2002 UPDATE:
PRIMARY CARE MEDICAL EDUCATION PLANS

From

Duke University School of Medicine
East Carolina University School of Medicine
University of North Carolina School of Medicine
Wake Forest University School of Medicine
North Carolina AHEC Program

This report is submitted by the Board of Governors of the University of North Carolina to the Joint Legislative Education Oversight Committee in response to General Statute 143-613 as contained in House Bill 230 passed in the 1995 session of the North Carolina General Assembly.

April 2002

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2002 UPDATE:
PRIMARY CARE MEDICAL EDUCATION PLANS

EXECUTIVE SUMMARY

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 setting goals 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. The General Assembly also mandated that the N.C. Area Health Education Centers (AHEC) Program develop a plan to expand the number of primary care residency positions. Finally, the legislature mandated that a monitoring system be developed by the Board of Governors to report on specialty selection by medical students at graduation and five years after graduation.

In 1994, the four schools of medicine and the N.C. AHEC Program submitted primary care educational plans for increasing the percent of medical school graduates choosing primary care residency programs and subsequently generalist practice. General Statute 143-613 as contained in House Bill 230 passed in the 1995 session of the North Carolina General Assembly requires an update of these plans beginning in 1996 and every two years thereafter.

The plans of the four schools built upon the unique missions and programs of the schools. Although specific activities differ between the schools, they are all implementing initiatives in similar areas in order to increase the percentage of graduates choosing careers in primary care. In each case, the schools built upon their long-standing relationships with the AHEC Program in order to conduct increased medical student and primary care residency training in community settings. The following attachments highlight the specific changes which have taken place since 1994. A brief summary of the themes addressed by the updates includes the following:

- Pre-medical Students: Each school has increased contact with pre-medical students in order to make clear the opportunities for practice as a generalist physician. Several of these activities target minority and disadvantaged pre-medical students.
- Admission to Medical School: Each school has placed increased emphasis on the admission of students with an interest in generalist practice. All four admissions committees have primary care physicians as members.
- Primary Care Role Models: Each school expanded activities to give students an in-depth and continuing exposure to generalist physicians at the school and in community settings. Over the four years of medical school, students receive career advising, mentoring, and role modeling from these physicians.
- Curriculum Changes: Each school implemented curriculum changes that give students greater exposure to primary care. While the curricula and the plans of the four schools vary greatly, the following are themes that are found in each of the plans:
    - increased education in the ambulatory setting
    - increased rotation of students at all levels to community practices, with a particular focus on rural and inner city underserved areas
    - increased emphasis on topics that are critical to the practice of the generalist physician. These include: health promotion/disease prevention; nutrition; geriatrics; alcohol and substance abuse; violence; ethics; health care organization, financing, and economics; and more effective uses of information technology
    - increased emphasis on the physician as a member of a cost-effective health care team operating in a managed care environment.
- Community Practitioner Support: Each school and its affiliated AHECs, in association with the Office of Rural Health, the North Carolina Primary Care Association, and the Reynolds Community Practitioner Program, have expanded activities in support of generalist practitioners in community settings. Special emphasis has been given to practitioners in rural, inner city, and isolated settings. Some activities include:
    - expanded *locum tenens* coverage and community physician exchange programs
    - expanded opportunities for physicians to serve as preceptors and to benefit from faculty development programs, telecommunications, reimbursement for teaching, etc.

continuing education targeted to improve practice outcomes.

- Information Services and Telecommunications: The four schools and their affiliated AHECs expanded existing library and information services to primary care physicians in underserved settings. For those physicians serving as preceptors, this includes the positioning of computer workstations in the practice so physicians and students can access the world's information databases. These developments also include developing teleclassroom and teleconsultation units at the schools, the AHECs, and at selected smaller hospitals and health centers to strengthen student education in these sites and to decrease the isolation of practitioners. The AHEC Digital Library, a comprehensive electronic set of information resources, including searching databases, full-text journals and other resources, is available to all community practitioners who take students in their practices.

- Primary Care Residency Training: Each school and the AHECs are expanding the number of primary care residency positions and developed rural and inner city training opportunities for residents.

- Table 1 (below), taken from the November, 2001 report "Monitoring the Progress of North Carolina Graduates Entering Primary Care Careers" summarizes the residency choices for the 2000 and 2001 medical school graduates. In both years, over 50% of the medical school graduates entered primary care residency training.

The dean and the faculty at each of the four schools of medicine have taken seriously the mandate of the General Assembly and have implemented plans that will help increase the number and percentage of medical students choosing primary care residency programs and, subsequently, generalist practice. This report, with attachments from the four schools of medicine and the N. C. AHEC Program, responds to that legislative mandate by providing an update on current and planned initiatives which are directed toward ensuring that our medical care workforce for our citizens.

Table 1

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

School	Total # of Graduates		Number of Graduates not Entering Residency Training as of		Number of 2000 and 2001 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%
TOTAL	438	423	9	9	429	414	221	222	52%	54%

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

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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

2002 Update:
Primary Care Medical Education Plan

Duke University School of Medicine

Respectfully Submitted by

Russel E. Kaufman, M.D.
Vice Dean for Education
School of Medicine

Barbara L. Sheline, M.D., M.P.H.
Assistant Dean of Primary Care
School of Medicine

Marvin Swartz, M.D.
Director, Duke AHEC Program
School of Medicine

March 28, 2002

A report in response to General Statue 143-613 as amended by Chapter 507 of the 1995 Session Laws (House Bill 230) of the North Carolina Assembly

Report to the Board of Governors of the University of North Carolina Update: Primary Care Education Plan

In 1994, the Duke University School of Medicine submitted an educational plan with the goal of encouraging students to enter the primary care disciplines of general internal medicine, general pediatrics, family medicine, and obstetrics/gynecology.

Support for these innovations has come from the North Carolina AHEC, a training grant from the U.S. Health and Human Services Grants for predoctoral education in family medicine, from the NC Academy of Family Practice, the Josiah Mercy, Jr. Foundation, the Fullerton Foundation, Hewlett Packard, and substantial support from the Office of Medical Education at Duke.

The ultimate measure of our programs to train individuals for a career in primary care is the distribution of graduates across residencies. A substantial proportion of Duke graduates enter primary care residencies.

Residency	1999 Grads.	2000 Grads.	2001 Grads.
Internal Medicine	33	35	31
Pediatrics	8	9	10
Med-Peds	4	3	2
Family Medicine	1	5	3
Ob/Gyn	2	3	1
Total Number	**48**	**55**	**47**
Percent of year's graduates*	**50%**	**58%**	**55%**

*Note: the proportion of graduates entering primary care includes one year Internal Medicine residencies expected to lead to sub-specialty training. Excluding those residents would reduce the overall percentage to 33%.

The Generalist Activities include:

1. Development of primary care faculty

Duke faculty continue to play a leading role in faculty development of community preceptors from all North Carolina Medical Schools through the North Carolina Academy of Family Physicians and the NCAHEC Program through its Office of Regional Primary Care Education (ORPCE) teaching sites. A certification program was developed for family physicians completing a series of five faculty development workshops. Faculty guidance continued for the family medicine residency in Cabarrus and Southern Regional AHEC in Fayetteville, NC.

A large group of primary care faculty serve on the Medical School's Curriculum Committee currently engaged in a major redesign of the curriculum.

The network of primary care practices added to Duke continue to be a resource for teaching medical students. NCAHEC ORPCE teaching sites also play a major role in primary care teaching.

2. Development of Research Programs in Primary Care

Research efforts in primary care have continued in the areas of treatment of common illness, health outcomes, general health status, and health services delivery. Such research is being carried out by the different divisions of primary care, the Health Services Research Program at the Veteran's Administration Medical Center, the Epidemiology Program in the Department of Psychiatry and the Aging Center, the Clinical Epidemiology and Biostatistics Program, and the Department of Community and Family Medicine. The Health Promotion and Disease Prevention Center at the Veteran's Administration Medical Center is active in the medical school curriculum. Many students participate in primary care research in their third year at Duke through the combined MD/MPH program and the Epidemiology, Health Service and Health Policy Study Program. Duke has facilitated students interested in completing a MPH degree at UNC-Chapel Hill during their third year of medical school. Duke now offers a Master's of Health Science in Clinical Research degree, which compliments students' interests in primary care research.

3. Admissions and Premedical Preparation

Every applicant to Duke Medical School receives information about Duke's program in Primary Care prior to their interviews. The assistant dean is available to discuss any applicant's questions about this program during the application process. Primary care physicians continue to be active on the Admissions Committee. Over half of students who matriculate to Duke School of Medicine express an interest in primary care. As the table in this report shows, a substantial proportion, eventually choose to enter primary care residencies.

4. Financial Aid

Duke continues to aggressively secure financial aid for student and identifies scholarships available for those interested in primary. Primary care financial aid programs are overseen by the Director of the Primary Care Program in coordination with the Financial Aid Office to help ensure that eligible students are aware of the opportunities. Duke participates with the Department of Health and Human Services to pursue grant and loan programs to benefit students interested in Primary Care.

5. Medical School Curriculum

A. Practice

The Practice course has continued for six years to expose all students at Duke to early ambulatory medicine in year one and provide much of the ambulatory care core training at Duke preclinically and during the clinical year. Students are taught the basic skills they need to be effective in the ambulatory setting. The course is now required for first, second and third year students.

Beginning in fall 2001, all third year students during their year of research are now required to have a longitudinal ambulatory care experience of at least 6 months. This adds an additional 100 hours of instruction in the clinical ambulatory setting. Ambulatory experiences have been added in surgery and psychiatry during the clerkship year.

B. Primary Care Program

This four-year long program has continued since 1994 to involve and support students interested in primary care. Students are paired with a primary care faculty mentor, participate in extracurricular programs, select additional primary care opportunities during clinical training, and are encouraged to participate in primary care research during their third year. To date, 114 students have joined the program over the past eight years.

6. Extracurricular Activities

National Primary Care Day

In the past several years Duke has participated with student leadership in National Primary Care Day, with support from the Duke Office of Medical Education. This event is co-sponsored by the Association of American Medical Colleges. The event continues to include resident physicians, community faculty, and students.

Student Interest Group

The Family Medicine Interest Group continues to provide opportunities for all students interested in primary care with a chance to learn primary care clinical skills and share interesting topics. Other interest groups, such as one in pediatrics, are also active.

7. Primary Care Residency Training

Duke continues to have five primary care residency tracks: general internal medicine, general pediatrics, a combined medicine/pediatrics residency, family medicine, obstetrics/gynecology. Though many specialty residencies are decreasing the number of residency slots, no decreases have occurred in primary care residencies.

8. Community Practitioner Support

Duke continues to work closely with the other three medical schools in North Carolina and the North Carolina Area Health Education Centers Program (AHEC). Duke continues to coordinate placement of the majority of its community learners with practitioners throughout the state with assistance from the Office of Regional Primary Care Education (ORPCE). The ORPCE staff has continued to be very successful in recruiting, training, and supporting community preceptors in their regions. Duke supports key community practices with teaching resources whenever possible.

9. Tracking Students and Residents

Duke maintains information on training and practice activities of its students and house staff alumni through several sources. Local records are kept of residencies entered and current addresses of those in practice. AAMC provides information about the status of residency training. These data are summarized and forwarded annually to the statewide coordinator at the AHEC central office, who, in turn, reports to the North Carolina State Legislature.

Residency choice by Duke School of Medicine graduates for the last three years is summarized below.

Residency	1999 Grads.	2000 Grads.	2001 Grads.
Internal Medicine	33	35	31
Pediatrics	8	9	10
Med-Peds	4	3	2
Family Medicine	1	5	3
Ob/Gyn	2	3	1
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*Note: the proportion of graduates entering primary care includes one year Internal Medicine residencies expected to lead to sub-specialty training. Excluding those residents would reduce the overall percentage to 33%.

Summary

Duke continues to undergo major changes in response to the changing organization and financing of health care. Duke is continuing to look for innovative ways to address the problems of increased patient volumes in the ambulatory settings and increased need to train students in these same settings. New teaching methods are being developed such as use of the computer-based informatics to make teaching more efficient. Residencies will be geared to addressing the nation's needs for physicians. Research efforts in health care delivery and primary care outcomes will continue to grow. Duke is committed to training leaders that will be part of the solution to today's need for primary care physicians.

2002 Update:
Primary Care Medical Education Plan

Brody School of Medicine
at
East Carolina University

Respectfully Submitted by:

Peter J. Kragel, M.D.
Interim Dean, School of Medicine

Julius Q. Mallette, M.D.
Senior Associate Dean
School of Medicine

March 31, 2002

A report in response to General Statue 143-613 as amended by Chapter 507 of the 1995 Session Laws (House Bill 230) of the North Carolina Assembly

2002 Update: Primary Care Education Plan
East Carolina University
Brody School of Medicine

In 1994, the School of Medicine (now Brody School of Medicine) at East Carolina University submitted a Primary Care Educational Plan for increasing the number and percentage of medical students choosing primary care residency programs, and subsequently generalist practice. Updates to the plan were submitted in March 1996, June 1998, and March 2000. Initiatives described in the plan included targeted efforts in four separate areas: 1) Pre-Medical Initiatives, 2) Undergraduate Medical Education, 3) Graduate Programs and, 4) Practice Support and Outreach. This year we are pleased to report recent achievements of our efforts. Our strategies remain the same, however some programs have changed in order to maintain our efforts in a changing economic and demographic environment.

As a result of these efforts, Brody School of Medicine (BSOM) has continued to excel in the numbers of graduating students selecting residency positions in the primary care disciplines. Student selection of primary care residency positions remains higher than national average. Seventy-six percent of students in the Class of 2002 selected primary care residency if preliminary and transitional year programs are included thereby exceeding the previous year's high of 74 %. In keeping with prior years outcomes it remains significant that for the Class of 2002, 45 % (32/70) chose a residency program in North Carolina. And 16 out the 32 (50%) are staying at University Health Systems of Eastern Carolina for their residencies. For the Class of 2001, 34% chose a residency program in North Carolina, with 15% staying at University Health Systems of Eastern Carolina.

I. PRE-MEDICAL AND ADMISSIONS INITIATIVES

We are continuing the strategies at the premedical level through: (1) communications network with premedical advisors throughout North Carolina; (2) research of variables that predict career choice and practice in underserved areas; and (3) support of a Health Careers Development Program to disseminate information about health careers and to encourage the participation of under-represented minority students in health careers. BSOM continues to host numerous conferences for college and university premedical program advisors from 24 institutions across North Carolina. The annual Health Career Awareness Program conference held its 13th conference this fall. Over the past several years, 25-30 advisors, representing 20-25 third-level institutions in North Carolina, attended the conference. This fall we had a record number of schools (44) participating, demonstrating the programs increasing outreach. The purpose of the meeting remains to provide the advisors with a clearer understanding of the need for generalist physicians in North Carolina and their role in identifying and encouraging promising students to pursue careers as future generalists.

Our keynote speaker for this year's event was an alumnus of the school of medicine, now a Family Medicine physician in Edgecombe County. The statewide premedical advisors group that was initiated as a result of contacts initially established through these conferences continues to meet regularly. *The East Carolina Generalist* newsletter, originally published through our Office of Generalist Programs, will continue to be distributed to premedical advisors throughout the region by the medical school division of Academic Affairs.

We are continuing the Community Health Access Group (CHAG) program established in 1994 to address physician maldistribution in eastern NC by focusing on people in the early stages of career planning (i.e. high school students and people considering mid-career changes). Evidence of our abilities to "grow our own" through this program, continues to be seen by the recruitment of students from the eastern regional seen in the production. The rationale for this approach evolved from the "growing your own" concept, which contends that physician recruitment and retention may be improved by identifying and supporting community residents interested in pursuing medical careers. A CHAG, comprised of a group of key community members would serve as a mechanism for identifying and supporting prospective applicants to medical school. Members of EAHEC coordinated CHAG program activities, with greatest success in Washington County. The success of the Washington county CHAG has depended greatly upon the creation of an internal support base of key community members. In addition, it was necessary to integrate community-specific health care access concerns into the CHAG plan and to provide ongoing opportunities for CHAG communication to help surmount distrust or competition between community agencies. Since 1999, activities have been expanded to address research and information dissemination. One student from Washington County has graduated from Brody School of Medicine and is pursuing a career in Internal Medicine. Several high school students from Plymouth High School have participated in the Ventures into Health Careers Institute and are in the pipeline for a health career.

The Health Careers Development Workshop is held each year to facilitate the recruitment of underrepresented minority students into health care careers through educational seminars. The Ventures into Health Careers Institute, sponsored by EAHEC, is held each summer for 9th and 10th grade students from underrepresented minority groups. This program is now in its eight year. During 1998-1999, 22 students from 12 of the eastern counties attended this summer program. The two-week experience includes educational sessions and an opportunity to shadow various health professionals. In addition to the summer program, workshop sessions for public school administrators, educators and counselors representing middle and high schools are presented to increase their awareness of health career opportunities for students.

Academic Support and Enrichment (formally the Academic Support and Counseling center) continues to host the MCAT review program is a distance-learning program for all of North Carolina's post secondary students. We have assisted over 185 students since 1999 to maximize they test performance via organized review and test taking skill enhancement.

II. UNDERGRADUATE MEDICAL EDUCATION INITIATIVES:

Undergraduate medical education strategies include early and repeated exposure to clinical medicine in ambulatory based primary care practices; a two-year longitudinal curriculum in physical diagnosis, interviewing, counseling, critical thinking, and evidence-based medicine; a required 8 week Family Medicine clerkship; required 4 week experience on General Medicine as part of the third year Medicine clerkship; required 2 week community-based ambulatory general pediatric experience as part of the third-year Pediatrics clerkship; and a two month Primary Care requirement in the fourth year. The Doctoring 1 (first year) and Clinical Skills II (second year) courses have been well received by the students and the integration of a longitudinal thread of evidence-based medicine into these two courses has also been positively evaluated.

Doctoring 1 was initiated in the 2001-2002 academic year. Implementation of Doctoring II is planned for the 2003-2004 academic year and will replace the Clinical Skills II and Introduction to Medicine courses. The Doctoring courses were developed with input by course directors and faculty from Family Medicine, Internal Medicine, Obstetric and Gynecology, Pediatrics, and basic science departments. The intent of Doctoring is to increase student exposure to clinical medicine and to develop skills in medical interviewing, physical examination, life-long learning, technology use, and critical thinking. Educational content in the weekly Doctoring classes and small group sessions is coordinated with information learned in concurrent basic science courses. Use of laptop computers is required in Doctoring and is designed to develop skills in information technology and information retrieval and analysis. Another innovative component of Doctoring is the Doctoring Evening Clinic where first year students see patients with Doctoring faculty preceptors in a specially designed educational clinic.

Admissions into the Rural Health Scholars program sponsored by the North Carolina Office of Rural Health and Resource Development were halted in 2000 because of state policy changes. Since its inception, 55 medical student scholars from BSOM participated in this enrichment program designed to select and nurture future leaders in rural health. Twelve of the 18 scholars for the Class of 2002 are from BSOM. Activities have continued for Scholars already admitted into the program and they receive certificates of completion of the program during BSOM graduation week. Of note, discussions with BSOM Rural Health Scholars have resulted in plans for a Rural Health Interest Group at BSOM in 2002.

The Clinical Skills II course during the second year has used a standardized patient family – the Jones family- as an innovative educational methodology to teach principles of interviewing, physical diagnosis, and patient counseling in the context of ambulatory care, and also reinforces students' understanding of the importance of continuity of care and family dynamics.

The curriculum committee with oversight over the third and fourth year curriculum has tightened the requirements for the fourth year. All students are required to complete a four-week Selective in Primary Care and a four-week Selective in Ambulatory Care. The criteria for selectives included on these lists are strictly defined to ensure that these experiences are truly primary care or ambulatory. A new selective was developed and offered this year that includes service learning opportunities in the student-run Greenville Shelter Clinics and in two rural free clinics in Fountain and Tillery.

Several efforts are underway to strengthen support for community based primary care education. A Division of Health Sciences Community Based Education Advisory Group was established to facilitate communication and planning among the primary care disciplines and health professions that utilize ambulatory teaching sites in eastern North Carolina. Representatives from ECU's Schools of Medicine, Nursing, Allied Health Sciences, the UNC School of Pharmacy and EAHEC have been meeting regularly since 1998. The seventh annual workshop for community preceptors was held in February 2002, with a focus upon rural community preceptors. The workshop was interdisciplinary, including preceptors who are physicians, nurse practitioners, physician assistants, pharmacists, and nurse midwives. The objectives of these workshops are to enhance the teaching, clinical, information technology, and evidence-based medicine skills of preceptors, and to support and nurture preceptors. All community preceptors receive *The East Carolina Generalist* newsletter. It is critical to the education of competent generalists, in all health professions, that the ambulatory education base in community sites be maintained, at minimum, and expanded and the sites' educational contributions enhanced. A subgroup of the Community Based Education Advisory Group is pursuing another initiative to develop a computer based preceptor database. This database will integrate information from BSOM, the Office of Generalist Programs at ECUSOM, EAHEC Office of Regional Primary Care Education and the Schools of Nursing and Allied Health. The Office of Generalist Programs was established in 1996 to ensure integration of curricular innovations, student and faculty programs, and premedical initiatives, into Academic Affairs in BSOM.

Student evaluations of the third year clerkship have indicated that our attempts to improve the experience in the Family Practice Center have begun to pay dividends. Changes in that rotation include scheduling several sessions during each rotation where an attending is assigned to work with two patients, seeing some of the attending physician's patients but with fewer patients scheduled than the attending would usually see. The third year clerks see the patients, generate a SOAP note, and present to the attending as if they were house officers and the attending were their preceptor. All patients are seen by the attending before leaving the clinic. Many students have indicated that their clerkship has resulted in an increased interest in Family Practice as a career option.

The Interdisciplinary Rural Health Training Program continues as an innovative interdisciplinary educational program for students from several health professions, including

medicine, nutrition, health education, occupational therapy, physical therapy, nursing, physicians' assistant, social work and pharmacy. Programs in Duplin and Beaufort counties have been underway for the past three years. An additional educational site for a similar program has now been developed in Bertie and Hertford counties. This interdisciplinary approach to educating health professional team members together in community based ambulatory settings has the potential to positively impact specialty and practice decisions by students from the disciplines involved. These two programs are being evaluated and may serve as models for replication of this educational approach in other areas of eastern North Carolina.

III. GRADUATE MEDICAL EDUCATION INITIATIVES:

Activities to support residents in primary care residencies include joint sessions on practice management, a longitudinal home care curriculum, leadership and management training for the primary care chief residents, and research of factors that influence resident career plans. An innovative new collaborative program, initiated in 1998 with the ECU School of Business, enables a resident to enroll in a 42 credit hour MBA program, which can be completed part-time or after completion of residency. Tracking of graduates from the predoctoral and residency programs reveals that from 1981-1997, graduates from BSOM or its affiliated residency programs were more likely to practice in medically underserved and non-metropolitan areas in North Carolina and eastern North Carolina. Initiatives to facilitate the retention of graduates include the provision of community ambulatory experiences, the Family Medicine Rural Residency track, and dissemination of information about financial incentive programs for practicing in primary care in underserved areas in North Carolina. For the past two years a lunchtime Medical Spanish class has been provided for primary care residents and many medical students have participated as well.

The telemedicine program, which links distant sites with BSOM for consultation and for continuing education, is another critical initiative that reduces the isolation of physicians and other health professionals practicing in rural areas. The residents experience distance learning during Family Medicine Noon Conferences and Grand Rounds, three times a week. Those residents in the rural sites have available to them consultation with BSOM sub-specialists in many areas including Maternal-Fetal medicine, Dermatology, Cardiology (both adult and pediatric) and Allergy &, Immunology.

Our primary care clinical departments have produced many practitioners in North Carolina since the last report. Pediatrics graduates since 1999 total 41, 32 are in primary care practice and 18 (56 percent) are in practice in North Carolina and almost 90 % are in communities of less than 100, 000. Internal Medicine has also produced a large proportion of primary care practitioners in North Carolina with over 50 percent (19/35) serving our state since graduating since 1999. If the service potential for each practitioner is 1779* people this equates to 65,000 more citizens with access to primary care physicians since our last report. * (primary care benchmarks from the Sheps Center at UNC - 1779 NC urban population/ primary care provider M.D.)

IV. PRACTICE ENTRY AND SUPPORT INITIATIVES:

The BSOM Office of Generalist Programs and Health East, a subsidiary of University Health Systems of Eastern Carolina, are collaborating to support practicing primary care physicians and to facilitate physician retention in eastern North Carolina. Support for regional physicians is provided through locum tenens coverage, practice management services, and education. Support of community teaching sites link physicians to the medical center and provide peer interaction, continuing education, an opportunity to teach and to participate in research, and the respect and prestige conferred by association with an academic health center.

V. ADDITIONAL PROGRAMS:

BSOM continues to be a co-supporter with Pitt County Memorial Hospital and EAHEC of the Annual Recruiting Fair held every fall. This event provides an opportunity for community hospitals in eastern North Carolina to meet students and residents in the educational programs at University Health Systems of Eastern Carolina. The students and residents learn about the health care workforce needs of the communities, and the communities have an opportunity to develop relationships with students and residents. It continues to be well received on the part of the hospitals and the students and residents and several hospitals have recruited physicians for their communities as a result of the Recruiting Fair.

Primary care based student organizations, including Interest Groups in Family Medicine, Pediatrics, and Medicine, continue to be active at BSOM. An OB/GYN Interest Group was formed in the past 2 years and is now meeting regularly. A Rural Health Interest Group is now in the formative stages and activities are being planned for the 2002-2003 academic year. The school supports student travel to regional, state and national meetings as a component of students' professional development. The Office of Generalist Programs supports many of the functions of these interest groups.

SUMMARY

The Brody School of Medicine at East Carolina University continues to be committed to its legislatively mandated mission to educate primary care physicians to meet the health care needs of Eastern North Carolina. Due to many sound initiatives and strategies that we have continued over several years, and the addition of new innovative strategies, BSOM has been able to maintain, or even slightly increase, the percentage of medical students who choose to enter primary care residencies, and who ultimately practice primary care. In the 2002 National Residency Match Program (NRMP) the percent of students selecting primary care was 49.5 % with OB/GYN and 43.6% without OB/GYN. We continue to be proud of the percent of our graduates (76%) who are pursuing primary care against what continues to be national downward trend in primary care training. BSOM continues to strive to develop and implement strategies that will increase the number of medical students and graduates who return to eastern North Carolina, and more specifically to underserved areas in the region. Each year we add to the available pool of primary care providers in our state directly and indirectly through the graduate and undergraduate medical education programs. Although it is difficult to determine quantitatively we also add to the poll of primary care providers who enter our state from other areas because of the medical school attraction to private practitioners from other states who did not train in North Carolina. Although the challenges of the health care environment put increasing pressures on revenues and the pressure to provide increasing levels of clinical service competes with time for education and research, BSOM continues to be mission focused increasing the quantity and quality of primary care providers in North Carolina.

2002 Update:
Primary Care Medical Education Plan

University of North Carolina at Chapel Hill
School of Medicine

Respectfully Submitted by:

Jeffrey L. Houpt, M.D.
Dean of the School of Medicine
Vice Chancellor for Medical Affairs
CEO UNC Health Care System

Cheryl F. McCartney, M.D.
Executive Associate Dean for Medical Education
Professor of Psychiatry

April 2002

A report in response to General Statue 143-613 as amended by Chapter 507 of the 1995 Session Laws (House Bill 230) of the North Carolina Assembly

Primary Care Medical Education Plan

2002 Update

The University of North Carolina at Chapel Hill School of Medicine

INTRODUCTION

The University of North Carolina (UNC) is committed to providing physicians to serve the health care needs of the citizens of North Carolina. Of the 15,470 physicians practicing in North Carolina in 1999, 27.5% or 4,242 of them were educated in North Carolina. Of the physicians receiving their medical education in North Carolina, 44.3% of these were educated at UNC and 46.4% of these UNC graduates were practicing primary care. UNC is a national leader in primary care education and was the only medical school in North Carolina to be ranked this year in the top 10 in primary care by U.S. News and World Report (1). The U.S. News and World Report Best Graduate School guide, released in April 2002, ranked UNC number 6 in primary care and number 8 in rural medicine (1). The Family Medicine program was number 3 in the country according to medical school deans and senior faculty (1).

In 1994, the UNC School of Medicine (SOM or the school) submitted a detailed plan to the Board of Governors for increasing to 60% the proportion of its graduates entering primary care practice. The range of initiatives designed to achieve the 60% goal detailed in the 1994 and 1996 reports to the Board of Governors were derived from an institutional planning process spanning 10 years. Our initiatives for increasing the number of primary care physicians practicing in North Carolina include pre-medical programs and programs aimed at promoting primary care as a career choice for medical students, and extend to programs aimed at retaining primary care physicians practicing in North Carolina. For the past two years, at a time during which the numbers of U.S. seniors going into primary care specialties have declined, just over 50% of our graduating seniors have gone into a primary care specialty. Specifically, in 2001, 55% of our graduates entered primary care and in 2002, 52%. Our goal and mandate is for 60% of our seniors to select primary care specialties. This document will review the programs we have in place to encourage primary care as a career choice, some of the factors affecting us and contributing to the declining numbers of U.S. seniors matching in primary care specialties, and our new initiatives developed to foster interest in primary care and generalist careers.

Nationally, the numbers of students going into primary care specialties peaked in 1997 (2). Primary care specialties, as defined by the North Carolina State Legislature, include Family Medicine, Internal Medicine, Obstetrics/Gynecology, Pediatrics, and Medicine/Pediatrics. In 2001, primary care residency matches were down nationally for the fourth straight year. In 2001, 49% of U.S. medical students chose primary care compared with 51.4% in 2000. (3). In contrast, from 1992 to 1997, the national percentage of United States senior medical students choosing primary care careers increased from 60.5% to 66.4% (2). Nationwide, the numbers of medical students choosing Family Medicine peaked in 1997 when a record 2,340 U.S. seniors filled Family Practice positions (4). The numbers of students going into Internal Medicine and Obstetrics and Gynecology also peaked in 1997 (5). At UNC, the numbers of seniors going into Family Medicine peaked in 1998 when 20% of the class went into Family Medicine. The number of U.S. seniors matching in primary care Internal Medicine programs has also declined since 1998 (5). Figures 1 through 4 (Attachments) illustrate the comparison between the percent of students in the U.S. and at UNC entering Internal Medicine, Pediatrics, Family Medicine, and Obstetrics/Gynecology from 1989 through 2002.

A complex set of factors influence a student's career choice including personal social values, institutional culture, curriculum design, role models, and market forces (6). The SOM can do little about market forces and has been focusing on admissions criteria and curricular programs that will promote interest in primary care specialties. We suggest that the explanation for the recent decline in interest among U.S. seniors in primary care residency training programs is multifactorial and may include:

- a backlash from patients and physicians against gatekeepers and restricted access,
- income disparities between primary care physician and specialists,
- the perception that choosing a specialty career may permit greater control over one's professional life thus allowing more time for family and personal endeavors,
- the recent tightening of the job market for primary care physicians, and
- the threat of competition from physicians extenders (nurse practitioners and physician's assistants)
- the growth in job opportunities for specialists (3,5,7,8,9,10)

Another factor that may be negatively influencing primary care as a career choice is Medicare funding for graduate medical education (GME). Currently, Medicare reimburses teaching hospitals for the cost of GME through two payment streams: direct medical education (DME) and the indirect medical education (IME) adjustment. Medicare determines a resident's training program's eligibility for graduate medicine subsidy GME funding based on the resident's internship year and the time it will take for the trainee to become board eligible. The trainee's eligibility is determined once and does not change if he/she switches specialties. For example, an intern who begins a general surgery residency will be board eligible for five years of funding because it takes five years of training to become board eligible in general surgery. The trainee will remain eligible for five years of DME funding even if he/she switches to internal medicine which takes only three years of training for board eligibility. In contradistinction, a resident who begins an internal medicine training program may face difficulty switching into general surgery because he/she will only be eligible for three years of DME funding. Some residency program directors are encouraging students to accept preliminary years in general surgery, instead of internal medicine, so that their institutions will not face a reduction in Medicare DME funding.

PREMEDICAL PREPARATION AND ADMISSIONS

Studies have shown that primary care role models are an important influence in encouraging primary care as a career choice and that dedication to community service predicts primary care practice choice (7,8,11). These studies have lead us to make the following adjustments to our admissions process:

- Appointment of a general internist as Associate Dean for Admissions and chair of the Admissions Committee
- Consideration of applicants' demonstrated dedication and experience in community service in the SOM selection process for admission.

The SOM actively recruits qualified underrepresented minority (URM) students in the state, region, and nation to better enable us to serve the health care needs of North Carolina's increasingly diverse population. Studies have shown that members of minority groups are more likely to treat minorities and that patients have better access to health care when same-race physicians are available (12,13). Our commitment to increasing the number of underrepresented minorities in primary care is reflected in our establishment of programs that improve the preparation of minority applicants for careers in the biomedical sciences and actively recruit URMs to the health care professions.

The SOM's Office of Educational Development developed and conducts programs designed to enhance the competitiveness of disadvantaged and URM applicants to medical school. The centerpiece of these efforts is the **Medical Education Development (MED) Program**, established in 1974 to prepare rising college seniors and college graduates who aspire to attend medical or dental school. This nine-week summer program simulates the medical school environment with rigorous coursework in the basic sciences, training in test-taking skills, and academic counseling. The program, funded by a federal Health Careers Opportunities Program grant, serves students from disadvantaged backgrounds and underrepresented minority groups. In the past 20 years of the MED Program, 82 percent of the program graduates applied to health professions schools and 84 percent of those applicants were accepted. In regard to medical school specifically, since 1974, 70 percent of the students who completed the MED Program applied to medical school and 88 percent of those applicants were accepted. Among URM physicians in North Carolina, MED participants have chosen primary care careers in underserved areas in greater numbers than have non-MED participants.

The Office of Educational Development also offers the **Research Apprenticeship Program** for high school students. Other UNC programs include the **Summer Enrichment in Mathematics and Science Program** for high school students and the eight-week **Science Enrichment Program** for rising college juniors and seniors. The Office of Educational Development recently was notified that its proposal for the **UNC Center of Excellence** had been approved by the US Health Resources and Services Administration (HRSA). If federal funding is forthcoming, the Center of Excellence will further enhance our efforts to prepare disadvantaged students for medical school, strengthen the cultural competence of all medical school graduates, provide community-based primary care experiences for students, recruit URM faculty, and encourage student and faculty research on minority health issues.

THE MEDICAL SCHOOL CURRICULUM

The First Two Years

Studies have shown that longitudinal experiences in primary care promote interest in primary care as a career choice (11). **The Introduction to Clinical Medicine (ICM)** course, implemented in 1995, represents about 16% of the instructional hours in years one and two of the medical school curriculum and includes interviewing, physical diagnosis, the doctor/patient relationship, and clinical reasoning. This course incorporates longitudinal experiences in primary care in the form of its five community weeks. Students work directly with a generalist role model and experience primary care practice in a community setting. Two hundred and twenty primary care practitioners participate as preceptors, each hosting a single student for five separate weeks during the first and second years. The Area Health Education (AHEC) Program was launched in the early 1970s and all nine of the AHEC-based

Offices of Regional Primary Care Education (ORPCEs) support this effort by helping to identify potential physician preceptors in their regions, and by providing coordination and logistical support for the students all over the state of North Carolina. In addition, 35 primary care faculty tutors in Chapel Hill teach small group seminars in the ICM course each week during the year.

In the academic year 1999-2000, the ICM program was able to respond to an immediate need in eastern North Carolina. After Hurricane Floyd produced devastating flooding in several eastern counties, half of the second-year class spent one of their ICM community weeks assisting with the cleanup effort. As a result of this experience, several students undertook projects aimed at meeting the medical and psychosocial needs of the flood victims. An account of this experience was published in Reference 14.

Our annual analyses of the influence of the SOM curriculum on our students' career choices indicate that, for students with an initial interest in primary care, the community-based clinical experiences provided by the ICM course are strong positive influences toward primary care careers.

The Third Year

Studies have shown that a student's experience in family medicine has a significant impact on generalist career intentions and that schools with Family Medicine Departments and required clerkships tend to have more of their students enter primary care specialties than schools without this clerkship (15,16). Our Department of Family Medicine was established in the early 1970s and is currently ranked number 3 by U.S. News and World Report (1). The six-week **Family Medicine Clerkship** is a requirement for all 160 medical students during their third year. The clerkship takes place at 60 community practice sites throughout the state, coordinated through six of the North Carolina AHEC Programs and their Offices of Regional Primary Care Education (ORPCE).

To expose students to primary care pediatrics and internal medicine practices, all students are required to complete two weeks of the **Pediatrics Clerkship** and four weeks of the **Medicine Clerkship** in an outpatient, ambulatory setting, usually at a community-based site coordinated through the AHEC and ORPCE programs. The Obstetrics/Gynecology clerkship also has an outpatient, ambulatory care component. Again, our analyses of curricular influences on career choice confirm that the Family Medicine, Medicine, Pediatrics, and Obstetrics/Gynecology clerkships are strong positive influences toward primary care careers, especially for students who entered medical school with an interest in primary care.

The Fourth Year

In the fourth year, students are required to take an **Ambulatory Care Selective**. This rotation comes at a time when students are refining their skills and are ready to function independently. Rotations in ambulatory care at this stage have a significant impact the choice of a generalist career. (16). During the selective, students make an independent learning plan to improve their clinical skills, explore community resources, and increase their understanding of the role of the practitioner and the practice in caring for the illnesses of patients, while promoting the health of patients, their families and communities. Sixty sites with over 170 community-based primary care practitioners participate as preceptors, each hosting one or more students for four weeks during the fourth year. All nine of the AHEC-based Offices of Regional Primary Care Education (ORPCEs) support this effort by helping to identify potential preceptors in their regions, and by providing coordination and logistical support for the students. Six primary care faculty in Chapel Hill act as departmental coordinators for the Ambulatory Care selectives.

A number of **elective courses in primary care disciplines** are available to fourth-year students. As a reflection of our excellence in rural health and family medicine, the Department of Family Medicine offers over 17 electives in rural and other primary care settings in North Carolina. These include courses such as Family Medicine and Community Fieldwork, Integrative Family Medicine, Aging and Health, and Principles & Practice of Alternative & Complementary Medicine. Other electives relevant to training in primary care are offered through our Department of Medicine, including Clinical Experience in Community Medical Practice, and Interdisciplinary Teamwork in Geriatrics. Similarly, our Department of Obstetrics and Gynecology offers the elective, Community Obstetrics and Gynecology.

Medical Spanish

North Carolina's Latino population increased by 94.7% in the 1990s. The Latino community here faces both language and cultural barriers to the state's health care system. With the great influx of Latino patients seen in primary care settings, it is important to train physicians to communicate with these patients. To address this need, the School of Medicine offers an intermediate level non-credit class in medical Spanish. Medical students may also take a non-credit beginning level interdisciplinary Spanish course for health affairs and social work students through our School of Social Work. In addition, fourth-year students have an opportunity to practice and improve their knowledge of conversational and medical Spanish through an international elective in Peru. This international exchange program with the Universidad Nacional de Trujillo in Trujillo, Peru allows students to join the medical team at a university hospital for one or two months. Students select an area of study such as Internal Medicine, Dermatology, Obstetrics/Gynecology, or Ophthalmology. An additional Spanish language and culture course currently is being developed through the UNC Office of the

Provost. Au Su Salud is a four-unit online program focusing on Spanish language as used in health care settings. Its development is supported by a grant from the U.S. Department of Education's Fund for the Improvement of Post-secondary Education.

MD/MPH Combined Degree Program

The **MD/MPH** program seeks to train leaders for the evolving health care environment of the 21st century. The goal is to provide students with the opportunity to integrate the individual patient perspective with that of the population sciences, thus strengthening each. In 2000, five students received an MPH (or MSPH) degree along with their MD degree and in 2001, eight students completed both degrees. Fourteen students are currently enrolled in the MD/MPH program. The interdisciplinary **Health Care and Prevention** MPH degree program was designed specifically for medical students and clinicians who wish to broaden their perspective and increase their career options. This program reflects a joint effort between UNC's School of Medicine and School of Public Health. The goal of the program is to prepare students for leadership roles in a variety of clinical settings, whether as practitioners in their own practices, or as leaders of primary care group practices or health care plans.

Faculty Development

In addition to fostering programs in our curriculum to promote interest in primary care specialties, we have also focused on programs aimed at retaining primary care physicians in generalist practices and in helping primary care physicians become effective teachers. To effectively prepare students for contemporary practice has required a shift from hospital-based to community-based education. In these "schools without walls," it is important to ensure the quality and consistency of educational experiences across sites and support the clinicians who volunteer to teach our students. To address this need, we have instituted faculty development programs for community practitioners who serve as part-time faculty. Programs for these faculty, who are busy caring for a large number of patients, must use non-traditional formats that are efficient, flexible and easily distributed. The **Expert Preceptor Program**, developed by the Office of Educational Development in collaboration with the AHEC Program, uses several different formats to meet the needs of widely dispersed community faculty. Preceptors may complete the program via paper-and-pencil independent study modules, by enrolling in seminars offered by the regional AHECs, or on the World Wide Web using a program called the **Expert Preceptor Interactive Curriculum (EPIC)**, available at http://www.med.unc.edu/epic. EPIC was developed by the Office of Educational Development and Office of Information Systems, with funding from the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE).

The program consists of eleven modules aimed at helping preceptors develop their skills in clinical teaching and in teaching students about issues in community practice. Each of the first three modules focuses on one critical skill related to clinical teaching in the community practice setting. Topics include (1) setting the stage, (2) effective teaching, and (3) evaluating performance and giving feedback. The remaining eight modules focus on methods for teaching contemporary health care issues. These modules address (1) interdisciplinary teamwork in health care, (2) information technology, (3) evidence-based care, (4) clinician-patient relationships, (5) managing care in the changing practice environment, (6) health promotion/disease prevention, (7) working with the community, and (8) culturally appropriate care. Participants earn continuing medical education (CME) credits for the completion of each module. "Expert Preceptor" designation is available to preceptors who complete eight of the eleven modules.

The **Visiting Clinician Program (VCP)** brings practicing primary care physicians from across North Carolina to the UNC campus to work one-on-one with clinical faculty and learn about topics that the participants themselves have identified as their desired learning focus. Clinicians who serve as preceptors for students' community-based clinical rotations are especially recruited for the program. Participants typically choose to study topics that represent dominant or emerging clinical problems within their practice populations. Upon enrollment, each participant chooses from a list of approximately 200 learning opportunities. Program staff then arrange for four one-day visits over a one-year period with faculty in the chosen areas to create an individualized program of continuing education.

Since its inception in 1996, the VCP has served 103 primary care clinicians from across the state. These include 31 from family medicine, 31 from internal medicine, 26 from pediatrics, and 15 from obstetrics and gynecology. Participants have engaged in 587 half- or full-day sessions in 116 different areas since the program began and have earned a total of 2,884 hours of Continuing Medical Education credit. Topics that have been chosen for study range from diabetes to pain management to high-risk obstetrics to computing in medical care. Participants report that the VCP helps them develop and confirm their knowledge and skills in a focused and relevant way. Faculty hosts report their appreciation for the opportunity to develop relationships with community clinicians and learn their perspectives. The VCP resides in the Office of Educational Development in the School of Medicine and is described at http://www.med.unc.edu/oed/vcp/. The program is currently funded by external grants.

In addition to EPIC and VCP, another resource for community-based primary care faculty preceptors is The Front Line, a quarterly newsletter published by the Office of Educational Development. This publication, also available online at http://www.med.unc.edu/oed/frontline/, provides information to help these faculty improve their teaching of UNC medical students on community rotations.

SERVICE LEARNING OPPORTUNITIES FOR STUDENTS

Student-run Organizations

There are several student-run organizations that give students learning opportunities in primary care. These include organizations focused on providing primary care to underserved patients, teaching youth about health issues and health careers, and providing medical students with learning opportunities in primary care.

Medical students themselves have conceived, planned and implemented many of the community service efforts emanating from the School of Medicine. In some of these programs, students provide health care services under the supervision of UNC faculty and community preceptors who volunteer their time. A leading example of this type of program is the **Student Health Action Coalition (SHAC)** Clinic, which celebrated its 30th anniversary in 1998. It is the oldest continuously operating, student-run free clinic in the country. The SHAC Clinic is multidisciplinary and includes students from the Schools of Medicine, Public Health, Pharmacy, Dentistry, Nursing, and Social Work, and the Division of Physical Therapy. This multidisciplinary environment replicates the team approach taken by many contemporary primary care practices. In 1999, students added **mobile SHAC** to provide well-person checkups and social support to underserved senior citizens in their homes. Students are assigned to visit a patient each month for a one-year period. At these visits, students interview patients to keep abreast of health problems, check vital signs and medications, and assess the safety level in the home.

Two other elements of the SHAC program are Health for Habitat and a variety of special programs offered by SHAC including the annual Kindergarten Clinic, which offers physical exams and vaccinations for children entering public school. Health for Habitat is a partnership of the University of North Carolina Schools of Pharmacy, Public Health, Dentistry and Medicine, joined with Habitat for Humanity of Orange County and a Habitat Family to finance and construct homes in Orange County. Health for Habitat received a Community Grant from the American Association of Medical Colleges.

Through the UNC-CH **Community Health Initiative**, a branch of the **North Carolina Student Rural Health Coalition (NCRHC)**, students provide primary care, lab services and health education at free clinics for low-income, rural patients in the Bloomer Hill (Edgecomb County) and Garysburg (North Hampton County) communities. The NCRHC is committed to teaching its members about conditions that contribute to poor health, developing skills and sensitivity needed to address these conditions, and introducing members to related career options.

Because of the growing Latino population in the surrounding area, students formed the **Spanish-speakers Assisting Latinos Student Association (SALSA)** to address the health departments' need for Spanish-speaking health care providers and interpreters. SALSA also serves the SHAC Clinic.

The **Health Professions Recruitment and Exposure Program (HPREP)**, sponsored by the Student National Medical Association, seeks to increase minority presence in the health professions. The program introduces high school students to career options in the health professions by teaching them about various medical conditions that exist in their families and communities. This project was recognized in a national competition when it won an award from the Student National Medical Association at its 1998 annual meeting.

The student-run program, **Making Educated Decisions About Life (MEDAL)**, seeks to educate area high school biology students about a variety of health topics including healthy living, sexually transmitted diseases, self-image, domestic violence, emergency medicine, and substance abuse. Approximately 40 medical students, working in pairs, are guest teachers about these topics throughout the school year.

Through **Students Teaching Early Prevention** (STEP on AIDS and STEP on Heart Disease), medical students teach middle school adolescents about the prevention of AIDS and heart disease.

Mentoring, by medical students, has been combined with health education in the **Pediaction** program, which works with local middle school students who have been identified at risk for school failure or family problems.

A variety of student-run interest groups help our students to explore careers in primary care. These groups typically meet monthly to hear a guest speaker and include the **Family Medicine Interest Group, the Internal Medicine Interest Group, and the Pediatric Interest Group.** In addition, **Prevention in Action (PACT)** provides information and educational opportunities in preventive medicine for medical students. PACT works with interest groups and supports its own projects such as promoting child safety and wellness in the local school system through the RiskWatch program and providing health education at local community centers.

The aim of the **Domestic Violence Action Coalition (DVAC)** is to educate health professionals about how to recognize victims of domestic violence so that they may support and help their patients survive these situations. The group is responsible for a half-day seminar, originally given on a Saturday morning for interested students, and then incorporated as a required part of the ICM curriculum. The DVAC also sponsors a domestic violence training workshop, as well as lunchtime talks on domestic violence.

School-sponsored Service Learning Opportunities

The Program on Aging offers several opportunities for students interested in primary care. The goal of their programs is to provide and improve access to health care for geriatric populations in rural areas through the education and training of health care professionals. The program holds an annual continuing education conference and provides information via its web site (www.med.unc.edu/wrkunits/3ctrpgm/aging/) on topics relevant to geriatrics such as polypharmacy and nonpharmacologic interventions in dementia. Through the Program on Aging, medical students are able to participate in the Hubbard Program for Collaborative Clinical Practice in Geriatrics, an interdisciplinary team training program focused on geriatric assessment. Students gain knowledge and skills in collaborative interdisciplinary practice applied to the care of geriatric patients in the context of family, home, and community. In addition, the team's work contributes to patient care by providing comprehensive assessments of patients referred to the team and recommendations to referring caregivers.

The Program on Aging research staff also works individually with interested students and fellows to mentor **independent study and research** in geriatrics. In recent years, students have investigated topics such as the prevention of osteoporosis in Wayne and Pender Counties and screening for dementia.

The UNC School of Social Work sponsors the **Summer Team Experience**, a six- to twelve-week interdisciplinary problem-solving program in which students live in a rural community and work in a rural health center, while researching and designing solutions to address a community health problem. Disciplines involved in the program include audiology, dentistry, medicine, nursing, occupational and speech therapy, physical therapy, pharmacy, public health, and social work. Student teams have worked on projects such as development of a caregiver support program in rural Northampton County, development of interventions to prevent complications of diabetes, determination of access to care in rural Halifax County, development of strategies to provide medicine to indigent patients, and improvement in the nutritional status of elderly residents in rural areas.

School of Medicine Recognition Activities Honoring Community Service

Studies have shown that dedication to service predicts primary care choice. One of the main goals of the School of Medicine is to instill in students the ethic of service. The **Eugene S. Mayer Community Service Honor Society** was created in 1994 to honor students' outstanding contributions in community service work. Since its founding, the Mayer Society has inducted 221 students and has showcased their contributions at an annual **Community Service Day**. The Mayer Society has recently begun to induct community preceptors and to honor them at a luncheon on Community Service Day. The Society also collaborates with students from other health affairs schools to produce a journal, Insight Out, that is dedicated to exploring the value of community service.

The **Zollicoffer Lecture** was established in 1981 by the Student National Medical Association in honor of Dr. Lawrence Zollicoffer, a graduate of the UNC School of Medicine. The purposes of this event are to increase awareness of minority health and community issues and to introduce students to dynamic minority role models in the field of medicine. The lecture recognizes Dr. Zollicoffer's commitment to civil and human rights, and commemorates over 40 years of minority presence in the school. In addition, each year a student is awarded the **Lawrence Zollicoffer Community Heath Fellowship** funded faculty donations. The purpose of this fellowship is to encourage medical students to learn about health issues related to minority and underserved communities through a community service project of the student's own design. Each year the Zollicoffer Lecture and banquet are held on a Friday and our Community Service Day is held the following day. Our annual applicant appreciation day for underrepresented minority students also coincides with these two events, enabling our applicants to become familiar with some of the community programs in which students are involved.

Our annual **Student Research Day**, sponsored by the Whitehead Medical Society (student government) and John B. Graham Student Research Society has expanded recently beyond basic science research to include epidemiological and clinical research as well. Topics such as a "A Survey of the Delivery of Mammography Services in North Carolina," "A Latino's Perspective: Hispanic Women and their Barriers to STD Health Care," "Young Adult Prevention Health Care Survey," and "Victim's Choice: Coping Strategies among Rural NC Women Experiencing Intimate Partner Violence" demonstrate our students' interest in integrating basic science concepts, population science, and clinical practice.

UNC RESEARCH RELEVANT TO PRIMARY CARE

UNC's Cecil G. Sheps Center for Health Services Research. The center encompasses an interdisciplinary program of research, consultation, technical assistance, and training focusing on the accessibility, adequacy, organization, cost, and effectiveness of health care services. One of the centers primary research programs is in primary care and the health professions. Historically, much of the Sheps Center's research in primary care has addressed the access, personnel, organization, quality, and cost issues that pertain to health services delivery, especially in rural areas. Current research efforts in this program include addressing issues of recruitment and retention of health care practitioners in rural practice, as well as the projection of need and demand for health professional personnel. Current research that specifically focuses on retaining physicians in primary care included a longitudinal study of rural physician retention that seeks to identify factors associated with longer retention, characterize how interactions between the physician and the community can predict retention rates, and assess the accuracy of rural physicians' estimates of their future practice employment tenure. Recently published work from the center has examined demography and health care in eastern North Carolina (17), hospitalization rates as indicators of access to primary care (18), the number of doctors practicing in rural areas the changing nature of rural health care (19), and medical training debt and service commitments: the rural consequences (20).

FUTURE PLANS

Rural and Underserved Task Force

To improve programs focused on rural and underserved populations, the School of Medicine formed the Rural and Underserved task force. This task force consists of the chairs from our Departments of Medicine, Pediatrics, Obstetrics/Gynecology, and Surgery, as well as the Associate Dean for Student Affairs and the Dean of the School of Nursing. The group has developed a list of possible interventions to improve services for these populations. These include curriculum changes, a link between loan repayment and service to the underserved, admissions practices, additional emphasis on service and population-based research, development of a health services leadership program in North Carolina, and a tracking system for the viability of care for the underserved.

Education for Lifelong Service

The SOM recently submitted a grant proposal for a three-year program aimed at preparing medical students to address the disparities in health care experienced by the underserved. This program, known as Education for Lifelong Service (ELS), consists of a required curriculum component for first- and second-year students, advanced curriculum options, extracurricular activities, and the formation of an ELS Office. For first- and second-year students, four ELS content areas will be incorporated into the curriculum: knowledge and understanding of communities with an emphasis on care to the underserved; cultural competence including an emphasis on social context in the delivery of care; effectively interacting with communities in meeting the health needs of underserved populations; and leading effectively within communities. Regarding the advanced curriculum, three new programs will be offered, including the Smart Ways to Develop Opportunities in Community Service (Smart DOCS) selective, Leadership Skills and Community Building Skills elective, and a medical Spanish and cultural sensitivity immersion program with an optional six- to eight-week preceptorship, Working with the Underserved. The ELS extracurricular activities include a speaker series, Voices from the Community, which will introduce and demonstrate institutional value in community service efforts, organizations, and leaders. In addition, the program will provide students with faculty mentors who are involved in community service or who are community preceptors. Finally, the ELS Office will coordinate and centralize the SOM's existing disparate community service activities thus providing "one-stop shopping" for students, faculty and community agencies looking for partners in caring for the underserved. As a result of the ELS office, direct service to underserved and vulnerable populations in North Carolina will be increased through student placements.

SUMMARY

We have responded to research findings that suggest that a strong background in community service, upbringing in a small town or rural area, and disadvantaged background all predict the choice of primary care practice careers. Our Associate Dean for Admissions is now a primary care physician. Observation of physician role models who practice in small communities now accompanies the study of basic science through Introduction to Clinical Medicine. Course offerings and extracurricular activities encourage and reward study of and contribution to the health of communities. Successful projects can lead to presentations at our school's Student Research Day and Community Service Day. Service is recognized by election to our Eugene S. Mayer Community Service Honor Society. Combined degree programs of MD-MPH invite students to gain formal academic training and credentials that will enable them to be leaders of generalist physicians and participate in the creation of new knowledge in this field. Clinical training emphasizes the practice of evidence-based medicine, integration of psychosocial factors in diagnosis and management of patients, and consideration of health promotion and disease prevention in the population. We are improving our efforts in faculty development for community preceptors that will assist both their teaching capabilities and standardize our education process across preceptor sites.

For the past three years, the selection of primary career specialties has trended downward among U.S. seniors. Although we have many programs and initiatives assembled to support students in choosing primary care as a specialty and the UNC SOM faculty continue to be national leaders in primary care education, we, too, have also experienced a drop in the number of seniors going into generalist specialities. A task force has been assembled to study ways that existing programs can be strengthened and to determine if additional initiatives are needed. We are also studying the factors that have contributed to the career choices of our students with the hope that this information can be used to improve our programs to promote interest in generalist careers among students. The SOM remains as committed as ever to fostering programs that will sustain students' interest in applying for primary care residencies and show them the rewards of a generalist practice career in the underserved communities of our state.

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ATTACHMENTS

Figure 1. Internal Medicine 1989-2002
US and UNC Student Placements

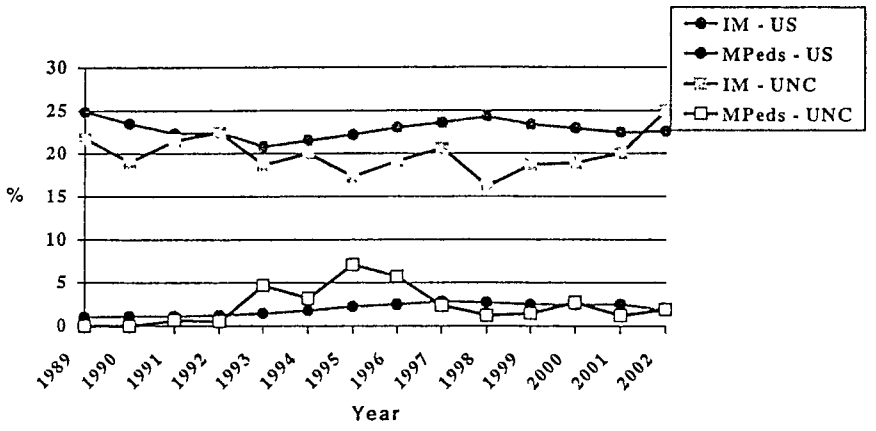


Figure 2. Pediatrics 1989-2002
US and UNC Student Placements

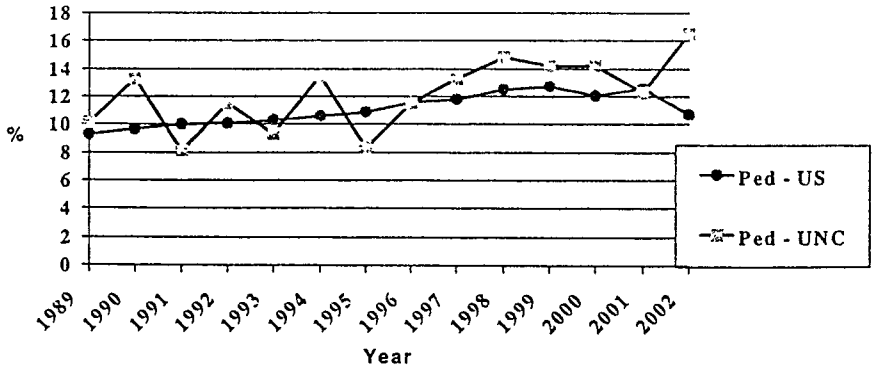


Figure 3. Family Medicine 1989-2002
US and UNC Student Placements

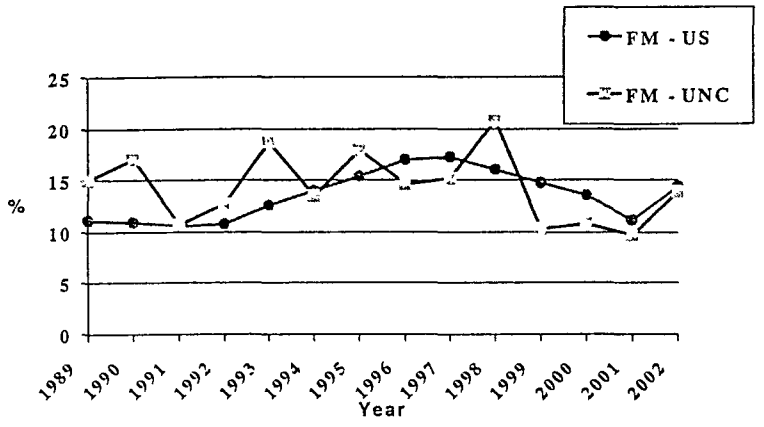
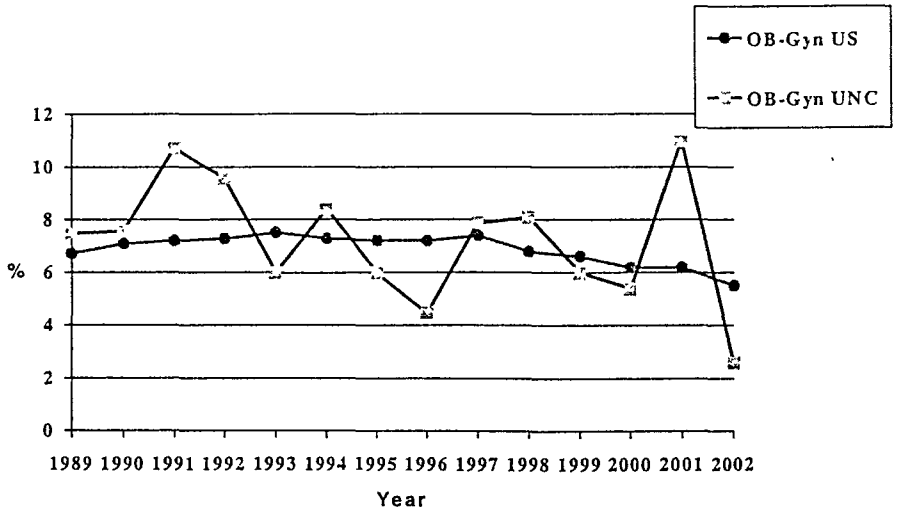


Figure 4. OB-Gyn 1989-2002
US and UNC Student Placements



2002 Update:
Primary Care Medical Education Plan

Wake Forest University School of Medicine

Respectfully Submitted by:

William B. Applegate, M.D., M.P.H.
Dean and Senior Vice President for Health Sciences
Wake Forest University School of Medicine

Cam Enarson, M.D., M.B.A.
Associate Dean for Medical Education
Wake Forest University School of Medicine

April 2002

A report in response to General Statue 143-613 as amended by Chapter 507 of the 1995 Session Laws (House Bill 230) of the North Carolina Assembly

In 1994, the Bowman Gray School of Medicine of Wake Forest University submitted an Institutional Plan for Increasing the Number of Generalist Graduates. Initiatives described in the plan included the Primary Care Development Program, the Department of Family Medicine, the partnership with Forsyth County in providing care for the indigent, the administration of the Northwest Area Health Education Center, and the Interdisciplinary Generalist Curriculum. This update will focus on current and planned initiatives, which are directed toward ensuring that our educational programs meet the needs of our students and society.

Programmatic efforts since the last report have been focused in the following areas:

1. **Enrollment**

Our 1994 report noted that since 1976, when the General Assembly appropriated funds to give North Carolina students an enhanced opportunity to attend medical school, WFUSM has consistently allocated approximately 60% of the positions in each class to North Carolina Students, even though State support has been static since 1976. This year, we had 5,175 applications for this year's entering class, 592 from North Carolina residents. Fifty-four North Carolina residents were selected for the 108-member Class of 2005. Over the past three years, including 2001, WFUSM has enrolled 172 North Carolina residents. See appendix for a fourteen-year trend of applications to WFUSM.

2. **Curriculum**

A. Community Practice Experience

The *Prescription for Excellence Curriculum* was introduced in 1998. Students complete an eight-week experience with a primary care practitioner as part of their Community Practice Experience course. During this academic year, over 200 students from the classes of 2002 and 2003 were spread throughout North Carolina for their CPE experience. As part of this experience, students complete a community profile and learn about the community resources available to the physicians in the practice to which they are assigned.

B. Ambulatory Clerkships

Students complete four-week rotations in Ambulatory Internal Medicine, Pediatrics, Family Medicine, and Women's Health. The latter clerkship is a multi-disciplinary experience involving faculty from Obstetrics and Gynecology, Surgery, Internal Medicine and Radiology. The 16-week ambulatory experience comprises 1/3 of the required clerkships in Phase III (third-year); additional primary care experience is available via electives in Phase IV of the curriculum.

Multiple community-based practice sites are utilized for student education in these clerkships. For example, the Internal Medicine Ambulatory clerkship utilizes 14 practice sites in 7 different locations and the Women's Health clerkship utilizes 30 different clinics in 8 different cities in western North Carolina.

3. National Primary Care Day

For the past seven years, the school has participated in the National Primary Care Day sponsored by a number of organizations including the Association of American Medical Colleges. Time is allocated to this program in the students' schedule to ensure the opportunity to participate. This year the program included presentations from a number of Wake Forest graduates who have entered generalist residencies and practice. The School sponsored a Career Day and Residency Fair to coincide with National Primary Care Day. Representatives from our own generalist residency programs and other generalist residency programs external to the Medical Center participated.

4. Office of Regional Primary Care Education

Our 1994 report noted the School's responsibility for administration of the Northwest Area Health Education Center (AHEC). The Northwest AHEC provides financial support for faculty and residents in the Departments of Family and Community Medicine, Internal Medicine, Pediatrics, Obstetrics and Gynecology, and Psychiatry, and for medical students during their community-based primary care rotations. In 1994 AHEC established the Office of Regional Primary Care Education (ORPCE) Program to support medical school initiatives in this area. ORPCE staff have been extremely helpful in facilitating achievement of the school's primary care education goals.

5. Program Evaluation

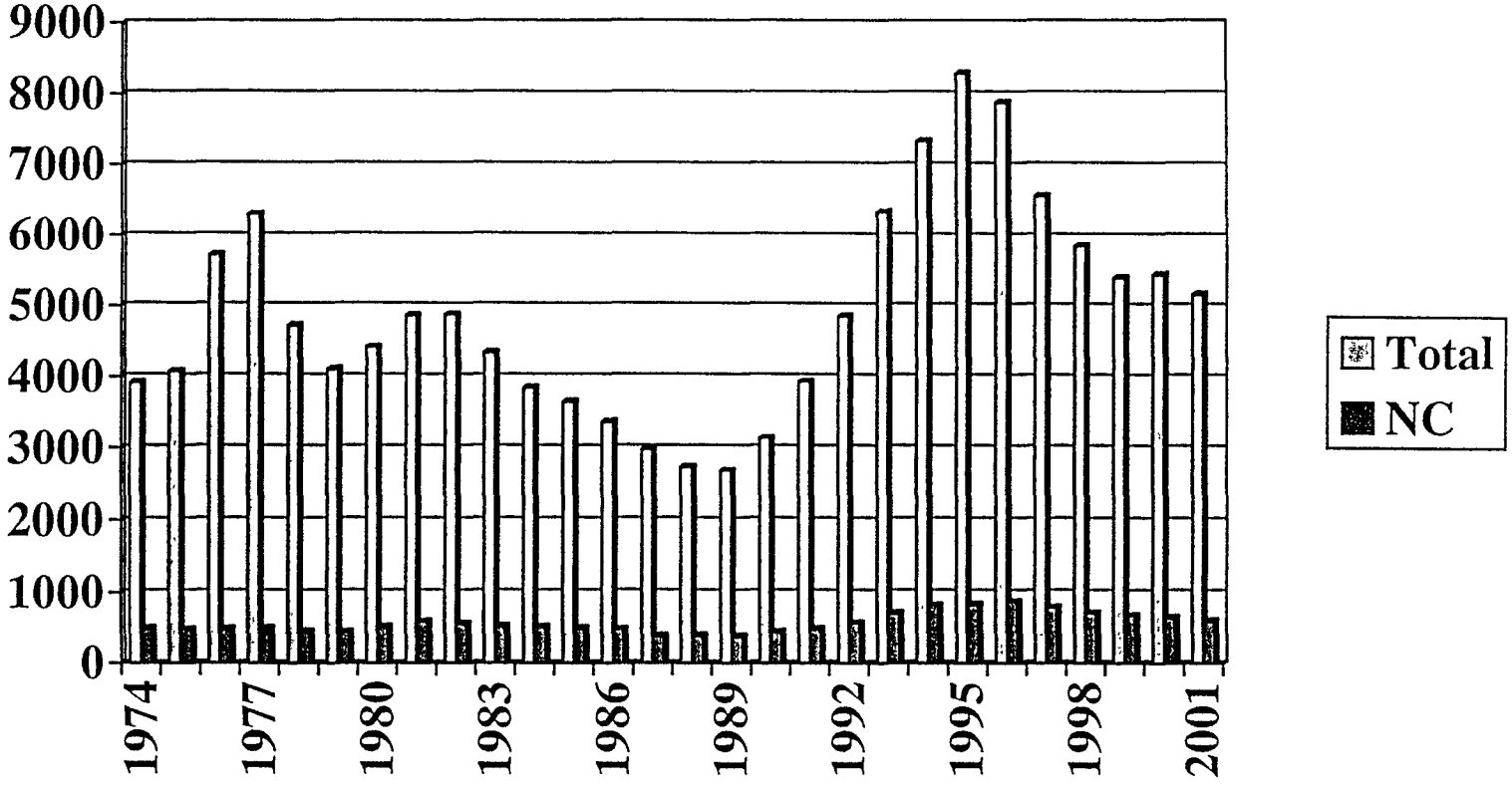
The School regularly tracks the residency selection of its graduating classes. During the past three years 64%, 58% and 62% of the class have selected a first-year residency position in family practice, obstetrics and gynecology, internal medicine and pediatrics (see appendix for 17-year trend). Since 1994, over 50% of WFUSM graduates have entered primary care residencies. Longitudinal outcomes also document the school's success in providing graduates for primary care practice. Forty-four and fifty percent of the 1994 and 1995 graduates were in primary care patient practice as of 1999 and 2000 respectively. These numbers compare favorably with statewide averages of 44% and 47% (North Carolina Medical Students Retention in Primary Care - 1994 and 1995 Graduates compiled

by North Carolina AHEC Program Cecil G. Sheps, Center for Health Services Resources).

6. Summary

The programs described in this document have been designed to address societal needs with respect to generalist physician education. As noted previously, we have implemented *The Prescription for Excellence Curriculum* which contains a significant emphasis on population and community health. This curriculum was designed to provide graduates with the requisite knowledge, skills and personal characteristics needed by physicians in the first stage of the 21st century. We look forward to continued evolution of our educational program to ensure that we are preparing students to serve the health care needs of our citizens.

Applications to the WFUSM



Percent of Wake Forest University
School of Medicine Students

Entering Primary Care Specialties *

1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
66%	64%	55%	52%	55%	44%	46%	56%	49%	41%	50%	51%	65%	58%	52%	64%	58%	62%

* Family Practice, Internal Medicine, Obstetrics - Gynecology, Pediatrics, Medicine-Pediatric

2002 Update:
Primary Care Medical Education Plan

The N.C. Area Health Education Centers (AHEC) Program

Respectfully Submitted by:

Thomas J. Bacon, Dr.P.H.
Program Director, N.C. AHEC Program
Executive Associate Dean
UNC-CH School of Medicine

April 15, 2002

A report in response to General Statue 143-613 as amended by Chapter 507 of the 1995 Session Laws (House Bill 230) of the North Carolina Assembly.

2002 Update: AHEC Support for Primary Care Medical Education Programs

Introduction

In 1994, the four schools of medicine and the N.C. AHEC Program submitted primary care educational plans designed with the goal of encouraging North Carolina residents to enter primary care disciplines. The plans of the four schools build upon the unique missions and programs of the schools. Although specific activities differ among the schools, they are all implementing initiatives in similar areas in order to increase the percentage of graduates choosing careers in primary care. The 1996 and 1998 updates to the original plans make it clear that the schools build upon their long standing relationships with the N.C. AHEC Program in order to conduct increased medical student and primary care residency training in community settings, with a particular emphasis on rural and underserved areas. The following sections provide an update on the AHEC plan for primary care residency expansion and support of medical schools training.

AHEC Plan for Primary Care Residency Expansion

Background. The General Assembly has given strong support to the training of primary care residents dating back to its appropriation to the AHEC Program in 1974. In 1974, the General Assembly provided funding to the AHEC Program for the expansion of primary care residency programs at the four schools of medicine and at those AHECs having the capacity to develop new primary care residency programs and/or to expand existing programs. Primary care was defined by the General Assembly as family practice, internal medicine, obstetrics-gynecology, and pediatrics. The 1974 legislation provided $15,000 grants to support 300 new primary care residency positions established after 1974. This number was reduced to 281 positions in response to reductions in the state budget sustained by the AHEC Program due to the fiscal crisis that faced the state in 1990-91 and 1991-92. The 1995-96 Expansion Budget grant supported five new residency positions in family practice. The 1997 AHEC Expansion Budget provided support for additional new family medicine positions as called for in the 1994 plan.

The following chart shows the allocation of the $15,000 residency training grants as of April 2002. It should be noted that the financial amount of these residency grants has not changed since 1974, and now, supports only a small portion of the full cost of the training provided. For those positions funded at the four schools of medicine, there is an obligation to rotate residents to community practice sites, thus broadening the community impact of the funding.

Distribution of AHEC Funding for Primary Care Residents

April, 2002

	Family Practice	Internal Medicine	Pediatrics	Medicine/ Pediatrics	OB/GYN	Total
Charlotte AHEC*	49.00	5.00	6.00	0.00	2.00	62.00
Coastal AHEC	11.00	13.00	0.00	0.00	6.00	30.00
Duke University	11.00	11.00	9.00	0.00	6.00	37.00
East Carolina University	38.00	6.00	5.75	2.00	3.00	54.75
Greensboro AHEC	14.00	7.00	4.00	0.00	0.00	25.00
Mountain AHEC	28.00	0.00	0.00	0.00	6.00	34.00
Southern Regional AHEC	17.55	0.00	0.00	0.00	0.00	17.55
UNC	11.00	2.00	1.50	3.50	0.50	18.50
Wake AHEC	5.00	4.00	7.00	0.00	0.00	16.00
Wake Forest University	30.00	7.00	3.50	0.00	2.00	42.50
Total	214.55	55.00	3675	10.75	5.50	337.03

* Includes 24 family practice residents in Cabarrus County

Current Status: Primary Care Residency Training in North Carolina, 2002. Two types of expansion of primary care residencies have occurred in North Carolina. The first is the development of new family practice residency programs. The second is the expansion of existing primary care residency programs. The expansion of these residency programs is coupled with an expanded commitment for the training of primary care residents in rural and inner-city areas. In many cases, this includes developing rural tracks for second- and third-year family practice residents.

According to the March, 2002 report of the National Resident Matching Program there were 602 first-year residency positions available in North Carolina, with 312, or 57 percent in the primary care specialties of family practice, internal medicine, pediatrics, and obstetrics/gynecology. These 312 first-year positions in primary care represent an increase of 10 positions since 2000. The following presents the status of primary care residency training in the state as of April 2002.

A. New Family Practice Residency Programs

Coastal AHEC: New Hanover Regional Medical Center, in conjunction with UNC-Chapel Hill and Coastal AHEC in Wilmington, North Carolina, has developed a new family practice residency program in Wilmington. This program has a total of twelve residents, four in each of three years. Primary goals are increasing the supply of family practitioners in southeastern North Carolina, as well as improving the retention of primary care physicians. With additional foundation and federal funding, Coastal AHEC is developing special rural experiences for their family practice residents in selected regional communities.

Cabarrus Family Medicine Residency: The Cabarrus Family Medicine Residency Program in Concord, in association with the Duke University Medical Center and Charlotte AHEC, has a total of 24 residents, eight in each of three years. The program graduated its first class of eight residents, in June 1999. Of the first three classes to complete this training at Cabarrus, 81 percent have remained in North Carolina, and 53 percent have gone to small towns or rural areas.

B. Expansion of Existing Primary Care Programs along with the Development of Rural/Inner-City Rotations

Mountain AHEC: The Mountain AHEC has implemented expansion of its 24-person family practice residency program by adding a rural track in Hendersonville with two residents in each its three years for a total of six new residency positions. The program graduated its first residents in June 1999. In addition, the OB/GYN program has expanded from three residents per year to four residents per year, for a total of 16 residents.

Charlotte AHEC: The Charlotte AHEC and the Carolinas Medical Center have added a rural track family practice residency in Monroe, which, like the Hendersonville program, has two residents in each of the three years. They have also added an urban track family practice program in Charlotte in collaboration with the Biddle Clinic. This program also has two residents in each of the three years.

Greensboro AHEC: The Greensboro AHEC and the Moses H. Cone Memorial Hospital expanded the family practice residency program to eight residents in each of the three years for a total of 24 residents. There are now two rural teaching practice sites to which residents may rotate and one inner-city practice where residents may also gain experience.

Southern Regional AHEC: The Southern Regional AHEC in Fayetteville remains at 18 family practice residents with no plans to expand at the current time. Residents rotate to four rural sites during the residency training. There is currently a new emphasis on practice management and computer skills acquisition.

Wake AHEC: The Wake AHEC, in association with the Department of Family Medicine at the UNC School of Medicine, has developed training opportunities for family practice residents from UNC at Wake Medical Center. These rotations give residents exposure to caring for the underserved urban population served by the medical center.

Coastal AHEC: The Coastal AHEC has plans to expand its existing residency program in OB/GYN from three to four residents per year, leading to a total of 16 residents in that program.

Wake Forest University School of Medicine: The Wake Forest University School of Medicine and the Baptist Hospital have maintained primary care residency training capacity at the same level as in 2000. The family practice residency program has a total of 30 residency positions. In pediatrics (36 residents) and internal medicine (28 residents), a strong emphasis is placed on preparing generalists for community practice.

Duke University Medical Center: The Duke University School of Medicine continues to have five primary care residency tracks: general internal medicine, general pediatrics, a combined medicine/pediatrics residency, family medicine, and obstetrics/gynecology. Though many specialty residencies are decreasing the number of residency slots, no decreases have occurred in primary care residencies.

ECU School of Medicine: The ECU School of Medicine, in conjunction with three area hospitals, expanded the family practice residency program in the mid-1990s from 36 positions to 54 through new rural track residency programs in Ahoskie, Williamston, and Clinton. In 1999 ECU decided to close the three rural programs due to changes in federal funding and difficulty in recruiting residents to these remote sites. It has now returned to a 36 resident program, but with a special rural track within the program for four to six residents in each of the three years of the curriculum. One additional position in pediatrics and two new positions in medicine/pediatrics were added in July 1996. General internal medicine has increased from eight to ten positions in each year. As a result, residency-training positions in primary care fields have increased 14 percent, from 126 to 144, since 1994.

UNC School of Medicine: The UNC School of Medicine and the UNC Hospitals has expanded their family practice residency program in a phased manner from 18 to 24 residents. No further expansion is planned at this time, but the department continues to develop community-based experiences for residents to enhance their preparation for community practice.

The Department of Obstetrics/Gynecology has increased its residency program to six residents for each of the four years for a total of 24. The Department of Pediatrics has completed a phased expansion of its residency program to a total of 48 residents. Similarly, the medicine/pediatrics residency has completed a modest expansion, which has resulted in a four-year program with a total of 24 residents.

AHEC Support of Community-Based Primary Care Training

In 1993, 1995, and 1997, the N. C. AHEC Rural Primary Care Initiative received funding from the N. C. General Assembly to support rural primary care, community-based education. As a result, an Office of Regional Primary Care Education (ORPCE) was created at each of the nine AHECs to facilitate the teaching of primary care students in community settings.

Since 1993, the state's nine AHEC ORPCE offices have supported a dramatic growth in primary care, community-based education. Currently, the AHEC ORPCEs facilitate the teaching of all medical, nurse practitioner, physician assistant, PharmD, and certified nurse midwifery students in North Carolina. In 1993-94, the ORPCEs provided assistance to 595 individual students; this number exceeded 2,800 in 2000-2001. Similarly, while the ORPCEs supported 693 student months of training in 1993-94, the total number of student months supported in 2000-2001 was over 3,800. These primary care experiences occur in approximately 1,200 community sites and with more than 2,000 individual preceptors across the state. These community-based student rotations provide an enriched experience in primary care with an early and continuing exposure to community practitioner role models, opportunities for practice in rural and underserved areas, and real world health care.

Facilitating quality primary care, community-based education for all health science students is the responsibility of each AHEC and it depends upon effective partnerships between the health science schools, AHECs (through their Offices of Regional Primary Care Education), and practicing clinicians throughout the state. The statewide AHEC system continues to provide the following elements of support:

For Preceptors

- Preceptor development activities
- Coordinated protocols for reimbursing eligible preceptor sites.
- Advocacy of preceptor concerns to schools
- Strengthened library and information services (including the AHEC Digital Library)

For Students

- Coordinate student housing
- Assist with student logistics and travel
- Facilitate quality educational experiences consistent with curricular goals
- Ensure Internet connections and access to library and information services

For Health Science Schools

- Identify and recruit preceptor sites
- Coordinate the placement and teaching of students in community-based sites
- Assist with the evaluation of community-based education.

Summary

This 2002 update on primary care programs indicates that the residency programs at the four schools of medicine and the AHEC system have significantly increased the number of primary care residents. North Carolina has now exceeded its goal of having approximately 50 percent of all residency positions in primary care by the year 2000. Currently, 57 percent of all first-year positions are in one of the four primary care specialties. This growth will significantly increase the number of primary care physicians trained in North Carolina, and increase the number of positions available to graduates of North Carolina's medical schools who show an interest in entering primary care specialties.

The foregoing program-by-program review of the primary care residency programs in North Carolina demonstrates that family medicine has experienced a substantial expansion of the numbers of residents through the development of rural and urban residencies. Each of the five AHEC-based family practice residencies and each of the four university-based family practice residency programs expanded their number of residents. In addition, two new residency programs have been developed at the Coastal AHEC in Wilmington and in Concord. There has also been a modest expansion of residency training in internal medicine, pediatrics, and obstetrics/gynecology. This expansion includes primary care tracks and/or

community-based training for the residents.

Of great importance to the state's efforts to retain residency graduates for practice in underserved communities is encouraging the expansion of residency training at each site and in each primary care field through the development of rural and inner-city training sites for residents from each of the programs. It can be assumed that the aforementioned efforts to expand primary care residency positions and to increase the rotations of residents to rural and inner-city areas will substantially enhance the retention of generalist physicians in the state while also increasing the likelihood that they will settle in underserved areas. In addition, since the rural and inner-city rotation of residents will strengthen the physician practices and health centers acting as teaching sites, it can be expected that the physician preceptors working in these practices will suffer less professional isolation and be more likely to remain in their communities.