

Monitoring the Progress of North Carolina Graduates Entering Primary Care Careers

November 2005

Submitted by the University of North Carolina Board of Governors in response to
General Statute 143-613 as amended by Chapter 507 of the 1995 Session Laws
(House Bill 230) of the North Carolina General Assembly

Monitoring the Progress of Graduates Entering Primary Care

Introduction

This report, which is submitted by the University of North Carolina Board of Governors to the General Assembly, presents information on the ongoing progress of entry into primary care careers by graduates of the four schools of medicine in the state. The report also presents progress in entering primary care by graduates of programs for nurse practitioners, physician assistants, and certified nurse midwives at UNC system schools.

Background

During its 1993 session, the North Carolina General Assembly expressed its interest in expanding the pool of generalist physicians for the state. In Senate Bill 27, as amended by House Bill 729, the General Assembly required that each of the state's four schools of medicine develop a plan with the goal for an expanded percentage of medical school graduates choosing residency positions in primary care. Primary care was defined as family practice, internal medicine, pediatrics, and obstetrics-gynecology. It set the goal for the East Carolina University (ECU) and UNC Schools of Medicine at 60 percent of graduates entering primary care. For the Wake Forest University and Duke University Schools of Medicine, it set the goal at 50 percent.

General Statute 143-613, as contained in House Bill 230 passed in the 1995 session of the North Carolina General Assembly, requires the UNC Board of Governors to monitor the progress of the private and state-operated schools toward increasing the number and proportion of nurse practitioner, physician assistant, and certified nurse midwife graduates entering primary care. This annual report was prepared in accordance with this statute. The charts contain data for 2005 and also shows trends in entry into primary care for recent years.

The Data

Section I of this report provides information from the Wake Forest University School of Medicine, the Brody School of Medicine at East Carolina University, Duke University School of Medicine and the University of North Carolina at Chapel Hill School of Medicine. Each of the four schools of medicine has committed to developing a common database to track medical students. At the request of the four schools, the AHEC Program has assumed responsibility for developing and managing the common database in association with the Sheps Center for Health Services Research at UNC-CH. The development of a common database to track medical students has required a complex process of merging two national data sets, a state data set, and files in alumni and student affairs offices of the four medical schools. The national data sets include the graduate medical education tracking file of the Association of American Medical Colleges and the physician master file maintained by the American Medical Association. The state data set used is the North Carolina Medical Board's file for physicians licensed in North Carolina. The format for Section I on the medical students is consistent with and comparable to the baseline information provided in the May 1994 report "Expanding the Pool of Generalist Physicians for North Carolina." The term "primary care" includes family medicine, general pediatric medicine, general internal medicine, internal medicine/pediatrics, and obstetrics/gynecology.

There is no comparable national database that can be used to longitudinally monitor the specialty practice and location of physician assistants, nurse practitioners, and nurse midwives. For the

present report, information on graduates and current enrollment has been provided by the state-operated schools that train nurse practitioners, nurse midwives, and physician assistants. UNC has nine mid-level provider programs: seven masters-level nurse practitioner programs at East Carolina University, The University of North Carolina at Chapel Hill, The University of North Carolina at Charlotte, The University of North Carolina at Greensboro, The University of North Carolina at Wilmington, Western Carolina University, and Winston Salem State University; one nurse midwifery program at East Carolina University and one master's physician assistant program at East Carolina University. The information on these graduates and students is included in this report as "Section II: Nurse Practitioners, Nurse Midwives, and Physician Assistants."

Section I: The Entry of Medical School Graduates into Careers in Primary Care

The General Assembly established goals for each of the four schools of medicine for entry of their graduates into primary care careers. For the UNC School of Medicine and the Brody School of Medicine at East Carolina University, the General Assembly established a target of 60 percent of the graduates to enter careers in primary care. For the Duke and Wake Forest University Schools of Medicine, the target set was 50 percent of graduates in primary care.

Although initial choice of residency is important, a more important indicator of entry into primary care is reflected in data on graduates five years after graduation. Table I-1 shows the percentage of 1999 graduates of each of the four schools who remained in a primary care specialty in 2004, five years after graduation. Of the 404 graduates in 1999 who are still in training or practice as of 2004, 219, or 54 percent, remained in one of the four primary care specialties. Again, only ECU, with 70 percent of its graduates in primary care five years after graduation, met the target established by the General Assembly. Table I-2 shows comparative data for state-supported graduates from Duke and Wake Forest who were in primary care training or practice five years after graduation.

Table I-3 shows the percentage of the graduates of the class of 2005 for each of the four schools of medicine who chose residency programs in one of the four primary care specialties of family medicine, pediatrics, internal medicine, and obstetrics and gynecology. In 2005, 208 out of the 407 total graduates, or 51 percent, entered primary care residency training. Only East Carolina University, at 77 percent, reached the target levels established by the General Assembly.

Both for new graduates and for those five years out of medical school, the percentage entering primary care from the four schools in North Carolina increased during the 1990's, but have declined slightly in recent years. (Figure 1) Although the four schools continue to offer a variety of curricular and community experiences to interest students in a primary care career, there is a strong national trend away from primary care that is also influencing the medical students in North Carolina. Factors recently pointed to that deter choices of primary care careers include the high levels of debt being incurred by many students, particularly in private schools; lower salary levels associated with primary care careers; and lifestyle choices being made by the current generation of medical students. Students are increasingly gravitating to specialties that allow them to control their hours and which have less call on nights and weekends. As a result, there has been a clear trend away from choosing primary care, particularly family medicine and general internal medicine. These national trends are reflected in the choices being made by students at the schools of medicine in North Carolina as well.

Section I: Medical Students

Table I-1

NC Medical Students – 1999 Graduates Initial Choice & Retention in Primary Care

| School | Total # of 1999 Graduates | Number of 1999 Graduates in Training or Practice as of 2004 | Number of 1999 Graduates in Training or Practice with an Initial Residency Choice of Primary Care | Number of 1999 Graduates in Training or Practice in Primary Care Patient Practice as of 2004 |
|--------------|------------------------------|---|--|--|
| Duke | 93 | 93 | 45 (48%) | 45 (48%) |
| ECU | 70 | 70 | 50 (71%) | 49 (70%) |
| UNC-CH | 133 | 132 | 76 (58%) | 74 (56%) |
| Wake Forest | 109 | 109 | 62 (57%) | 51 (47%) |
| | | | | |
| Total | 405 | 404 | 233 (58%) | 219 (54%) |

*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, and Obstetrics/Gynecology.

Sources:

Wake Forest Office of Student Affairs
UNC-CH Office of Student Affairs
Duke Office of Medical Education
American Medical Association

ECU Office of Medical Education
Association of American Medical Colleges
NC Medical Board

Compiled by:

NC AHEC Program
Cecil G. Sheps Center for Health Services Research

Section I: Medical Students (continued)

Table I-2
State Supported NC Students Attending
The Duke and Wake Forest Schools of Medicine – Choice and Retention in Primary Care Specialties*
1999 Graduates

| School | Total Number of 1999 State Supported Graduates in Training or Practice as of 2004 | Number of 1999 State Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care | Percent of 1999 State Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care | Number of 1999 State Supported Graduates in Training or Practice in Primary Care Patient Practice as of 2004 | Percent of 1999 State Supported Graduates in Training or Practice in Primary Care Patient Practice as of 2004 |
|-------------|---|---|--|--|---|
| Duke | 27 | 14 | 52% | 13 | 48% |
| Wake Forest | 54 | 31 | 57% | 29 | 54% |

*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, and Obstetrics/Gynecology.

Sources:

Wake Forest Office of Student Affairs
Association of American Medical Colleges
American Medical Association

Duke Office of Medical Education
NC Medical Board

Compiled by:

NC AHEC Program
Cecil G. Sheps Center for Health Services Research

Table I-3
NC Medical Students – Initial Choice of Primary Care*
2005 Graduates

| School | Total Number of 2005 Graduates | Number of 2005 Graduates not Entering Residency Training | Number of 2005 Graduates Entering Residency Training | Number of 2005 Graduates Entering Residency Training Who Chose A Primary Care Residency | Percent of 2005 Graduates Entering Residency Training Who Chose A Primary Care Residency |
|--------------|--------------------------------|--|--|---|--|
| Duke | 81 | 1 | 80 | 34 | 43% |
| ECU | 74 | 5 | 69 | 53 | 77% |
| UNC-CH | 153 | 1 | 152 | 76 | 50% |
| Wake Forest | 107 | 1 | 106 | 45 | 42% |
| | | | | | |
| Total | 415 | 8 | 407 | 208 | 51% |

*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, and Obstetrics/Gynecology.

Sources:

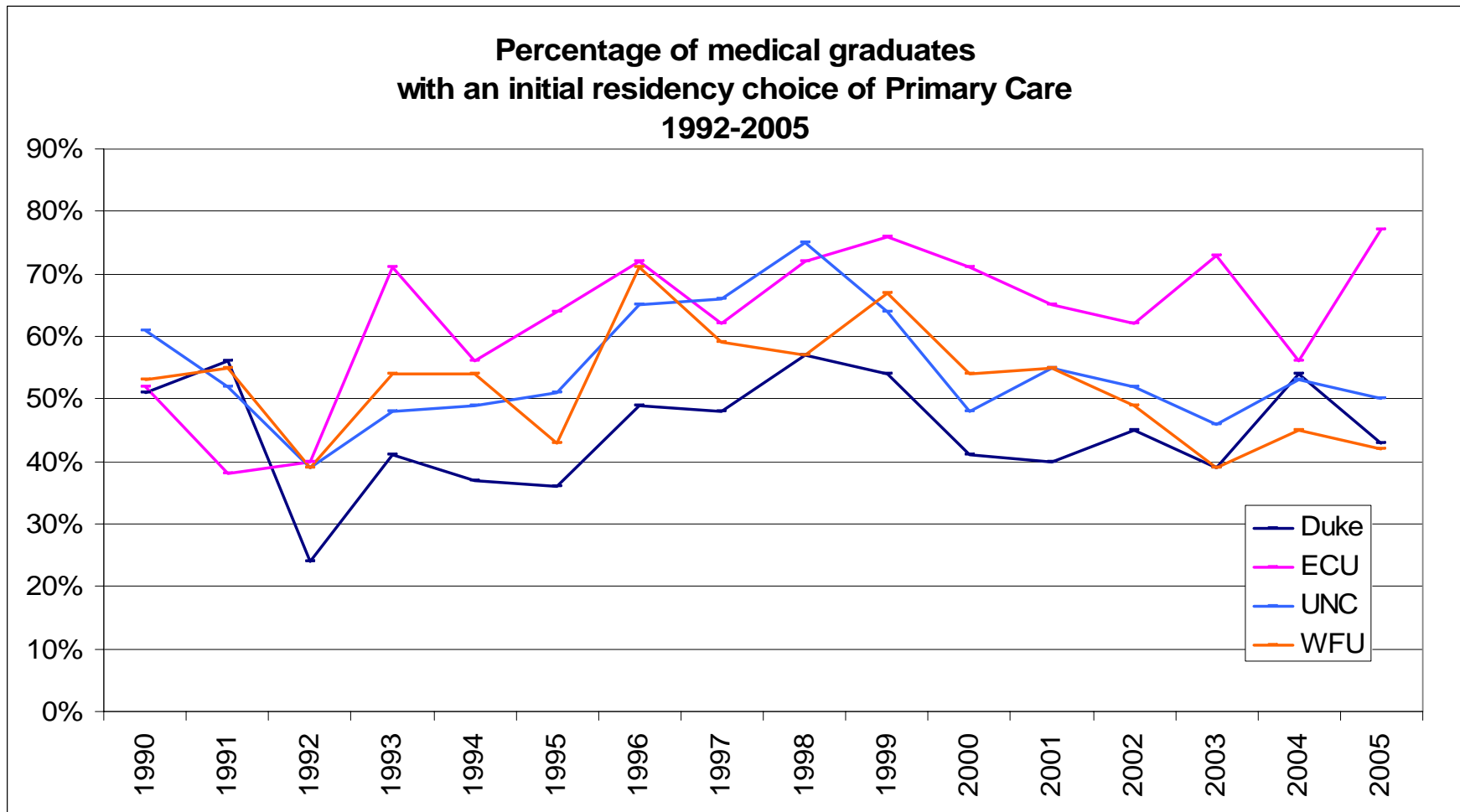
Wake Forest Office of Student Affairs
UNC-CH Office of Student Affairs
Duke Office of Medical Education
American Medical Association

ECU Office of Medical Education
Association of American Medical Colleges
NC Medical Board

Compiled by:

NC AHEC Program
Cecil G. Sheps Center for Health Services Research

Figure 1



Choice of Primary Care Career for Nurse Practitioner, Certified Nurse Midwife, and Physician Assistant Students

The 1995 North Carolina General Assembly required the UNC Board of Governors to monitor the progress of students in nurse practitioner, certified nurse midwife, and physician assistant programs in the state. Table II-1 show the retention five years after graduation of students in nurse practitioner programs who remain in a primary care career. Of the students graduated in 1999, 62 percent remain in primary care as of 2004.

Since 1999, the number of students in nurse practitioner programs in the UNC system has risen dramatically. Table II-2 shows the graduates of those programs who have entered primary care practice during the past two years. Not only has the number of students enrolled and the number of graduates increased significantly, the percentage of those graduates choosing careers in primary care has remained high. During the past two years, the percentage of graduates entering careers in primary care was 81 percent and 69 percent, respectively.

Tables II-3 and II-4 show enrollment in nurse practitioner programs in the UNC system, broken out by whether the program is an on-campus program or an off-campus program. The UNC system has invested significantly in off-campus distance degree programs in recent years, in order to provide additional opportunities for nurses to obtain graduate degrees while remaining in their home communities to work.

Enrollment in on-campus nurse practitioner programs has risen steadily during the last five years, and reached 387 in 2005. Off-campus enrollment also has grown and reached its highest level yet in 2005 at 110 students. This significant growth in both on- and off-campus enrollment in nurse practitioner programs in the state has resulted in the nurse practitioner profession being one of the fastest growing health professions in North Carolina over the last five years. Tables II-5 and II-6 show the enrollment growth for the certified nurse midwifery and physician assistant programs located at East Carolina University. Although enrollment in these programs has grown steadily, it has not been as dramatic as the growth in the nurse practitioner programs statewide.

Section II: Nurse Practitioners, Nurse Midwives, and Physician Assistants

Table II-1

North Carolina Nurse Practitioner Students: Retention in Primary Care 1997-1998 and 1998-1999 Graduates

| School of Nursing/Programs | Number of graduates | | Number of 97-98 and 98-99 Graduates in Primary Care as of | | Percentage of 97-98 and 98-99 Graduates in Primary Care as of | |
|---|---------------------|---------|---|------|---|------|
| | 1997-98 | 1998-99 | 2003 | 2004 | 2003 | 2004 |
| University of NC-Chapel Hill | | | | | | |
| Family Nurse Practitioner (Degree) | 17 | 39 | 13 | 24 | 76% | 62% |
| University of NC-Greensboro | | | | | | |
| Adult/Gerontological Nurse Practitioner (Degree&Post MSN) | 25 | 19 | 15 | 10 | 60% | 53% |
| East Carolina University | | | | | | |
| Family Nurse Practitioner (Post MSN) | 0 | 10 | 0 | 5 | NA | 50% |
| Family Nurse Practitioner (Degree) | 16 | 9 | 16 | 9 | 100% | 100% |

Source: UNC-CH School of Nursing, UNC-Greensboro School of Nursing, and East Carolina University School of Nursing

**Section II: Nurse Practitioners, Nurse Midwives,
and Physician Assistants (continued)**

Table II-2
N. C. Nurse Practitioner Students: Initial Practice Choice:
Graduates of 2003-2004 and 2004-2005

| Schools of Nursing/Programs | Number of Graduates | | Number of Graduates With Initial Practice Choice of Primary Care | | Percent of Graduates With Initial Practice Choice of Primary Care | |
|--|---------------------|------------|---|-----------|--|------------|
| | 2003-04 | 2004-05 | 2003-04 | 2004-05 | 2003-04 | 2004-05 |
| University of NC-Chapel Hill | | | | | | |
| Family Nurse Practitioner (Degree) | 20 | 18 | 14 | 7 | 70% | 39% |
| Family Nurse Practitioner (Post MSN) | 3 | 1 | 3 | 1 | 100% | 100% |
| Pediatric Nurse Practitioner (Degree) | 13 | 8 | 9 | 5 | 69% | 63% |
| Pediatric Nurse Practitioner (Post MSN) | 0 | 1 | 0 | 1 | | 100% |
| OB-GYN Nurse Practitioner (Degree) | 4 | 3 | 4 | 0 | 100% | 0 |
| OB-GYN Nurse Practitioner (Post MSN) | 0 | 2 | 0 | 1 | | 50% |
| Adult Nurse Practitioner (Degree) | 5 | 9 | 5 | 4 | 100% | 44% |
| Adult Nurse Practitioner (Post MSN) | 4 | 2 | 2 | 0 | 50% | 0 |
| UNC-CH Sub-Total | 49 | 44* | 37 | 19 | 76% | 43% |
| University of NC-Greensboro | | | | | | |
| Adult and Gerontological Nurse Practitioner (Degree & Post MSN) | 13 | 17 | 7 | 16 | 54% | 94% |
| University of NC-Charlotte | | | | | | |
| Family Nurse Practitioner | 9 | 27 | 9 | 21 | 100% | 77% |
| Adult Nurse Practitioner | 17 | 13 | 12 | 5 | 70% | 38% |
| East Carolina University | | | | | | |
| Family Nurse Practitioner (Degree) | 3 | 4 | 3 | 4 | 100% | 100% |
| Family Nurse Practitioner (Post MSN) | 0 | 2 | 0 | 2 | 100% | 100% |
| Western Carolina University | | | | | | |
| Family Nurse Practitioner (Degree & Post MSN) | 13 | 0 | 13 | 0 | 100% | 0 |
| University of NC - Wilmington | | | | | | |
| Family Nurse Practitioner | 6 | 9 | 5 | 6 | 83% | 67% |
| Winston Salem State University | | | | | | |
| Family Nurse Practitioner (Degree & Post MSN) | 14 | 23 | 14 | 23 | 100% | 100% |
| Total Nurse Practitioner Graduates | 124 | 139 | 100 | 96 | 81% | 69% |

* Students may be waiting certification

Source: UNC Schools of Nursing

Section II: Nurse Practitioners, Nurse Midwives, and Physician Assistants (continued)

Table II-3
Enrollment in State Operated Nurse Practitioner Programs: On-Campus 2000 to 2005

| Schools of Nursing/Programs | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|------------|------------|------------|------------|------------|------------|
| On Campus Enrollment | | | | | | |
| University of NC-Chapel Hill | | | | | | |
| Family Nurse Practitioner (Degree and Post MSN) | 39 | 64 | 56 | 64 | 66 | 60 |
| Pediatric Nurse Practitioner (Degree and Post MSN) | 15 | 34 | 36 | 28 | 23 | 21 |
| OB-GYN Nurse Practitioner (Degree and Post MSN) | 12 | 13 | 11 | 8 | 11 | 9 |
| Adult Nurse Practitioner (Degree and Post MSN) | 29 | 31 | 25 | 29 | 25 | 32 |
| Woman=s Health Nurse Practitioner (Post MSN) | 0 | 3 | 0 | 0 | 0 | 0 |
| Psych Mental Health Nurse Practitioner (Degree) | | | | 5 | 12 | 22 |
| UNC-CH Sub-Total | 95 | 145 | 128 | 134 | 137 | 144 |
| University of NC-Greensboro | | | | | | |
| Adult/Gerontological Nurse Practitioner (Degree&Post MSN) | 77 | 43 | 53 | 52 | 48 | 46 |
| University of NC-Charlotte | | | | | | |
| Family Nurse Practitioner | 42 | 37 | 35 | 48 | 56 | 41 |
| Adult Nurse Practitioner | 22 | 37 | 40 | 42 | 27 | 25 |
| East Carolina University | | | | | | |
| Family Nurse Practitioner | 31 | 37 | 30 | 0 | 0 | 0 |
| University of NC - Wilmington | | | | | | |
| Family Nurse Practitioner | 29 | 27 | 19 | 21 | 20 | 11 |
| Western Carolina University | | | | | | |
| Family Nurse Practitioner (Degree and Post MSN) | 29 | 42 | 17 | 28 | 30 | 40 |
| Winston Salem State University | | | | | | |
| Family Nurse Practitioner (Degree and Post MSN) | | | | 48 | 60 | 80 |
| Total on Campus Enrollment | 325 | 368 | 322 | 373 | 378 | 387 |

Source: UNC Schools of Nursing

**Section II: Nurse Practitioners, Nurse Midwives,
and Physician Assistants (continued)**

Table II-4
Enrollment in State Operated Nurse Practitioner Programs: Off-Campus
2000 to 2005

| Schools of Nursing/Programs | # Enrolled | | | | | |
|---|------------|-----------|-----------|-----------|-----------|------------|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| Off-Campus Enrollment | | | | | | |
| University of NC - Chapel Hill: Family Nurse Practitioner | 4 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | |
| | | | | | | |
| University of NC - Charlotte: Adult Nurse Practitioner | 7 | 7 | 5 | 5 | 0 | 0 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| East Carolina University: Family Nurse Practitioner | 24 | 20 | 7 | 35 | 67 | 110 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Total Off-Campus Enrollment | 35 | 27 | 12 | 40 | 67 | 110 |

Source: UNC Schools of Nursing

**Section II: Nurse Practitioners, Nurse Midwives,
and Physician Assistants (continued)**

Table II-5
Enrollment in State Operated Nurse Midwifery Programs:
2000-2005

| | Enrollment | | | | | |
|---|------------|-----------|-----------|-----------|-----------|-----------|
| Nurse Midwifery Programs | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| East Carolina University | | | | | | |
| On-Campus Enrollment | 12 | 11 | 0 | 0 | 0 | 0 |
| Off-Campus Enrollment | 4 | 3 | 13 | 16 | 25 | 16 |
| Total Nurse Midwifery Enrollment | 16 | 14 | 13 | 16 | 25 | 16 |

Source: ECU School of Nursing

Table II-6
Enrollment in State Operated Physician Assistant Programs
2000-2005

| | Enrollment | | | | | |
|---|------------|-----------|-----------|-----------|-----------|-----------|
| Physician Assistant Programs | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| East Carolina University | | | | | | |
| On-Campus Enrollment | 58 | 59 | 56 | 54 | 58 | 52 |
| Off-Campus Enrollment | 20 | 12 | 30 | 42 | 31 | 27 |
| Total Physician Assistant Enrollment | 78 | 71 | 86 | 96 | 89 | 79 |

Source: ECU Department of PA Studies

**Section II: Nurse Practitioners, Nurse Midwives,
and Physician Assistants (continued)**

Table II-7
ECU Nurse Midwifery Students: Initial Practice Choice
2004-2005 Graduates

| School of Nursing | Total Number of Graduates | Number of Graduates Who Have Not entered Practice | Number of Graduates who have entered practice | Number of Graduates with Initial practice choice of primary care | Percent of Graduates with initial practice choice of primary care |
|------------------------------|--------------------------------------|--|--|---|--|
| | 2004-2005 | 2004-2005 | 2004-2005 | 2004-2005 | 2004-2005 |
| East Carolina University | 11 | 3 | 8 | 8 | 100% |

Source: ECU School of Nursing

**Section II: Nurse Practitioners, Nurse Midwives,
and Physician Assistants (continued)**

Table II-8
ECU Physician Assistant Students: Initial Practice Choice
2004-2005 Graduates

| | Total Number of Graduates | Number of Graduates Who Have Not Entered Practice | Number of Graduates Who Have Entered Practice | Number of Graduates with Initial Practice Choice of Primary Care | Percent of Graduates with Initial Practice Choice of Primary Care |
|-----------------------------|--------------------------------------|--|--|---|--|
| | 2004-2005 | 2004-2005 | 2004-2005 | 2004-2005 | 2004-2005 |
| East Carolina University | 34 | 7* | 27 | 20* ¹ | 58.8 ¹ |

* Some graduates are in the process of taking the national certification examination

¹ - Only those students who have reported back to ECU

Source: ECU Department of PA Studies

Conclusion

This report responds to the mandate of the 1993 and 1995 sessions of the General Assembly to monitor the progress of graduates of the schools of medicine into primary care, as well as the graduates of the programs in the UNC schools for nurse practitioners, certified nurse midwives and physician assistants. With the exception of East Carolina University medical graduates, the interest in primary care has declined somewhat among medical school graduates in the state. This decline matches a national trend, but needs to be monitored since a number of counties, particularly in rural and economically depressed areas of the state, are reporting increasing shortages of primary care physicians over the last several years. Because of the work of the medical and other health science schools, the North Carolina AHEC Program, the State Office of Rural Health, and related programs, North Carolina's rural areas continue to have a higher supply of physicians than comparable rural areas elsewhere in the country. Nevertheless, it will be important to monitor these trends in the coming years to assure that there still remains a steady supply of primary care providers to meet the needs of North Carolina communities.