

Monitoring the Progress of North Carolina Graduates Entering Primary Care Careers

November 2006

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 2006 and also show 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.

* Table I-1 shows the percentage of 2000 graduates of each of the four schools who made an initial choice of primary care.

* Table I-2 shows the same graduates and the percentage that remained in primary care five years (in 2005) after graduation. Of the 415 graduates in 2000 who are still in training or practice as of 2005, 206, or 51 percent, remained in one of the four primary care specialties.

* Table I-3 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-4 shows the percentage of the graduates of the class of 2006 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 2006, 208 out of the 417 total graduates, or 49 percent, entered primary care residency training. Only ECU, with 67 percent, met the target established by the General Assembly.

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. As figure 1 shows, the percentage of physicians who graduated from NC medical schools practicing in primary care five years after graduation increased gradually during the 1990's. The percentage of the class of 2000 entering primary care seems to have plateaued.

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 – Initial Choice of Primary Care*
2000 Graduates

School	Total Number of 2000 Graduates	Number of 2000 Graduates not in Training or Practice as of 2005	Number of 2000 Graduates in Training or Practice as of 2005	Number of 2000 Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Percent of 2000 Graduates in Training or Practice with an Initial Residency Choice of Primary Care
Duke	94	4	90	47	52%
ECU	71	2	69	52	75%
UNC-CH	146	4	142	78	55%
Wake Forest	104	2	102	57	56%

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

Sources:

Wake Forest SOM 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

Table I-2

NC Medical Students – Retention in Primary Care*
2000 Graduates

School	Total Number of 2000 Graduates in Training or Practice as of 2005	Number of 2000 Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Percent of 2000 Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Number of 2000 Graduates in Training or Practice in Primary Care Patient Practice as of 2005	Percent of 2000 Graduates in Training or Practice in Primary Care Patient Practice as of 2005
Duke	90	47	52%	34	38%
ECU	69	52	75%	50	72%
UNC-CH	142	78	55%	73	51%
Wake Forest	102	57	56%	49	48%

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

Sources:

Wake Forest SOM 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

Table I-3

State Supported North Carolinians Attending
The Duke and Wake Forest Schools of Medicine – Choice and Retention in Primary Care Specialties*
2000 Graduates

School	Total number of 2000 State Supported Graduates in Training or Practice as of 2005	Number of 2000 State Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Percent of 2000 State Supported Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Number of 2000 State Supported Graduates in Training or Practice in Primary Care Patient Practice as of 2005	Percent of 2000 State Supported Graduates in Training or Practice in Primary Care Patient Practice as of 2005
Duke	26	15	58%	9	35%
Wake Forest	55	36	65%	32	58%

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

Wake Forest SOM Office of Student Affairs
Duke Office of Medical Education
American Medical Association

Sources:

NC Medical Board
Association of American Medical Colleges

Compiled by:

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

Section I: Medical Students

Table I-4

NC Medical Students – Initial Choice of Primary Care*
2006 Graduates

School	Total Number of 2006 Graduates	Number of 2006 Graduates Not Entering Residency Training	Number of 2006 Graduates Entering Residency Training	Number of 2006 Graduates Entering Residency Training Who Chose a Primary Care Residency	Percent of 2006 Graduates Entering Residency Training Who Chose a Primary Care Residency
Duke	105	0	105	43	41%
ECU	68	2	66	44	67%
UNC-CH	146	7	139	75	54%
Wake Forest	98	1	97	46	47%

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

Sources:

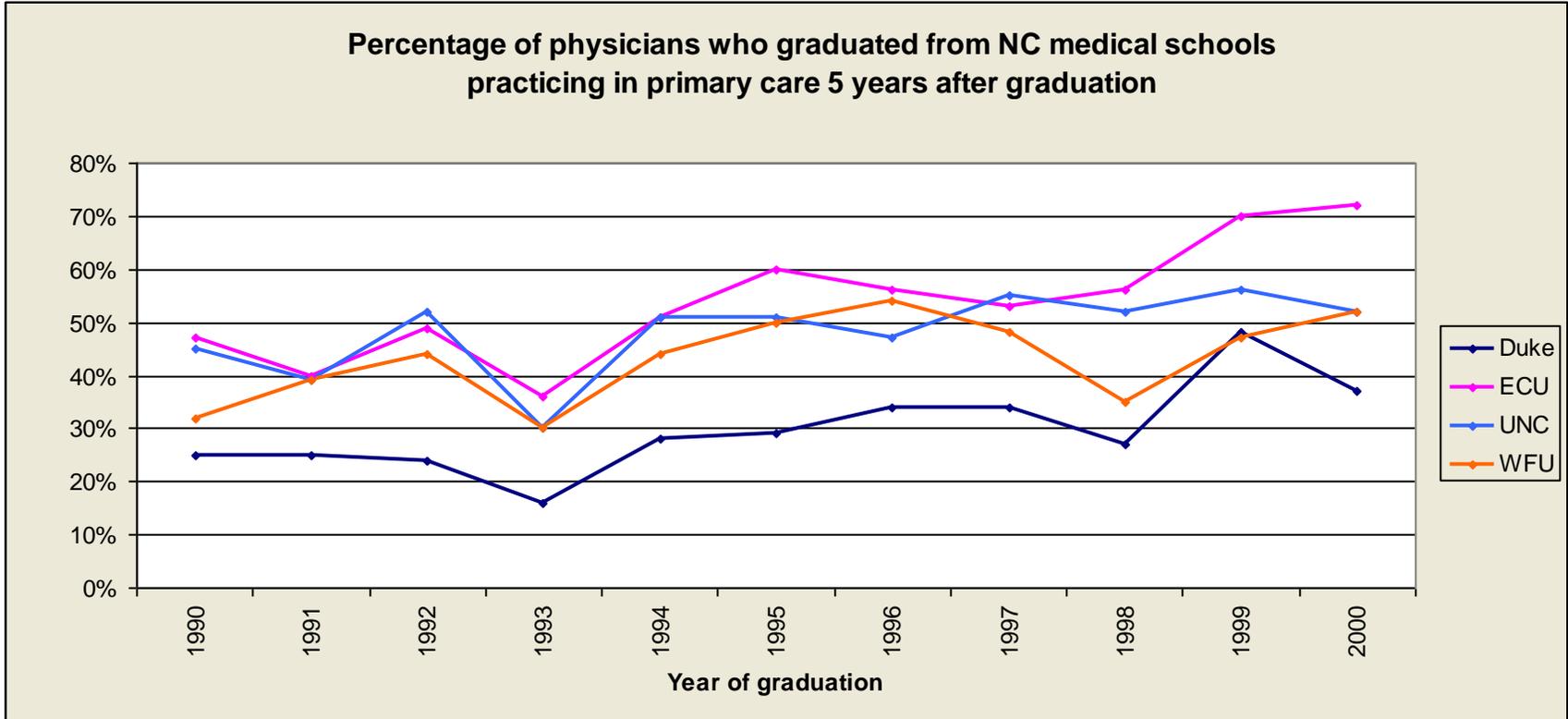
Wake Forest SOM Office of Student Affairs
 UNC-CH Office of Student Affairs
 Duke Office of Medical Education
 American Medical Association

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 2000, 75% percent remain in primary care as of 2005.

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 (2005 & 2006), the percentage of graduates entering careers in primary care was 69 percent and 73 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 continues to grow, reaching 433 in 2006 (387 in 2005). Off-campus enrollment also has grown and reached its highest level yet in 2006 at 160 students (110 students in 2005). 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. Nurse midwifery showed an increase from last year, but their enrollment is comparable to that of 2004. On-campus enrollment at ECU PA Program has remained steady at 53 students, while off-campus enrollment has dropped from 27 to 10 students in 2006.

Tables II-7 and II-8 show initial practice choice for both ECU nurse midwifery and PA programs in 2006.

Table II-1
North Carolina Nurse Practitioner Students: Retention in Primary Care 1998-1999 and 1999-2000 Graduates

School of Nursing/Programs	Number of graduates		Number of 98-99 and 99-00 Graduates in Primary Care as of		Percentage of 98-99 and 99-00 Graduates in Primary Care as of	
	1998-99	1999-00	2004	2005	2004	2005
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	39	20	24	11*	62%	55%
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	19	34	10	19	53%	56%
East Carolina University						
Family Nurse Practitioner (Post MSN)	10	1	5	1	50%	100%
Family Nurse Practitioner (Degree)	9	21	9	18	100%	86%
University of NC-Charlotte						
Family Nurse Practitioner	23	19	unknown	15	unknown	79%

Source: Schools of Nursing at UNC-CH, UNC-G, ECU, UNC-W, UNC-C & WCU.

* Unable to locate all graduates

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

Table II-2
N. C. Nurse Practitioner Students: Initial Practice Choice:
Graduates of 2004-2005 and 2005-2006

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	
	2004-05	2005-06	2004-05	2005-06	2004-05	2005-06
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	18	25	7	24	39%	96%
Family Nurse Practitioner (Post MSN)	1	1	1	1	100%	100%
Pediatric Nurse Practitioner (Degree)	8	7	5	4	63%	57%
Pediatric Nurse Practitioner (Post MSN)	1	1	1	1	100%	100%
OB-GYN Nurse Practitioner (Degree)	3	8	0	6	0	75%
OB-GYN Nurse Practitioner (Post MSN)	2	0	1	0	50%	
Adult Nurse Practitioner (Degree)	9	8	4	5	44%	63%
Adult Nurse Practitioner (Post MSN)	2	0	0	0	0	
UNC-CH Sub-Total	44*	50	19	41	43%	82%
University of NC-Greensboro						
Adult and Gerontological Nurse Practitioner (Degree & Post MSN)	17	9	16	3	94%	33%
University of NC-Charlotte						
Family Nurse Practitioner	27	12*	21	5	77%	42%
Adult Nurse Practitioner	13	9	5	7	38%	78%
East Carolina University						
Family Nurse Practitioner (Degree)	4	8	4	6	100%	75%
Family Nurse Practitioner (Post MSN)	2	2	2	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	9	5	6	1	67%	20%
Winston Salem State University						
Family Nurse Practitioner (Degree & Post MSN)	23	20	23	19	100%	95%
Total Nurse Practitioner Graduates	139	115	96	84	69%	73%

* 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 2001 to 2006

Schools of Nursing/Programs On Campus Enrollment	2001	2002	2003	2004	2005	2006
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree and Post MSN)	64	56	64	66	60	46
Pediatric Nurse Practitioner (Degree and Post MSN)	34	36	28	23	21	20
OB-GYN Nurse Practitioner (Degree and Post MSN)	13	11	8	11	9	9
Adult Nurse Practitioner (Degree and Post MSN)	31	25	29	25	32	38
Woman's Health Nurse Practitioner (Post MSN)	3	0	0	0	0	0
Psych Mental Health Nurse Practitioner (Degree)			5	12	22	34
UNC-CH Sub-Total	145	128	134	137	144	147
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	43	53	52	48	46	75
University of NC-Charlotte						
Family Nurse Practitioner	37	35	48	56	41	40
Adult Nurse Practitioner	37	40	42	27	25	32
East Carolina University						
Family Nurse Practitioner	37	30	0	0	0	0
University of NC - Wilmington						
Family Nurse Practitioner	27	19	21	20	11	16
Western Carolina University						
Family Nurse Practitioner (Degree and Post MSN)	42	17	28	30	40	40
Winston Salem State University						
Family Nurse Practitioner (Degree and Post MSN)			48	60	80	83
Total on Campus Enrollment	368	322	373	378	387	433

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
2001 to 2006

Schools of Nursing/Programs	# Enrolled					
	2001	2002	2003	2004	2005	2006
Off-Campus Enrollment						
University of NC - Chapel Hill: Family Nurse Practitioner	0	0	0	0	0	0
University of NC - Charlotte: Adult Nurse Practitioner	7	5	5	0	0	0
East Carolina University: Family Nurse Practitioner	20	7	35	67	110	128
Adult Nurse Practitioner						32
Total Off-Campus Enrollment	27	12	40	67	110	160

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:
2001-2006

	Enrollment					
Nurse Midwifery Programs	2001	2002	2003	2004	2005	2006
East Carolina University						
On-Campus Enrollment	11	0	0	0	0	0
Off-Campus Enrollment	3	13	16	25	16	24
Total Nurse Midwifery Enrollment	14	13	16	25	16	24

Source: ECU School of Nursing

Table II-6
Enrollment in State Operated Physician Assistant Programs
2001-2006

	Enrollment					
Physician Assistant Programs	2001	2002	2003	2004	2005	2006
East Carolina University						
On-Campus Enrollment	59	56	54	58	52	53
Off-Campus Enrollment	12	30	42	31	27	10
Total Physician Assistant Enrollment	71	86	96	89	79	63

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
2005-2006 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
	2005-2006	2005-2006	2005-2006	2005-2006	2005-2006
East Carolina University	4	1	3	3	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
2005-2006 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
	2005-2006	2005-2006	2005-2006	2005-2006	2005-2006
East Carolina University	78	3	75	36	46%

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.