needs to move forward in using the best information to achieve quality care and maximum reimbursement for services provided. Nurses have the insights that will be necessary for our state to accomplish both, but systemic and cultural barriers need to be removed. The following recommendations are a preliminary list of actions to be taken.

First, hospitals should recruit qualified nurses to serve on hospital boards, thus bringing insights on direct patient care into decision-making arenas. Second, schools of nursing and the North Carolina Nurses Association should establish leadership education to prepare nurses for board positions. The College of Nursing at East Carolina University is developing a graduate course on board involvement, and the North Carolina Nurses Association will establish the NCNA Leadership Academy to prepare nurses for roles on health care boards. Insights from the North Carolina Organization of Nurse Leaders should enlighten this education. Third, nurses should become educated in budgeting and finance to bring additional knowledge to bear on what care costs and on the consequences of financial decisions on patient outcomes. Fourth, nurse executives, other nurse leaders, and researchers should compare the cost of staffing with additional registered nurses with the cost of receiving no reimbursement for adverse events. Additionally, they should study the staffing needed to prevent condition-specific adverse events. Fifth, physicians, hospital administrators, and financial officers should encourage nurse involvement in

decision making, so that patients may benefit from nurses’ insights. Sixth, nurses and hospital systems should work together to resolve hospital system problems that impede care and frustrate caregivers.

There are many actions that need to be taken to provide patients with the quality care they need and to secure consistent reimbursement. The involvement of nurses in decision making is one part of the solution that will help North Carolina move confidently and securely into the health care future. **NCMJ**

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# Nurses and Health Information Technology: Working With and Around Computers

Jane Peace

**Information technology is nearly ubiquitous in health care settings. Nurses need basic computer skills and information literacy to effectively practice nursing. In addition, nurses must be prepared not only to work around complex health information technology, but also to communicate with individuals who can address the underlying problems.**

**A**s technology use expands in health care, as it has in virtually every aspect of our society, nurses are finding that, to practice nursing, they must use computers. Encouraged by incentives in the Health Information Technology for Economic and Clinical Health Act, as well as by anticipated improvements in patient outcomes and organizational efficiency, health care organizations are rapidly implementing health information technology (HIT), especially electronic health record (EHR) systems.

To work effectively with HIT, nurses must have basic computer skills, typically defined as the ability to use office software (eg, word processing and spreadsheet programs), communicate electronically (eg, via e-mail), and conduct Internet searches. A survey conducted by the National League for Nursing in 2006 demonstrated that 60% of the schools of nursing in their sample required their graduates to be computer literate [1]; therefore, most recently graduated nurses have basic computer skills. Nurses who feel that they lack basic computer literacy can learn these skills through an introductory class at a local community or technical college. Some public libraries and community groups also offer classes in basic computer skills.

In addition, nurses must have information literacy, defined as the ability to locate and gather pertinent, accurate, up-to-date information and to evaluate it for a particular need. Information literacy is essential for evidence-based practice. Nurses wishing to improve their information literacy may sharpen their skills through continuing-education offerings or classes offered by medical libraries. Additionally, some schools of nursing have created online tutorials to help students attain information literacy and have made the tutorials available to the public; tutorials offered by Rutgers University ([http://www.libraries.rutgers.edu/rul/rr\\_gateway/research\\_guides/nursing/tutorial/](http://www.libraries.rutgers.edu/rul/rr_gateway/research_guides/nursing/tutorial/)) and New York University (available at: <http://library.nyu.edu/research/subjects/health/tutorial/>) are notable examples.

Basic computer skills and information literacy prepare nurses to effectively incorporate HIT into their practices, but they do not immunize nurses against problems created by technology. The introduction of new technology, from a new blood pressure monitor to a new EHR system, creates changes in work flow (hereafter referred to as “workflow,” as preferred by the National Library of Medicine [available at: [http://www.nlm.nih.gov/cgi/mesh/2011/MB\\_cgi?mode=&index=25524&view=expanded](http://www.nlm.nih.gov/cgi/mesh/2011/MB_cgi?mode=&index=25524&view=expanded)]), defined in this context as the processes one follows to complete a task and reach clinical goals. Although the hope associated with the introduction of HIT is for improved workflow and safety, that is not always the case. In fact, poor design or implementation of technology can create new risks, reduce anticipated safety benefits associated with the technology, and increase the likelihood of errors [2].

When technology makes a health care process slower or less efficient, or when it requires steps that are impossible or seem unnecessary, clinicians create work-arounds. Work-arounds are described as “informal temporary practices for handling exceptions to normal workflow” [3p1561], or, alternatively, as processes that are different from the anticipated, intended sequence of steps to achieve a specific goal. Work-arounds are beneficial in that a goal is achieved even when the anticipated process for achieving that goal cannot be completed. In health care, this may mean that a patient receives a needed medication or that an order is received and completed. Work-arounds are at times necessary to ensure that care is given.

However, work-arounds have negative impacts, as well. For example, when work-arounds are used to circumvent safety procedures, the unanticipated practices yielded by the work-around can increase the risk of harm. Moreover, a work-around masks the underlying problem that caused the worker to employ the work-around in the first place. Because the goal is met, employing a work-around and taking no further action to solve the underlying problem make it

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likely that the problem will continue to exist. In health care, this means that, by adapting their practices to work with HIT that imposes impediments to care processes, nurses inadvertently make it possible for problematic technology to remain in use.

The following fictional vignettes, based on commonly reported types of work-arounds, illustrate this phenomenon.

### **Vignette 1: Bar Code Medication Administration (BCMA) Work-around**

**Background.** County Hospital uses a BCMA system. The BCMA system requires a nurse giving medications to use a handheld device to electronically scan a bar code affixed to the medication dose to be administered and a bar code on the wristband of the patient to whom the medication will be given. The BCMA system then compares the medication to the patient's active orders and returns an alert if it appears that any of the 5 "rights" of medication administration (ie, right drug, right dose, right route, right time, and right patient) are about to be violated. The BCMA is intended to increase safety and prevent medication errors.

Anna is a registered nurse preparing to administer an intravenous antibiotic at 3 AM on a busy inpatient medical unit at County Hospital. Anna checks the medication order in the electronic medication administration record, scans the bar code on the antibiotic, and scans the wristband affixed to the head of her patient's bed. The BCMA system returns no alerts, and she administers the antibiotic without disturbing her patient's sleep.

**Analysis.** Intended to improve safety and decrease medication administration errors, the introduction of BCMA has resulted in many types of work-arounds. Analysis of BCMA work-arounds is a topic of research interest, with the understanding that work-arounds signal a lack of congruence between the medication administration process and the BCMA system [4, 5].

In this vignette, the nurse used a work-around to satisfy the scanning requirements of the BCMA while also meeting the nursing goals of ensuring that the patient receives adequate sleep and administering ordered medications. Unfortunately, the work-around circumvented a safety procedure, increasing the risk of administering the medication to the wrong patient. Such work-arounds are created because bar codes on patient wristbands are often inaccessible or unreadable because of position, dressings, or damage [2]. BCMA work-arounds may also be related to problems with hardware (eg, multiple scanning attempts are needed to read the bar code), task (eg, the BCMA scanning procedure is slower or more cumbersome than other methods), organizational factors (eg, BCMA procedures are not compatible with workflow), and environmental factors (eg, the medication bar code is in a location inaccessible to the scanner, such as a refrigerator) [2].

Work-arounds are likely to appear when technology is introduced, if the related work processes are not well-under-

stood or are not reengineered to successfully incorporate the new technology [6]. Understanding the nature of and reasons for BCMA work-arounds is necessary to configure BCMA systems and processes for safe and efficient administration of medication.

### **Vignette 2: Hardware Inefficiency Work-around**

**Background.** The nursing assistants on the adult inpatient unit at County Hospital use a portable meter to check patients' blood glucose levels. The meter stores each patient's identification and blood glucose reading. When not in use, the portable blood glucose meter may be placed in a centrally located docking unit, which uploads the stored blood glucose readings into the appropriate EHR for each patient, decreasing the risk of error from transferring blood glucose readings manually from the meter to the EHR. Once uploaded to the EHR, blood glucose results are accessible to all nurses and physicians caring for the patient.

Johanna, a nursing assistant, checks prelunch blood glucose levels for several patients. As the portable blood glucose meter records each patient's identification and blood glucose reading, Johanna writes each patient's name, room number, and blood glucose level on a clipboard she carries with her. After she has completed the blood glucose checks, she gives the clipboard to Jon, a registered nurse who will assess the readings she has recorded and complete any necessary follow-up. At the end of her shift, Johanna returns the blood glucose meter to its docking unit. All readings stored in the meter are quickly uploaded to the appropriate EHR for each patient.

**Analysis.** Inaccessible or inconveniently located hardware is a common cause of work-arounds. In this vignette, the nurses and nursing assistants found returning the portable blood glucose meter to its docking unit to be problematic and developed a work-around. The solution described—duplicate documentation on paper—solved the immediate problem but created the risk of introducing errors in the manual transcription of blood glucose readings from meter to paper.

Researchers have observed that work-arounds may increase overall workload [7], as in this vignette. Documenting blood glucose levels on paper and ensuring that the paper documentation is given to the correct nurse would be unnecessary if the system worked as envisioned. The work-around also increases the work of nurses and physicians, who must search for the most recent blood glucose reading, which may not be in the EHR.

Work-arounds similar to this one may occur when technology does not fit well with workflow. Replacing the meter in the docking unit requires extra steps and time. The docking unit might be in a seldom frequented location, thereby limiting its accessibility, whereas the registered nurse to whom the clipboard is given is readily accessible. In addition, because hospitals are busy and nursing work is often unpredictable, portable units are easily set down and forgotten,

rather than placed in docking or charging units. Attempts to place docking units in locations that facilitate accessibility may be helpful, but wireless communication between the meter and the EHR system may be a superior solution for the problem presented in this vignette, making information more immediately available in the EHR to all clinicians.

Other work-arounds related to hardware problems include those related to mobile workstations that are too heavy, bulky, or unwieldy to take into patient rooms; battery failures on mobile units; insufficient numbers of workstations; and workstations placed in inconvenient locations [2, 6]. Understanding workflow, workers, and how workers interact with technology is necessary for successful selection and deployment of the best hardware solutions for health care.

## Discussion

Nurses are skilled at creating work-arounds. Trained to be creative and to adapt to unique situations, nurses readily make adjustments in their plans and processes, using available resources to achieve an immediate goal. In addition, high workloads and time demands in health care lead to the use of work-arounds, because nurses feel pressured to “get the work done” however they can [6p5]. In fact, certain characteristics that are valued of and by nurses—individual vigilance, efficiency, and empowerment to solve problems—encourage the use of work-arounds [8].

Work-arounds are not errors. In an error, a planned sequence of steps does not lead to the intended goal; in a work-around, the outcome generally is achieved, but by using a process different from the one that was intended. Although safety concerns are raised by work-arounds, in some instances the work-around may actually be a safer and more efficient process [6]. However, by its very nature, a work-around is a process designed to circumvent, rather than correct, an underlying problem. Work-arounds enable clinicians to give patients needed care, but they do not address the root problem; therefore, the same problem in workflow occurs again.

Working around a problem to solve the immediate concern is referred to as first-order problem solving [8]. On the surface, first-order problem solving appears successful, because the goal was achieved. However, it can be counterproductive, because the problem is not used as an opportunity for change or learning.

In addition, second-order problem solving, which addresses the cause of the work-around, is needed. Second-order problem solving may include communicating about the problem to people who can address its cause, sharing ideas about what caused the problem, suggesting alternatives, and experimenting with solutions to the problem. The goal of second-order problem solving is lasting change and improvement [8].

To accomplish second-order problem solving, nurses must communicate about the problems they encounter with HIT that cause work-arounds. Administrators must be avail-

able to talk about process problems; to seek out and value information about problems, rather than to value individual first-order problem solving; to foster an atmosphere that encourages discussion of problems, rather than punishment or ridicule; and to provide clear follow-through when problems are reported, because overworked nurses will take the time to report problems only if they believe there will be some resolution [2, 6, 8].

In summary, to work effectively with HIT, nurses must have basic computer skills and information literacy. In addition, nurses must be prepared to effectively address problems encountered in processes that use HIT. Work-arounds are manifestations of nurses’ creativity, resilience, and ability to solve problems to achieve important goals. They also provide powerful insights about the ways that nurses work with HIT, how HIT functions, and problems that HIT and associated processes introduce. Nurses and organizations must now move beyond working around problems with HIT to communicate about and address the underlying problems that necessitate work-arounds. Doing so will facilitate the development and deployment of HIT that enhances nursing practice and improves patient outcomes. **NCMJ**

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# North Carolina's Nursing Workforce: Planning Today for a Reformed Tomorrow

Erin P. Fraher, Cheryl B. Jones

**Nurses are the single largest component of North Carolina's health workforce, and nursing jobs are an essential driver of the state's economic recovery. We propose 5 recommendations for creating a nursing workforce system that, if implemented, would position the state to meet the future health care needs of North Carolinians.**

**N**urses are the single largest profession in North Carolina's health workforce. Recently, there has been an uptick in their supply relative to the size of the population (Figure 1), but the increase has occurred, in part, because more nurses delayed retirement and reentered the workforce in response to the recent economic downturn. Despite this supply increase, the state will likely experience shortfalls when the economy recovers [1] and nurses begin to retire in larger numbers, as nearly 1 in 5 nurses in North Carolina is older than 55 years (calculated on the basis of data from the North Carolina Health Professions data system, as derived from licensure data from the North Carolina Board of Nursing). These supply shortfalls will occur just as insurance expansions under health reform, a rapidly aging population, and a rising prevalence of chronic disease intensify the state's demand for nurses.

How many nurses will North Carolina need in the future? How will health reform and system redesign affect the supply and demand for nurses? How will the state's budget cuts affect nursing school enrollments and future supply? In what specialties and geographies will nurses be needed? These questions are difficult to answer without adequate investment in the data and analytical infrastructure required to proactively plan for the right number of nurses to deliver the right nursing services to the right people at the right time [2]. Such a planning infrastructure is crucial to avoid a nursing workforce that fluctuates between surplus and shortage, resembling what Grumbach [3p14] (who observed the same phenomenon in the physician workforce) quipped was a "version of Goldilocks written by Albert Camus...too hot, too cold, but never just right."

The recently released Institute of Medicine of the National Academies (IOM) report on the future of nursing acknowledged, as 1 of its 4 "key messages," the need for better data collection and improved information infrastructure to support more-effective workforce planning and policy

making [4]. Compared with the nation as a whole, North Carolina is well situated to plan for the future, because of past investments in a longitudinal data set on nursing supply that is the envy of many other states and because of a history of strong stakeholder collaborations. Despite having these central building blocks for future nursing workforce planning in place, significant work remains.

It will be critical for North Carolina to move from a reactive mode that waits for the market to signal an existing surplus or shortage to a mode that proactively plans for the number, type, and distribution of nurses needed to meet the state's future health care needs. The suggestion that the state should engage in better workforce planning supports a market-based approach by providing information to employers, educators, and other stakeholders who need this information to make decisions about how to best allocate resources. In light of current state fiscal constraints, the need to target resources to achieve the greatest return on investment has never been more important.

In the past, state and national efforts have focused on quantifying how many nurses exist and where they work—what some have called a "counting noses" approach (George F. Sheldon, MD, University of North Carolina-Chapel Hill, personal communication)—instead of on assembling the data needed to better understand the actual services nurses provide in practice, the services they could potentially provide, and the degree to which these services match population health needs. And for the most part, nursing workforce policy has primarily assumed that the answer to the question of how to address imbalances in supply and demand is to focus almost exclusively on producing more new graduates. While North Carolina may, in fact, need to increase the nursing educational pipeline, policymakers must also consider the importance of retooling nurses who are already in the workforce. Better information is needed to ensure that practicing nurses have the skills and the competencies to meet the changing demands of a redesigned health care system.

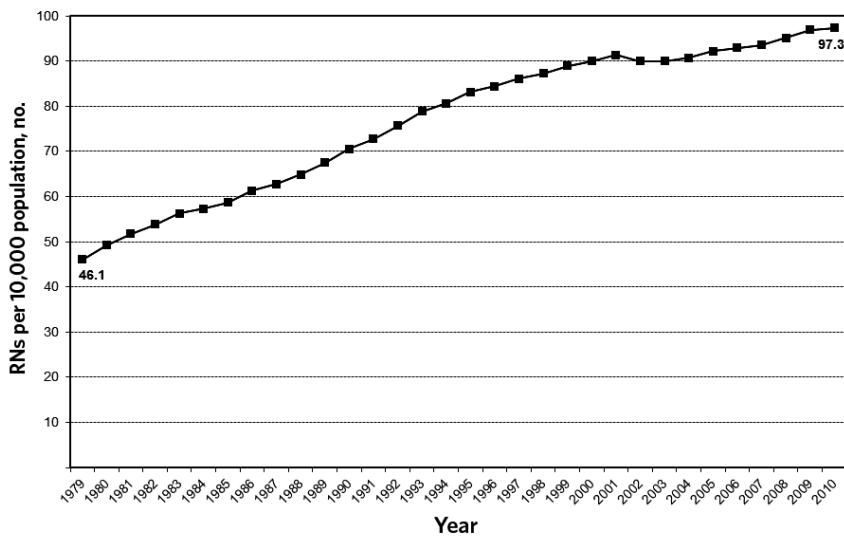
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**FIGURE 1.**  
Registered Nurses (RNs) per 10,000 Population, North Carolina, 1979-2010



Note. Data are for all licensed, active, in-state RNs. Nursing data are from the North Carolina Health Professions Data System, as derived from licensure data from the North Carolina Board of Nursing. Population data are from the North Carolina Office of State Budget and Management.

Workforce policymakers also need to link nursing supply to patient and community outcomes, to better understand how nurses and other health professionals—physicians, pharmacists, medical assistants, and other allied health professionals—working independently and in teams contribute to achieve “better care and better health at reduced costs” [5].

The remainder of this commentary provides recommendations for moving North Carolina toward a nursing workforce planning system that supports a transformed health care system. The recommended approaches emphasizes the need for nurses—and all health professionals—to be part of an integrated, comprehensive, and interprofessional health workforce planning system that builds on and leverages existing strengths within the state.

### **Recommendation 1: Enhance Collaborations Among Stakeholders and Commit to Proactively Engage in Health Workforce Planning**

This recommendation is the cornerstone to realizing the IOM report’s goal to “plan for the fundamental changes required to achieve a reformed health care system” [4p1-12]. Decision-makers from multiple sectors—actively practicing nurses, employers, policymakers, educators, professional associations, workforce investment boards, and consumers, to name a few—need to come together around the common goal of planning for the future health *and employment* needs of the state. In the context of the rapidly changing health care system, input from the profession, employers, and consumers, which is based on the realities of practice, is imperative. Better links need to be established between workforce planning efforts and North Carolina’s health care facilities

planning and certificate-of-need processes, two existing mechanisms through which the state proactively plans for the future needs for different patient populations.

Collaborations must expand beyond the traditional stakeholders involved in health care planning in the state. The rapid growth of health care jobs and their “recession-resistant” qualities underscore the importance of better collaborations with stakeholders engaged in workforce development, including the North Carolina Department of Commerce, workforce investment boards, and local chambers of commerce [6]. A recently released report from the North Carolina Commission on Workforce Development highlights the importance of transitioning unemployed workers from declining industries into nursing and other health care opportunities, in both rural and urban areas of the state [7]. But knowing what types of health care jobs will exist in the future, as well as the geographic and employment settings in which they will be located, requires a more proactive approach to workforce planning.

### **Recommendation 2: Build a Data and Analytical Infrastructure to Inform Decision Making by Key Organizations and the State as a Collective**

**2A. Inventory and pool existing health care workforce data from various sources in the state.** Much of the data needed for better nursing workforce planning already exist, but they are collected and housed by many different organizations. For example, supply-side data from the North Carolina Board of Nursing, the North Carolina Health Professions Data System, the Employment Security System, and the North Carolina Nurses Association need to be brought together

with nurse-demand data from the North Carolina Hospital Association's annual workforce survey and other employer data on vacancy rates, turnover, time to fill vacant positions, recruitment costs, and salaries. Because labor markets are regional, these data need to be collected and evaluated at the state and regional levels.

**2B. Develop data sources for nursing workforce information not currently available.** While some data on demand already exist, more and better data are needed to accurately gauge the demand for nurses in different employment settings, specialties, and geographies. This effort was initiated several years ago by the North Carolina Center for Nursing and should be expanded to collect more-comprehensive and updated data.

A critical area of need is for data on the nursing educational pipeline. The North Carolina Board of Nursing collects some information about prelicensure education programs through its annual report, but data are not routinely collected on RN to BSN, master's degree, and doctorate nursing programs. The state needs to create a central repository of educational data on the numbers and characteristics of all nursing school applicants, enrollees, retention rates, types of degree programs sought, and graduates. Data are also needed on the numbers, characteristics, and types of nursing school faculty, to better evaluate the adequacy of nursing program capacity—an area that has been identified as a major constraint in expanding future supply [8-10].

### **Recommendation 3: Create a Nursing Workforce Research and Policy Unit That Provides Objective, Evidence-Based Workforce Information**

Three "tiers" of analyses are proposed that will provide ongoing, comprehensive, and systematic evaluations of the nursing workforce to inform policymakers: (1) rapid response analyses that can be completed within hours or a few weeks, (2) focused policy analyses with a turnaround time that ranges from a few months to a year, and (3) longer-term (ie, multiyear and/or longitudinal) and more-in-depth studies of the nursing workforce. For example, rapid response is needed to respond to queries about the supply of nurses in various specialties, employment settings, and geographies; their distribution in rural and underserved areas; and their ethnic, racial, and linguistic diversity. Short-turnaround policy analyses are needed to evaluate the impact of changing nursing school enrollments on future supply; of changing the mix of nurses with an associate's degree, a baccalaureate, or a master's degree on the geographic and specialty distribution of the workforce; and of implementing innovative programs, such as the Foundation for Nursing Excellence's Regionally Increasing Baccalaureate Nurses project. Finally, longer-term research studies are needed to develop better models for forecasting future nursing supply and demand; to understand nurses' long-term educational and career trajectories; to evaluate innovative and evolving care delivery models, such as those of Community Care of North Carolina;

to determine how different workforce configurations affect cost, quality, and access to care; and to examine new and emerging roles for nurses in health information technology, patient education, discharge planning, transitional care, and other roles in an increasingly integrated and coordinated health care system.

### **Recommendation 4: Secure Funding**

Resources for such a unit will need to come from a variety of sources, including each of the stakeholder groups who will use and benefit from the unit's outputs, such as the North Carolina Legislature, state agencies (eg, the North Carolina Community College System, the University of North Carolina General Administration, and the North Carolina Department of Commerce), federal agencies, and private foundations. Funding could also flow from contract work with organizations wishing to draw upon the unit's analytic and workforce policy expertise.

### **Recommendation 5: House the Nursing Workforce Unit at a Neutral Institution That Has the Data, Analytical Expertise, and Stakeholder Relationships to Engage in Interprofessional Planning**

A nursing workforce unit that gathers and analyzes workforce data, provides technical assistance to other organizations engaged in workforce planning, and translates raw workforce data into products—Web pages, fact sheets, policy briefs, research papers, and scholarly articles—would inform a wide variety of policy decisions. The types of workforce analyses proposed are data and research intensive and require a highly specialized staff, including experienced data management personnel, cartographers, statisticians, qualitative data experts, economists, policy analysts, and nursing workforce researchers. Involvement of actively practicing professionals from a wide array of health disciplines will also be crucial, because planning for the workforce needed under health reform in North Carolina will require moving from a silo-based approach that simply asks "How many more nurses do we need?" to an interprofessional workforce planning model that asks "Given North Carolina's population health needs, how can nurses and other health professions be best deployed to meet those needs?"

### **Conclusion**

Nurses play a critical role in North Carolina's health care system, and nursing jobs are an essential component of the state's economic recovery. While the supply of nurses in North Carolina has increased in recent years, all indicators suggest that demand will outstrip supply as the state's economy rebounds, as new models of care and payment evolve under health care reform, as the baby boomer generation ages, and as nurses of retirement age leave the workforce. North Carolina has a long history of collaboration around the collection of nursing workforce data and is

considered a national leader in this regard. However, a more comprehensive, systematic, and enduring interprofessional system is needed to measure, monitor, and evaluate the state's nursing workforce within the context of other health workers. This article proposed 5 recommendations for creating a nursing workforce system that, if implemented, would position the state to meet the future health care needs of North Carolinians. These recommendations called for an infrastructure that will enable us to determine the right number, mix, type, and distribution of nurses needed to work collaboratively with other health professionals and ensure the delivery of high-quality, cost-effective care across the state. *NCMJ*

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*Margaret lives in her own place  
with her own stuff.*

*Tracie helps to make it possible.*

"Margaret is 85 and sharp as a tack. But her health makes it tough to get around. Tracie wants to help out in her community, but she has a busy job. *Faith in Action* brought them together. It's people of different faiths who volunteer to shop, cook, drive, or just check in on some of the millions of Americans with long-term health needs.

If you're like me and have wondered how you can make a difference, volunteer with *Faith in Action*. A neighbor's independence depends on you and me."



**FAITH  
IN ACTION**

— Della Reese. *Entertainment Legend.*  
**Faith in Action Believer.**



# The National Perspective on the Future of Nursing: Where We Are Going

Susan B. Hassmiller

**The Robert Wood Johnson Foundation and the AARP have embarked on The Future of Nursing: Campaign for Action to strengthen nursing education, enable nurses to practice to the full extent of their education and training, advance inter-professional collaboration, expand nurse leadership, and improve collection of data about the health care workforce.**

**T**he Robert Wood Johnson Foundation (RWJF), the nation's largest health and health care philanthropy, has embarked with AARP, the nation's largest consumer organization, on The Future of Nursing: Campaign for Action to advance comprehensive health care change. The campaign envisions a nation where all Americans have access to high-quality, patient-centered care in a health care system in which nurses contribute as essential partners in achieving success. The campaign is focusing on the nursing profession because nurses deliver the most patient care and are trained in the coordination of care across the health care spectrum. Risa Lavizzo-Mourey, RWJF president and chief executive officer, often says that our society cannot begin to address the challenges facing our health care system without first addressing the challenges facing the nursing profession. Nurses, working with other members of the health care team, can help ensure that our health care system delivers integrated, equitable, and cost-effective services. Given many health professionals' increasingly interdependent roles, confronting some of nursing's key challenges will have broad benefits for every member of the health care team.

The Campaign for Action builds on the recommendations in *The Future of Nursing: Leading Change, Advancing Health* [1], a recently published report from the Institute of Medicine of the National Academies (IOM) that provides a blueprint for transforming the nursing profession to improve health care and meet the needs of diverse populations.

The campaign's first goal is to strengthen nursing education and training, to ensure that patients receive safe, high-quality, patient-centered care. In North Carolina and the rest of the country, patient needs have become more complex as the population has become older and sicker, and delivering high-quality care often demands competencies in evidence-based practice, leadership, health policy, research, and the latest medical technology and information management

systems. Several studies support a significant association between the educational level of registered nurses and outcomes for patients in the acute care setting, including mortality rates [2-6].

Furthermore, as care moves from the hospital to medical homes and the community, nurses need to be prepared to provide community-based care. Persistent health disparities also demand a diverse workforce that provides culturally competent care. The campaign aims to strengthen nursing education by fulfilling the IOM recommendations of increasing the proportion of nurses with a baccalaureate degree to 80% by 2020, doubling the number of nurses with a doctorate by 2020, and implementing nurse residency programs and promoting lifelong learning.

The second goal is to enable nurses to practice to the full extent of their education and training. The United States faces a primary care shortage, and staffing shortages will be exacerbated during the next decade as millions of newly insured Americans seek care and the average age of the US population continues to increase. Expanding access to primary care requires all nurses to practice to the full extent of their education and training. Moreover, all providers should be able to maximize the time they spend treating patients. Decades of research show that advanced practice registered nurses (APRNs) provide basic primary care services that are as safe, effective, and efficient as those provided by physicians [7-10]. As with any other primary care professionals, APRNs refer patients to a specialty provider if the care required extends beyond the scope of their education, training, and skills.

Yet, regulations in many states, including North Carolina, prevent nurses from being able to give the care that they are trained to provide (Figure 1). North Carolina law requires nurse practitioners to practice with a physician's supervision, whereas nurse practitioners in other states are able to prescribe medicine and see patients without a physician's supervision. The Campaign for Action seeks to implement

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**FIGURE 1.**  
**Physician–Nurse Practitioner Restrictive Collaboration Requirements in the United States**

This figure is available in its entirety in the online edition of the NCMJ.

the IOM report recommendation to remove these scope-of-practice barriers so that all nurses can practice to the full extent of their education and training.

The third goal is to advance interprofessional collaboration. Studies demonstrate that effective coordination and communication among health professionals can improve quality and patient safety [11, 12]. Health professionals working together as integrated teams draw on individual and collective skills and experiences across disciplines, allowing each provider to practice at a higher level and deliver better patient care. With more patients having complex health needs, providers will need to work in teams to efficiently and effectively manage and coordinate comprehensive care.

However, medical students, nursing students, and students in other health professions have very little meaningful interaction with each other during their years of formal education, often leaving them ill-prepared to work together as team members. To facilitate interprofessional collaboration, nurses and other health professionals should be educated together as students and during their careers through lifelong learning opportunities. This exposure and collaboration early in educational programs and continuing through post-graduate training will lay the groundwork that is so critical to an improved health care system and culture.

To fulfill the IOM recommendation of implementing early and continuous interprofessional collaboration, the campaign is enlisting professional associations, educational institutions, health care entities, and funders integral to advancing interprofessional collaboration. The campaign will highlight medical centers, primary care settings, and long-term care facilities that successfully implement team-based care.

The fourth goal is to expand nurse leadership. As the health professionals who spend the most time with patients, nurses bring an important voice and point of view to management and policy discussions. Cultivating and promoting leaders within the nursing profession—from the front lines of care to the boardroom—are crucial if nurses are to have a role in improving health care quality, safety, access, and value. The IOM report recommends expanding opportunities for nurses to lead and diffuse collaborative improvement efforts, as well as enabling nurses to lead change to advance health. To achieve these recommendations, the campaign will promote leadership initiatives for nurses at various career stages. Educational programs need to embed relevant competencies and training across health care settings and levels. Leadership development and mentoring

programs also need to be made available.

However, as the IOM report makes clear, better leadership must be developed across all of the health professions, and it must foster a culture of mutual respect, collaboration, problem solving, and accountability. Patients and the health care system will be the true beneficiaries.

The fifth goal is to improve the collection of data about the health care workforce. Planning for fundamental, wide-ranging changes in the education and deployment of the nursing workforce will demand comprehensive data about the entire health care workforce. We need better data about the numbers and types of health professionals currently available and what will be needed in the future. Once an improved infrastructure for collecting and analyzing this type of data is available, systematic assessment and projection of workforce requirements by role, skill mix, region, and demographic characteristics should inform future nursing practice and education.

RWJF and the AARP Center to Champion Nursing in America are rallying support across the health care spectrum and engaging health professionals, policymakers, consumer leaders, and prominent officials and groups from government, business, academia, and philanthropy to spur the campaign forward. More than a quarter of the states in the country are involved in official RWJF/AARP Action Coalitions, our grassroots strategy to drive implementation at the state level, and more than half of the states have brought together partnerships independently to begin to work to implement the recommendations. We anticipate that most states will be part of this campaign by the end of 2012.

North Carolina leaders held a statewide summit in April 2011 and developed an action plan to implement the IOM recommendations. To succeed, we need physicians, policymakers, academic researchers, other health professionals, and consumers to join the Campaign for Action in North Carolina. It truly will take all of us. For more information on how to get involved, go to The Future of Nursing: Campaign for Action Web site (available at: <http://www.thefutureofnursing.org>). Only with your help will we succeed in transforming the health care system so that all Americans receive integrated, equitable, and cost-effective services. **NCMJ**

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# Running the Numbers

*A Periodic Feature to Inform North Carolina Health Care Professionals  
About Current Topics in Health Statistics*

## School Health Services Reports for North Carolina Public Schools

North Carolina's leaders in both education and health agree that the two are interdependent. The identification of health-related barriers to learning is crucial to the academic success of every student. Instituting comprehensive school health services in every school district has been a priority of the North Carolina Public Health Task Force and the North Carolina Division of Public Health. In concert with the American Academy of Pediatrics, the Centers for Disease Control and Prevention, the American School Health Association, and the National Association of School Nurses, North Carolina established a goal that every public school student have access to a school nurse in a ratio not to exceed 1 nurse per 750 students. To achieve this goal, the state has instituted strategies such as the North Carolina Healthy Schools Coordinated School Health program, the School Health Advisory Councils (SHACs), the North Carolina School Health Leadership Assembly, and establishment of a School Health Cabinet at the highest levels of state government. Other strategies include the School Nurse Funding Initiative, the Child and Family Support Team Initiative, and local funding directed toward school health services and personnel.

In August 1998, about 556 school nurses delivered services in 87 counties, and these nurses carried caseloads of about 2,450 students each. During the 2009-2010 school year, despite the economic crisis, there were 1,169.61 nurse positions, and the ratio of school nurses to students was 1:1,185. Significant improvement has been made in providing comprehensive school health services, and school nursing is a critical component of these services.

Since 1996-1997, the Division of Public Health has summarized school health data from each district; these annual school health services reports are available online [1]. The annual school health services report includes details about student health and school nursing activities. North Carolina is one of few states in the nation to compile such a report. All 115 local education agencies (LEAs) participate in the data collection and submit the survey instrument electronically. The data contained in the school health services report are based on data collected by school nurses and reflect their knowledge of the health services provided in their schools. The report also summarizes data and provides information on trends. The following data are excerpted from the 2009-2010 School Health Services Report [1].

National certification in school nursing is the standard by which school nurses are judged to have the knowledge and skills necessary to provide these health services [2]. During 2009-2010, the number of nationally certified school nurses, as a percentage of the total number of school nurses in North Carolina, increased by 3 percentage points to 53%. North Carolina has the highest number of nationally certified school nurses in the country.

During the 2009-2010 school year, a number of outcomes were a direct result of school nurse-led management of students with specific disease processes. Among students with allergies severe enough to affect their health and ability to learn, more than 900 stated that they had reduced the number of episodes of severe allergic reactions that required the use of their injectable emergency medication, and almost 2,000 stated that with the school nurse's assistance, they had increased their knowledge of their disease, its causes and treatments, and how to better manage the illness. Among students with asthma severe enough to affect their health and ability to learn, almost 4,000 said their improved health allowed them to increase their participation in physical education and/or after-school physical activity. Among students with diabetes severe enough to affect their health and ability to learn, more than 1,000 improved their skill in testing their own blood sugar, and more than 500 calculated and correctly drew



**TABLE 1.**  
**Individual Student Health Counseling Sessions Provided by School Nurses During the 2009-2010 School Year, by Condition or Topic**

Condition or topic	School level			Total (N = 177,298)
	Elementary (N = 77,141)	Middle (N = 46,590)	High (N = 53,567)	
ADD/ADHD <sup>a</sup>	6,090	3,599	1,577	11,266
Asthma <sup>a</sup>	21,691	6,219	4,113	32,023
Child abuse/neglect	1,817	697	594	3,108
Depression/suicide	680	1,413	3,086	5,179
Diabetes <sup>a</sup>	13,959	10,804	8,066	32,829
Grief/loss	1,197	863	1,291	3,351
Hygiene <sup>a</sup>	12,421	6,831	4,735	23,987
Mental health issues <sup>a</sup>	3,043	4,279	4,629	11,951
Pregnancy	40	1,053	7,478	8,571
Puberty/reproductive health	5,148	4,798	8,799	18,745
Seizure disorders <sup>a</sup>	2,430	851	1,185	4,466
Severe allergies <sup>a</sup>	6,452	1,791	1,668	9,911
Sickle cell disease/trait <sup>a</sup>	408	111	246	765
Substance abuse	166	710	2,280	3,156
Tobacco use	141	758	2,351	3,250
Violence/bullying	1,458	1,813	1,469	4,740

Note. ADD, attention-deficit disorder; ADHD, attention-deficit hyperactivity disorder.  
<sup>a</sup>Does not include Charlotte-Mecklenburg Schools because of differences in reporting.

their own dose of insulin 100% of the time. Among students with weight issues severe enough to affect their health and ability to learn, more than 500 were able to increase their participation in physical education, sports, or after-school activity, and about the same number demonstrated a better understanding of their condition.

School nurses also provide general health education to staff and students. During the 2009-2010 school year, the nurses reported providing 27,825 programs and presentations. Forty-eight LEAs (42%) presented asthma education programs for staff, 46 (40%) provided asthma education programs for students, and 105 (91%) provided diabetes education programs for staff.

A critical function of school nurses is to manage, throughout the school day, the care of students with chronic health conditions. During 2009-2010, the most common chronic health conditions of K-12 public school students in North Carolina, as reported by the nurses who care for them, were asthma (92,838 students), severe allergies (22,359), and diabetes (4,318). As part of care management, school nurses develop individual health care plans and train school staff members to give necessary medications and safely perform nursing procedures delegated by the nurse to school staff.

Health counseling is defined as any encounter with a student in which instruction and advice for health promotion, health improvement, and health maintenance were discussed. During the 2009-2010 school year, school nurses provided 177,298 health counseling sessions to individual students (Table 1). Several hundred additional counseling sessions were provided to school staff.

Facilitating periodic health screenings in schools is another important role of the school nurse. The goal of any mass screening program is to assess the condition and, if indicated, to treat. One indicator of the success of a school health screening program is the percentage of students who secured care; that is, how many of the students who did not pass a screening and were therefore referred for further evaluation actually completed the process by seeing a health care professional for the condition? For example,

**TABLE 2.**  
**Student Screening and Referral for Follow-up Care by School Health Services Staff, by Screen Type**

Screen	No. or no. (%) of students		
	Screened	Referred for follow-up care	Secured follow-up care
Body mass index	79,084	5,586 (7)	1,691 (30)
Hearing	156,808	4,027 (3)	2,748 (68)
Vision	527,843	38,216 (7)	27,482 (72)

among children who received vision screening during the 2009-2010 school year and were referred for follow-up care, 72% secured such care (Table 2).

Some school districts, by increasing numbers of school nurses, increasing efforts to communicate with parents, and finding health care resources for school children, secured care for 100% of students with referrals. Screening for vision is the most frequently conducted health screen in North Carolina schools. More than half a million North Carolina school children (38%) had their vision checked for possible eye problems. The school-based vision screening program is an example of the highly collaborative intersections among school health professionals, nonprofit organizations, volunteers, and health care providers. The Prevent Blindness North Carolina (PBNC) Vision Screening Certification Program works under contract with the Division of Public Health, in collaboration with the Children and Youth Branch, to deliver vision screening certification training to all 100 counties. The PBNC's certification program is the Division of Public Health's primary means of ensuring consistent screening practices and referral criteria across all schools in North Carolina.

Nurses received 113,206 physician orders for individual medications, including drugs for regular, daily use by specific students, as well as drugs ordered to be on hand should the student need them. The school nurse reviews the orders before administering the medications, training non-health care school staff to administer them, or, when specific conditions are met, assisting students to self-administer these medications. Review of the order by a registered nurse trained to identify the indications for use of a drug, its side effects, and its usual doses and routes of administration can reduce the incidence of medication errors. Routine audits by registered nurses of records of medications given to students means the risk of errors can be spotted and reduced quickly.

School nurses work with their local SHAC to develop and implement local programs designed to prevent illness and promote health. The SHACs are mandated by the North Carolina State Board of Education Healthy Active Children Policy (GCS-S-000). School nurses also assist with disaster and emergency planning for their communities. As the number and complexity of health needs of children in school continue to grow, so must the availability of school nurses until the recommended ratio of 1:750 is reached and, ideally, there is at least 1 school nurse in every school in North Carolina. NCMJ

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# Spotlight on the Safety Net

*A Community Collaboration*

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## **Nurse Care Managers in Community Care of North Carolina**

Care management is the cornerstone of Community Care of North Carolina's mission. Care managers are in the offices of health care professionals, where they have access to patient records and the opportunity to document notes about home visits or other information in the patient's chart. They help coordinate care by ensuring that the health care professional and the patient have a mutual understanding about disease management. Care managers achieve this by sharing key background information about the patient's home, community, and barriers to care with health care professionals and by providing education and other empowering tools to patients that encourage self-advocacy during discussions about their care.

Nursing professionals with a variety of educational backgrounds serve as care managers. Community Care of Wake and Johnston Counties has 24 nurse care managers, with degrees ranging from the associate's level to the bachelor's level, and the majority are nationally certified. Nurse care managers focus on patients with more-complex conditions. Nurses working with pediatric patients handle a greater number of cases, whereas nurses working with the adult population care for patients with more-chronic illnesses. Each nurse usually works with approximately 50 patients.

Nurse care managers at Community Care of The Lower Cape Fear (CCLCF) help patients make successful care transitions. Nurses in hospitals with the largest numbers of admissions help troubleshoot what went wrong in efforts to self-manage care and then work to support patients' self-management when they get home. Care managers try to see the patient within 3 days after discharge, to coordinate follow up with other health care professionals who are working with the patient. They often ask patients to demonstrate how they take medication, to help ensure adherence and safety.

According to Lydia Newman, executive director of CCLCF, "Care managers are essential to everything CCLCF does, dissolving the fragmentation that occurs between health care professionals, hospital, and home. They are the critical link between patient and health care professional, conducting home visits to ensure follow up in the patient's medical home, enforcing the health care professional's plan of care, reconciling medications, coordinating care and services, and educating patients about how to improve self-management of their health conditions. The scope of their work is exhaustive, and I don't think they realize just how important their role is." Patients also recognize the value of care managers. As a participant in Carolina ACCESS, the state's Medicaid plan, notes, "No one had ever taken the time to sit down with me and address every area of my health care. I am so thankful to have someone who really cares." NCMJ

*Kimberly Alexander-Bratcher, MPH, program director, North Carolina Institute of Medicine, Morrisville, North Carolina, with contributions from Angela Ives, RN, CCM, deputy director, Lydia Newman, executive director, and Beth Adams, communications and outreach consultant, Community Care of The Lower Cape Fear, Wilmington, and Susan Davis, RN, CCM, network director, Community Care of Wake and Johnston Counties, Raleigh.*



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## ERRATUM

An error appeared in an article published in the May/June 2011 issue of the NCMJ (Poley ST, Walker EK, Lyons JC, Newkirk VR, Thompson K. N C Med J. 2011;72(3):249-251).

The name of the second author should read "Elizabeth W. Kasper" (not "Elizabeth K. Walker"). The authors regret this error.

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