

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

**November 2004**

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 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 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 toward 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 2004 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 2003.

### **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 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 1997 and 1998 in tables numbered I-1, I-2, and I-3. Table I-4 presents information about graduates of the classes of 2003 and 2004 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 1997 and 1998.

Table I-2 contains information on *the retention in primary care* for medical students graduating in 1997 and 1998.

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 1997 and 1998.

Table I-4 presents information about *the initial choice of primary care* for 2003 and 2004 graduates of the four medical schools in North Carolina.

The data in Table I-1 show that 223 or 55 percent of the 405 1998 medical school graduates currently in training or practice chose an initial residency in primary care. The percentages were: Duke 43 percent, ECU 67 percent, UNC-CH 65 percent, and Wake Forest 45 percent. Overall, the initial choice of primary care specialties for all the graduates decreased from 1997 to 1998.

Table I-2 shows the percentage of those same 1997 and 1998 graduates who were in primary care patient practice as of 2002 and 2003, five years after graduation. In 2002, the percentages for the classes of 1997 were: Duke 34 percent, ECU 53 percent, UNC-CH 55 percent, and Wake Forest 48 percent. In 2003, the percentages for the classes of 1998 were: Duke 28 percent, ECU 56 percent, UNC-CH 55 percent, and Wake Forest 35 percent.

Table I-3 shows the percentage of state-supported graduates from Duke and Wake Forest who were in primary care patient practice as of 2002 and 2003. In 2003, the percentage of all the state-supported graduates in 1998 at Duke and Wake Forest who were in primary care patient practice was 48 percent.

Table I-4 focuses on the initial choice of primary care for the 2003 and 2004 graduates of North Carolina medical schools who entered residency training. In 2003, 169 out of 357 graduates or 47 percent entered primary care residency training. In 2004, 223 out of 431 graduates or 52 percent entered primary care residency training. The number and percentage of the class of 2004 who choose primary care residencies were: Duke 53 graduates or 54 percent; ECU 44 graduates or 56 percent, UNC-CH 78 graduates or 53 percent and Wake Forest 48 graduates or 45 percent.

## **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 2002-2003 and 2003-2004 graduates of nurse practitioner programs.

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

Table II-6 presents six year (1999-2004) *enrollment* for the ECU Physician Assistant Program.

Table II-7 shows *the initial practice choice* of the 2002-2003 and 2003-2004 ECU nurse midwifery graduates.

Table II-8 shows *the initial practice choice* of the 2002-2003 and 2003-2004 ECU physician assistant students.

Table II-1 presents the retention in primary care for nurse practitioner graduates completing training in 1996-1997 and 1997-1998. The number of graduates during this time period is still quite small compared to recent enrollment.

Table II-2 shows the number of graduates in state-operated masters' level and post masters' level programs in 2002-2003 and 2003-2004 and the initial practice choice of these graduates. These programs are located at UNC-Chapel Hill, UNC-Greensboro, UNC-Charlotte, East Carolina University, Western Carolina University, UNC-Wilmington, and Winston Salem State University. During the period 2003 through 2004 the number of graduates from these programs increased slightly. In 2002-2003, 81 percent of the graduates chose primary care practice while in 2003-2004, 87 percent 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 six years which include new

programs at Western Carolina University and Winston Salem State University. The collective enrollment in these programs declined in 2002 but increased to its highest level 2004.

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 2002-2003 and 2002-2002 graduates of the ECU nurse midwifery program which is still quite small.

Table II-8 shows the number of recent graduates of the ECU physician assistant program. Practice information for these graduates is incomplete because they have not completed the Physician Assistant National Certifying Exam.

APENDIX M  
**Section 1: Medical Students**

Table I-1  
North Carolina Medical Students-Initial Choice of Primary Care  
for 1997 and 1998 Graduates in Training or Practice in 2002 and 2003

School	Total Number of Graduates		Number of 1997 and 1998 Graduates <u>not</u> in Training or Practice as of		Number of 1997 and 1998 Graduates in Training or Practice as of		Number of 1997 & 1998 Graduates in Training or Practice with an <u>Initial Residency Choice</u> of Primary Care		Percent of 1997 & 1998 Graduates in Training or Practice with an Initial Residency Choice of Primary Care	
	1997	1998	2002	2003	2002	2003	1997	1998	1997	1998
Duke	96	95	4	0	92	95	44	41	48%	43%
ECU	73	64	0	0	73	64	45	43	62%	67%
UNC-CH	157	149	1	10	156	139	103	91	66%	65%
Wake Forest	104	109	4	2	100	107	59	48	59%	45%
<b>TOTAL</b>	430	417	9	12	421	405	251	223	60%	55%

\*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

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

APPENDIX M  
**Section I: Medical Students (continued)**

Table I-2  
North Carolina Medical Students-Retention in Primary Care\*  
1997 and 1998 Graduates

School	Number of 1997 and 1998 Graduates in Training or Practice as of		Number of 1997 and 1998 Graduates in Training or Practice with an <u>Initial</u> <u>Residency Choice</u> of Primary Care		Percent of 1997 and 1998 Graduates in Training or Practice with an <u>Initial Residency</u> <u>Choice</u> of Primary Care		Number of 1997 and 1998 Graduates in Training or Practice <u>in Primary Care</u> <u>Patient Practice</u> as of		Percent of 1997 and 1998 Graduates in Training or Practice <u>in Primary Care</u> <u>Patient Practice</u> as of	
	2002	2003	1997	1998	1997	1998	2002	2003	2002	2003
Duke	92	95	44	41	48%	43%	31	27	34%	28%
ECU	73	64	45	43	62%	67%	39	36	53%	56%
UNC-CH	156	139	103	91	66%	65%	86	76	55%	55%
Wake Forest	100	107	59	48	59%	45%	48	37	48%	35%
TOTAL	421	405	251	223	60%	55%	204	176	48%	43%

\*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

APENDIX M  
**Section 1: 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\*  
1997 and 1998 Graduates and Training or Practice in 2002 and 2003

School	Number of 1997 and 1998 State Supported Graduates in Training or Practice as of		Number of 1997 and 1998 state-supported Graduates in Training or Practice with an <u>Initial Residency</u> <u>Choice of Primary</u> Care		Percent of 1997 and 1998 state-supported Graduates in Training or Practice with an <u>Initial Residency</u> <u>Choice of Primary</u> Care		Number of 1997 and 1998 state- supported Graduates in Training or Practice <u>in Primary</u> <u>Care Patient Practice</u> as of		Percent of 1997 &1998 state- supported Graduates in Training or Practice <u>in Primary Care</u> <u>Patient Practice</u> as of	
	2002	2003	1997	1998	1997	1998	2002	2003	2002	2003
Duke	24	27	9	16	38%	59%	7	15	29%	56%
Wake Forest	55	50	25	27	45%	54%	19	22	35%	44%
TOTAL	79	77	34	43	43%	56%	26	37	29%	48%

\*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  
American Medical Association

UNC-CH President's Office  
Association of American Medical Colleges  
NC Medical Board

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

APPENDIX M  
**Section I: Medical Students (continued)**

Table I-4  
North Carolina Medical Students-Initial Choice of Primary Care\*  
for 2003 and 2004 Graduates

School	Total # of Graduates		Number of Graduates <u>not</u> Entering Residency Training		Number of 2003 and 2004 Graduates Entering Residency Training		Number of 2003 & 2004 Graduates Entering Residency Training Who Chose A Primary Care Residency		% of 2003 and 2004 Graduates Entering Residency Training Who Chose A Primary Care Residency	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Duke	85	98	3	0	82	98	32	53	39%	54%
ECU	60	79	0	0	60	79	44	44	73%	56%
UNC-CH	125	153	0	6	125	147	58	78	46%	53%
Wake Forest	93	107	3	0	90	107	35	48	39%	45%
<b>TOTAL</b>	<b>363</b>	<b>437</b>	<b>6</b>	<b>6</b>	<b>357</b>	<b>431</b>	<b>169</b>	<b>223</b>	<b>47%</b>	<b>52%</b>

\*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

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

Table II-1  
North Carolina Nurse Practitioner Students: Retention in Primary Care 1996-1997 and 1997-1998 Graduates

School of Nursing/Programs	Number of graduates		Number of 96-97 and 97-98 Graduates in Primary Care as of		Percentage of 96-97 and 97-98 Graduates in Primary Care as of	
	1996-97	1997-98	2002	2003	2002	2003
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	31	17	21	13	68%	76%
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	26	25	13	15	50%	60 %
East Carolina University						
Family Nurse Practitioner (Post MSN)	1	0	1	0	100%	NA
Family Nurse Practitioner (Degree)	0	16	0	16	NA	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 2002-2003 and 2003-2004

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	
	2002-03	2003-04	2002-03	2003-04	2002-03	2003-04
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	22	20	17	14*	77%	70%
Family Nurse Practitioner (Post MSN)	3	3	3	3	100%	100%
Pediatric Nurse Practitioner (Degree)	19	13	15	9**	80%	69%
Pediatric Nurse Practitioner (Post MSN)	1	0	0	0	0	
OB-GYN Nurse Practitioner (Degree)	5	4	5	4	100%	100%
OB-GYN Nurse Practitioner (Post MSN)	1	0	1	0	100%	
Adult Nurse Practitioner (Degree)	8	5	6	5	75%	100%
Adult Nurse Practitioner (Post MSN)	2	4	1	2	50%	50%
<b>UNC-CH Sub-Total</b>	<b>61</b>	<b>49</b>	<b>48</b>	<b>37</b>	<b>78%</b>	<b>76%</b>
University of NC-Greensboro						
Adult and Gerontological						
Nurse Practitioner (Degree & Post MSN)	5	13	4	7	80%	54%
University of NC-Charlotte						
Family Nurse Practitioner	13	9	11	9	84%	100%
Adult Nurse Practitioner	10	17	8	12	80%	70%
East Carolina University						
Family Nurse Practitioner (Degree)	16	3	16	3	100%	100%
Family Nurse Practitioner (Post MSN)	3	0	3	0	100%	100%
Western Carolina University						
Family Nurse Practitioner (Degree & Post MSN)	0	13	0	13	NA	100%
University of NC - Wilmington						
Family Nurse Practitioner	7	6	3	5	42%	83%
Winston Salem State University						
Family Nurse Practitioner (Degree & Post MSN)		14		14		100%
<b>Total Nurse Practitioner Graduates</b>	<b>115</b>	<b>124</b>	<b>93</b>	<b>100</b>	<b>81%</b>	<b>87%</b>

\* 5FNPs are awaiting certification

\*\*4PNPs are awaiting certification

Source: UNC Schools of Nursing

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

Table II-3

Enrollment in State Operated Nurse Practitioner Programs: On-Campus 1999 to 2004

Schools of Nursing/Programs	# Enrolled					
	1999	2000	2001	2002	2003	2004
<b>On Campus Enrollment</b>						
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree and Post MSN)	64	39	64	56	64	66
Pediatric Nurse Practitioner (Degree and Post MSN)	14	15	34	36	28	23
OB-GYN Nurse Practitioner (Degree and Post MSN)	9	12	13	11	8	11
Adult Nurse Practitioner (Degree and Post MSN)	31	29	31	25	29	25
Woman=s Health Nurse Practitioner (Post MSN)	0	0	3	0	0	0
Psych Mental Health Nurse Practitioner (Degree)					5	12
<b>UNC-CH Sub-Total</b>	<b>118</b>	<b>95</b>	<b>145</b>	<b>128</b>	<b>134</b>	<b>137</b>
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	75	77	43	53	52	48
University of NC-Charlotte						
Family Nurse Practitioner	60	42	37	35	48	56
Adult Nurse Practitioner		22	37	40	42	27
East Carolina University						
Family Nurse Practitioner	42	31	37	30	35	67
University of NC - Wilmington						
Family Nurse Practitioner	29	29	27	19	21	20
Western Carolina University						
Family Nurse Practitioner (Degree and Post MSN)	34	29	42	17	28	30
Winston Salem State University						
Family Nurse Practitioner (Degree and Post MSN)					48	60
<b>Total on Campus Enrollment</b>	<b>358</b>	<b>325</b>	<b>368</b>	<b>322</b>	<b>408</b>	<b>445</b>

Source: UNC Schools of Nursing

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

Table II-4  
Enrollment in State Operated Nurse Practitioner Programs: Off-Campus  
1999 to 2004

<b>Schools of Nursing/Programs</b>	<b># Enrolled</b>					
	1999	2000	2001	2002	2003	2004
<b>Off-Campus Enrollment</b>						
University of NC - Chapel Hill: Family Nurse Practitioner	14	4	0	0	0	0
University of NC - Charlotte: Adult Nurse Practitioner		7	7	5	5	0
East Carolina University: Family Nurse Practitioner	13	24	20	7	0	0
<b>Total Off-Campus Enrollment</b>	<b>27</b>	<b>35</b>	<b>27</b>	<b>12</b>	<b>5</b>	<b>0</b>

Source: UNC Schools of Nursing

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

Table II-5  
Enrollment in State Operated Nurse Midwifery Programs:  
1999-2004

	Enrollment					
<b>Nurse Midwifery Programs</b>	1999	2000	2001	2002	2003	2004
East Carolina University						
On-Campus Enrollment	10	12	11	13	16	25
Off-Campus Enrollment	0	4	3	0	0	0
<b>Total Nurse Midwifery Enrollment</b>	<b>10</b>	<b>16</b>	<b>14</b>	<b>13</b>	<b>16</b>	<b>25</b>

Source: ECU School of Nursing

Table II-6  
Enrollment in State Operated Physician Assistant Programs  
1999-2004

	Enrollment					
<b>Physician Assistant Programs</b>	1999	2000	2001	2002	2003	2004
East Carolina University						
On-Campus Enrollment	46	58	59	56	54	58
Off-Campus Enrollment	8	20	12	30	42	31
<b>Total Physician Assistant Enrollment</b>	<b>54</b>	<b>78</b>	<b>71</b>	<b>86</b>	<b>96</b>	<b>89</b>

Source: ECU Department of PA Studies

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

Table II-7  
ECU Nurse Midwifery Students: Initial Practice Choice  
2001-2002 Graduates

<b>School of Nursing</b>	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	
	2002-2003	2003- 2004	2002-2003	2003-2004	2002-2003	2003-2004	2002-2003	2003-2004	2002-2003	2003-2004
East Carolina University	1	5	0	0	1	5	1	5	100%	100%

Source: ECU School of Nursing

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

Table II-8  
ECU Physician Assistant Students: Initial Practice Choice  
2002-2004 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	
	2002-2003	2003-2004	2002-2003	2003-2004	2002-2003	2003-2004	2002-2003	2003-2004	2002-2003	2003-2004
East Carolina University	43*	23*	**	**	**	**	**	**	**	**

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

\*\* Practice information is unavailable.

Source: ECU Department of PA Studies