

# A Study of Associate Degree Nursing Program Success

Conducted by:  
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## Summary of Findings

North Carolina faces a slowing per capita supply of registered nurses at a time of increased demand for health care services. Despite a 28.6% increase in RN graduates in the State, attrition remains high from North Carolina Community College System Associate Degree Nursing programs. This study identifies the factors influencing attrition and expands the current evidence base that can be used to inform efforts to reduce student attrition.

- Student demographic and socioeconomic characteristics are the most powerful predictors of on-time graduation.
- To fairly judge program performance, graduation rates must be considered in comparison to what should be expected given the student body's demographic and socioeconomic profile.
- Programs with higher than expected graduation rates
  - Used standardized tests in their admissions processes
  - Employed slightly more educated faculty
  - Tended not to use the same faculty in clinic and lecture settings
  - More frequently required orientation for clinic instructors
- Students were more likely to pass NCLEX if they enrolled in a program
  - Where more of the faculty had a master's degree
  - That used standardized tests in the admissions process
  - That had a higher science competency standard than the standard for the community college
- On-time graduates from NCCCS ADN programs have a high retention rate (90%) in the North Carolina RN workforce.
- On-time graduates from NCCCS ADN programs enter practice close to the communities where they are educated.
- NCCCS ADN graduates are more likely to practice in long-term care, home care/hospice, and mental health settings, and in rural counties.

High workforce retention rates for NCCCS ADN on-time graduates (90%) combined with the tendency of these graduates to practice in 1) clinical settings with high vacancy rates such as long-term care and 2) counties experiencing shortages of health professionals make a compelling case for policy makers to invest resources in understanding and addressing attrition from ADN programs.

**North Carolina faces a slowing supply of RNs at a time of increased demand for health care services.** Ensuring an adequate supply of nurses to meet the growing demand for health care services is a key issue facing state policy makers. In 2004, a task force of the North Carolina Institute of Medicine (NC IOM) reported an emerging perfect storm of factors that could lead to a nursing shortage: population growth, particularly among persons aged 65 years and older, is converging with the rapid aging of the state's nursing workforce. Consistent with this forecast, the North Carolina Center for Nursing (NCCN) has projected that by 2020 the State's supply of full-time RNs will meet only 70% of demand.

**Despite growth in output of RNs, attrition remains high in NCCCS ADN programs.** In response to recommendations made by the NC IOM's taskforce, the State has initiated a series of strategies to increase the number of nurses graduating from pre-licensure RN programs. These efforts have been largely successful, resulting in a 28.6% increase in RN graduates in North Carolina between 2003 and 2006. However, rates of attrition from Associate Degree Nursing (ADN) programs remain high. According to internal estimates, only 58% of students entering North Carolina Community College System (NCCCS) ADN programs complete the degree. While policy makers are keenly aware that attrition from ADN programs is problematic, there is a lack of empirical evidence identifying specific factors contributing to student attrition.

**This study helps develop an evidence base to inform efforts to address student attrition in NCCCS ADN programs.** In late 2007, the North Carolina Community College System (NCCCS) asked the Cecil G. Sheps Center for Health Services Research (Sheps Center) to conduct a study of Associate Degree Nursing (ADN) program attrition and its causes. This report summarizes the findings from the study and identifies the student- and program-level characteristics associated with more and less successful associate degree nursing (ADN) programs. Program success is measured by three outcomes; 1) graduation within three years of enrollment, 2) passing the NCLEX-RN on the first attempt, and 3) practicing as an RN in North Carolina within five years after enrolling in an ADN program. These criteria were chosen because they are consistent with The National League for Nursing Accreditation Commission (NLN) criteria for accrediting nursing education programs but also because they explicitly recognize that the State's investment in nursing education cannot be evaluated by simply examining program completion rates – the ultimate return on investment in these programs is having graduates practice nursing in North Carolina.

The study tracked the outcomes of 2,237 students in a cohort that enrolled in the gateway Nursing 110 or Nursing 115 class in the North Carolina Community College System (NCCCS) in the Fall of 2002. Student-level data were combined with information about the 842 faculty who taught in ADN programs during the period and with data on the institutional characteristics of the 42 community colleges and consortia that enrolled nursing students in the Fall of 2002.

Data were not available for Wayne Community College, and these ADN students are not included in the sample. Wake Technical Community College did not have any students enrolled in the gateway course in the Fall of 2002 and therefore data from Wake Tech are also excluded from this study. An analysis of the students enrolled in the Wayne

Community College and Wake Technical Community College ADN programs revealed that they were not statistically significantly different in age, race, education, socioeconomic background or part-time enrollment status than the sample included in the study. In simple terms, this means that although ideally the Wayne and Wake Tech students would have been included in the study, their exclusion does not affect the study findings and the conclusions and recommendations made in this report are as relevant to these 2 omitted programs as they are to the programs that were included in the analysis.

**Student demographic and socioeconomic characteristics are the most powerful predictors of on-time graduation.** Results indicate that student demographic and socioeconomic characteristics play an important role in determining graduation outcomes. Young age (18-23 years), non-white race/ethnicity (excluding American Indian ancestry), having a GED rather than a high school diploma, and being a Pell Grant recipient were all associated with lower probabilities of graduating on-time.

**To fairly judge program performance, graduation rates must be considered in comparison to what would be expected based on the student body's demographic and socioeconomic profile.** Because these risk characteristics are not evenly distributed across NCCCS programs, statistical techniques were used to construct a "risk adjusted graduation rate" (RAGR) that identified programs whose graduation rates were higher or lower than would be expected given their student populations.

**Programs with higher than expected graduation rates**

- Used standardized tests in their admissions process
- Employed slightly more educated faculty
- Tended not to use the same faculty in clinic and lecture settings
- More frequently required orientation for clinic instructors

Student characteristics played less of a role in determining whether program graduates passed the National Council Licensure Examination-Registered Nurse (NCLEX-RN) licensure exam. Only young age was associated with a lower probability of passing the test on the first attempt. However, several characteristics of the programs in which students enrolled were associated with their likelihood of success.

**Students were more likely to pass NCLEX if they enrolled in a program**

- Where more of the faculty had a master's degree
- That used standardized tests in the admissions process
- That had a higher science competency standard than the standard for the community college

**On-time graduates from NCCCS ADN programs have a high retention rate (90%) in the North Carolina RN workforce.** This high retention rate means the returns to increasing graduation rates are nearly twice those of increasing program size. Based on a system-wide graduation rate of approximately 60% and a workforce retention rate of around 90%, 100 new ADN program slots will yield only 54 new RNs to the North Carolina workforce. By contrast, 100 additional graduates will yield 90 RNs.

**On-time graduates from NCCCS ADN programs enter practice near to where they earn their degree.** Half of all on-time graduates practiced within 13 miles of their program of enrollment in 2002.

**NCCCS ADN program graduates are more likely to practice in long-term care, home care/hospice, and mental health settings, and in rural counties.** In comparisons of 1) the 2002 NCCCS ADN cohort versus graduates of North Carolina BSN programs in 2004-2005, and 2) all RNs earning licensure through NCCCS ADN programs versus all other RNs, the NCCCS graduates were more likely to practice in nursing homes, home care or hospice settings, and mental health facilities. NCCCS graduates were also more likely to practice in rural counties, and in counties designated Health Professional Shortage Areas.

### Conclusions

High workforce retention rates for NCCCS ADN on-time graduates (90%) combined with the tendency of these graduates to practice in 1) clinical settings with high vacancy rates such as long-term care and 2) counties experiencing shortages of health professionals make a compelling case for policy makers to invest resources in understanding and addressing attrition from ADN programs. While the existing policy debate about an emerging nursing shortage has focused on mechanisms to increase the overall supply of nurses, the findings from this report emphasize the critical importance of ADN nursing graduates to the distribution of nurses in the state both geographically and by practice setting. The fact that ADN graduates distribute to rural and underserved parts of the state and tend to work in clinical settings facing high vacancy rates makes a compelling case for policy makers to invest resources in understanding and addressing attrition from ADN programs.

### Recommendations

#### **1. Standardizing Performance Measures**

- A uniform method should be used by the North Carolina Board of Nursing and the NCCCS to calculate retention rates.
- On-time graduation rates should be calculated for all students within a curriculum (full- and part- time) using the NLN standard of 150% of program length to define “on-time.” In this study, part-time and full-time students were equally likely to graduate on-time according the 150% definition.
- The Board of Nursing and the Community College System should explore whether a first-time pass rate is the best measure of performance. In this study, approximately three-quarters of all on-time graduates failing NCLEX on their first attempt later passed and entered the NC workforce.

#### **2. Adjusting Performance Evaluations to Reflect Differences in Service Populations**

- Performance measures that evaluate graduation rates should be adjusted to reflect student body characteristics. This adjustment should include the following student characteristics:
  - Age, gender, race/ethnicity
  - Education

- Pell grant status
- Part-time/full-time enrollment status
- Socioeconomic characteristics of ZIP code of residence, including rurality, poverty level, educational attainment, and proportion of active duty military in the student's home community.

### 3. Best Practices in Associate Degree Nursing Education

Although findings from this study are not conclusive, several practices of high performing programs have emerged and should be considered by programs seeking to improve graduation rates. These include:

- increasing graduate education among faculty through continuing education or recruitment;
- requiring orientation for clinic instructors;
- using standardized tests to rank applicants for admission; and
- requiring science competency above the general community college standard.

### 4. Registered Nurse Workforce Policy

Higher rates of practice in rural areas and in long-term care, home care/hospice, and mental health settings among BSNs who first earned an ADN highlight the importance of improving articulation between ADN and BSN programs as the state moves toward the NC Institute of Medicine's recommended goal of a 60% BSN workforce. An important first step in this process would be for the NC State Board of Community Colleges to request that the NC General Assembly direct that a Nursing Articulation Legislative Study be conducted by the Joint Legislative Education Oversight Committee. The purpose of the study would be to identify, and to make recommendations about, barriers and opportunities that exist for increasing the number of ADN nurses who pursue additional education.

Decisions about whether to open new nursing programs or expand existing ones, to enact or change policies regarding the regulation of educational programs, and other policy decisions concerning the nursing workforce affect a wide range of stakeholders and can be the source of contentious debate. The ability of educators, legislators, legislative staff, and policymakers to understand, consider, and debate pressing issues and identify potential policy solutions exists only if decision makers have access to both a ready source of rich data and researchers who can work with that data to objectively present the analyses "as they lay." The NCCCS should pursue \$150,000 from the legislature in the 2009 session to undertake workforce analyses that will provide policy makers the evidence base needed to make informed decisions about how to best invest in preparing the nursing workforce to meet the demands of North Carolina's rapidly growing and aging population.

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