

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

**November 2003**

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 2003 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 2002.

### **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 1996 and 1997 in tables numbered I-1, I-2, and I-3. Table I-4 presents information about graduates of the classes of 2002 and 2003 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 1996 and 1997.

Table I-2 contains information on *the retention in primary care* for medical students graduating in 1996 and 1997.

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 1996 and 1997.

Table I-4 presents information about *the initial choice of primary care* for 2002 and 2003 graduates of the four medical schools in North Carolina.

The data in Table I-1 show that 251 or 60 percent of the 421 1997 medical school graduates currently in training or practice chose an initial residency in primary care. The percentages were: Duke 48 percent, ECU 62 percent, UNC-CH 66 percent, and Wake Forest 59 percent. Overall, the initial choice of primary care specialties for all the graduates decreased from 1996 to 1997.

Table I-2 shows the percentage of those same 1996 and 1997 graduates who were in primary care patient practice as of 2001 and 2002, five years after graduation. In 2001, the percentages for the classes of 1996 were: Duke 24 percent, ECU 56 percent, UNC-CH 47 percent, and Wake Forest 54 percent. 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.

Table I-3 shows the percentage of state-supported graduates from Duke and Wake Forest who were in primary care patient practice as of 2001 and 2002. In 2002, the percentage of all the state-supported graduates of 1997 at Duke and Wake Forest who were in primary care patient practice was 33 percent.

Table I-4 focuses on the initial choice of primary care for the 2002 and 2003 graduates of North Carolina medical schools who entered residency training. In 2002, 206 out of 399 graduates or 52 percent entered primary care residency training. In 2003, 169 out of 357 graduates or 47 percent entered primary care residency training. The decline in the percentage of graduates choosing primary care careers mirrors a national trend. The number and percentage of the class of 2003 who choose primary care residencies were: Duke 32 graduates or 39 percent; ECU 44 graduates or 73 percent, UNC-CH 58 graduates or 46 percent and Wake Forest 35 graduates or 39 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 2001-2002 and 2002-2003 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 the 1999, 2001, 2002, and 2002 *enrollment* for the ECU Physician Assistant Program.

Table II-7 shows *the initial practice choice* of the 2001-2002 and 2002-2002 ECU nurse midwifery graduates.

Table II-8 shows *the initial practice choice* of the 2001-2002 and 2002-2002 ECU physician assistant students.

Table II-1 presents the retention in primary care for nurse practitioner graduates completing training in 1995-1996 and 1996-1997. 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 2001-2002 and 2002-2003 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, and UNC-Wilmington. During the period 2002 through 2003 the number of graduates from these programs declined slightly. In 2001-2002, 62 percent of the graduates chose primary care practice while in 2002-2003, 81 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 2003.

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 2001-2002 and 2002-2002 graduates of the ECU nurse midwifery program which is still quite small.

Table II-8 shows the initial practice choice of the graduates of the ECU physician assistant program. For the 2002 graduates, 12 of 21 graduates (57 percent) went into primary care practice. Practice information for the 2003 graduates is incomplete because they have not completed the Physician Assistant National Certifying Exam. The initial practice choice of these graduates will be included in next years report.

## Section I: Medical Students

Table I-1  
North Carolina Medical Students-Initial Choice of Primary Care\*  
for 1996 and 1997 Graduates in Training or Practice in 2001 and 2002

School	Total Number of Graduates		Number of 1996 and 1997 Graduates <u>not</u> in Training or Practice as of		Number of 1996 and 1997 Graduates in Training or Practice as of		Number of 1996 & 1997 Graduates in Training or Practice with an <u>Initial Residency Choice</u> of Primary Care		Percent of 1996 & 1997 Graduates in Training or Practice with an <u>Initial Residency Choice</u> of Primary Care	
	1996	1997	2001	2002	2001	2002	1996	1997	1996	1997
Duke	102	96	3	4	99	92	49	44	49%	48%
ECU	68	73	0	0	68	73	49	45	72%	62%
UNC-CH	157	157	1	1	156	156	102	103	65%	66%
Wake Forest	96	104	0	4	96	100	68	59	71%	59%
Meharry	1	0	0	0	1	0	1	0	100%	NA
TOTAL	424	430	4	9	420	421	269	251	64%	60%

\*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:

NC 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\*  
1996 and 1997 Graduates

School	Number of 1996 and 1997 Graduates in Training or Practice as of		Number of 1996 and 1997 Graduates in Training or Practice with an <u>Initial Residency</u> <u>Choice of Primary Care</u>		Percent of 1996 and 1997 Graduates in Training or Practice with an <u>Initial</u> <u>Residency Choice of</u> Primary Care		Number of 1996 and 1997 Graduates in Training or Practice <u>in Primary Care</u> <u>Patient Practice</u> as of		Percent of 1996 and 1997 Graduates in Training or Practice <u>in Primary</u> <u>Care Patient</u> <u>Practice</u> as of	
	2001	2002	1996	1997	1996	1997	2001	2002	2001	2002
<b>Duke</b>	<b>99</b>	<b>92</b>	<b>49</b>	<b>44</b>	<b>49%</b>	<b>48%</b>	<b>34</b>	<b>31</b>	<b>34%</b>	<b>34%</b>
<b>ECU</b>	<b>68</b>	<b>73</b>	<b>49</b>	<b>45</b>	<b>72%</b>	<b>62%</b>	<b>38</b>	<b>39</b>	<b>56%</b>	<b>53%</b>
<b>UNC-CH</b>	<b>156</b>	<b>156</b>	<b>102</b>	<b>103</b>	<b>65%</b>	<b>66%</b>	<b>73</b>	<b>86</b>	<b>47%</b>	<b>55%</b>
<b>Wake Forest</b>	<b>96</b>	<b>100</b>	<b>68</b>	<b>59</b>	<b>71%</b>	<b>59%</b>	<b>52</b>	<b>48</b>	<b>54%</b>	<b>48%</b>
<b>Meharry</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>100%</b>	<b>NA</b>	<b>1</b>	<b>0</b>	<b>100%</b>	<b>NA</b>
<b>TOTAL</b>	<b>420</b>	<b>421</b>	<b>269</b>	<b>251</b>	<b>62%</b>	<b>60%</b>	<b>198</b>	<b>204</b>	<b>47%</b>	<b>48%</b>

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

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

Sources:

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

Compiled by:  
NC 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\*  
1996 and 1997 Graduates and Training or Practice in 2001 and 2002

School	Number of 1996 and 1997 State Supported Graduates in Training or Practice as of		Number of 1996 and 1997 state-supported Graduates in Training or Practice with an <u>Initial Residency Choice of Primary Care</u>		Percent of 1996 and 1997 state-supported Graduates in Training or Practice with an <u>Initial Residency Choice of Primary Care</u>		Number of 1996 and 1997 state-supported Graduates in Training or Practice in <u>Primary Care Patient Practice</u> as of		Percent of 1996, 1997 state-supported Graduates in Training or Practice in <u>Primary Care Patient Practice</u> as of	
	2001	2002	1996	1997	1996	1997	2001	2002	2001	2002
Duke	27	24	13	9	48%	38%	8	7	30%	29%
Wake Forest	49	55	35	25	71%	45%	25	19	51%	35%
TOTAL	76	79	48	34	69%	43%	33	26	43%	33%

\*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 General Administration  
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-4  
North Carolina Medical Students-Initial Choice of Primary Care\*  
for 2002 and 2003 Graduates

School	Total # of Graduates		Number of Graduates not Entering Residency Training		Number of 2002 and 2003 Graduates Entering Residency Training		Number of 2002 and 2003 Graduates Entering Residency Training Who Chose a Primary Care Residency		% of 2002 and 2003 Graduates Entering Residency Training Who Chose a Primary Care Residency	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
Duke	88	85	0	3	88	82	40	32	45%	39%
ECU	71	60	0	0	71	60	44	44	62%	73%
UNC-CH	151	125	6	0	145	125	76	58	52%	46%
Wake Forest	96	93	2	3	94	90	46	35	49%	39%
Meharry	1	0	0	0	1	0	0	0	0%	N/A
<b>Total</b>	<b>407</b>	<b>363</b>	<b>8</b>	<b>6</b>	<b>399</b>	<b>357</b>	<b>206</b>	<b>169</b>	<b>52%</b>	<b>47%</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  
Meharry Medical College

Compiled by:  
NC 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 1995-1996 and 1996-1997 Graduates

School of Nursing/Programs	Number of graduates		Number of 95-96 and 96-97 Graduates in Primary Care as of		Percentage of 95-96 and 96-97 Graduates in Primary Care as of	
	1995-96	1996-97	2001	2002	2001	2002
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	14*	17	8	21	57%	68%
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	16	26	**	**	NA	NA
East Carolina University						
Family Nurse Practitioner (Post MSN)	1		1		100%	

\* 3 graduates missing location/specialty information

\*\* Unknown

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 2001-2002 and 2002-2003

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	
	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree)	21	22	12*	17	57%	77%
Family Nurse Practitioner (Post MSN)	2	3	2	3	100%	100%
Pediatric Nurse Practitioner (Degree)	13	19	11	15	85%	80%
Pediatric Nurse Practitioner (Post MSN)	0	1	0	0	--	0
OB-GYN Nurse Practitioner (Degree)	5	5	2	5	40%	100%
OB-GYN Nurse Practitioner (Post MSN)	1	1	1	1	100%	100%
Adult Nurse Practitioner (Degree)	9	8	6**	6	67%	75%
Adult Nurse Practitioner (Post MSN)	1	2	1	1	100%	50%
<b>UNC-CH Sub-Total</b>	<b>52</b>	<b>61</b>	<b>35</b>	<b>48</b>	<b>67%</b>	<b>78%</b>
University of NC-Greensboro						
Adult and Gerontological						
Nurse Practitioner (Degree & Post MSN)	17	5	9	4	53%	80%
University of NC-Charlotte						
Family Nurse Practitioner	13	13	10	11	77%	84%
Adult Nurse Practitioner	7	10	5	8	71%	80%
East Carolina University						
Family Nurse Practitioner (Degree)	7	16	7	16	100%	100%
Family Nurse Practitioner (Post MSN)	1	3	1	3	100%	100%
Western Carolina University						
Family Nurse Practitioner (Degree & Post MSN)	25	0	10	0	40%	NA
University of NC - Wilmington						
Family Nurse Practitioner	10	7	5	3	50%	42%
<b>Total Nurse Practitioner Graduates</b>	<b>132</b>	<b>115</b>	<b>82</b>	<b>93</b>	<b>62%</b>	<b>81%</b>

\* 5 FNP unknown

\*\* 2 ANP unknown 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 1998 to 2003

Schools of Nursing/Programs	# Enrolled					
	1998	1999	2000	2001	2002	2003
<b>On Campus Enrollment</b>						
University of NC-Chapel Hill						
Family Nurse Practitioner (Degree and Post MSN)	65	64	39	64	56	64
Pediatric Nurse Practitioner (Degree and Post MSN)	18	14	15	34	36	28
OB-GYN Nurse Practitioner (Degree and Post MSN)	9	9	12	13	11	8
Adult Nurse Practitioner (Degree and Post MSN)	37	31	29	31	25	29
Woman=s Health Nurse Practitioner (Post MSN)	0	0	0	3	0	0
Psych Mental Health Nurse Practitioner (Degree)						5
<b>UNC-CH Sub-Total</b>	<b>129</b>	<b>118</b>	<b>95</b>	<b>145</b>	<b>128</b>	<b>134</b>
University of NC-Greensboro						
Adult/Gerontological Nurse Practitioner (Degree&Post MSN)	74	75	77	43	53	52
University of NC-Charlotte						
Family Nurse Practitioner	60	60	42	37	35	48
Adult Nurse Practitioner			22	37	40	42
East Carolina University						
Family Nurse Practitioner	56	42	31	37	30	35
University of NC - Wilmington						
Family Nurse Practitioner	20	29	29	27	19	21
Western Carolina University						
Family Nurse Practitioner (Degree and Post MSN)	0	34	29	42	17	28
Winston Salem State University						
Family Nurse Practitioner (Degree and Post MSN)						48
<b>Total on Campus Enrollment</b>	<b>339</b>	<b>358</b>	<b>325</b>	<b>368</b>	<b>322</b>	<b>408</b>

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  
1998 to 2003

<b>Schools of Nursing/Programs</b>	<b># Enrolled</b>					
	1998	1999	2000	2001	2002	2003
<b>Off-Campus Enrollment</b>						
University of NC - Chapel Hill: Family Nurse Practitioner	22	14	4	0	0	0
University of NC - Charlotte: Adult Nurse Practitioner			7	7	5	5
East Carolina University: Family Nurse Practitioner	15	13	24	20	7	0
<b>Total Off-Campus Enrollment</b>	<b>37</b>	<b>27</b>	<b>35</b>	<b>27</b>	<b>12</b>	<b>5</b>

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:  
1998-2003

	<b>Enrollment</b>					
<b>Nurse Midwifery Programs</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
East Carolina University						
On-Campus Enrollment	18	10	12	11	13	16
Off-Campus Enrollment	1	0	4	3	0	0
<b>Total Nurse Midwifery Enrollment</b>	<b>19</b>	<b>10</b>	<b>16</b>	<b>14</b>	<b>13</b>	<b>16</b>

Source: ECU School of Nursing

Table II-6  
Enrollment in State Operated Physician Assistant Programs  
1999-2003

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

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  
2001-2002 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	
	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03
East Carolina University	8	1	4	0	4	1	4	1	50%	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  
2001-2003 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	
	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03
East Carolina University	26	43**	0	**	21*	**	12*	**	57%	**

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

\* Practice information is unavailable.

Source: ECU Department of PA Studies