

**THE NORTH CAROLINA
AREA HEALTH EDUCATION CENTERS
PROGRAM**

Program Plan

July 1, 2001 - June 30, 2005

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Introduction

The North Carolina AHEC Program, established in 1972, is a unique partnership between university health science centers and communities that was created to improve the supply, geographic and specialty distribution, retention, and quality of health professionals and support personnel to meet the primary health care needs of the people of North Carolina. Nine AHECs help serve the health workforce development needs of North Carolina. These are the (1) Area L AHEC, (2) Charlotte AHEC, (3) Coastal AHEC, (4) Eastern AHEC, (5) Greensboro AHEC, (6) Mountain AHEC, (7) Northwest AHEC, (8) Southern Regional AHEC, and (9) Wake AHEC.

Under the leadership of the Dean and the faculty of the School of Medicine at the University of North Carolina at Chapel Hill, which includes the Department of Allied Health Sciences, the AHEC Program has been developed in cooperation with the other UNC-CH health science schools at Chapel Hill (Dentistry, Nursing, Pharmacy, and Public Health), the Duke University Medical Center, the Wake Forest University School of Medicine, and the East Carolina University health science schools (Medicine, Nursing, and Allied Health). Also included in this statewide educational program are other university campuses, colleges and community colleges, along with a wide array of service institutions including hospitals, health departments, mental health centers, community health centers, nursing homes, and private medical offices.

The 2001-2005 North Carolina Area Health Education Centers (AHEC) Program Plan has been derived from a planning process involving the AHEC faculty and staff, the university health science schools, and the AHEC Program Office. This planning process resulted in four year plans for each discipline or program area, a four year plan for each of the university health science schools, a regional plan for each of the nine AHECs, and a statewide plan for the North Carolina AHEC Program.

The purpose of the statewide plan is to present a broad framework for more specific program plans which address current and emerging issues in health

education and training. It is also an opportunity for the various partners in the program, from the health service delivery and health sciences education sectors, to examine, review and endorse the philosophic and administrative assumptions and principles which underlie the N. C. AHEC Program=s basic mission, governance, and educational and training programs.

The AHEC Program has been guided by a series of long-range plans since its inception in 1972. The earliest plan (1972-1980) set forth the mission and the primary emphasis of the AHEC Program on health workforce and outreach activities in health professions student education, primary care residency training, and continuing education. The 1980-85 Plan expanded these activities and added special attention to the library/information services network and to nursing. The 1985-90 Plan continued the strengthening of all earlier activities and added a special concern and focus on the interdisciplinary health issues of aging, health promotion/disease prevention, occupational/environmental health, and management training. It also included the development of an AHEC initiative linking the four academic medical centers with the state's community mental health system.

The 1990-95 Plan reaffirmed a commitment to previous efforts and added a focus on health workforce development in several areas of special concern: increasing the number of under represented minorities who are successfully pursuing careers in all health fields, the allied health professions, and ambulatory-care-based education in medicine and other disciplines.

The development of the 1995-2001 AHEC Program Plan was challenging and complex. It reflected the complexity of rapid change in the health care delivery system that made new demands on health professionals in practice and the educational institutions which train them. It also reflected a response to several legislative mandates and outlined the final steps for completing Phase II of AHEC's six year plan to increase primary care practitioners for underserved communities of North Carolina.

Given that context, the 2001-2005 planning process incorporates the perspectives of the nine AHECs, the university health science schools, other

universities, community service agencies and community practitioners and support personnel from throughout the state. It was guided by a consideration that outcome measures will be used as a criteria for success by those who allocate resources. The emerging health workforce concerns identified by our own state coincide with the current priorities that have been identified on the federal level by the Bureau of Health Professions. These included:

- X Development of the health professions work force through research, analysis, and planning;
- X Improved distribution of health professionals;
- X Improved racial and ethnic diversity and cultural competence in the health professions workforce;
- X Improvement of the quality of health professions practice and education; and
- X Dissemination of information and provision of technical assistance.

In addition, all health science schools, departments, disciplinary groups, and AHECs assessed state and regional health professions workforce issues (shortages, distribution, education needs, etc.). All parties also agree that it is vital that we maintain and strengthen community-based training programs for students, residents, and practicing health professionals. The AHEC Directors also identified several programmatic initiatives, each of which builds upon activities already underway in each AHEC, to emphasize for the period 2001-2005. These priorities include:

- X Increased efforts to improve the diversity and cultural competence of the health care workforce;
- X Utilize technology to expand statewide access to educational programs and information services in order to reduce costs and improve the quality of the health care workforce;
- X Strengthen community-based student training;
- X Strengthen support for AHEC primary care Graduate Medical Education (GME) targeted to underserved communities; and
- X Respond to critical workforce shortages and training needs.

The North Carolina AHEC Program was created because of the need to improve the geographic distribution and specialty distribution of physicians and other health care personnel and to improve the quality of health care throughout the state. The planning process has served to reinforce the fact that the same health workforce needs that are at the basic core of the AHEC Program mission exist today and may be expected to continue into the future. The planning process has also allowed us to remind ourselves that AHEC's mission is not education and training for its own sake but rather education and training in order to have an impact on the access to quality health care for underserved populations in rural and underserved areas of the state.

Mission of the N.C. AHEC Program

The mission of the North Carolina AHEC Program is to meet the state's health and health workforce needs by providing educational programs in partnership with academic institutions, health care agencies, and other organizations committed to improving the health of the people of the North Carolina.

AHEC educational programs and information services are targeted toward:

- X Improving the distribution and retention of health care providers, with a special emphasis on primary care and prevention.
- X Improving the distribution and retention of health care providers, with a special emphasis on primary care and prevention.
- X Improving the diversity and cultural competence of the health care workforce in all health disciplines.
- X Enhancing the quality of care and improving health care outcomes.
- X Addressing the health care needs of underserved communities and populations.

Education and Training Issues

In order to achieve its mission, the N. C. AHEC Program has historically supported the systematic collection, analysis and evaluation of both workforce data and health information. The N. C. AHEC Program will continue to work with appropriate state and federal agencies to obtain current health workforce data necessary to target AHEC education, training, consultation, and technical assistance activities toward an improved supply, distribution, retention, and quality of health workforce of all types.

Wherever possible, the AHEC Program will assist other agencies, such as state licensing boards, the Sheps Center for Health Services Research, the N. C. Center for Nursing, and the State Center for Health Statistics, that have a primary responsibility for health care and health workforce data collection and analysis. The Program will also work cooperatively with each level of the state's health planning process and with other agencies and institutions, such as the Office of Research, Demonstrations, and Rural Health Development and the National Health Service Corps, which are equally concerned with the distribution and retention of health workforce.

During the period 2001-2005, the North Carolina AHEC Program will undertake programs consistent with its mission of improving the geographic distribution, retention, and quality of health care providers throughout the state. At the same time, the N. C. AHEC Program will adapt its programs to the changing health care environment and sharpen its focus on some of the most pressing issues of the decade. Since its inception, the North Carolina AHEC Program has demonstrated its capacity to identify and respond to local, regional, and statewide needs for health professionals. The maldistribution of primary care physicians identified in the early 1970s, the shortages of personnel in community mental health centers and the nursing shortage in the mid to late 1980s, and the shortages of certain allied health personnel and primary care practitioners identified in the 1990s are among the more important health workforce issues that the AHEC Program has addressed. AHEC will work with education and service agencies to address those issues and others as they emerge. The following sections outline major health

workforce and health education issues which will be a critical influence on the design and the implementation of future programming.

Health Workforce Issues

Over the past 40 years the U. S. has experienced evolving imbalances in the diversity, geographic distribution, and specialty mix of its health care workforce. Today, virtually every health care discipline is adversely affected by problems associated with shortages in workforce resources. Some of these problems stem from decreased quantity B either a shortage in absolute numbers or a maldistribution of health professionals; others reflect growing demand; while still others are due to deficiencies in a specialty/technical mix or competence. The current workforce situation is complicated by the fact that all health professions are experiencing declining applicant pools and enrollment.

Although each discipline has prepared a assessment of current workforce issues, several examples are listed below:

1. **Allied Health.** The Balanced Budget Act of 1997 coupled with the cost of health care has had an impact on the reimbursement and utilization of many of the allied health disciplines resulting in perceived workforce shortages in the disciplines of radiological sciences, clinical laboratory sciences, and health information management.

2. **Dentistry.** North Carolina ranks 47th in the supply of dentists to serve its population. In North Carolina, there are 38 dentists per 100,000 population compared to the national rate of 60 dentists. North Carolina began to experience a decline in the number of dentists per person in 1988. The N. C. Office of Research, Demonstrations and Rural Health Development estimates that 79 counties qualify as nationally recognized dental professional shortage areas. Thus, in many communities there are insufficient dentists to serve the insured population, let alone low-income Medicaid or uninsured populations. A similar shortage exists for dental hygienists.

3. **Medicine.** There are early signs of a trend away from family practice and other primary care disciplines and toward specialization as a career choice for new physicians. In addition, while there continues to be geographic maldistribution of

physician services, there are some predictions of physician surpluses. These predictions have had little impact on enrollments in medical schools, the number of residency training positions, or the rapid expansion in the supply of nonphysician clinicians such as nurse practitioners, physician assistants, or clinical pharmacy practitioners.

4. **Mental Health.** In North Carolina the gap between the advertised need and supply for psychiatrists in rural and underserved areas appears to be growing again following a decade of improvement. Data from a recent AHEC survey showed a pervasive shortage of qualified case managers and masters-level social workers. The need for more psychiatrists (particularly those in the specialty areas of geriatrics, child psychiatry, and substance abuse) was also critical, as was the need to retain those psychiatrists who currently work in the system.

5. **Nursing.** Supply and demand estimates suggest that for the next 10 years the supply of RNs will be very close to estimated demand, but that shortly after 2010 supply will decline while demand is expected to continue to increase. The shortages projected for 2010 and 2020 are very different from the cyclical shortages that have occurred in the profession of nursing during the last 50 years. The coming shortage will be driven by fundamental permanent shifts in the labor market, which are unlikely to reverse in the next few years. While the total current supply of RNs may be sufficient in North Carolina, there are signs that certain employment settings are more attractive than others. There are reported difficulties in recruiting nurses in long term care and in the acute care hospital departments of critical care, emergency rooms, and operating rooms.

6. **Pharmacy.** The pharmacist practicing today provides a much broader range of services than was offered even ten years ago. The profession has embraced the concept of pharmaceutical care which extends the pharmacist's role to providing medicine therapy that continues through to the goals of improved patient outcomes. Pharmacists are engaged in efforts to improve the quality of the drug use process and to identify ways to reduce medication errors. A recent Health Resources and Services Administration (HRSA) report, AA Study of the Supply and Demand for Pharmacists, concludes that there is a national shortage and that each

employment sector for pharmacists has shown evidence of increasing demand for pharmacists with increasingly demand in one sector affecting the supply of pharmacists available to other sectors.≡

7. **Public Health.** The public health workforce includes many disciplinary groups, including physicians, nurses, dentists, nutritionists, health educators, environmental health specialists, social workers, laboratory technicians, epidemiologists, biostatisticians, and veterinarians. It is particularly vulnerable to general workforce shortages in those disciplines, but for a variety of reasons the recruitment and retention of qualified public health professionals is more difficult than in other sectors of the health care delivery system.

8. **General Health Workforce Diversity.** In all health professions, minority populations continue to be underrepresented relative to the overall population in the state, despite the high demand for health care professionals. While African Americans, Native Americans, and individuals of hispanic origin account for approximately 10% of North Carolina=s health care workforce, these same minority groups comprise over one fourth of the state=s population. The discrepancies are often much greater in rural counties and among rural populations in the Piedmont and eastern part of the state. The rapidly growing hispanic/latino population has highlighted what has always been a hidden and often forgotten component of access to quality health care: cultural sensitivity and competence in the delivery of health care.

Obviously, during next few years we will continue experience changes in the health care system and in the education and training programs that produce the workforce for the health care system. While these changes might be shaped or accelerated by legislative reform at the federal or state level, we often overestimate the predictive accuracy and impact of rational health workforce planning and underestimate the power generated by the evolving health care marketplace that is already underway.

For example, the 1995-2001 N. C. AHEC Program Plan anticipated a more tightly and highly integrated health care system of managed care. However, the

intensification of consumer complaints about restrictive managed care plans actually had an effect on employers, state legislatures, and on systems of health care delivery and workforce requirements. In contrast to widespread prior expectations about how health care markets would evolve, the past few years have been noted for the demise of national hospital chains, local consolidation of health plans to enhance market share (though not services), slow HMO growth and less restrictive management of care. These trends have been responsive to consumers' demands, however, they also threaten to jeopardize the cost control that has been achieved in recent years.

Both plans and providers continue to feel financial pressure from the demands of employers and Medicare reimbursement. Cost pressures in acute and long care settings are causing workforce shortages and problems in recruitment and retention. Cost pressures on medical education and residency training are affecting the viability of some programs and the quality of education. While many organizations continue to develop initiatives aimed at improving quality and reducing costs, there is much greater skepticism about their ability to produce significant efficiencies in the delivery of care.

These changing patterns of health care delivery systems reaffirm the importance of AHEC's unique role in facilitating the linkage between education and health service. With creative ideas, a commitment to flexibility and strengthened communication with academic and service sector partners, the AHEC Program will continue to be an important part of the health workforce development initiatives that make quality and cost effective health care accessible to all citizens, but especially those in underserved rural and inner city areas.

As noted, rapidly changing economic conditions, revised policies related to the reimbursement of health care, emerging technology and the development of alternate forms of health care delivery have a major impact on the assumptions upon which current projections of the quantity and composition of the workforce are based and the manner of AHEC programmatic response. Assessment of health workforce requirements and educational needs in each discipline will continue to be made on the best estimates and most current data. However, given the likelihood

that projections will be modified in the near future, the N. C. AHEC Program will remain flexible to respond to any changing needs and educational requirements that may affect students and practitioners involved in AHEC education and training programs.

Other Educational Issues

Just as changes in health services delivery affect health workforce requirements, they also have a critical impact on the environment for health science education and training. New cost pressures on medical education and residency training are affecting the viability of some programs and have raised concerns about the quality of education. Similarly, in light of dwindling resources, the search for cost efficiencies by health care professionals and organizations may limit participation in continuing education and access to needed clinical education training sites.

Concern over the quality of health care requires finding the most relevant and effective way to use available resources in the delivery of education and training to all health professionals and support personnel. Adaptation and innovation of continuing education delivery methods are addressed within each discipline's plan for providing continuing education, technical assistance, and consultation. New teaching and learning formats, the use of ever expanding information services and technology, and increasing demand for individualized and specialized technical assistance and/or consultation all require assessing the efficacy and potential impact of various educational approaches and establishing priorities for those choices which involve time, personnel, and resources.

Information technology and information systems will be emphasized in the specific sections of this plan but all disciplines have considered the implications of information technology and computers on education and training programs for students and residents, on continuing education for practitioners, and on their own commitment to scholarly activity.

The rapid expansion of the health science knowledge base, escalation in the growth and use of modern technologies, and changes in the organization, economics, and delivery of health care services are profoundly affecting both the process of health science professional education and the practice of every health professional. Technological change is accelerating in two areas that will affect health care dramatically: medical and information technologies.

Despite an increased interest in cost benefit assessment techniques the impact of introducing new medical technology B devices, techniques, and pharmaceuticals B is to significantly increase the cost of health care. The development of computer assisted drug design, advances in imaging, gene therapy/genetic mapping, vaccines, minimally invasive surgery and transplants have profound educational implications for the health sciences education curricula, maintaining minimal competence, and life long learning in the health professions.

Information technology has not been adopted by the health care industry or workforce with as much enthusiasm as it has in other sectors of the economy. However, not even the health care industry and workforce can ignore the introduction of new information technologies that will drive new clinical care processes. Areas of expansion (and education) include: automation of the basic business processes (stimulated by the Health Information Personal Portability Act); easy to use clinical information interfaces (the electronic medical record); population based data mining (population risk factors and patient/provider outcomes); and the continued expansion of telehealth devices and systems. The success of these ventures in transforming the delivery of care remains to be seen. However, consumer ability to use the internet B to seek information about health and health care and to create communities and support groups B will in all likelihood improve and complicate health care decision making.

There is continued emphasis and general agreement that clinical training in the organizational and community sites where health care is delivered is an important experience for health science students. It is at those community-based educational sites that students and faculty can appreciate the changing demographics in the general population and recognize the impact of diverse cultural experiences upon the health status and health care needs of individuals and groups. Targeted community health issues such as aging, maternal/child/adolescent health, AIDS, health promotion and disease prevention have a common thread which is the reaction and interaction of individuals and their families to current health care issues. One implication of this population based approach for the educator is recognizing the need for interdisciplinary educational designs in addition to the

unique needs for more specialized clinical knowledge and skills by specific disciplines.

For the individual practitioner, most professionals recognize that completion of their formal training is only the beginning of a professional lifetime devoted to increasing competence, improving capacity to use more complex knowledge, and becoming more sensitive to the problems in the delivery of services. Given the diversity of health care settings, specialization of practice, and individual differences, special efforts are needed to provide a varied array of educational opportunities to provide educational mobility and meet the diverse learning needs of practicing health professionals.

Related issues affecting the educational process include:

- X The need for easy access to information by both learner and teacher in settings away from the AHEC site, resulting in the local availability of library and other information services in an effective, organized, decentralized manner.
- X The importance of individualized learning (and flexible program models) to supplement traditional group continuing education methods.
- X The continued assessment of whether new educational technologies, such as computer assisted instruction, computer based evaluation and knowledge/competence assessment, computer based learning resources, CD-ROM technology, interactive video, and related applications, are in fact cost effective, acceptable to learners, efficient, and an educationally appropriate means to convey information, assist learning, or teach skills.

The present confluence of health workforce concerns and new educational opportunities occurs at a time when there is an increased recognition and appreciation of the services provided by the N. C. AHEC Program in the state. Clearly, efforts to improve the quality, variety, and quantity of educational resources for individual health practitioners, support personnel, and employing health

organizations are essential to ensure the highest possible quality of health care delivery for the citizens of North Carolina. Yet these efforts must often be assessed within the context of finite, limited, and often committed resources.

Programming for these concerns will require careful assessment and perhaps re-evaluation of traditional health care educational technologies and approaches. Others will require improved approaches to educational administration and assurance of program quality. Whatever the case, the 2001-2005 time frame clearly will be one of both challenge and opportunity for the N. C. AHEC Program.

Goals of the N. C. AHEC Program

Given the context of environmental influences on the health workforce and health education outlined above, the n. C. AHEC Program will have several broad goals in carrying out its mission during the next four years. Each goal reflects critical Program priorities and activities.

Goal 1: Education and Training Programming

The AHEC Program will conduct and/or facilitate a variety of health education and training programs which (a) conform to the Program's Mission Statement, (b) stimulate an improved environment for professional practice with decreased isolation for health professionals and support personnel throughout each AHEC region, (c) reflect the education and training needs of primary care practice sites in underserved areas; and (d) respond to changing health workforce needs. The program will continue to support community-based education and training programs at the undergraduate, graduate and continuing education levels in nursing, medicine, dentistry, pharmacy, and the constituent professions in public health, allied health and mental health services.

Goal 2: Health Careers/Workforce Diversity

The AHEC Program will encourage and expand the development of activities which serve to improve the diversity and cultural competence of the health care workforce.

Goal 3: Information Technology

The AHEC Program will continue the development of its information technology infrastructure in order to allow health professionals flexible and

expanded access to the full spectrum of AHEC educational programs and information services.

Goal 4: Organizational Development

The AHEC Program will continue the development and evolution of an organizational structure and a style of administration which builds upon collaborative institutional partnerships, provides for regular input by AHEC-based faculty, coordinators and staff in decisions influencing their programs and their careers, and utilizes its resources more efficiently by operating as a unified statewide system.

Education and Training Programs: 2001-2005

In accordance with its general mission, one specific goal of the N. C. AHEC Program is to conduct and facilitate a broad spectrum of health education and training activities at undergraduate, graduate, and continuing education levels in allied health, dentistry, mental health, medicine, nursing, pharmacy, and public health in each of the nine AHEC regions. The Program has also identified an interdisciplinary educational approach to the training of students and in addressing such health issues as aging, AIDS, maternal/child/adolescent health, health promotion and disease prevention, and management education for health professionals as an important goal. These educational efforts, which take place in communities throughout the state, stimulate an improved environment for health care, decrease professional isolation, and allow practicing professionals and support personnel to meet their own educational needs on a local and regional level.

In order to achieve this educational goal, each AHEC has full-time and part-time faculty in a variety of health disciplines. These individuals are the AHEC-based representatives and/or liaisons to the affiliated health science schools and are responsible for maintaining the academic quality of the educational and training activities of AHEC sponsored programs.

Consistent with the public mandate of the N. C. AHEC Program, each member of the AHEC faculty and staff devotes attention to both

- (a) the education and training activities of health science students and/or medical residents on rotation in the AHEC regions and
- (b) the education and training needs of practicing health professionals, support personnel, and health care institutions and agencies in each of the counties served by the AHECs.

The emphasis for any one faculty member in these two levels of responsibility varies because the formal educational programs of each health science school place different demands on the AHEC-based educator. Faculty and staff in medicine and

pharmacy, for example, are more intimately involved in the educational activities of students on rotation to the AHECs than are faculty in the disciplines of nursing, dentistry, public health and allied health. Similarly, the approach used in designing educational activities to respond to the needs of the community varies among AHEC faculty because of the different characteristics of each health profession. Thus, institutional settings and their needs may receive more emphasis in designing educational activities in nursing and allied health than in dentistry and pharmacy.

Several principles underlie the education and training programs to be conducted by the N. C. AHEC Program during the period 2001-2005. These principles guide both disciplinary and interdisciplinary programs.

- X Each AHEC will continue to participate in the education and training of medical students, primary care residents and other health science students (allied health, dentistry, nursing, pharmacy, and public health) insofar as this serves regional and statewide needs.

- X Each AHEC will also participate in the continuing education of professionals and support personnel of all types. The participation of each AHEC in education and training programs will be of two types. First, each AHEC will directly conduct or sponsor certain programs. Second, each AHEC will co-sponsor activities under the direct sponsorship of another service agency or educational institution.

- X The programs of each AHEC will complement and support efforts designed to recruit underrepresented minorities into all health careers.

- X The programs of each AHEC will continue to focus on the special needs of individual health professionals and support personnel, the changing health care delivery system which emphasizes the ambulatory care setting, and on the interdisciplinary health issues identified at the regional and state levels.

X Since AHECs do not grant academic degrees, their programs will continue to give academic credit through association with various academic institutions, including universities, colleges, community colleges, and technical institutes. AHECs are committed to maintaining the highest possible educational standards so that participants can receive appropriate professional recognition. Recognition for participants attending continuing education programs will be derived through the AHECs' association with, and in accordance with guidelines established by, academic institutions, professional societies, and/or other appropriate educational organizations.

The North Carolina AHEC Program will provide educational activities and services that are of the highest quality, that are accessible to the maximum number of health professionals and support personnel, and that are delivered in the most efficient and cost effective manner possible. To accomplish this goal the N. C. AHEC Program will systematically and continually assess the rapid development of new educational technology for the delivery of educational programming. The N. C. AHEC Program is committed to enhancing its capabilities to provide educational programs and information services to the maximum number of health professionals and institutions in the state.

The descriptions of the disciplinary-focused education and training programs included as part of the 2001-2005 AHEC Plan are arranged according to the major health workforce disciplines represented among the four university health science centers associated with the Program. They are allied health, dentistry, medicine, mental health, nursing, pharmacy, and public health.

Education and Training Programs: 2001-2005

Disciplinary Focus

Allied Health

The allied health professions comprise a sizeable sector of the health care workforce. There are varying definitions of "allied health" but in general they can be categorized as those health professions associated with diagnostic, therapeutic, preventive, and organizational functions. They are to be found in all health care settings as well as many education and rehabilitation facilities.

Each occupational field has its own standards for education and practice and its own professional issues and concerns. Some fields are licensed and supervised under state law, making it possible to assess their supply and distribution. Others practice under varying standards of certification and are not easily counted or tracked, except by professional associations and national certification registries. For these fields, it has been particularly difficult for health planners to monitor the balance of supply and demand in the state except through surveys such as those conducted by the N. C. AHEC Program and the Council for Allied Health in North Carolina.

The National Institute of Medicine's 1989 report, "Allied Health Services: Avoiding Crisis" looked at data from ten allied health occupations and predicted serious imbalances if corrective measures were not taken. During this same period the N. C. AHEC Program hosted two invitational conferences, one in 1989 and one in 1990. One outcome of these two conferences was the realization that workforce planning in allied health required some primary data collection on supply and demand. A second major outcome was the creation of the Council for Allied Health in North Carolina in 1991. The Council now consists of 22 members who represent allied health professions, allied health educators, and major employers of allied health personnel.

The Council's ongoing purpose is to recommend strategies for ensuring that North Carolinians will have access to a well-prepared, well-distributed allied health workforce that is representative of the diversity of our state's communities. Allied health workforce shortages have been an on-going concern for the N. C. AHEC System for several years. Increasing demand for allied health services coupled with slow growth in the number and size of training programs and a lack of awareness of careers in allied health have contributed to these shortages. The Council also seeks to foster strategies to promote the allied health professions as sound occupational pathways for North Carolina's students and career-changers. Towards those goals, the Council has monitored trends in the demand, supply and distribution of allied health personnel through statewide surveys. Recently, however, there has been some experimentation with a new methodology for assessing the supply and distribution of allied health occupations in North Carolina.

Advisory panels, consisting of allied health practitioners, employers, educators, and workforce planning experts have been established to review the best available statistical and administrative data, to discuss existing and emerging policies, and to construct a consensus statement on the need for, and supply of, selected allied health disciplines. The process has been designed to take place under the joint guidance of representatives of the Cecil G. Sheps Center, the Council for Allied Health in N. C. and the N. C. AHEC Program. The first disciplines to be reviewed by the panel process have been physical therapy, speech/language pathology, and health information administration.

The Balanced Budget Act of 1997 coupled with the cost of health care has had an impact on the reimbursement and utilization of many of the allied health disciplines resulting in perceived workforce shortages in the disciplines of radiological sciences, clinical laboratory sciences and health information management.

Additional workforce and educational issues that need to be addressed during the 2001-2005 period include: the recruitment of underrepresented minorities, faculty/preceptor development, the identification of new clinical sites, establishing

career ladders and promoting educational mobility (including the strategies of off-campus degree programs).

Allied Health Education and Training Programs

The allied health education and training programs which will be conducted as part of the 2001-2005 AHEC Plan have been designed to respond to the allied health needs of the various regions. The overall objective of allied health education and training programs will be to facilitate the appropriate distribution and retention of well-qualified allied health personnel in North Carolina, and to continue to provide a bridge between the AHEC-affiliated schools of allied health and the local community. These programs are:

1. Undergraduate and Graduate Education Programs

Undergraduate and graduate rotations for allied health students to AHEC settings originate from a variety of allied health programs that use the AHEC network as a classroom for students. These schools are in community colleges, technical institutes, at various colleges and universities and at the academic health science centers.

Since the number of schools and types of allied health students receiving some training in AHEC settings is very extensive, the reader is referred to the nine AHEC plans for more details. The allied health education and training programs at the Department of Allied Health Sciences at the UNC-CH School of Medicine, Western Carolina University, East Carolina University, and the Duke University Medical Center will continue to be affiliated with the N. C. AHEC Program. These programs will continue to support community rotations to AHEC settings for students in physical therapy, occupational therapy, clinical laboratory science, cytotechnology, speech and hearing sciences, rehabilitation psychology and counseling and radiologic sciences (including radiography, nuclear medicine, radiation therapy). In addition, the newly implemented interdisciplinary PHD program in Human Movement Science will continue..These rotations vary from four

to twelve weeks for all students. In addition, the allied health programs of many community colleges and technical institutes, community hospitals, colleges, and universities will continue to use AHEC settings for student rotations.

The N. C. AHEC Program will continue to provide logistical and library support for the continuation and completion of the N. C. Consortium for Distance Education in Communication Sciences and Disorders. Currently five (5) collaborating UNC campuses (ASU, NCCU, UNC-G, UNC-CH, WCU) and the N. C. Department of Public Instruction are offering this graduate level degree via core distance courses, videotaped with internet support and live-interactive broadcasts from specific campuses to admitted students.

To ensure the continued supply of well trained allied health personnel, AHECs will continue to provide opportunities for students in allied health professions at university and community college programs to obtain high quality clinical experiences in community settings.

In addition, during the 2001-2005 period, AHECs will continue to assess the demand and to document the need for additional opportunities for undergraduate and graduate education programs for practicing allied health professionals.

2. Continuing Education

The AHECs will provide high quality, affordable, and geographically accessible continuing education programs and experiences to practicing allied health professionals of all disciplines in cooperation with the AHEC-affiliated health science schools, other cooperating educational institutions and regional/state professional associations. This continuing education programming will continue to be designed for development of new skills and knowledge and for clarification of practice issues in individual disciplines; there will also be an increased focus on multi- and inter-disciplinary programming on issues in health care practice.

3. Technical Assistance/Consultation

The AHECs will continue to provide assistance to institutions, agencies and professionals in the design of educational programming and the identification of resources.

Allied Health Education and Training Resources

Because of the number of schools training allied health personnel in North Carolina, each AHEC has several academic relationships involving community colleges, technical institutes, colleges, universities, and service agencies which sponsor allied health training programs of one type or another.

There is, nevertheless, a primary academic affiliation for each AHEC insofar as faculty teaching resources are concerned. The faculty from each of the following affiliated schools serve as a primary resource to AHEC education and training programs in allied health.

Area L AHEC	UNC-Chapel Hill
Charlotte AHEC	UNC-Chapel Hill
Coastal AHEC	UNC-Chapel Hill
Eastern AHEC	East Carolina University
Southern Regional AHEC	Duke University Medical Center
Greensboro AHEC	UNC-Chapel Hill
Mountain AHEC	UNC-Chapel Hill/Western Carolina University
Northwest AHEC	UNC-Chapel Hill/Wake Forest University School of Medicine
Wake AHEC	UNC-Chapel Hill

Each AHEC has a masters prepared member of the staff serving as its director of allied health education and training. In addition to these individuals, the AHEC-based faculty in medicine, nursing, dentistry, pharmacy, and public health also serve as

faculty for allied health programs. Finally, numerous allied health practitioners throughout the state who are employed in hospitals and other agencies give many hours of time as

teachers of students and continuing education programs in allied health

. These individuals also serve on a variety of allied health advisory committees which exist in each of the AHECs,

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Education and Training Programs: 2001-2005

Disciplinary Focus

Dentistry

Nationally, the dental profession faces critical workforce supply and demand challenges. The number of dental graduates peaked in 1983 (5,700), declined through the late 1980s, and leveled off in the 1990s at 3,900. As a result, in the 1990s, dental supply growth fell below overall population growth and that is projected to continue for the next decade.

North Carolina ranks 47th in the nation in the supply of dentists to serve its population. In North Carolina, there are 38 dentists per 100,000 population compared to the national rate of 60 dentists. North Carolina began to experience a decline in the number of dentists per person in 1988. At the county level, the decline in providers has accelerated in the past 10 years. Between 1979-1988, 41 counties experienced a decline in the number of dentists per person; between 1989-1998, 64 counties saw a decline in the number of dentists per person. In addition, there is a maldistribution of dentists in the state. There are four counties with no dentists in practice; another 36 counties have no dentist currently offering services to Medicaid recipients. The N. C. Office of Research, Demonstrations, and Rural Health Development estimates that 79 counties qualify as nationally recognized dental professional shortage areas. Thus, in many communities there are insufficient dentists to serve the insured population, let alone low-income Medicaid or uninsured populations. A similar shortage exists for dental hygienists.

The racial and ethnic status of dental practitioners is also an continuing workforce concern since there is a disproportionately higher need for dental care found among socially disadvantaged minority groups in the society. As with virtually all health occupations, minority representation in dentistry is very low. Approximately 6.5 percent of dentists are African American or Native American and approximately 3.3 percent of dental hygienists are African American, Native American or Hispanic. Aside from the obvious need to strengthen efforts in the

recruitment of a diverse population of students into the dental professions, the rapidly growing hispanic population in the state has serious educational implications. Meeting the needs of non-English speaking patients is of growing importance in the dental school curriculum.

While the general dentist plays a dominant role in the dental care delivery system, dental auxiliaries are an integral and essential component of nearly every dental practice. On average, three dental auxiliary personnel are employed per dentist in private practice. The demand for these support personnel is steady and according to practitioners there is a constant shortage in the workforce. The Allied Dental Education Program at the School of Dentistry offers curricula in both dental hygiene and dental assisting. There are eleven dental assisting programs and seven dental hygiene programs in community colleges throughout the state. Despite the number of auxiliary personnel entering the workforce each year, the supply apparently cannot keep pace with the demand.

No single factor contributes to the continuing shortage of these staff members from private practice; however, both job satisfaction and career satisfaction appear to be important factors in North Carolina. Results of a recent survey of dental professionals in North Carolina indicated that, for dental hygienists, there is a need for developing interventions to improve the level of satisfaction in the workplace.

Economic and demographic forces at the extreme ends of the population spectrum will influence the provision of dental services in the future. On the one hand, inadequate access to dental care is commonplace among children of families living in poverty. Nationally, among parents who feel that their children have unmet health care needs, 57% report the unmet need is for dental care. But there are only 47 actively practicing pediatric dentists in the state, and the number of pediatric dentists is declining. The lack of accessibility of dental services, and the low utilization of dental services among low-income children contributes to the large number of young children with untreated dental disease.

Not only do young children have particular problems accessing dental services, but people in institutional or group home settings, especially older adults also have

unique access problems. The aging of the general population will also have an impact on dental practice. Dental offices will provide care to a greater number of adults with increased education, substantial financial resources, higher expectations, and demands for maintaining and improving oral health. This group will expect to receive their dental care from practitioners trained in the latest scientific and technological advances in the field. The explosion of new information and technology will require practitioners to focus on continuing education in order to meet consumer expectations.

Finally, more and more dental health professionals have come to rely on computer and other electronic technologies to help them learn new procedures and techniques. The information highway, the Internet, and satellite technology allow more off-campus instruction that has the potential to reach every dental office via personal computer or some type of video transmission. The challenge to educators and CE providers will be to effectively develop and translate educational materials into the various appropriate forms of electronic media.

Dental Education and Training Programs

The UNC-CH School of Dentistry has developed a wide range of education and training programs in the AHEC regions. The experiences available for undergraduates and graduates through rotations and externships will continue to accommodate the requirements of the curricula and conform to the dental laws of the state. Within this framework a set of rotations and externships has been designed which provides students with clinical and didactic experience in serving a variety of underserved populations in settings such as county health departments, state institutions and correctional facilities, mental health centers, and Veterans Administration hospitals. Students also learn about different types of health care delivery systems in the various AHEC regions.

The purpose of these experiences is to broaden the students' perspective on the practice of dentistry and on the alternatives available within the profession so that when they enter practice, they may be responsive to the needs of underserved

populations and will consider practicing in an underserved geographical area or institutional setting. The dental education and training programs that will be conducted as a part of the 2001-2005 AHEC Plan include:

1. Undergraduate Education

The School of Dentistry will continue to support the dental hygiene student rotation program that is essential to the schools education/service linkage with the primary health care systems in the community. This program will allow undergraduate dental hygiene students an opportunity to enhance their clinical skills and broaden their understanding of health care delivery in a variety of real-world settings. Working with county agencies, students gain practical experience by providing care to patient groups they would not otherwise encounter during the traditional educational experience. Students select from specialty tracks in geriatric, pediatric, or hospital dentistry and gain experience in programs that serve well-ambulatory-indigent patients as well as children in programs such as Head Start and Smart Start.

The School=s AHEC Program has worked closely with the Allied Dental Education program in an endeavor to meet the training needs of dental hygienist in North Carolina through distance delivery. Acquisition of a Kate B. Reynolds grant will launch this initiative. It is expected that, long term, implementation will involve collaborations with all of the regional AHECs.

2. Predoctoral and Residency Education

The School of Dentistry will continue to support the off-campus program called Dentistry in Service to Communities (DISC). The DISC program is an integral component of the predoctoral dental curriculum and essential to the school=s education/service linkage with the primary health care systems in the community. The extramural experience consists of a minimum of seven weeks, a three- or four-week rotation in hospital dentistry and a three- or four-week community dentistry rotation. The extramural experience occurs during the summer session between the third and fourth years. Students who are unable to complete their experiences during the summer may be assigned a rotation during the fall semester of their senior

year. Students gain valuable clinical experiences under the supervision of on-site faculty preceptors in a variety of health care settings. The focus of the extramural experience is to provide training in the delivery of dental care to special and underserved populations in settings such as county health departments, state institutions and correctional facilities, mental health centers, and Veterans Administration hospitals. The program is designed to broaden the student=s perspective on practice alternatives emphasizing practice options in underserved geographical areas or institutional settings. The school will continue to explore options for and add new rotation sites to those currently approved.

3. Extramural Programs for Dental Residents

The school will continue to support the extramural program for residents in the dental specialties and the general practice residency program. These rotations are essential to the school=s education/service linkage with the primary health care systems in the community. This program allows residents in endodontics, orthodontics, pediatric dentistry, and oral surgery the opportunity to expand the scope of their training through collaboration and cooperation with state and community agencies.

A summer program of three one week clinical rotations at facilities operated by the Indian Health Service in Cherokee, North Carolina, is sponsored by the department of pediatric dentistry. Other special rotations are available during spring semester for seniors who have completed their requirements and wish to pursue individual interests.

4. Graduate and Post-graduate Education

A two-year general practice residency program is based at the UNC Hospitals and includes rotations in anesthesiology, oral surgery, physical diagnosis, ambulatory medicine, and emergency care. Some of these rotations occur at designated AHEC sites. Two other hospital based post-graduate general residency programs in dentistry are affiliated with the AHEC system. They are based at the Eastern and Charlotte AHECs.

5. Continuing Dental Education/Technical Assistance

The N. C. AHEC Program will respond to the continuing education needs of practitioners and auxiliaries throughout the state as they are expressed through the N. C. Dental Society, the N. C. Board of Dental Examiners, the North Carolina Dental Hygienists Association, the North Carolina Dental Assistants Association, local dental and auxiliary societies and the AHEC dental advisory committees. Quality and access will remain the benchmark of this program. The N. C. AHEC Program will strive to assure that appropriate programs of the highest quality are available to practitioners throughout the state on a regional basis. The system will continue to adapt to the rapidly changing continuing education environment and will respond to state and government regulatory changes as they continue to be implemented.

To conduct the wide range of programs required by these diverse groups, the regional AHECs often contract with national presenters to meet their programming needs. They also have access to approximately 114 full-time faculty members at the UNC-CH School of Dentistry. During 1995-1999, School of Dentistry faculty members helped conduct 732 continuing education program in community settings throughout the state. Over 26,1356 North Carolina dental professionals attended these continuing education courses during this period. The collaboration of the AHEC Program and the School of Dentistry allows practicing dental professionals and auxiliary personnel access to more continuing dental education in North Carolina than in any other state in the country.

In addition to the yearly CE programming, the AHEC Program in cooperation with the UNC School of Dentistry will continue to support special dental auxiliary training initiatives include Coronal Tooth Polishing for the Dental Assistant, the Dental Assistant II Preparatory course and Intraoral Radiography for the Office Trained Dental Assistant. The AHEC Intraoral Radiography Program was among the first of the special initiatives developed in response to the persistent need for Dental Assistants I (DAI) to take x-rays in the dental practice. Offered in conjunction with the School of Dentistry, this State Board of Dentistry approved program is in great demand and the courses are consistently filled to capacity. The

program also offers workshops to train radiology instructors from the nine regional AHEC programs who can then teach this course in their home communities.

Another initiative started in recent years is the Academy of General Dentistry Mastership Program. This program provides hands on participation courses which emphasize practical clinical applications of theory, principles, and techniques. At the Mountain AHEC in Asheville, dentists participate in courses such as occlusion, oral surgery, prosthodontics, restorative dentistry, and practice management. A second program is also underway at Northwest AHEC in Winston Salem.

AHECs will continue to provide a comprehensive array of educational services for dental practitioners and their auxiliaries. This includes formal sponsorship and cosponsorship of educational programs designed to meet both professional and community needs and access to the information resources of the AHEC library network. In addition, consultation and technical assistance concerning available educational resources will be made available to local dental societies and study groups as requested.

Dental Education and Training Resources

As the only dental school in North Carolina, the UNC-CH School of Dentistry is affiliated with each of the nine AHECs for dental education and training programs. Each AHEC has also collaborated with other dental educational programs which are conducted throughout the state. During the period 2001-2005, every effort will be made to work with the UNC-CH School of Dentistry, the Department of Dentistry of the Wake Forest University School of Medicine and dental programs conducted throughout the community college/technical institute system in order to maximize the efficient use of educational resources.

Each AHEC has a person on its staff who serves as the director of dental activities for the AHEC. Each of these persons serves part-time and may or may not be a dentist. In addition, many local dentists and dental auxiliaries also serve as a major resource to the program through membership on the dental advisory

committees in each AHEC which have a significant voice in the definition and implementation of AHEC dental programs.

Education and Training Programs: 2001-2005

Disciplinary Focus

Medicine

Substantial progress has been made since 1972 in overcoming the problems of aggregate supply and geographic maldistribution of physicians in North Carolina. In 1971 the state was 36th in the nation in its ratio of physicians to population; in 1998 North Carolina stood 24th. In the twenty years between 1979 and 1998 the growth trends for all North Carolina physicians has closely paralleled national trends and the state's 75 non-metropolitan counties have shown greater improvement in the physician to population ratios than the comparable non-metropolitan counties in the rest of the United States.

During the 1993 session, the North Carolina General Assembly expressed its interest in expanding the pool of generalist physicians for the state by mandating that each of the state's four schools of medicine develop plans to expand the percentage of medical school graduates choosing residency positions in primary care. The plans submitted by the four schools reflect the unique missions and the strengths of programs in the schools. The plans also described similar initiatives to increase the percentage of graduates choosing careers in primary care. These included curriculum changes to emphasize primary care, increased use of community practices at teaching sites, and expansion of primary care residency positions across the state to ensure residency opportunities for those graduates who choose primary care specialties.

In each case, the medical school plans for new generalist community-based initiatives built upon their 22 year relationships with the AHEC Program. These initiatives, as part of the 1995-2001 AHEC Plan, ushered in Phase II of the AHEC Program. In Phase I, medical education was decentralized -- but largely to the AHEC hospitals and to selected physicians' offices. In Phase II, the entire educational process moved even more into the community practice setting. This trend in undergraduate education, along with the expansion of primary care

residency training, has led to a dramatic increase in the supply of primary care physicians in the state. In 1998 North Carolina had 85 primary care physicians per 100,000 population, while nationally there were 74 primary care physicians per 100,000 population.

Medical Education and Training Programs

The objectives of the medical education programs for the AHEC Program for 2001-2005 are:

- X to introduce the medical student to the community and to demonstrate the attractive qualities which exist in the communities of North Carolina for the practice of excellent medicine, in addition to making available educational programs to ensure the maintenance of skills and the acquisition of new knowledge as it evolves;
- X to maintain and advance the cognitive knowledge and skills of the physicians now practicing in North Carolina;
- X to enhance the practice environment in order to retain physicians now in practice and to attract the appropriate physicians to identified underserved areas;
- X to collaborate with the Office of Research, Demonstrations, and Rural Health Development in the recruitment of residents to community practice sites and to support them once settled; and
- X to work with the North Carolina Health Careers Access Program, in addition to the local AHEC minority initiatives and other medical school based initiatives, to identify strategies that improve cultural competency in the delivery of health care and that will increase the number of underrepresented minorities who are pursuing practice as primary care physicians.

1. Undergraduate Medical Education

Students enrolled in the four medical schools in North Carolina will continue to rotate through the N. C. AHEC regions for their community medical experiences as they have in previous years. There is now a substantial portion of the curricula devoted to office-based off-campus training.

The increased emphasis on community-based education experiences for medical students led to the creation of Offices of Regional Primary Care Education (ORPCE) in each AHEC. 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 reached 2380 (and almost 4000 student months of training) in 1999-2000. These primary care experiences occur in approximately 1175 community sites and with more than 1900 individual preceptors across the state.

These offices are designed to help coordinate and organize the many primary care community-based physicians who are participating in the new programs. In these efforts the ORPCEs assist teachers and students in the education process, support community-based preceptors, and ultimately help to create more primary care providers, especially in underserved and rural areas.

2. Graduate Medical Education

An important mission of the AHEC Program is to improve the distribution and retention of primary care physicians in the state. To this end, the nine AHECs participate in the community-based training of medical residents who have chosen to specialize in the primary care areas as defined by the N. C. General Assembly: family medicine, general internal medicine, internal medicine/pediatrics, general pediatrics, and obstetrics/gynecology.

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. Since that time, 673 new primary care residency positions have been created in North Carolina. AHEC directly supports 339 of these.

The Charlotte, Coastal, Greensboro, Mountain, and Southern Regional operate Family Practice residency programs. The Eastern AHEC provides support for the Department of Family Medicine at ECU; the Northwest AHEC supports the Department of Family and Community Medicine at the Wake Forest University School of Medicine. In addition, the AHEC Program provides support to family practice residency programs at Duke and UNC-CH.

The Coastal, Charlotte and Greensboro AHECs have expanded residency programs in internal medicine, pediatrics and obstetrics/gynecology which were already in place at their sponsoring community teaching hospitals. The Wake AHEC provides extensive teaching to the residents on rotation from the UNC-CH School of Medicine to Wake Medical Center. In addition to the AHEC-based resident training, the AHECs also sponsor rotations of psychiatry residents from the four medical schools to community mental health centers. For those positions funded at the four schools of medicine, there is an expectation for the rotation of residents to community practice sites, thus broadening the community impact of the funding.

The North Carolina AHEC Program continues to serve as the major resource for training primary care physicians for rural and underserved communities of the state. Over 1100 primary care physicians have been trained in AHEC residencies, with two-thirds remaining in North Carolina towns to practice. At a time of substantial reductions in federal funding to hospitals for medical education and related programs, there is a need to strengthen the capacity of AHEC primary care residency training in order to assure the continued capacity of the program to meet the needs of the communities of the state.

3. Continuing Medical Education

The period 2001-2005 will be one of considerable importance and change for continuing medical education (CME). Issues of accreditation, funding, boundaries, managed care, mandatory documentation of CME for licensure, and utilizing new educational technology are all part of the changing paradigm of CME delivery. The challenge of maintaining the intellectual and educational character of the community environment that helped attract physicians to North Carolina will be a critical factor in their retention. It will also be essential to help physicians gain access to the latest medical knowledge so that they can best serve the citizens of North Carolina. The introduction of newer methods for patient care along with advances in biotechnology, computer networks and databases, and the introduction of telemedicine will make medical practice increasingly more complex. The N. C. AHEC Program provides an ideal network for the rapid dissemination of new information to the practitioner.

During the 2001-2005 period, medical faculty from the medical schools and the AHECs will continue to conduct specialty consultation clinics in various medical specialties in small towns that lack such services. These clinics are excellent forms of continuing education for the private practitioners who refer their patients to the clinics. The clinics also offer realistic education for medical students and residents who accompany faculty to the small towns.

Medical Education and Training Resources

The four university medical centers and their health science schools provide a major resource for the N. C. AHEC Program. The fact that the N. C. AHEC

Program is an interlocking network also means that any component may in a particular instance be a major resource to other components.

The schools of medicine have an affiliation agreement with one or more AHECs so that their responsibilities and support are clearly spelled out. These affiliations are as follows:

Area L AHEC	UNC-CH School of Medicine
Charlotte AHEC	UNC-CH School of Medicine
Coastal AHEC	UNC-CH School of Medicine
Eastern AHEC	East Carolina University School of Medicine
Greensboro AHEC	UNC-CH School of Medicine
Mountain AHEC	UNC-CH School of Medicine
Northwest AHEC	Wake Forest University School of Medicine
Southern Regional AHEC	Duke University Medical Center
Wake AHEC	UNC-CH School of Medicine

It is within this framework that the faculty in the medical schools and in the AHECs are a primary resource for education and the development of new skills for physicians throughout the state. Each AHEC has full time and/or part time faculty based at the AHEC. Faculty in each AHEC have their academic appointments in the medical school affiliated with the AHEC.

In addition to the full and part time faculty, a significant number of private practicing physicians contribute time and effort to the teaching of medical students and residents throughout the N. C. AHEC Program.

Finally, faculty based at the medical schools themselves spend a considerable amount of time visiting AHEC settings in order to conduct conferences, give lectures, and provide consultation for medical students, residents, and practicing physicians.

Education and Training Programs: 2001-2005

Disciplinary Focus

Mental Health

Mental health professionals include all those who assess and treat persons who have mental illness, developmental disabilities, and/or substance abuse diagnoses or other significant behavioral problems requiring counseling. Included among mental health professionals are: psychiatrists, psychologists, social workers, psychiatric nurses, Licensed Professional Counselors (LPCs), National Certified Counselors (NCCs), substance abuse professionals, school counselors / social workers / psychologists, and others.

Many other health and social service professionals also provide mental health services and are often part of the mental health target audience. Examples are those working in Department of Social Services and Developmental Evaluation Centers, faith communities, juvenile justice, law enforcement and corrections, group homes and long-term care, day care, vocational rehabilitation, and others. Mental health professionals often work on interdisciplinary teams with these service providers.

The largest employer of mental health professionals continues to be the public mental health system, largely within the N. C. Division of Mental Health, Developmental Disabilities, and Substance Abuse Services. This system includes state psychiatric facilities, mental retardation centers, alcohol and drug rehabilitation centers, and thirty-eight area programs (commonly referred to as community mental health centers) covering all 100 counties. Other places of work for mental health professionals and their colleagues include hospitals, public health centers, rehabilitation facilities, substance abuse inpatient and outpatient programs, inpatient psychiatric units, schools, departments of social services, prisons, faith communities, private practice, nursing homes and other long-term care facilities, day treatment facilities, and others.

Psychiatry remains a shortage specialty nationwide. The production of new psychiatrists is less than 50% of the need estimated by the Graduate Council on Medical Education. The shortfall is particularly acute for child psychiatrists for whom need outstrips demand by 15 fold. In North Carolina the gap between the advertised need and supply for psychiatrists in rural and underserved areas appears to be growing again following a decade of improvement. Severe financial pressure from shortfalls in State Medicaid funding, contraction in private mental health treatment due to managed care pressures, and resultant cost-shifting to the public mental health system have all caused dramatic strains in public mental health.

The AHEC Mental Health Directors conducted a statewide needs assessment of area mental health programs in the Spring of 1999. Interviews were conducted with Medical Directors and other senior leaders in area programs in every county in the state. Data from these interviews showed a pervasive shortage of qualified case managers and masters-level social workers. The need for more psychiatrists (particularly those in the specialty areas of geriatrics, child psychiatry and substance abuse) was also critical, as was the need to retain those psychiatrists who currently work in the system. The study also showed that the public mental health system has a myriad of training needs, some of which are inadequately addressed via on-the-job training.

The greatest current challenge to the N. C. mental health workforce is the proposed reorganization of the entire public mental health system. A report by the State Auditor called for massive system change including consolidation of area programs, abolition of area program autonomy, downsizing of state hospitals, and prioritization of target populations. Until a new structure emerges, most area programs will be under considerable financial constraints forcing many of them to downsize staff and limit needed services. An additional ramification of the state auditors report involves the recommendation to close some state facilities that are currently being used as AHEC training sites. AHEC may be called upon to help develop alternative sites for medical rotations with in the AHEC system.

It may be expected that the N. C. mental health workforce will enter a period of transition over the next two to five years, during which there will be considerable

uncertainty regarding workforce size, capability, organization, and educational needs. The new system that will follow will likely have more focused priorities, and will require a workforce with new skills for community management of specifically targeted populations. The challenge for AHEC will be to anticipate these changes and to aid in the development of professionals who can become leaders in a new public mental health system. AHEC will additionally have a role in maintaining the morale of the current workforce during the period of transitions.

Mental Health Education and Training Programs

The Mental Health Initiative of the North Carolina Area Health Education Center (AHEC) Program was created by an act of the North Carolina Legislature in 1985, more than 12 years after the original AHEC Program was started. The Mental Health Initiative recognized that the historically separate public mental health system and its workforce had unique educational needs. As a result the Initiative was designed to improve the recruitment and retention of mental health professionals in the public mental health sector as well as in rural and other underserved regions of the state.

The specific goals of the AHEC mental health initiative were, and still are, to:

1. Support the placement of psychiatric residents and other mental health trainees in rural and underserved regions of the state,
2. Coordinate educational resources for mental health practitioners, and for other providers such as primary care clinicians who work with individuals with mental health problems,
3. Provide technical assistance and consultation to public mental health facilities, and
4. Support mental health information resources in each AHEC region.

1. Undergraduate Medical Education

The N. C. AHEC Program contributes to the clinical training of medical students. AHECs specifically support required clinical rotations at the State Psychiatric Hospitals and at the Charlotte Area Program=s inpatient unit. Additionally, AHEC supports advanced community psychiatry electives at Charlotte and Henderson. These community-based experiences have proven invaluable in attracting students to careers serving underserved psychiatric populations.

2. Psychiatry Residency Training

The placement of psychiatry residents in community mental health center and other public sector sites remains one of the successful hallmarks of the AHEC mental health initiative. Residents are exposed to a wide range of public sector practice settings where they are supervised by university-affiliated psychiatrists. This Areal world exposure to community-based practice has been an important tool in recruiting new psychiatrists to public sector positions, while retaining clinicians who enjoy the university affiliation and teaching experience that comes from AHEC community placements. At Duke, approximately 60% of graduates remain in North Carolina. Of those remaining in the state, approximately 50% practice in rural or underserved areas. Of those leaving North Carolina, roughly 50% choose rural or underserved regions as well. At UNC, 66% of graduating residents remain in North Carolina, and 56% of these practice in rural or underserved areas. Of those leaving the state, 14% work in rural or underserved areas. At ECU, 60% of the graduating residents remain in North Carolina, and 27% of all graduates chose public mental health settings. At Wake Forest University, 50% of psychiatry resident graduates enter public sector psychiatry, either at state hospitals or area programs, on a full-time basis. Most graduates (about 80%) remain in the state.

3. Graduate Degree Programs

It is obvious from the needs assessment of area mental health programs and from frequent inquiries, that there continues to be a need for off-campus academic degree programs for those professionals who live in remote areas and must remain employed, but who also wish to continue their formal education. The N. C. AHEC Program has a successful track record of working with universities in the state to make these programs available and successful. Off-campus masters degree programs recently brought to rural areas of North Carolina include:

1. Master of Public Health in Health Policy and Administration from the University of North Carolina School of Public Health.
2. Masters Degree in Social Work from the Schools of Social Work at both East Carolina University and the University of North Carolina at Chapel Hill.
4. Continuing Education

The N. C. AHEC mental health directors have a strong interest in educational leadership. Characteristics the educational leadership approach include:

- X being proactive, rather than reactive;
- X helping to shape the content and methods of educational programming;
- X providing leadership to the public mental health system;
- X sharing knowledge and the planning process with others; and
- X developing partnerships with key organizations which can be mutually beneficial in furthering the work.

In particular, the AHEC mental health directors intend to be very involved in the development of appropriate training to meet Area Program standards for the Council on Accreditation (COA) surveys, the N. C. Division's Training Plan, the N. C. Council of Community Programs' training plan, and the development of on-line learning modules.

There is a great need for mental health practitioners to update their practices from Ausual treatment≅ to Aempirically-based≅ therapy. Their Askills toolkits≅ need to be revised. The Mental Health Directors will offer to work with the N. C. Division to identify, assemble or develop Best Practice Models in one or more of the following areas:

- X Schizophrenia
- X Developmental Disabilities
- X Substance Abuse
- X Personality Disorders
- X Depression
- X Dual and triple diagnosis
- X Assessment protocols
- X Treatment Issues specific to Children and Older Adults
- X Cultural Competency.

5. Technical Assistance and Consultation

The AHEC Mental Health directors will extend technical assistance and consultation to the Area Programs and other mental health facilities in their areas in order to meet individual agency needs. This assistance may be provided by the directors themselves or by others under AHEC auspices, such as on-site case consultation by faculty of a department of psychiatry, assistance with workforce distribution tracking and analysis, or other individualized technical assistance. The AHEC librarians whose focus includes mental health outreach services will emphasize the access and extension of computer based information services through the AHECs and computer databases.

In summary, the N. C. AHEC mental health directors have identified the following Key Priorities for the next four years:

1. Provide educational leadership to the N. C. division of mental health, developmental disabilities and substance abuse services and its area programs during this time of statewide reorganization and transition;
2. Embrace technology wherever possible to assist in the delivery of educational programming that meets the needs of our customers;
3. Develop best practice models and other programs to update the clinical skills of practicing mental health professionals;
4. Continue efforts toward workforce development;
5. Create and foster collaborative partnerships for interdisciplinary education, leverage of limited resources, and to guarantee audiences for our programs.

Mental Health Education and Training Resources

The AHECs have relationships with the Departments of Psychiatry at the four schools of medicine. These academic affiliations are as follows:

Area L AHEC

The UNC-CH Department of Psychiatry

Charlotte AHEC	The UNC-CH Department of Psychiatry
Coastal AHEC	The UNC-CH Department of Psychiatry
Eastern AHEC	East Carolina University Department of Psychiatric Medicine; School of Social Work
Greensboro AHEC	The UNC-CH Department of Psychiatry
Mountain AHEC	The UNC-CH Department of Psychiatry
Northwest AHEC	The Wake Forest University School of Medicine Department of Psychiatry
Southern Regional AHEC	Duke University Medical Center Department of Psychiatry
Wake AHEC	The UNC-CH Department of Psychiatry

The faculty from each of these departments serve as a primary resource for AHEC education and training programs in mental health. In addition, the N. C. AHEC Program maintains an agreement with the UNC-CH School of Social Work for programming in the areas of mental health and aspects of geriatric mental health.

Each AHEC has one or two staff members serving as directors of mental health education. These individuals are themselves mental health professionals or educators with mental health preparation, and many serve as faculty for AHEC programs. The AHEC libraries have additional personnel to provide information and outreach services to mental health facilities and personnel. These services support and enhance the continuing education services of the AHECs.

In addition to the contributions of university faculty, the AHEC mental health directors and the AHEC librarians, many mental health professionals from AHEC communities serve on AHEC advisory and program planning committees to guide the development and implementation of mental health educational programs.

Education and Training Programs: 2001-2005

Disciplinary Focus

Nursing

Registered nurses (RNs) comprise the largest group of health care professionals in the United States (more than 2.0 million RNS were employed in health care organizations in 1998) and in North Carolina (with 58,516 in the workforce as of 1998). In general there has been strong growth in the RN workforce both in absolute numbers and relative to the size of the general population, suggesting that new jobs are being created within the health care industry for registered nurses. However, there does appear to be very little slack (a readily available supply of potential workers) in the pool of licensed RNs in the state. A what little slack there is occurs primarily among licensed nurses aged 55 or older. A comparison of supply and demand estimates through 2020 shows that for the next 10 years the supply of RNs will be very close to estimated demand, but that shortly after 2010 supply will decline while demand is expected to continue to increase.

The shortages projected for 2010 and 2020 are very different from the cyclical shortages that have occurred in the profession of nursing during the last 50 years. The coming shortage will be driven by fundamental permanent shifts in the labor market, which are unlikely to reverse in the next few years.

The reason that the supply will decline is involves the aging of the nursing workforce and the fact that opportunities for women outside of nursing have expanded. Demographically, over the past 15 years the average age of working RNs has increased (to 44) and the proportion of the RN workforce younger than 30 years has decreased since the number of young women entering the RN workforce has declined. Nationally, and in North Carolina, admissions, enrollments, and graduates in entry level RN nursing programs have declined for the past five years. One can expect a substantial percentage of the nursing workforce (both RN and LPN) to reach retirement age in the next 10 to 15 years, they will not be replaced by new graduates, and the RN workforce will contract.

While the total current supply of RNs may be sufficient in North Carolina, there are signs that certain employment settings are more attractive than others. In 1998, 59% of the RN workforce was employed in hospitals, down from a high of 69% in 1989 and 1990. For LPNs hospital employment has declined steadily from 62% of the total LPN workforce in 1982 to just 24% in 1998. Both groups, but especially LPNs have seen employment opportunities increase in long term care, medical practice offices, and community agencies. These trends reflect the influence of managed care delivery systems that have shifted patient care and thus staff nurse employment out of hospitals and into community settings. They also reflect the wages paid for difficult and complex work and the attractiveness of the workplace setting. Hence, there are reported difficulties in recruiting nurses in long term care and in the acute care hospital departments of critical care, emergency rooms, and operating rooms.

Finally, as we enter the 21st century, with projected shortages in the nursing workforce, and projected substantial growth in minority populations, increasing the numbers of minority nurses becomes more important than ever for meeting the needs of the population for culturally sensitive and appropriate health care. Despite some gains in increasing minorities in the nursing workforce, the workforce is still far from reflecting the racial/ethnic composition of the population: less than 10 percent of all RNs are minority nurses while more than one-fourth of the nation's population are minorities.

AHEC nursing faculty recognize that solutions to educational and workforce issues in nursing are complex. Continued efforts and innovative, coordinated, and comprehensive responses utilizing new educational strategies, programs, and services will be required. Although an overall shortage of registered nurses may not take place until 2010, that shortage is almost inevitable, and now is the time that employers and nursing leaders should begin working together to plan how best to use increasingly scarce RNs to deliver patient care in the future. The North Carolina AHECs will continue to be well suited to collaborate with the North Carolina Center for Nursing, health care agencies, educational institutions and the nursing profession to assess needs and to respond to nursing issues throughout the

2001-2005 period. Specific objectives for the N. C. AHEC nursing faculty for the period 2001-2005 include:

- X continuing to implement the recommendations and mandate of the 1989 and 1991 Legislative Commission on Nursing;
- X supporting preceptor development in the creation of new clinical training sites for nursing programs;
- X supporting efforts designed to recruit minority and non-traditional students into nursing;
- X providing educational opportunities for nurses in administrative positions;
- X continuing to promote innovative off-campus baccalaureate and masters opportunities for registered nurses and to encourage opportunities for off-campus graduate nursing education for nurses in specialized settings, in advanced nursing practice, and for faculty in community college/technical institute programs; and
- X providing continuing education, technical assistance, and consultation to nurses at all levels to develop health promotion expertise and clinical skills, both acute and rehabilitative, necessary for practice in community, inpatient, and ambulatory settings.

Nursing Education and Training Programs

1. Undergraduate and Graduate Nursing Education

Education of registered nurses takes place in a variety of health care institutions, agencies, and educational settings throughout the AHEC regions. It also occurs in underserved rural and urban areas. AHEC-based nursing faculty are assisting in the development of new clinical training sites to further increase the accessibility of educational opportunities for the nursing student. These faculty are

also involved in coordinating the clinical assignments for nursing students, when one or more nursing programs are trying to make maximum use of the limited number of clinical facilities. AHECs will also be involved in the development of preceptor training to support nursing education experiences.

Graduate nursing students continue to receive clinical and community health experiences in the AHECs. Several AHEC nurses facilitate arrangement of high quality educational experiences and coordinate these experiences with those of other nursing students in their area. AHEC nursing and medical faculty may serve as teachers of these nursing students. Further, clinical training experiences among underserved rural and vulnerable populations will be essential for the training of primary care nurse practitioners. Sites that can provide such experiences will be actively sought and developed.

2. Continuing Education

AHEC educational needs assessments identify important trends in the learning needs of nurses. Programs in leadership development and management, the development of healthy workplaces, delivering culturally sensitive care, preparation for nursing specialties in the acute and non-acute settings (long-term care and hospice/home care), and successful strategies for retaining nursing staff are needed. The AHEC Nurse Council views education and training initiatives which improve the work-place climate for practicing nurses as essential for both retention and career recruiting.

To assist in the retention and distribution of nurses across a variety of work settings, the AHEC Program will provide educational opportunities which allow practicing nurses to maintain clinical competence and acquire new knowledge and skills. The content areas of continuing education workshops will continue to include clinical practice excellence, advanced certification, and management and professional leadership training. Statewide programming should continuously challenge nursing professionals to consider alternate practice and organizational models that improve the work setting environment and enhance the delivery of

nursing care. These professional practice models will assist in nurse retention and promote positive health outcomes for patients.

3. Educational Mobility/Career Advancement

There is a continuing interest in improving the availability of academic programs for qualified registered nurses leading to a baccalaureate and masters degree in nursing. The AHEC Program will continue to work with its affiliated nursing schools to implement a plan to provide needed off-campus instruction for practicing registered nurses in underserved regions of the state. Several AHECs are also directly involved with efforts to identify and counsel students to facilitate BSN and MSN education for the registered nurse. The development of programs and supportive services that address the access, articulation, location, time and financial resources issues that face today=s nurses are of utmost importance.

In addition, collaboration with schools of nursing on the assessment of needs for off-campus graduate nursing education for nurses in specialized settings and advanced nursing practice will continue. Of particular concern during the 2001-2005 period will be the academic needs and opportunities for professional development of faculty at all levels.

Nursing Education and Training Resources

Since its inception in 1972, a primary focus of AHEC nursing has been to design education and training activities that provide information about new technology, innovative clinical methods, and models of professional nursing practice. The provision of continuing education, technical assistance, and consultation, in response to regionally identified needs, relies on the strong support of nursing faculty from schools of nursing in the state and on the efforts of the nurse educators in each AHEC.

There are nursing faculty in the AHECs who, with the Liaison for Statewide Nursing Activities based at the University of North Carolina at Chapel Hill School

of Nursing, comprise the AHEC Nurse Council. The majority of the AHEC nurses have a masters degree, and several have earned a doctorate. These nurses coordinate and produce all AHEC nursing education programs and have adjunct faculty appointments at an affiliated school of nursing.

In addition to the full-time AHEC nurses, the faculty of the various affiliated schools of nursing devote time to help meet the education and training needs of the AHECs. Each AHEC also works collaboratively with the other diploma, associate degree, baccalaureate degree, and graduate degree nursing education programs in its region. Finally, nurses from communities throughout each AHEC region give many hours of time and effort to design and implement AHEC programs. This includes time devoted to serving on the nursing advisory committees of the nine AHECs

Education and Training Programs: 2001-2005

Disciplinary Focus

Pharmacy

The profession of pharmacy may be distinguished by the fact that it is the only health science discipline to have shaped its future through rationale planning and deliberate decision making. Pharmacy has evolved from its product preparation focus prior to WWII, through its dispensing focus to its current clinical (patient care) focus. The profession maintains its preparation and dispensing roles as it moves to take greater responsibility for the entire medication use system including the outcomes of pharmacotherapy. The exponentially increasing availability of scientific knowledge and the corresponding increasing availability of important new drug therapy options, the increasing utilization of the US health care system, increasing costs of health care, the high rate of medication related problems (many of which are preventable) and the poor rate of patient compliance with drug therapy regimens are some of the factors that have increased the need for pharmacists to take a more active role in medication use. To assure that the pharmacist is capable of assuming these roles and dealing with these issues, the profession has moved to the six year Pharm. D. program as its entry program. The transition process has been phased in among the 81 schools of pharmacy, where curricular changes added one to two years to the degree requirement.

There is relatively limited data available to assist assessment of the adequacy of the pharmacy workforce. This has led to contradictory claims of a surplus of pharmacists only several years ago and a shortage at this time. A recent Health Resources and Services Administration (HRSA) report, AA Study of the Supply and Demand for Pharmacists[≡] concludes that there is a shortage and Athat each employment sector for pharmacists has shown evidence of increasing demand for pharmacists with increasingly demand in one sector affecting the supply of pharmacists available to other sectors.[≡] In addition, the pharmacist practicing today provides a much broader range of services than was offered even ten years ago.

The profession has embraced the concept of pharmaceutical care which extends the pharmacist's role to providing medicine therapy that continues through to the goals of improved patient outcomes. Pharmacists are engaged in efforts to improve the quality of the drug use process and to identify ways to reduce medication errors.

However, some of the market pressures contributing to a current or future shortage may well be short term pressures subject to volatility in market strategies and expanding access to alternative dispensing models.

There are at the present time several strategies under consideration that address workforce issues. There has been some discussion of establishing new schools of pharmacy or expanding enrollment in existing schools. Other considerations include a modification in state pharmacy regulations, a change in the focus of practice to more direct patient care, an expansion of the education, national certification, and utilization of the pharmacy technician support system and dispensing automation. All of these options have AHEC implications. As the pharmacy profession continues to redefine its role, it is essential that the practice models and workforce estimates adequately represent their full range of services.

Finally, as the application to schools of pharmacy decline, there is an opportunity to combine recruitment strategies with the significant need to improve the ethnic and cultural diversity of the profession. Minorities represented 3.5% of the state's pharmacist work force as reported for 1999.

Pharmacy Education and Training Programs

The pharmacy education and training programs that will be conducted as a part of the 2001-2005 AHEC Plan respond to the previously listed health workforce issues. These programs are:

1. Entry Level Practice Pharmacy Education

During the period 1995-2000, the School of Pharmacy phased out its Bachelor of Science (BS) in Pharmacy curriculum and implemented a four-year, professional

doctoral program, the Doctor of Pharmacy (PharmD) curriculum for all professional students. The transition process has been highly time and resource intensive, and have resulted in a variety of curricular and programmatic innovations, but have also created several other educational issues that need continued attention.

The School is now admitting 120 students for each class. The implementation of the PharmD curriculum resulted in an increase from three to ten (more than tripling) in the number of required clinical experience months. The majority of these clerkships are completed throughout North Carolina with Pharmacy AHEC and community-based faculty serving as preceptors. This huge expansion in clinical training, which takes place throughout the state, has demanded the identification of new progressive clinical training sites and the development of new pharmacy preceptors. It has also placed increased demands on existing scarce resources (such as AHEC pharmacy faculty and the AHEC infrastructure that supports preceptor payment, housing, travel reimbursement) that will require assessment and continued implementation of measures to ensure system wide efficiencies..

2. Graduate/Residency Pharmacy Education

In addition to the experiential needs for entry-level PharmD students, the School implemented the External Doctor of Pharmacy Program during Spring 1996. This Program provides an accessible means for practicing pharmacists to earn the doctor of pharmacy degree while minimizing extended absences from their practice setting. As of May 2000, 107 North Carolina pharmacists have completed the Program, while approximately 170 are currently enrolled who also have clinical education requirements.

As the profession of pharmacy has expanded its responsibilities for patient care there is a growing need for more pharmacy residency programs. The School of Pharmacy hopes to work with the AHEC to promote, expand and maintain, through partnering relationships, the state's pharmacy residency programs. This will include both institutional (pharmacy practice and specialty) as well as the newer community-based residency programs.

3. Continuing Pharmacy Education

Mandatory continuing pharmacy education has increased the demand for accessible high quality continuing pharmacy education. The AHECs have been and will continue to be responsive to the educational needs of practicing pharmacists in their regions. In collaboration with the UNC-CH School of Pharmacy the AHECs will continue to offer a comprehensive selection of continuing education programs and information services throughout the state. The recent consolidation of the state's three major pharmacy organizations into one has also demanded a new element of continuing education coordination between AHEC and the North Carolina Association of Pharmacists.

Recently, both the medical and pharmacy practice acts were amended to create the Clinical Pharmacy Practitioner (CPP). The inclusion of the Clinical Pharmacy Practitioner in the Medical Practice Act and the Pharmacy Practice Act has provided a significant opportunity for a change in practice focus by clinically trained pharmacists. This mid-level practitioner has a scope of practice somewhat similar to the Nurse Practitioner or Physician's Assistant, but with additional restrictions. Both the Board of Pharmacy and Board of Medical examiners are currently finalizing regulations that will define the qualifications of a CPP. Once the enabling regulations (now under discussion) are in place, it is likely that a significant effort will be made through continuing education programming to prepare pharmacists for the CPP role and then keeping them up to date. It is anticipated that there will be some significant demand, at least for some period of time, for training programs, especially certificate programs, by pharmacists who wish to enter into collaborative practice arrangements.

In summary, the greatest need of practitioner workforce likely to be continuing education to maintain licensure. The next likely demand will be for certificate programming to get knowledge/skills to enter collaborative practices and/or initiate reimbursable services (e.g., immunizations). A third potential demand area is that of pharmacy residency training. These multiple training levels may become critical to assure a workforce that is competent to apply clinical and business skills to implement contemporary practices.

4. Technical Assistance

AHEC Pharmacy faculty will continue to serve their regions as resource persons in the areas of pharmacy systems and services, pharmacology, and therapeutics. Several AHECs have supported the development of Drug and Poison Information Centers to assist physicians, pharmacists and other health personnel with questions of immediate concern.

Pharmacy Education and Training Resources

Both Campbell University and the University of North Carolina at Chapel Hill Schools of Pharmacy partner with the statewide AHEC system. Campbell University places two faculty members in the Area L AHEC and one in Southern Regional AHEC. The UNC-CH School of Pharmacy has 21 pharmacy faculty in the AHEC system, with at least one in each AHEC region. These faculty coordinate and precept students in a variety of clerkships, direct continuing education and provide technical assistance within their respective regions. In addition, 13 community-based practice faculty are located in practice sites throughout the state. All of these faculty are contractually linked to the local AHEC and have pharmacy education responsibilities.

The Pharmacy AHEC Program is based in the School's Office of Professional Education. The Associate Dean for Professional Education serves as the liaison to Central AHEC and is responsible for the Offices of Experiential Education, Postgraduate Education, Curricular Affairs, Student Services and Practice Development. All of the AHEC and community-based pharmacy faculty have appointments within the Division of Pharmacotherapy. The Pharmacotherapy Vice Chair for External Programs is the primary liaison between the School and each of the nine AHEC regions.

Practicing pharmacists throughout North Carolina play a vital role in the education of pharmacy students and complement the AHEC based pharmacy faculty. Over 700 community and hospital pharmacists in over 500 practice sites

serve in this capacity throughout the state. Many also serve on regional AHEC pharmacy advisory committees.

Education and Training Programs: 2001-2005

Disciplinary Focus

Public Health

Public health can be defined as organized societal efforts to prevent disease and monitor and improve the health status of defined populations. The practice of public health encompasses a wide array of activities in public, private, and voluntary organizations which apply scientific and technical knowledge to prevent disease, promote health and improve the health status of defined populations. The emphasis is on the health and well being of the collective membership rather than on the health status of individuals within the defined population. In addition, the emphasis is on prevention rather than cure.

Changes in the health system -- including new biological, environmental, and behavioral health threats as well as shifts in health care organization, financing, and delivery -- create imperatives for public health to expand and adapt its educational and research initiatives in order to respond to emerging health issues and health workforce needs.

The challenges of the public health system are wrapped in the diversity of its programs and professional disciplines, and the need to make these function synchronously in order to deliver the best possible service. Public health has within it many disciplinary groups, including physicians, nurses, dentists, nutritionists, health educators, environmental health specialists, social workers, laboratory technicians, epidemiologists, biostatisticians, and veterinarians. It is particularly vulnerable to workforce shortages in those disciplines.

It is widely believed that workforce shortages exist in public health although there is very little current data available to quantify the extent of that shortage. Many entry level public health workers are inadequately prepared, while management positions are frequently held by workers with insufficient supervisory training in public health.. In addition to the issue of under-qualified personnel, there

are also indications of recruitment and retention problems once those personnel are brought up to the minimum qualification levels. In keeping with the AHEC mission, AHEC public health directors will be working towards identifying sources of information for an ongoing monitoring system for the public health workforce.

Public Health Education and Training Programs

The overall goal of the N. C. AHEC Program in the area of public health is to encourage, through education and training activities, the adequate distribution, retention and quality of the health workforce in public health agencies across the state. The N. C. AHEC Program will continue to be involved in conducting and facilitating education and training programs based upon systematic assessments of regional and local needs and professional workforce trends. Activities will be consistent with the underlying goals of the N. C. AHEC Program and will include involvement with undergraduate and graduate education and training, continuing education and technical assistance, with special attention devoted to major public health issues facing health professionals in North Carolina.

Public health issues affect large and varied segments of our society. They range from the monitoring of private water sources, to the disposal of toxic and hazardous wastes, to AIDS prevention and infant mortality. Public health topics such as disaster preparedness, infectious disease, health disparities, and primary and preventive health services are also highly visible in the professional and consumer arenas. The difficult public health problems to be addressed, the maldistribution of trained public health professionals, the population served, and budget constraints make the public health agency's job increasingly difficult. This will require that the AHECs focus on several areas during the next four years: first, providing up-to-date information and education on current public health issues of concern, including workforce issues; second, cooperatively working with other organizations to provide continuing education opportunities for public health personnel; and third, supporting the efforts of North Carolina's public health system and the UNC-CH School of Public Health to promote public health practice in North Carolina.

New educational programs in public health will use innovative educational technologies to enhance the quality, efficiency, timeliness, and accessibility of instruction; and span the boundaries of traditional academic and professional disciplines in order to offer interdisciplinary and multi-disciplinary experiences. In these particular areas, AHEC and the School of Public health plan to build on the successes already achieved in the application of distance learning technologies, in order to enhance the effectiveness and accessibility of its public health education and training programs.

Public health educational efforts through AHEC will continue in the areas of community experience for graduate and undergraduate students earning the Masters of Public Health degree and the B.S. in Public Health and continuing education for public health professionals. In addition to the on-campus M.P.H. Program of the UNC-CH School of Public Health, the Executive Master's Program offered by the Department of Health Policy and Administration, School of Public Health, enables health care executives, managers, clinicians, and other professionals to earn a Master of Public Health (MPH) or Master of Health Care Administration (MHA) by attending classes offered at off-campus sites. The Charlotte AHEC is one of three class sites in western North Carolina. The other two are in Winston-Salem and Asheville. Instructors rotate among these sites, alternating with video conference sessions. Students also take Internet-based courses during the summer. A new cohort for locations in eastern North Carolina will begin classes in August 2001. The program is a joint effort of the school's department of health policy and administration and the AHEC Program.

The distance learning MPH Program within the Public Health Leadership Program was developed to provide leadership training to current health professionals. The first cohort of students graduated in May of 2000. A second cohort will begin in the Fall of 2000. Teleconference sites for this cohort will be located in Elizabeth City, Wilmington, New Bern, Raleigh, and Winston-Salem.

Additional programs such as the Southeast Public Health Leadership Institute, the Certificate in Core Public Health Concepts, the Spanish Language Initiative, and the Management Academy for Public Health are other examples of how public

health training is being made available and delivered in a variety of media to a dynamic mobile workforce. AHEC's role of promotion, counseling, and logistical facilitation continue to be key components to the success of these programs.

AHECs will continue to provide regionally accessible and affordable continuing education programs of high quality relating to public health practice for professionals and public health agencies in the AHEC regions. AHEC Public health coordinators continue to play a key role in facilitating the work of community-based health initiatives and coalitions. AHEC involvement with statewide efforts of the Department of Health and Human Services (DHHS) to address educational needs of public health practitioners is growing. AHEC public health coordinators are involved with statewide efforts targeting nurses (working in the areas of obstetrics and gynecology, child health, adolescent health, school health, and prison health), maternity care coordinators, maternal outreach workers, child service coordinators, early intervention specialists, social workers, health educators, nutritionists, WIC staffs, lactation educators, adolescent health specialists, family planning specialists, immunization specialists, medical laboratory, dental health, STD and HIV testing/counseling specialists, smoking cessation specialists, and Health Check staffs. The AHEC staff is involved with conference development - most frequently in the areas of planning, faculty recruitment, accreditation, and logistical/fiscal management. Hundreds of practitioners across the state are the beneficiaries of these efforts.

Public Health Education and Training Resources

The primary university affiliation for public health programming through the N. C. AHEC Program is the UNC-CH School of Public Health, which is affiliated with each of the nine AHECs. The School maintains an administrative unit responsible for coordinating the activities of all nine departments with the AHECs. Each of the nine AHECs has one or more staff members whose full or part time responsibilities are to coordinate AHEC activities in the public health sector. These directors work with university and AHEC faculty/staff in designing educational services for specific disciplines in public health settings.

Education and Training Programs: 2001-2005

Library and Information Services

The growth of health science knowledge, the use of modern technologies, and changes in the delivery of health care services are profoundly affecting both the process of health science professional education and the practice of every health professional.

Each health science discipline has described curricular designs that emphasize new learning opportunities for community-based health professions education for all health science students. The need for easy access to information by both learner and teacher in settings away from the local campus or AHEC site is an important consideration.

Health care professionals, now more than ever, realize that the completion of their formal training begins a lifetime devoted to further learning. The importance of accessible information, individualized learning, and new educational technologies to assist in this process is obvious. AHEC has long recognized that access to quality information services is one of the features that can attract health care workers to areas where populations are underserved. The increasing availability of digital information services, together with the strong support services provided by AHEC regional libraries, can be even more effective in reducing professional isolation and bringing quality health information directly to the point of care.

The expansion and evolution of activity in distance learning as well as health care information system technology will bring opportunities as well as challenges to the education environment of the AHEC program.

The information environment changes as rapidly and as dramatically as the health care environment. However, these technological changes have actually reinforced the historical structure and role of AHEC library and information services. They are still part of a mutually supportive network with the university health science libraries, regional medical libraries, and other components of the

national biomedical communication network. These services are integrated into the total educational effort of each AHEC; serve as regional informational resources for all types of health professionals, and are integrated into national and statewide networks for the dissemination of health information.

Libraries and access to information services continue to serve the North Carolina AHEC Program mission by being

1. a resource to students and residents on rotation from the university,
2. a resource for students and residents based at the AHEC,
3. a resource for faculty and staff based at the AHEC,
4. a resource for practitioners and support personnel within the AHEC regions and
5. a resource for the statewide AHEC Program through various inter-AHEC exchange relationships.

The N. C. AHEC LIS Network has been a well-known and respected presence in rural North Carolina communities for the past twenty five years. Through outreach visits to rural health clinics, the N. C. AHEC librarians provide access to full-text, electronic resources, and assistance through effective use of the Internet. With the university affiliation of the N. C. AHEC Program, many of the resources typical of academic medical center libraries are available to N. C. AHEC faculty, residents and community-based preceptors.

AHEC library collections have become more electronic and the access to those collections is provided over computer networks. AHEC librarians have the task of balancing the requirements for print and non-print materials and finding the resources to support traditional and new forms of information.

In the age of information technology, AHEC librarians' roles continue to expand and include teaching, technical consultation, and information evaluation. Teaching the use of the internet in accessing biomedical literature is the primary domain of the health sciences librarians. The area of Evidence-Based Medicine and provided a prime area for librarians and physicians to collaborating in the teaching of medical students and residents. As information technology changes, AHEC library staff must continue to develop competencies in health care information and systems, knowledge management, computer technology, information evaluation, and marketing.

Over the last ten years the North Carolina AHEC Program's library outreach program has changed with the times. Ten years ago the N. C. AHEC Library and Information Services (LIS) Network emphasized forming cooperative library networks with rural hospitals through consultation services and circuit rider library programs. Today the emphasis has shifted toward creating virtual libraries delivering core resources and services to the health care provider's desktop.

The last two five year plans for the N. C. AHEC LIS Network responded to the changing environment of rural health care professionals and students. The theme of the 1990-1995 plan was the A library without walls, to encourage making library resources and services accessible at the point of need. The 1995-2001 plan proposed a statewide electronic network to address the educational and information needs of practicing health care professionals, preceptors for health professions students, students in community-based rotations, and burgeoning number of distance education students in an integrated fashion. The next four years will involve the full development of the AHEC Digital Library a common Web-based point of entry for access to core health information resources and services that support health professionals' clinical education.

The AHEC Digital Library is a collaborative project of the N. C. AHEC Program and the health science libraries at the University of North Carolina at Chapel Hill, Duke University, East Carolina University, and Wake Forest University. The collaboration of these organizations provides the opportunity to create a statewide digital library focused on health care that is connected to the

larger educational context of the universities while maintaining the N. C. AHEC library outreach services to rural communities.

The ultimate goal of the AHEC Digital Library is to become the digital health library for all North Carolina health professionals. In 1999, a prototype of the N. C. AHEC Digital Library became available for use by N. C. AHEC faculty, residents, and community-based preceptors. Panels of librarians and health care professionals will select core resources. Further development of the prototype is underway to provide a customized environment that delivers preselected and user-selected resources that are of the highest value to individual health care providers and which will also link those users to information services at their affiliated university and educational services available throughout the AHEC statewide system.

Although the rapid and complex changes in this area demand flexibility and sensitivity to the need for modification, the planning process has resulted in several broad goals for the library and information services system during the period 2001-2005:

- X To support AHEC efforts to recruit and retain primary care practitioners in rural and underserved communities through relevant training and the fast, efficient delivery of information services to their workplaces.
- X To provide information services support to health science students on rotation in community-based clinical sites.
- X To further the development of a statewide AHEC Digital Library that will allow new system wide efficiencies in the provision of information services.
- X To ensure that a sufficient level of computer and telecommunications expertise is available to allow each AHEC the ability to provide regional training and support.

Education and Training Programs: 2001-2005

Health Careers and Workforce Diversity

The North Carolina AHEC Program has always accepted the challenging need and goal to recruit more minorities into health care professions. While some improvement has occurred, data continues to show that in all health professions, minority populations continue to be underrepresented relative to the overall population in the state, despite the high demand for health care professionals. While African Americans, Native Americans, and individuals of hispanic origin account for approximately 10% of North Carolina's health care workforce, these same minority groups comprise over one fourth of the state's population. The discrepancies are often much greater in rural counties and among rural populations in the Piedmont and eastern part of the state. The rapidly growing hispanic/latino population has highlighted what has always been a hidden and often forgotten component of access to quality health care: cultural sensitivity and competence in the delivery of health care. Primary health care access can be improved through a better diversity of the health care workforce.

The nation's population outlook for the next century shows the numbers of minorities increasing, and can expect health care issues to remain at the forefront of concerns for those growing populations. It is imperative that the AHEC Program focus on underrepresented and/or disadvantaged groups in its efforts to improve the recruitment, distribution, retention and utilization, of health care professionals in the state. If the challenge to provide high quality care to the unserved and underserved is going to be met, the pool of competitive underrepresented minority applicants must be expanded and cultural competence in the delivery of health care continues to be an important consideration. It is imperative that the North Carolina AHEC Program strengthen its focus on increasing minority representation in the health care workforce in an effort to improve the distribution, accessibility and quality of the state's health care professionals.

While the population explosion being experienced by most minority groups creates concerns for the quality of health care available, that same population

provides a relatively untapped source for health care personnel. According to a Healthy People 2010: National Health Promotion and Disease Prevention Objectives, by the US Department of Health and Human Services, A...increasing the number of minority health professions is viewed as a partial solution to improving access to care. Several studies have shown that underrepresented minority health profession graduates are more likely to enter primary care specialties and to voluntarily practice in or near designated primary care health workforce shortage areas.≡

Despite considerable efforts to increase the number of representatives of racial or ethnic groups in health profession schools (medicine, dentistry, nursing, pharmacy, and allied and associated health professions), the percentage of such entrants, enrollees, and graduates has not advanced significantly and in some cases has not advanced at all since 1990. The targets set for Healthy People 2000 for such enrollment and graduation were not achieved, and achieving the revised targets by 2010 presents a significant challenge. Additional attention will need to be given to such efforts as providing financial assistance for underrepresented racial and ethnic group students to pursue health care degrees, encouraging mentor relationships, promoting the early recruiting of students from racial and ethnic groups before they graduate from high school, and increasing the number of racial and ethnic group faculty and administrative staff members in schools that train health care professionals. Other suggested approaches to improving culturally appropriate care for ethnic and minority populations include increasing cultural competency among all health workers and increasing the number of lay health workers from underrepresented racial and ethnic groups.

Since 1993, the AHEC Program efforts in health careers and workforce diversify, in conjunction with the North Carolina Health Careers Access Program (NC-HCAP), have expanded and grown from single AHECs providing individual programs to a statewide system with an infrastructure consisting of staff and core programs and activities at each of the nine centers. At the center of all these initiatives is the N. C. AHEC Health Careers and Workforce Diversity Council (HC/WD). The years, 2001-2005, provide an opportunity for the North Carolina AHEC Program to enhance and enrich the significant progress made into a seamless

interdisciplinary statewide program. However, in order to integrate and expand these health careers and workforce diversity efforts, it is essential that the North Carolina AHEC Program consider these efforts as part of the core mission of the AHEC Program instead of a special initiative; bring all disciplines and schools into the development and implementation of all efforts; identify permanent resources to sustain and support programming; and develop internal strategies to encourage diversity within our own constituent organizations.

Educational Resources and Programs

The N. C. AHEC Health Careers and Workforce Diversity Council (HC/WD) consisting of representatives from the nine AHECs, the N. C. AHEC Program Office, the North Carolina Health Careers Access Program (NC-HCAP) and the AHEC Office at Duke seeks to increase the numbers of minority/disadvantaged individuals in the health professions throughout the state by maintaining and expanding effective academic/community partnerships. The Council strives to collaborate with existing programs and identify gaps in the academic pipeline. This system of formal and dynamic partnerships seeks to link graduate and undergraduate institutions, community colleges, local school districts, health care agencies and communities to create an environment that attracts students in the health professions educational pipeline from kindergarten to professional practice. Over the next four years, there will be efforts to reinforce and support activities while creating a shared sense of accountability and responsibility to promote activities well beyond the boundaries of the HC/WD Council.

Since 1993 a formalized partnership between NC-HCAP and AHEC has increased the statewide visibility of and service to each organization's respective constituents in the area of health career development and recruitment, especially with students of color and their parents as well as under-served urban and rural communities within the state.

NC-HCAP and AHEC have collaborated on middle school and high school outreach programs offered through the nine regional AHECs. Selected members of

the NC-HCAP staff conduct lectures, seminars, and workshops with student groups, parents, and educators that are assembled through programs sponsored by the AHECs across the state. Additionally, NC-HCAP provides structured educational materials to AHEC program attendees. These booklets cover a variety of popular and non-traditional health careers, financial aid information, educational strategies designed to alert students about the college prep courses needed to gain admissions into the public and private higher education institutions of North Carolina. Life skill activities and health issues impacting ethnic minorities and other disadvantaged populations in North Carolina are also included. Several other publications, produced in-house by NC-HCAP, are used with AHEC adult and youth audiences (i.e., Datelines, Access Newsletter, Health Sciences Admissions Tests Schedule, etc.) Finally, NC-HCAP provides technical assistance to members of the Health Careers/Workforce Diversity Council in program development, implementation, evaluation and student tracking.

In order to provide continuity across the state, the HC/WD Council has agreed upon 5 core functions that will be available in each of the nine AHEC regions for the period 2001-2005. These functions include:

1. Information and Material Dissemination

In efforts to continually promote and increase awareness of health careers, the Health Careers and Workforce Diversity Council is committed to providing educational resources to students, parents, and teachers. The Council will maintain a lending library and a speaker's bureau. Health careers information will also be distributed to target populations via the AHEC health careers manuals as well as educational videos, books and CD-ROMs.

North Carolina AHEC Program will continue to support the publication of a health careers guide. The purpose of this publication is to provide information about the many choices in health careers to persons making career decisions. The guide provides a comprehensive overview of over 85 health occupations and training programs in the state, for use by schools, students, hospitals, and "career-changers". The manual describes the setting and work done in various occupations, the

requirements for entry into practice and prerequisites for admission to training programs. Financial aid information as well as information on health career opportunities in the Military are also provided. To date, 140,000 copies of the North Carolina Health Careers Manual have been distributed throughout the state to schools, counselors, libraries, hospitals and other organizations. The guide is considered to be an indispensable recruitment and career development tool.

2. Health Careers Enrichment and Exposure Activities

K-12 students engage in a variety of motivational, academic and research opportunities in which they are expected to gain skills and knowledge that will give them a competitive advantage when applying to a health professional school. The Council proposes to continue to support and incorporate shadowing, mentoring and modeling into programs and activities since the literature suggests that these experiences contribute to the academic success of faculty and students.

3. Cultural Diversity and Cultural Competence

Since it is projected that by the year 2010, the U.S. minority population will increase by 60 percent, clearly health professional must develop skills in cultural awareness and cultural competence essential to providing quality health care to a diverse patient population. Cultural competence includes attaining the knowledge, skills, and attitudes to enable administrators and practitioners within systems of care to provide effective care for diverse populations, i.e., to work within the person's values and reality conditions. Compliance, recovery and rehabilitation are more likely to occur where managed care systems, services, and providers have and utilize knowledge and skills that are culturally competent and compatible with the backgrounds of consumers.

The Council proposes that all AHEC education and training programs include the following components:

- ⊘ Awareness of self and one's own value system;
- ⊘ Understanding of the concept of culture and its role as a factor in health and health care;
- ⊘ Sensitivity to cultural issues for each patient; and
- ⊘ Understanding and ability to use specific methods to deal effectively with cultural issues in interacting with individual patients, their families, members of the health care team, and the wider community.

One aspect of cultural competency recently addressed by the North Carolina AHEC Program has been the Spanish Language Initiative. Hispanics and Latinos continue to be the fastest growing minority population in the United States and North Carolina. At many of the state's outpatient health care clinics, and especially those serving young families, over half of the patients are Hispanic, and the vast majority of them speak little or no English. The North Carolina AHEC Spanish Language and Cultural Training Initiative is a unique opportunity to increase access and improve the quality of health care services to Spanish-speaking families in North Carolina. Through a three year grant from the Duke Endowment, the N. C. AHEC Program collaborated with the N. C. Department of Health and Human Services Office of Minority Health, the UNC-CH School of Public Health, the Duke AHEC office and the UNC-CH Health Sciences Library to provide interpreter training, several levels of language classes for health care workers, instructor training for basic medical Spanish, and Spanish materials for AHECs' on-site libraries. Clearly this is an programmatic issue that permeates the spectrum of the health education from students to practitioners. The North Carolina AHEC Program remains fully committed to participating in these efforts and in the improvement of health care services for immigrant populations.

4. Partnering and Collaboration

It is paramount that the HC/MW Council and each AHEC collaborate with various community groups to develop health career awareness programs to reach the greatest number of students. Those relationships exist between public and private secondary schools. The Job Readiness Partnership established by the Governor's

Job Readiness Commission, hospitals, and organizations like the NC-HCAP. While those partnerships have been key in reaching students, the nine AHEC programs should aggressively seek to establish linkages with other organizations, as well. Strategic partnerships with community colleges, historically black colleges and universities, UNC-Pembroke and health career opportunity programs offer even more possibilities to develop ethnic minorities for health careers.

5. Regional and Statewide Tracking and Evaluation

Regional and statewide tracking and evaluation efforts are essential in terms of monitoring and assessing the efforts of the HC/WD Council. The Council therefore recommends that the AHEC Program Office develop a database in conjunction with CASCE that will track individuals and programs. Subsequently, efforts should continue to establish an appropriate statewide strategy for baseline workforce data, process evaluation and outcome tracking.

Each AHEC determines in collaboration with a regional advisory committee specific activities undertaken to accomplish these functions.

As can be seen from the strategies presented, the North Carolina AHEC Program is strongly committed to fostering, encouraging, and promoting endeavors which serve to increase the representation of minority populations in health care careers. AHEC assumes that collaborative efforts to provide support and encouragement at every link of the educational chain will ultimately promote a health workforce diversify and profile that more closely represents the composition of the general population of North Carolina.

AHEC Program Organization and Administration

Program Resources and Infrastructure

Information Technology

Introduction and Background

The N. C. AHEC Program's niche as an organization has been to act as a bridge and catalyst between health sciences schools and health care delivery institutions without duplicating services and activities that are the primary concern of those two sectors. The credibility of the North Carolina AHEC system has been to be able to identify and acknowledge regional and local educational needs and to be able to provide, facilitate and interpret education information and resources tailored to specific needs. In order to continue in that role for the period 2001-2005 we need to be knowledgeable about educational resources, the means that can be used to deliver those resources (including technology), and be able to determine what methods of delivery and resources match the educational and social needs of our local and regional clientele.

In November of 1996 a statewide AHEC Electronic Task Force was convened in order to study how the AHEC Program can more effectively use telecommunications and other technology to enhance our ability to carry out our mission.

The task force observed that information technology had the potential to allow AHEC to facilitate and enhance the things we are best known for: such as, provide cost-effective education and training activities of the highest quality, that are responsive to the educational needs of all health profession disciplines, and that reach into each county of the state. There was also the very real potential to increase individualized contact, communication and interaction with our learners, overcoming barriers of geographic isolation, and helping those in rural or

underserved areas access to information and education resources when and where they choose.

The AHEC Electronic Task Force also described the potential impact of information technology as positive goals for the AHEC Program in the future. These goals and the progress that has been made include the following:

Goal 1: *The N. C. AHEC Program would provide a uniform way to gain easy access to, and support for, information and communication technology for the students (during community-based education), preceptors, practicing health care professionals (engaged in continuing education or degree/certification programs), and AHEC faculty and staff.*

X Students on community-based clinical assignments would have access to the same administrative (syllabi, e-mail, etc.) and knowledge resources (reference material, electronic databases, etc.) as students on campus.

X Health professionals might connect to the AHEC regularly to identify information relevant to the care of their patients and stay current about trends in health care, and the availability of continuing education programs (in many formats).

Accomplishments:

1. Significant investment in technology at the AHEC centers and housing allowing AHEC faculty, staff, residents, and rotating students access to internet resources.

2. A decision to develop a robust single portal of entry to all AHEC services: ncahec.net.

3. Development of a prototype for the AHEC digital Library (as described in the library/information services section.

Goal 2: The N. C. AHEC Program would be known as a primary source of quality education which is affordable and accessible to all health care professionals in North Carolina. Maintaining quality, affordability, and accessibility would be achieved through targeted and discriminating needs assessments, expertise in designing programs and services to meet those needs, and capabilities to deliver the needed learning. Learning might be delivered through one-on-one consultation and technical assistance, by coordinating small to large scale area on-site programs, and by offering leading edge technological access to information and programming.

Accomplishments:

1. Videoconferencing technology expansion now extends the AHEC network=s read for distance education, TeleHealth, and Telemedicine initiatives to over 200 public and private sites throughout the state.
2. Several AHEC have been involved in the authoring and development of web based continuing education modules.
3. The partnership between AHEC and HealthStream features a library of more than 1800 hours of online courses and other educational management services for regional institutions and practitioners.

Goal 3: The N. C. AHEC Program would ensure that all the information required for the management of the statewide program and the individual AHECs is easily compiled, centrally maintained, readily available and manipulable in ways which protect the integrity of the data while allowing multiple uses of it. This administrative system would also facilitate the transfer of information and communication to ensure efficient and cost effective program planning and implementation.

Accomplishments:

1. The development of a Centralized Administration System for Continuing Education (CASCE) will allow the AHEC Program to provide a searchable list of AHEC educational offerings across the state, on-line registration, searchable consolidated staff directories, consolidated transcript service, and the potential for more advanced analysis and marketing.

The progress that has been made in all three of these areas during the past four years has suggested several important principles for the future of the AHEC Program.

There is a new imperative for the N. C. AHEC Program in this age of rapid change, new opportunities, and dwindling resources: AHEC must take advantage of its history and organizational structure and history of programming to foster a new level of collaboration which will allow the Program to gain economies and efficiencies by functioning more like a unified statewide system.

As may be seen from the goals and progress to date, the components of achieving technological efficiencies are linked to applying the notions of standardization, centralization, and the reduction of redundancy and duplication in very specific areas, while maintaining the AHEC's historical role and ability to identify and acknowledge regional and local needs and be able to provide facilitate and interpret educational information and resources tailored to specific needs.

Information Technology Infrastructure Issues

Although there are a variety of information technology issues that must be planned and addressed at the regional AHEC level because of the nature of its partnerships with its host organizations, there are also a number of issues and goals that are recognized as common among the entire network. As such, the AHEC Program is moving toward statewide technology standards and practices, as well as integrated services, whenever possible and practical. For example, the system is

currently in the process of migrating its various systems for administration of continuing education programs to a Web-accessible system which accesses a centralized data repository. The following information technology initiatives also represent issues that address this theme of consolidation and integration, so that AHEC can operate more efficiently and better present itself as a statewide program.

Adopting Statewide Standards: It is believed that the development of formalized standards for platforms (desktop, laptop, Personal Digital Assistants (PDAs), and other hardware) will lead to both economies in bulk purchasing and the potential for shared pools: staff knowledge, device drivers, and even spare parts. Additionally, by having a common platform across the state, the system would be in a better position to plan and implement statewide, coordinated hardware or software upgrading and replacement.

Migrating to Convergent Technologies: As voice, video, and data universally migrate to digital encoding, it will be possible to carry all these technologies over a single digital carrier. The AHEC system would do well to position itself for adoption of these services when they become available and commercially viable.

Planning and Budgeting for Hardware and Software Obsolescence: For fiscal responsibility, it is important to migrate from an environment with grant supported hardware and software replacement to a position where software and hardware life cycles are considered in budgeting, associated with AHEC overhead and operations.

Recruiting/Retaining IT staff. There is a need to develop statewide organizational strategies to attract, retain, and share high quality IT staff. Attracting, Retaining, and Sharing High Quality IT Staff: since the non-profit status of the AHEC Program makes it difficult to compete on a purely financial basis, we should promote any special, non-monetary, incentives offered by the AHEC or its hosting organization, like tuition waivers, flexible work location options, or flexible work schedules. We would also do well to investigate additional methods for compensating staff, like plans for student loan payback or support for professional development. It should be acknowledged that it is particularly important that IT staff be provided access to training on current technology. This accelerated rate of

change also requires special consideration for training non-IT staff and the need to conduct and manage in-service training on upcoming or recent changes in the infrastructure.

Define IT support roles for students. Providing student support requires defining IT support roles and responsibilities and developing proactive support relationships (collaborative communication) with schools, faculty, and other AHECs.

Providing statewide support for health professionals. This support involves strengthening rural connectivity to the Internet and developing the Single Web Portal for AHEC Customers: One of the most desirable achievements to strive for in the next 4-5 years is having a single web point of entry for an AHEC customer. Providing such a service requires that initiatives currently being developed in parallel, develop standards for interoperability and data sharing: Central Administration Database (CASCE and others), the AHEC Digital Library, and Horizon, the integrated library catalog -- all systems converging into components within the NCAHEC.NET customer portal.

Accelerating Availability of Distributed Education. AHECs such as Mountain, Eastern, and Coastal have established regional partnerships to create videoconferencing networks that span their region. In the case of Mountain, establishment has included the AHEC's facilitating re-occurring grant support for health organizations in rural areas that would otherwise find connectivity cost prohibitive (see figure that follows this section). Although some Web-based continuing education has been developed and distributed entirely using program resources, a recent partnership with a private industry leader in distance education has provided a unique opportunity to experiment with a partnership that involves the need assessment and content expertise strength of the AHEC Program and its affiliates with the instructional design and distribution strength of a private company.

Continue the Development of a Central Database. One of the best ways to support health professionals with technology will be to continue our work on a central database. With a continued push toward support systems based on automated technologies, having as much consolidated data as possible will allow for a level of information services not currently possible. Features available from with a central database include: a searchable database of AHEC educational offerings across the state, on-line registration, searchable staff directories, consolidated transcript service, and advanced analysis, marketing, and customized reporting.

Information Technology Resources and Mission

The Information Technology (IT) staff at the AHECs is made up of a wide array of skilled professionals. The complement at each regional AHEC varies based on the nature of its relationship with local partnering organizations and the priorities of the organization. Staffing also varies widely in the defined roles and responsibilities assumed by AHEC IT staff, and in the levels at which services are provided.

Similarly, the infrastructure at regional AHECs also varies widely based on the level of internal services made available by hosting organizations and on the regional services undertaken by the AHECs. This is based on their needs to support clinical operations and billing, internal administrative systems, software development, staff and student help desk operations, telecommunications and videoconferencing services, multimedia, marketing, and classroom support, and both internal and external IT instruction.

The Information Technology staff see their roles for the period 2001-2005 as being both a training discipline in its own right, and that of a primary support function for AHEC operations. The AHEC IT departments are critical to the smooth operations within each AHEC organization, but are increasingly in demand for support and services. As a result there may be a need to look for economies within the current environment to better utilized limited staff resources.

The mission of the AHEC Information Technology Group and its steering committee, the Chief Information Officers, is as follows:

To support the advancement of communication, information, and educational technologies throughout the N. C. AHEC system by facilitating cooperative planning, collaborative decision-making, and the implementation of local system architectures that are compatible, cost-effective and contribute to development of AHEC as a statewide electronic network.

AHEC Program Organization and Administration

Program Resources and Infrastructure

N. C. AHEC Offices of Regional Primary Care (ORPCE)

Introduction & Background

In 1993, 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 medical students in community settings. In 1995, additional funds were allocated from the General Assembly to include nurse practitioners, certified nurse midwives, and physician assistants. The ORPCE mission expanded once again in 1997 with state funding to support Pharm D students from UNC-CH School of Pharmacy.

Since its creation in 1993, ORPCE has seen a 400% increase in community-based student months across the state (from 700 student months in 1994 to almost 4,000 in 1999). The number of community-based preceptors increased from 300 to 2000 during this same period. ORPCE currently works with nine different schools, sixteen different programs and over 140 community-based, primary care courses. 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.

The mission of the ORPCEs is to facilitate quality, community-based, primary care education for health science students. Accomplishing the ORPCE mission depends on effective partnerships between the health science schools, AHECs and practicing clinicians. The ORPCEs provide services to students, preceptors and the health science schools.

Student Support Services

The number of community-based training experiences for students has increased significantly since the creation of ORPCE in 1993. Early efforts focused largely on securing logistical arrangements for student rotations and trying to keep up with the growing need for placement sites, housing needs, and providing preceptor payments. ORPCE logistical support is crucial to the success of community-based education. However, as ORPCE processes have been put into place and the number of community-based rotations has become more stable, ORPCE has been able to pay more attention to the educational aspects of student rotations. Balancing the following logistical and educational student services presents a continued challenges for the period 2001-2005.

- ∃ Facilitate quality educational experiences consistent with curricular goals;
- ∃ Coordinate student housing (the nine AHECs coordinate over 500 beds in over 80 cities of North Carolina);
- ∃ Assist with student logistics and travel;
- ∃ Ensure Internet connections and access to library and information services;
- ∃ Coordinate and share site evaluations among students, program directors, and AHECs; and
- ∃ provide orientation to the information and health resources in the community.

Preceptor Recruitment, Retention, Development and Support

Efforts in preceptor recruitment, retention, development and support have been a primary function of ORPCE since its beginning and will become even more important as changes occur in the health care environment. Preceptor responsibilities are perhaps most consistent of any of the nine AHEC ORPCE functions, but these responsibilities have seen significant growth and development

since 1993 and will require ongoing attention and creativity during the next four years. Services for preceptors include:

- ∃ Preceptor development activities (for example, improved teaching skills and interaction with peers);
- ∃ Coordinated protocols for reimbursing eligible preceptor sites;
- ∃ Advocacy of preceptor concerns to schools;
- ∃ Strengthened library and information skills and services (including the Internet); and
- ∃ Preceptor recognition

Health Science School Support

Since the inception of ORPCE in 1993, the health science schools across the state have become increasingly reliant on ORPCE for assistance with student placements and preceptor recruitment and support. The schools' willingness to share information on their established precepting sites and openness to altering their traditional placement processes led to a more coordinated statewide system for community-based education. The success of this joint effort has been tremendous.

While travel reimbursement is handled through the schools, ORPCEs coordinate over 400 beds across the state and have met at least 95% of the housing needs for medical, Nurse Practitioner, Physician Assistant, Certified Nurse Midwives, and PharmD (UNC-CH) students. The ORPCEs serve in a variety of "gatekeeping" roles, often providing a single point of entry through which schools send their student placement requests. ORPCEs have also provided an invaluable service to the schools by identifying, recruiting and supporting community preceptors. The need for community preceptors increased significantly from 1993-1999 and ORPCE staff played a major role in securing new sites to accommodate community-based curricula.

The AHEC Health Careers/Workforce Diversity initiative has increased awareness of the importance of role models and developing cultural competency

during the health science student=s community-based clinical experiences. The growing realization that there is a need for identifying and recruiting minority preceptors provides a good opportunity for ORPCE to work more closely with N. C. AHEC Health Careers/Workforce Diversity efforts. Some old and new challenges lie ahead in supporting the health science schools objectives for community-based education during the next four years. On-going services will include:

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

Key Initiatives and Priorities for 2001-2005

While the ORPCE plan for 2001-2005 lists many concerns and opportunities, four issues emerge as top priorities.

1. As with many of the AHEC initiatives, ORPCE is increasingly faced with the challenge of how to do more with less. A priority concern therefore of ORPCE is the limited, and often reduced, staffing available at the local AHEC level. This forces each ORPCE to prioritize the services to its region, contributing to inconsistencies among the ORPCEs on a statewide level. While all AHEC disciplines are facing similar challenges, a priority issue for ORPCE Directors and Clinical Coordinators is to ensure that their AHEC administration is kept up-to-date of the needs and trends in community-based education both in their region and on a statewide level. ORPCEs must then decide how best to utilize given resources, looking for creative opportunities to partner among ORPCEs, exploring "centers-of-excellence" within the AHEC ORPCE structure, or establishing a core set of services common to all nine ORPCEs.

2. Establishing and maintaining effective partnerships and communication with academic and community-based partners, as well as within our own AHEC

structure, is a second priority of ORPCE for 2001-05. Though easily taken for granted, developing strategies for ensuring communication is crucial to the continued success of ORPCE. This is an underlying theme in many of the issues and concerns in the current plan and should be treated as an ongoing effort, requiring specific strategies and action steps from the ORPCE discipline. While site visits, discipline and course director meetings are obvious steps towards accomplishing this goal, orientation of new ORPCE staff, school contacts and even students may be considered as part of a strategic plan.

3. Creating a more unified ORPCE system, especially in regards to the student placement process, is a third priority over the next four years. As the statewide AHEC Program looks and functioning more like a unified system, ORPCE should also look for areas of standardization in operating procedures with the schools. The schools constantly struggle with a statewide AHEC system that may have as many as nine different ways of coordinating community-based education. The lack of consistency among the individual AHEC ORPCEs is a major frustration among the schools and one that demands attention during the next four years. Specific steps can be identified for increasing standardization among the ORPCEs, with the overall goal being to create a more efficient, coordinated, and user friendly community-based educational system. Though not limited to these areas, initial efforts may focus on standardizing the AHEC housing application process and creating a more systematic site-evaluation process.

4. Pursuing research, evaluation and outcome measures relevant to ORPCE and community-based education is the fourth priority area. ORPCE recently initiated first steps in this area but substantial data, research & evaluation efforts can only occur as a result of strong collaboration with the health science schools. ORPCE should first explore the use of university resources at UNC-CH (Office of Educational Development), Duke, East Carolina University and Wake Forest University, but acknowledges that additional resources may be needed in order to sufficiently pursue this area of interest.

The Offices of Regional Primary Care in the AHECs are committed to ensuring that schools and preceptors are active partners in identifying and

implementing any goals and strategies during the next four years. Technology such as the AHEC digital library, CASCE & the ORPCE database will also influence future directions of ORPCE as well. The ORPCEs intend to review this plan on an annual basis, revisiting the issues, assessing progress and altering priorities as needed.

AHEC Program Organization and Administration

AHEC Governance and Administration

The North Carolina AHEC Program is committed to the continued development and evolution of an organizational structure and style of administration that utilizes its physical and human resources most efficiently in delivering educational programs and services to fulfill its mission. Maintaining North Carolina's investment in the statewide network of health professions education will demand careful attention to the philosophy of program governance established at its inception in 1972.

Program Resources and Infrastructure

In North Carolina, each AHEC is based in a regional medical center or is an incorporated public non-profit educational foundation. The governing boards of directors of these AHECs agree to accept the responsibility for health workforce development programs in a multi-county area. The boundaries of the multi-county area or AHEC region exist to ensure that every institution, agency, and health care provider in North Carolina has access to educational programs and can identify the particular AHEC from which to request educational services.

These programs span the continuum of education for a variety of health professionals and support personnel in a manner which reflects both regional and statewide needs while focusing on primary care. The scope of these activities and accomplishments may be reviewed in the Program's most recent *Progress Report* which is available from the AHEC Central Administrative Office.

The state has a network of nine regional education centers (AHECs) in partnership with the four university medical centers in North Carolina. Educational facilities which were built or renovated with AHEC support from the state of North Carolina have been in use in 33 sites since 1975. Each AHEC has affiliations in two directions. The first links each AHEC with one or more of the university health science schools. The second links each AHEC with its extended community and includes hospitals, health agencies, and professional associations in each AHEC's multi-county region. As such, health practitioners in each community in the state have an AHEC that they can identify for workforce development activities.

This statewide network of regional centers for health workforce education and training involves:

- the presence of full-time and part-time medical and other health science faculty and staff based at each of the nine AHECs;
- the regular presence in the AHEC regions of visiting faculty and staff from the university health science schools and the regular presence of AHEC-based faculty at the university health science centers;
- a network of information services which now connect almost all community hospitals to an AHEC and, in turn, to a university health science library;
- the support and participation of community physicians and other health professionals, administrators, and support personnel from the AHEC hospitals and from throughout the AHEC regions; and
- the presence of a central AHEC Program office at the UNC-CH School of Medicine with responsibility for overall coordination of the statewide AHEC Program consistent with the mandate of the federal and state government, and with the needs of the university health science schools and the AHECs.

The AHEC network in North Carolina has grown and extended its services because of the support that has been provided by the General Assembly, community hospitals, community practitioners, and other community agencies which have provided both direct and indirect fiscal support to the Program. In addition to state funding, community resources account for an estimated 66% of the total AHEC budget.

The AHEC Program has become a statewide classroom for students, residents, and health care practitioners of all types. The quality of this classroom relies on the partnership between the academic health science center and the community service agency. This partnership has resulted in the commitment to full-time faculty in many health professions disciplines at each of the AHECs. In order to provide adequate supervision for medical student rotations and residency training, the Program involves over 240 full-time medical faculty in AHEC settings. In addition to these full-time faculty, there are many part-time faculty from private medical practice, public health agencies, and community health settings.

Central to the quality of AHEC-based education and training activities and central to the AHEC's ability to recruit and retain excellent faculty is the belief that the AHEC Program must stimulate and support faculty development and academic inquiry. Activities in support of faculty research and scholarship occur at the AHECs, in collaboration between AHECs, and among faculty at the AHECs and at the affiliated academic centers.

Because the physical size and topography of North Carolina present a challenge to communication and to the daily movement of students and faculty between the academic centers and the communities of the state, the Program has made a substantial investment in computers and other forms of communications technology for the efficient movement of this information.

It has also developed a network of transportation services. Each AHEC has motor vehicles for transportation. In addition, the Program houses Medical Air Operations. This air service consists of six twin engine airplanes that are owned by the Medical Foundation of North Carolina and operated by the AHEC Program. The Program employs seven full-time and two contract pilots, three full-time

certified mechanics, and flies about 670,000 passenger miles each year. This service is central to the Program's ability to allow faculty, who are already busy "at home" to spend time in community settings. In addition to student and resident supervision, regular participation in continuing education and consultation, medical and dental faculty from the university health sciences campuses conduct specialty consultation clinics, with AHEC support, in towns across North Carolina, bringing educational and consultative assistance to primary care physicians in underserved regions of the state. During the period July, 1999 B June, 2000, the program supported over 2,300 clinic sessions in 57 communities.

Several principles have formed the basis for the establishment and continued governance of the multi-institutional statewide network which comprises the N. C. AHEC Program.

- X The N. C. AHEC Program is a partnership between four university health science centers and nine regional educational and training centers. The essence of this partnership is mutual planning and mutual decision-making on policy issues.
- X The partnership is based on contracts between the involved institutions. Affiliation agreements also bind the UNC-CH health science center to its affiliated AHECs. These contracts and agreements recognize that (1) the responsibility for academic quality rests with the university through its AHEC-based faculty and (2) the responsibility for the efficient delivery of clinical services to the community rests with the community hospital and its medical staff.
- X Decision-making with respect to program development, administrative policies and the recruitment of AHEC-based faculty and administrative staff is to reflect the mutual interests of the statewide AHEC Program, the university and the AHEC (its corporation, its faculty and staff, the primary hospital and its medical staff, and other groups, as appropriate).

- X Each AHEC also has extended partnerships with a wide variety of community hospitals, service agencies, practitioner groups and planning/regulatory agencies. Maintaining collaborative relationships with appropriate federal, state and local programs that have part, or all, of their mission relating to the improvement of health workforce distribution, retention and quality is essential.

- X The statewide AHEC Program and each of the nine AHECs require an effective communications system, with clear points of responsibility, authority and accountability which recognizes the complexities inherent in a multi-institutional partnership that is ultimately grounded in corporate structures in the community and at the university. While each AHEC should, and does, handle its communications in a manner which reflects local circumstances, it is important that this process be clearly identified. This is especially true for those individuals (faculty, directors, and staff) who have made career decisions to full-time service to an AHEC.

- X While the 2001 B 2005 AHEC Plan must further stimulate better communication throughout the Program, it must also recognize that for a multi-institutional partnership to function effectively there must continue to be a minimum of bureaucracy and a maximum of flexibility to meet regional needs within broad program goals.

Unlike "traditional" affiliated hospital programs or "branch campus" programs, the AHEC Program has been designed as a contractual partnership with regional medical centers and their medical staffs.

The formal contract that defines an AHEC has evolved over the past 20 years and reflects discussion and agreement by all parties in the partnership. For each partner the contracts specify and reflect

1. agreement on policy: control and advice, broad goals, and locus of decision making;

2. agreement on purposes: as set forth in a quantified work plan; and
3. agreement on evaluation or accountability: as measured against a defined scope of activities.

Thus, the contract links the AHEC Program and its policy, scope, and activities to the fabric of the institutional partners, both the university health science center and regional medical center, by specifying a scope of work and an agreed-upon budget -- a cost reimbursable budget.

The North Carolina AHEC Program has, throughout its existence, committed itself to both the state and federal governments to meet specific quantified objectives. The earlier contract with the federal government, the budget submissions to the UNC Board of Governors and the budget submissions to the North Carolina General Assembly specifically stated five-year objectives delineating the number of new residency programs and positions to be established; the number of medical, nursing, dental, public health, pharmacy, and allied health students to be trained off-campus; the number of continuing education programs to be delivered; and the number of faculty, by discipline required to carry out the Program.

There are, however, limitations to the Program's ability to solve health workforce problems. The Program in and of itself does not have the capacity to meet either the short-term or long-term objectives of improving the quantity, quality, geographical, and specialty distribution of health personnel for the 100 counties of the state. In addition, the AHEC Program does not have authority for academic programs nor does it have responsibility or authority for health services delivery. Consequently, the success of the AHEC Program depends upon its ability to act as a catalytic agent which brings academic and service institutions together in partnership for the purpose of educating and training the health science students and practicing health professionals in the context of North Carolina's workforce needs.

The N. C. AHEC Program will continue to be the responsibility of the Board of Governors of the University of North Carolina. The Program is based in the Division of Education and Research in Community Medical Care in the Office of

the Dean of the School of Medicine at the University of North Carolina at Chapel Hill.

N. C. AHEC Program: Goals and Priorities for 2001-2005

The major challenge of the AHEC Program for 2001-2005 is to maintain and strengthen existing initiatives in the face of diminishing resources and new programmatic opportunities. Whether there is new funding or we maintain existing funding, the N. C. AHEC Program is committed to continuing to provide the full spectrum of education and training activities designed to improve the supply, distribution, and quality of the health care workforce. These core AHEC initiatives include the following:

19. The support of health science students on rotation to AHEC sites in hospitals, community health centers, health departments, private practitioners' offices, and other community settings.
20. The support of primary care residency training in order to prepare primary care physicians to serve the communities of the state, as well as support for residency training in other shortage specialties, such as psychiatry, general surgery, and preventive medicine.
21. The production of continuing education programs for all health practitioners in the state, delivered through an increasingly diverse mix of formats.
22. The provision of programs to recruit more disadvantaged and underrepresented young people into health careers, and to prepare them for success as they enter educational and training programs.
23. The provision of a wide array of library and information services for students, residents, and practicing health professionals throughout the state.
24. The development of special initiatives to respond to emerging workforce and educational needs in the state, such as responses to the growing hispanic/latino population in the state and other community health efforts.

The 2001-2005 planning process has identified several broad goals which reflect critical Program priorities and activities necessary for carrying out the N. C. AHEC Program's mission during the next four years.

Goal 1: Education and Training Programming

The AHEC Program will conduct and/or facilitate a variety of health education and training programs which (a) conform to the Program's Mission Statement; (b) stimulate an improved environment for professional practice with decreased isolation for health professionals and support personnel throughout each AHEC region; (c) reflect the education and training needs of primary care practice sites in underserved areas; and (d) respond to changing health workforce needs. The AHEC Program will continue to support community-based education and training programs at the undergraduate, graduate and continuing education levels in nursing, medicine, dentistry, pharmacy, and the constituent professions in public health, allied health and mental health services.

Priorities

A. Strengthen Community-Based Student Training

- X Support growth in partner programs (if new resources are available)
- X Assure and document quality of the community experience across the state
- X Expand efforts in evaluation and research on community-based education
- X Recruit more minority preceptors
- X Establish core services and share resources across the system

B. Primary Care Residency Training

- X Strengthen financial resources
 - X Increase graduates going to underserved areas
 - X Increase number of underrepresented minority graduates and faculty
 - X Strengthen curricula in practice improvement, prevention, and evidence-based medicine
3. Respond to current workforce shortages, maldistribution, and training needs.

Allied Health

- X Provide management and supervision programs to improve practice environment and enhance retention
- X Develop new recruitment initiatives to increase interest in allied health careers, with special focus on underrepresented minority groups

- X Offer career development and mobility programs, including distance degree options

Dentistry

- X Utilize distance education to expand capacity of community college system to train hygienists
- X Support expanded dental residency programs
- X Support programs to increase student awareness of needs of underserved populations

Medicine

- X Utilize new educational technology to improve access and efficiency of CME.
- X Provide opportunities for physicians to be exposed to new methods of patient care, evidence based medicine techniques, and advances in biotechnology & telemedicine.
- X Collaborate with other agencies to recruit physicians to underserved practice sites and to support them once settled.
- X Identify strategies that improve cultural competency in the delivery of health care

Nursing

- X Expand management and supervision courses for nursing leadership to improve practice environment and retention
- X Strengthen career development and mobility programs, including distance degree and nurse refresher
- X Continue clinical site development for shortage specialties
- X Intensify recruitment efforts to increase enrollments, especially among minority students

Mental Health

- X Develop programs that utilize best practice models in high priority service areas, such as child and older adult disorders, substance abuse, dual diagnosis
- X Deliver programs on-site and electronically to increase educational access for practitioners
- X Assist mental health system as reorganization proceeds
- X Stay engaged at state, regional and county levels

Pharmacy

- X Develop additional clinical sites to support projected student growth
- X Expand certification programs to prepare pharmacists for expanded clinical roles
- X Support development of quality pharmacy technician programs

Public Health

- X Support growth of distance degree programs to strengthen leadership of public health system
- X Expand training of other health professionals in prevention and population health issues
- X Increase linkages to primary care residencies

Goal 2: Health Careers/Workforce Diversity

The AHEC Program will encourage and strengthen the development of activities which serve to improve the diversity and cultural competence of the health care workforce.

Priorities

- X Strengthen linkages to historically minority institutions**
- X Expand cultural competency offerings throughout the state and within the AHEC system**
- X Strengthen Health Careers and Workforce Diversity activities to recruit young people into health careers**
- X Strengthen linkages to other AHEC educational programs**

Goal 3: Information Technology

The AHEC Program will continue the development of its information technology infrastructure in order to allow students and health professionals flexible and expanded access to the full spectrum of AHEC educational programs and information services.

Priorities

4. Continue the development of a statewide technology infrastructure for administrative and education activities
 - X Implement the centralized customer database (CASCE)
 - X Complete AHEC teleconferencing capacity where needed
 - X Develop easy technological access to all AHEC services (ncahec.net)
 - X Establish statewide standards for computing in various formats
5. Evaluate the educational effectiveness of Internet-based courses and curricula and expand the utilization of innovative formats for delivering educational programs.
6. Provide information services that span the spectrum of educational programs for students and practitioners
 - X Continue the development of AHEC Digital Library, expand users, and strengthen links to other AHEC education initiatives
 - X Create centers of excellence to serve entire system
 - X Establish statewide standards for library services
 - X Develop training sites for library students

Goal 4: Organizational Development

The AHEC Program will continue the development and evolution of an organizational structure and a style of administration which builds upon collaborative institutional partnerships, provides for regular input by AHEC-based faculty, coordinators and staff in decisions influencing their programs and their careers, and utilizes its resources more efficiently by operating as a unified statewide system.

Priorities

7. Develop a statewide AHEC brand for continuing education that reflects the following common elements across the system
 - X Publicity and marketing
 - X A statewide web-based catalog in a searchable database
 - X Consistent credit and certificates
 - X Common logistical support across the system
 - X Links to AHEC Digital Library
 - X Common evaluation process and forms
 - X Documentation of attendance in central database

8. Maintain the capacity to respond to local needs while supporting efforts that will allow AHEC to operate more as a unified system
 - X Be visible and connected to regional health care professionals and agencies
 - X Expand Web-based courses (HealthStream, other)
 - X Define and utilize centers of excellence to serve the system
 - X Increase collaboration across AHECs
 - X Encourage common charges for information services

- C. Assure a sound financial future for AHEC initiatives.**
 - X Increase efforts to maximize revenue resources available from the state, contracts and grants, and generated revenue.
 - X Improve efficiencies throughout system
 - X Make tough strategic choices that focus AHEC programming efforts on areas of greatest need.

- D. Strengthen organizational support for AHEC Faculty and Staff**
 - X Expand professional development opportunities
 - X Assure competitive salaries and benefits
 - X Assure positive work environment for all staff
 - X Be more reflective of the diversity of the N. C. population

