

**Monitoring the Progress of
North Carolina Graduates
Entering Primary Care Careers**

November 2001

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

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 mandated that each of the state's four schools of medicine develop a plan with goals for expanding the 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 ECU and UNC Schools of Medicine at 60 percent of graduates. 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 medical schools and state-operated health professional schools towards increasing the number and proportion of graduates entering primary care. This annual report was prepared in accordance with this statute. The charts contain data for 2001 and also comparative data from the report "Monitoring the Progress of North Carolina Graduates Entering Primary Care Careers" that the Board submitted to the North Carolina General Assembly in November 2000.

The Data

Section I of this report provides information from the Wake Forest University School of Medicine, East Carolina University School of Medicine, Duke University Medical Center 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 have been provided by the state-operated schools that train nurse practitioners, nurse midwives, and physician assistants. UNC has eight mid-level provider programs: six 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, and Western Carolina University; one nurse midwifery program at East Carolina University and one baccalaureate 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: Medical Students

Section I provides comparative data for medical students graduating in the Classes of 1994 and 1995 in tables numbered I-1, I-2, and I-3. Table I-4 presents information about graduates of the classes of 2000 and 2001 whose initial choice for residency training was in a primary care area. The tables are organized as follows:

Table I-1 contains information on *the initial choice of primary care* for medical students graduating in 1994 and 1995.

Table I-2 contains information on *the retention in primary care* for medical students graduating in 1994 and 1995.

Table I-3 shows *the initial choice and retention in primary care* specialties for those state-supported North Carolina residents who graduated in the Wake Forest and Duke Classes of 1994 and 1995.

Table I-4 presents information about *the initial choice of primary care* for 2000 and 2001 graduates of the four medical schools in North Carolina.

The data in Table I-1 show that 220, or 48% of the 459 medical school graduates in 1995 chose an initial residency in primary care. The percentages were: Duke 36%, ECU 64%, UNC-CH 51%, and Wake Forest 43%. Overall, the

initial choice of primary care specialties for all the graduates of 1994 and 1995 are similar.

Table I-2 shows the percentage of those same 1994 and 1995 graduates who were in primary care patient practice as of 1999 and 2000. In 1999, the percentages for the classes of 1994 were: Duke 28%, ECU 51%, UNC-CH 51%, and Wake Forest 44%. In 2000, the percentages for the classes of 1995 were: Duke 29%, ECU 60%, UNC-CH 51%, and Wake Forest 50%.

Table I-3 shows that the percentage of state supported graduates from Duke and Wake Forest who were in primary care patient practice as of 1999 and 2000. In 2000, the percentage of the state supported graduates of 1995 at Duke and Wake Forest who were in primary care patient practice was 50%.

Table I-4 focuses on the initial choice of primary care for the 2000 and 2001 graduates of North Carolina medical schools who entered residency training. In 2000, 222 out of 431 graduates or 52% entered primary care residency training. In 2001, 222 out of 416 graduates or 53% entered primary care residency training. The number and percentage of the class of 2001 who choose primary care residencies were: Duke 34 graduates or 40%; ECU 44 graduates or 65%, UNC-CH 85 graduates or 55% and Wake Forest 59 graduates or 55%.

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

Section II presents information provided by state-operated health professional schools that train physician assistants, nurse practitioners, and nurse midwives concerning choice of and retention in primary care.

Table II-1 presents *the retention of nurse practitioner students in primary care*.

Table II-2 presents *the initial practice choice* of the 1999-2000 and 2000-2001 graduates of nurse practitioner programs.

Tables II-3, II-4, and II-5 present *enrollment* in state-operated nurse practitioner and nurse midwifery programs.

Table II-6 presents the 1998, 1999, 2000, and 2001 *enrollment* for the ECU Physician Assistant Program.

Table II-7 shows *the initial practice choice* of the 1999-2000 and 2000-2001 ECU nurse midwifery graduates.

Table II-8 shows *the initial practice choice* of the 1999-2000 and 2000-2001 ECU physician assistant students.

The UNC-Chapel Hill Family Nurse Practitioner program is the only program that has been established long enough to have five-year retention data. Table II-1 presents the retention in primary care for UNC-CH graduates completing training in 1993-1994 and 1994-1995. The number of graduates during this time period is still quite small.

Table II-2 shows the number of graduates in state-operated master's level and post master's level programs in 1998-2000 and 2000-2001 and the initial practice choice of these graduates. These programs are located at UNC-Chapel Hill, UNC-Greensboro, UNC-Charlotte, East Carolina University, and UNC-Wilmington. During the period 1999 through 2001 the number of graduates from these programs grew considerably. In 1999-2000, 71% of the graduates chose primary care practice and again in 2000-2001, 71% chose primary care practice.

Table II-3 and II-4 show on-campus and off-campus enrollment in state-operated nurse practitioner programs over the last five years which includes new programs at UNC-Wilmington and Western Carolina University. In the year 2001 on-campus and total enrollment in nurse practitioner programs increased.

Table II-5 and II-6 show the enrollment pattern in state operated nurse midwifery and physician assistant programs located at East Carolina University.

Table II-7 shows the initial practice choice of the 1999-2000 and 2000-2001 graduates of the ECU nurse midwifery program. There was a decline in the number of percentage of graduates in 2000-2001 selecting primary care practice.

Table II-8 shows the initial practice choice of the graduates of the ECU physician assistant program. For the 2001 graduates, 13 of 23 graduates (57%) went into primary care practice.

Section I: Medical Students

Table I-1

North Carolina Medical Students-Initial Choice of Primary Care for 1994 and 1995 Graduates in Training or Practice in 1999 and 2000

| School | Total Number of Graduates | | Number of 1994 and 1995 Graduates <u>not</u> in Training or Practice as of | | Number of 1994 and 1995 Graduates in Training or Practice as of | | Number of 1994 & 1995 Graduates in Training or Practice with an <u>Initial Residency Choice</u> of Primary Care | | Percent of 1994 & 1995 Graduates in Training or Practice with an Initial Residency Choice of Primary Care | |
|--------------|---------------------------|------|--|------|---|------|---|------|---|------|
| | 1994 | 1995 | 1999 | 2000 | 1999 | 2000 | 1994 | 1995 | 1994 | 1995 |
| Duke | 110 | 106 | 3 | 1 | 107 | 105 | 40 | 38 | 37% | 36% |
| ECU | 72 | 73 | 4 | 1 | 68 | 72 | 38 | 46 | 56% | 64% |
| UNC-CH | 159 | 169 | 2 | 4 | 157 | 165 | 77 | 84 | 49% | 51% |
| Wake Forest | 94 | 117 | 0 | 2 | 94 | 115 | 51 | 50 | 54% | 43% |
| Meharry | 1 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 100% | 100% |
| TOTAL | 436 | 467 | 9 | 8 | 427 | 459 | 207 | 220 | 48% | 48% |

*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
 N. C. Medical Board
 Meharry Medical College

Compiled by:
 N. C. AHEC Program
 Cecil G. Sheps Center for Health Services Research

Section I: Medical Students (continued)

Table I-2
 North Carolina Medical Students-Retention in Primary Care*
 1994 and 1995 Graduates

| School | Number of 1994 and 1995 Graduates in Training or Practice as of | | Number of 1994 and 1995 Graduates in Training or Practice with an Initial Residency Choice of Primary Care | | Percent of 1994 and 1995 Graduates in Training or Practice with an Initial Residency Choice of Primary Care | | Number of 1994 and 1995 Graduates in Training or Practice in Primary Care Patient Practice as of | | Percent of 1994 and 1995 Graduates in Training or Practice in Primary Care Patient Practice as of | |
|-------------|---|------|--|------|---|------|--|------|---|------|
| | 1999 | 2000 | 1994 | 1995 | 1994 | 1995 | 1999 | 2000 | 1999 | 2000 |
| Duke | 107 | 105 | 40 | 38 | 37% | 36% | 30 | 30 | 28% | 29% |
| ECU | 68 | 72 | 38 | 46 | 56% | 64% | 35 | 43 | 51% | 60% |
| UNC-CH | 157 | 165 | 77 | 84 | 49% | 51% | 80 | 84 | 51% | 51% |
| Wake Forest | 94 | 115 | 51 | 50 | 54% | 43% | 41 | 57 | 44% | 50% |
| Meharry | 1 | 2 | 1 | 2 | 100% | 100% | 1 | 2 | 100% | 100% |
| TOTAL | 427 | 459 | 207 | 220 | 48% | 48% | 187 | 216 | 44% | 47% |

*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
 N. C. Medical Board
 Meharry Medical College

Compiled by:

N. C. AHEC Program
 Cecil G. Sheps Center for Health Services Research

Section I: Medical Students (continued)

Table I-3
 State-Supported North Carolinians Attending
 The Wake Forest and Duke Schools of Medicine - Choice and Retention in Primary Care Specialties*
 1994 and 1995 Graduates and Training or Practice in 1999 and 2000

| School | Number of 1994 and 1995 State Supported Graduates in Training or Practice as of | | Number of 1994 and 1995 State-Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care as of | | Percent of 1994 and 1995 State-Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care as of | | Number of 1994 and 1995 State-Supported Graduates in Training or Practice in Primary Care Patient Practice as of | | Percent of 1994, 1995 State-Supported Graduates in Training or Practice in Primary Care Patient Practice as of | |
|-------------|---|------|--|------|---|------|--|------|--|------|
| | 1999 | 2000 | 1994 | 1995 | 1994 | 1995 | 1999 | 2000 | 1999 | 2000 |
| Duke | 19 | 37 | 7 | 21 | 37% | 57% | 5 | 16 | 26% | 43% |
| Wake Forest | 48 | 55 | 28 | 28 | 58% | 51% | 24 | 30 | 50% | 55% |
| TOTAL | 67 | 92 | 35 | 49 | 52% | 53% | 29 | 46 | 43% | 50% |

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

Sources:

Wake Forest Office of Student Affairs
 Duke Office of Medical Education
 ECU Office of Medical Education
 Meharry Medical College

American Medical Association
 UNC-CH Office of Student Affairs
 Association of American Medical Colleges
 N. C. Medical Board

Compiled by:
 N. C. AHEC Program
 Cecil G. Sheps Center for Health Services Research

Section I: Medical Students (continued)

Table I-4
 North Carolina Medical Students-Initial Choice of Primary Care*
 for 2000 and 2001 Graduates

| School | Total # of Graduates | | Number of Graduates <u>not</u> Entering Residency Training as of | | Number of Graduates Entering Residency Training | | Number of 2000 & 2001 Graduates Entering Residency Training Who Chose A Primary Care Residency | | % of 2000 and 2001 Graduates Entering Residency Training Who Chose A Primary Care Residency | |
|--------------|----------------------|------------|--|----------|---|------------|--|------------|---|------------|
| | 2000 | 2001 | 2000 | 2001 | 2000 | 2001 | 2000 | 2001 | 2000 | 2001 |
| Duke | 95 | 84 | 0 | 0 | 95 | 84 | 39 | 34 | 41% | 40% |
| ECU | 72 | 68 | 0 | 0 | 72 | 68 | 51 | 44 | 71% | 65% |
| UNC-CH | 166 | 163 | 6 | 8 | 160 | 155 | 76 | 85 | 48% | 55% |
| Wake Forest | 105 | 108 | 3 | 1 | 102 | 107 | 55 | 59 | 54% | 55% |
| Meharry | 2 | 2 | 0 | 0 | 2 | 2 | 1 | 0 | 50% | 0% |
| TOTAL | 440 | 425 | 9 | 9 | 431 | 416 | 222 | 222 | 52% | 53% |

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

Sources:

Wake Forest Office of Student Affairs
 Duke Office of Medical Education
 ECU Office of Medical Education
 Meharry Medical College

UNC-CH Office of Student
 American Medical Association
 Association of American Medical Colleges
 N. C. Medical Board

Compiled by:
 N. C. AHEC Program
 Cecil G. Sheps Center for Health Services Research

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

Table II-1
North Carolina Nurse Practitioner Students: Retention in Primary
Care 1993-1994 and 1994-1995 Graduates

| School of Nursing/Programs | Number of Graduates | | Number of 93-94 and 94-95 Graduates Primary Care as of | | % of 93-94 and 94-95 Graduates in Primary Care as of | |
|------------------------------------|---------------------|-------|--|------|--|------|
| | 93-94 | 94-95 | 1999 | 2000 | 1999 | 2000 |
| University of NC-Chapel Hill | | | | | | |
| Family Nurse Practitioner (Degree) | 16 | 15* | 9 | 5 | 56% | 33% |

* 7 graduates missing location/specialty information

Source: UNC-CH 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 1999-2000 and 2000-2001

| 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 | |
|---|---------------------|------------|--|-----------|---|------------|
| | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 |
| University of NC-Chapel Hill | | | | | | |
| Family Nurse Practitioner (Degree) | 19 | 25 | 10 | 18 | 53% | 72% |
| Family Nurse Practitioner (Post MSN) | 3 | 3 | 2 | 3 | 67% | 100% |
| Pediatric Nurse Practitioner (Degree) | 6 | 6 | 4 | 5 | 67% | 83% |
| Pediatric Nurse Practitioner (Post MSN) | 0 | 2 | 0 | 1 | NA | 50% |
| OB-GYN Nurse Practitioner (Degree) | 2 | 6 | 1 | 3 | 50% | 100% |
| OB-GYN Nurse Practitioner (Post MSN) | 1 | 1 | 1 | 1 | 100% | 50% |
| Adult Nurse Practitioner (Degree) | 9 | 8 | 5 | 4 | 56% | 67% |
| Adult Nurse Practitioner (Post MSN) | 1 | 3 | 1 | 2 | 100% | 69% |
| UNC-CH Sub-Total | 41 | 54 | 24 | 37 | 59% | 69% |
| University of NC-Greensboro | | | | | | |
| Adult and Gerontological Nurse Practitioner (Degree & Post MSN) | 0 | 36 | 0 | 24 | 0 | 67% |
| University of NC-Charlotte | | | | | | |
| Family Nurse Practitioner | 19 | 16 | 15 | 13 | 79% | 81% |
| East Carolina University | | | | | | |
| Family Nurse Practitioner (Degree) | 11 | 15 | 11 | 15 | 100% | 100% |
| Family Nurse Practitioner (Post MSN) | 0 | 6 | 0 | 6 | NA | 100% |
| University of NC - Wilmington | | | | | | |
| Family Nurse Practitioner | 9 | 12 | 7 | 4 | 78% | 33% |
| Total Nurse Practitioner Graduates | 80 | 139 | 57 | 99 | 71% | 71% |

Source: UNC Schools of Nursing

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

Table II-3
Enrollment in State Operated Nurse Practitioner Programs: On-Campus
1997 to 2001

| Schools of Nursing/Programs | # Enrolled | | | | |
|---|------------|------------|------------|------------|------------|
| | 1997 | 1998 | 1999 | 2000 | 2001 |
| On Campus Enrollment | | | | | |
| University of NC-Chapel Hill | | | | | |
| Family Nurse Practitioner (Degree and Post MSN) | 55 | 65 | 64 | 39 | 64 |
| Pediatric Nurse Practitioner (Degree and Post MSN) | 19 | 18 | 14 | 15 | 34 |
| OB-GYN Nurse Practitioner (Degree and Post MSN) | 9 | 9 | 9 | 12 | 13 |
| Adult Nurse Practitioner (Degree and Post MSN) | 24 | 37 | 31 | 29 | 31 |
| Woman's Health Nurse Practitioner (Post MSN) | 0 | 0 | 0 | 0 | 3 |
| UNC-CH Sub-Total | 107 | 129 | 118 | 95 | 145 |
| University of NC-Greensboro | | | | | |
| Adult/Gerontological Nurse Practitioner (Degree & Post MSN) | 60 | 74 | 75 | 77 | 43 |
| University of NC-Charlotte | | | | | |
| Family Nurse Practitioner | 48 | 60 | 60 | 42 | 37 |
| Adult Nurse Practitioner | | | | 22 | 37 |
| East Carolina University | | | | | |
| Family Nurse Practitioner | 32 | 56 | 42 | 31 | 37 |
| University of NC - Wilmington | | | | | |
| Family Nurse Practitioner | 0 | 20 | 29 | 29 | 27 |
| Western Carolina University | | | | | |
| Family Nurse Practitioner (Degree and Post MSN) | 0 | 0 | 34 | 29 | 42 |
| Total On Campus Enrollment | 247 | 339 | 358 | 325 | 368 |

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
1997 to 2001

| Schools of Nursing/Programs | # Enrolled | | | | |
|---|------------|-----------|-----------|-----------|-----------|
| | 1997 | 1998 | 1999 | 2000 | 2001 |
| Off-Campus Enrollment | | | | | |
| University of NC - Chapel Hill: Family Nurse Practitioner | 24 | 22 | 14 | 4 | 0 |
| | | | | | |
| University of NC – Charlotte: Adult Nurse Practitioner | | | | 7 | 7 |
| | | | | | |
| East Carolina University: Family Nurse Practitioner | 0 | 15 | 13 | 24 | 20 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Off-Campus Enrollment | 24 | 37 | 27 | 35 | 27 |

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:
1996-2000

| Nurse Midwifery Programs | # Enrolled | | | | |
|---|------------|-----------|-----------|-----------|-----------|
| | 1997 | 1998 | 1999 | 2000 | 2001 |
| East Carolina University | | | | | |
| On-Campus Enrollment | 25 | 18 | 10 | 12 | 11 |
| Off-Campus Enrollment | 0 | 1 | 0 | 4 | 3 |
| Total Nurse Midwifery Enrollment | 25 | 19 | 10 | 16 | 14 |

Source: ECU School of Nursing

Table II-6
Enrollment in State Operated Physician Assistant Programs
1998-2001

| Physician Assistant Programs | # Enrolled | | | |
|---|------------|-----------|-----------|-----------|
| | 1998 | 1999 | 2000 | 2001 |
| East Carolina University | | | | |
| On-Campus Enrollment | 41 | 46 | 58 | 59 |
| Off-Campus Enrollment | 8 | 8 | 20 | 12 |
| Total Physician Assistant Enrollment | 49 | 54 | 78 | 71 |

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
1999-2001 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 | |
|--------------------------|---------------------------|-----------|---|-----------|---|-----------|--|-----------|---|-----------|
| | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 |
| East Carolina University | 8 | 5 | 0 | 3 | 8 | 2 | 8 | 2 | 100% | 40% |

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
1999-2001 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 | |
|--------------------------|---------------------------|-----------|---|-----------|---|-----------|--|-----------|---|-----------|
| | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 | 1999-2000 | 2000-2001 |
| East Carolina University | 18 | 23 | 0 | 0 | 18 | 23 | 5 | 13 | 28% | 57% |

Source: ECU Department of PA Studies