THE NORTH CAROLINA
AREA HEALTH EDUCATION CENTERS
PROGRAM
Progress Report 1985
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  Aging 
  Management Training and Cost Containment
  Mental Health
  Health Promotion and Disease Prevention
  Occupational and Environmental Health

University of North Carolina

D.D. 19

D. Buller

1985

Health Sciences Library
This 1985 Report of the North Carolina Area Health Education Centers (AHEC) Program documents the goals, accomplishments, and activities of this statewide system of nine centers which serve their geographic regions with health professional education and training activities conducted in partnership with a considerable number of health science schools throughout the state. The Program was established in 1972 to address health manpower needs in the many medically underserved areas of the state with an emphasis on primary care, in particular family medicine. The system was developed to provide a bridge between the universities and the communities of North Carolina, based on two assumptions: first, that community-based training for health science students and medical residents increases their interest in selecting a community site once their training is completed; and second, that local access to high quality educational and information services enhances the practice environment, therefore improving the quality and retention of health professionals.

Based on these ideas, the NC AHEC Program has developed and provided an extensive number and variety of community-based educational opportunities for health professionals of all types and at all levels of training. This has been possible in part through AHEC’s strong partnerships and affiliations with the four university health science schools in the state. These are: the University of North Carolina at Chapel Hill Schools of Dentistry, Medicine (including its Division of Medical Allied Health), Nursing, Pharmacy and Public Health; the Duke University Medical Center; the East Carolina University Schools of Medicine, Nursing, and Allied Health and Social Professions; the Bowman Gray School of Medicine of Wake Forest University; and other campuses of the University of North Carolina system. An essential component of the Program is the small group of major community hospitals which were willing to serve as AHECs. Equally vital partnerships exist between the AHECs and other community hospitals, as well as other health agencies and educational institutions such as community colleges and technical institutes across the state.

During its twelve-year history, the NC AHEC Program has served as a bridge between the schools and communities in a manner designed to protect both academic quality and the integrity of service delivery. The AHECs have demonstrated the continuing capacity to focus education and training activities on regional needs and to modify resources to meet emerging needs. Their success demonstrates that educational institutions, service agencies, professional associations and individual health care professionals can work together to meet the needs of North Carolina for adequate numbers and distribution of well-trained health care providers.

The results of these efforts and relationships are described and illustrated in this 1985 Program Report. Accomplishments are summarized in the main activity areas of community-based health professional education, residency programs, continuing education and technical assistance, including the impressive in-
formation and educational media resources available through the AHEC Library/Learning Resources Center Network. AHEC provides support to other health education programs and these are described herein. Notable among these are the special activities developed by the AHECs and schools of nursing to address the shortage of nurses in the early 1980's.

Meeting Emerging Needs

The Report also reflects the intensive assessment and planning which resulted in the NC AHEC Program Plan for 1985-1990. This Plan reflects health care providers' changing needs, the changing nature of health care delivery, and some major issues relative to the health of North Carolinians. The 1985-1990 Plan builds upon the foundation of AHEC activities—those specific to health care disciplines—to add an interdisciplinary focus necessary to address current community health issues. *Five such issues will receive increased emphasis in the programming to be carried out by the nine AHECs: aging, health promotion/disease prevention, the recruitment and retention of mental health personnel in underserved communities, management education to help contain rising health care costs, and occupational/environmental health.*

This Report reviews the history of the North Carolina AHEC Program, from its inception with three AHECs to its development as a statewide system. Throughout the development of the AHEC Program, both state and local support has grown and remained firm and has allowed the Program and its affiliated schools to reach more individuals and communities with educational opportunities targeted to their needs. In addition, a small but important component of federal support has helped the program since 1972.

Although this Report illustrates improvement in many areas, many needs remain, as is suggested by the poor physician-to-population ratios in the majority of North Carolina's counties. There are still many areas of the state which are underserved in terms of the distribution or training level of health care providers. Therefore, the North Carolina AHEC Program must continue to strive to improve the distribution, retention and quality of health care professionals throughout North Carolina by providing education and training activities which link the four university health science centers and the major regional community hospitals to the communities of the state.
GOALS OF THE NORTH CAROLINA AHEC PROGRAM

The North Carolina AHEC Program has developed a Program Plan for the period 1985-1990. The planning process has shown that the overall mission of the Program shall be the same as for the period 1972-1985:

AHEC will continue to be a program devoted to the education and training of health professionals through collaborative relationships between educational and service institutions.

Its education and training activities will continue to be targeted toward the retention, geographic distribution, specialty distribution, and quality of health care professionals and support personnel of all types. Attention will be given to the need for improved minority representation in various health fields.

The NC AHEC Program will maintain and further develop collaborative relationships with other programs and agencies devoted to the planning and delivery of community health services, including community health information services. AHEC will do so with full recognition of its primary focus on the education and training of health professionals.
Goals: 1985-1990

During the period 1985-1990, the North Carolina AHEC Program will carry out program activities in several areas in order to meet its goals. The Program will:

1. focus program activities on an improved distribution, retention and/or quality of health professionals;

2. conduct or facilitate a variety of health education and training programs at the undergraduate, graduate and continuing educational levels in allied health, dentistry, medicine, nursing, pharmacy and public health;

3. develop interdisciplinary educational activities to address health issues such as aging, health promotion and disease prevention, occupational/environmental health, mental health, and management education so as to help contain the cost of health care;

4. continue the development of information and biomedical communications services as regional informational resources for all health professionals; and

5. continue to develop activities to increase minority representation in health careers.
AHEC ACCOMPLISHMENTS

Challenges Met and Ongoing

- A network of nine Area Health Education Centers functions in partnership with four university health science centers in North Carolina.
- Community-based educational experiences for students in dentistry, medicine, public health, pharmacy, allied health, and nursing have been developed or expanded by all four university health science centers.
- Over 300 new primary care residency positions have been developed throughout the state, with nearly 180 in family practice.
- Community-based continuing education is accessible to health practitioners and support personnel throughout the state.
- A network of AHEC libraries and learning resources centers, in affiliation with the four university health science libraries and through them the National Library of Medicine, serves health professionals and health care agencies throughout the state.
- New or renovated educational facilities serve health professionals in 33 sites across the state.
- Cooperative assistance has been provided to other statewide initiatives concerned with the education, training, and retention of health professionals and support personnel.
- Degree-producing programs in several health care disciplines are available off-campus to practicing health professionals by university health science schools with the support of the AHEC Program.
The North Carolina Area Health Education Centers Program

Each of the nine Area Health Education Centers of the North Carolina AHEC Program serves a multi-county region. Each AHEC is a community hospital or a foundation which agrees to provide undergraduate, graduate and continuing education and training for health professionals throughout its region. AHEC activities are carried out by faculty and educational coordinators (who represent the health care disciplines), information specialists and support staff.
AHEC ACCOMPLISHMENTS

Health Sciences Education: 1972–85

The AHECs have expanded opportunities for undergraduate and graduate community-based health science education for students of the:

1. University of North Carolina at Chapel Hill, in its Schools of Medicine (including the Department of Medical Allied Health), Nursing, Public Health, Dentistry and Pharmacy;
2. Duke University Medical Center;
3. Bowman Gray School of Medicine of Wake Forest University; and
4. East Carolina University in its Schools of Medicine, Nursing, Allied Health* and Social Work.

In addition, during 1972–1985 the AHECs provided community training experiences in nursing and allied health for students from private colleges, other campuses of the University of North Carolina system, and community colleges and technical institutes of the North Carolina Department of Community Colleges.

*“Allied Health” refers to a broad range of supportive, diagnostic and therapeutic health professions.
Community Training in the AHEC Regions

AHEC community training for students in the health professions has become an established and important part of the educational process. The number of students and the amount of time spent in training at community hospitals, and other agencies has increased steadily since the inception of the NC AHEC Program.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Allied Health</td>
<td>**</td>
<td>1879*</td>
<td>1737</td>
</tr>
<tr>
<td>Dentistry</td>
<td>68</td>
<td>288</td>
<td>252</td>
</tr>
<tr>
<td>Medicine</td>
<td>294</td>
<td>1030</td>
<td>1268</td>
</tr>
<tr>
<td>Nursing</td>
<td>**</td>
<td>3909</td>
<td>4314</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>38</td>
<td>404</td>
<td>521</td>
</tr>
<tr>
<td>Public Health</td>
<td>64</td>
<td>190</td>
<td>198</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>**</td>
<td>7700</td>
<td>8290</td>
</tr>
</tbody>
</table>

*Data are in student months

**Student month data not available
Location of Regular Assignments of Medical Students from UNC-CH, Duke, Bowman Gray and ECU (1984)

Community rotations vary in duration and focus according to the students’ levels of training. Exposure to community practice is included in the early training of many students (for example, first- and second-year medical students at ECU participate in 3-day preceptorships with private physicians in 67 locations). Students at the third and fourth years are involved in much longer rotations, as shown on page 10.
AHEC Rotations of UNC-CH Medical Students (1983–84)

A significant part of the training of medical students at UNC-CH takes place off-campus in community settings in the AHEC regions. In 1983–84, over 30% of the clinical training rotations for third- and fourth-year UNC-CH medical students took place in the AHECs with the contributed teaching and supervision of community physicians.

<table>
<thead>
<tr>
<th>Discipline</th>
<th># Assigned Months Per Student</th>
<th>Total # Student Months Assigned</th>
<th># Student Months on Rotations in the AHECs</th>
<th>% Rotations in AHECs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Third Year (162 Students)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>3.0</td>
<td>486</td>
<td>159</td>
<td>33%</td>
</tr>
<tr>
<td>Obstetrics-Gynecology</td>
<td>1.5</td>
<td>243</td>
<td>134</td>
<td>55%</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>1.5</td>
<td>243</td>
<td>84</td>
<td>35%</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>1.5</td>
<td>243</td>
<td>114</td>
<td>47%</td>
</tr>
<tr>
<td>Surgery</td>
<td>3.0</td>
<td>486</td>
<td>40</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>10.5</td>
<td>1701</td>
<td>531</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Fourth Year (145 Students)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acting Internship</td>
<td>1.0</td>
<td>145</td>
<td>155</td>
<td>100%</td>
</tr>
<tr>
<td>Electives</td>
<td>5.0</td>
<td>725</td>
<td>74</td>
<td>10%</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>1.0</td>
<td>145</td>
<td>125</td>
<td>86%</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>7.0</td>
<td>1015</td>
<td>354</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17.5</td>
<td>2716</td>
<td>885</td>
<td>33%</td>
</tr>
</tbody>
</table>
AHEC Special Initiative: Nursing

The 1980-1985 Plan for the North Carolina AHEC Program indicated that a critical nursing shortage existed in the state and consequently gave nursing education and training activities the highest priority for AHEC programming. In 1980, and again in 1982, the AHEC Program conducted statewide nursing surveys. The surveys documented the nature and extent of the serious shortage of nurses in the state and provided the program with other information which was useful in designing education strategies for improvement.

The AHEC nursing surveys were also of value to the decision by the Program on Access to Health Care to convene a statewide Task Force on Nursing. The Task Force developed a set of recommendations that could be used by government, professional associations, academic institutions, hospitals, AHECs and others to help overcome the nursing personnel problems facing North Carolina. The AHEC Program developed several initiatives designed to improve the recruitment, retention, and quality of nursing personnel in the state.

There has been heightened interest in improving the availability of academic programs for qualified registered nurses (RNs) leading to a baccalaureate degree in nursing. For those RNs who are unable to matriculate in on-campus programs, the AHEC Program has worked with its affiliated nursing schools to plan for off-campus BSN programs. Such programs allow the RN to pursue a baccalaureate degree on a part-time basis closer to home, while continuing to be employed as a nurse. At the request of the UNC Board of Governors and in association with the deans of five of the UNC Schools of Nursing (the campuses of the University of North Carolina at Chapel Hill, Greensboro, Charlotte, Western Carolina University, and East Carolina University) the NC AHEC Program is now implementing a plan for five off-campus baccalaureate degree nursing programs designed for practicing RNs in five underserved regions of the state.

In addition, the Wake AHEC and North Carolina Central University in Raleigh are implementing a program to identify and counsel students to facilitate BSN education for registered nurses in the Wake AHEC area. The Greensboro AHEC has conducted an annual State Nursing Board examination review course for graduating nursing students from North Carolina Agricultural & Technical State University in Winston-Salem. The Wilmington AHEC, in cooperation with the East Carolina University School of Nursing, supported an off-campus master's degree program for nurses in the Wilmington region.

Other special initiatives in nursing designed to enhance the recruitment and retention of nurses have included:

- Information materials on nursing careers and the requirements of education programs in nursing in the various AHEC regions;
- Management training for nurse administrators in hospital and long-term settings;
- Innovative nurse residency and extended preceptorship programs for new employees; and
- Nursing specialty courses in such areas as critical care, emergency nurse education and advanced life support.
AHEC Supported Off-Campus Degree Programs

Seven UNC health science schools (five Schools of Nursing and the UNC-CH Schools of Public Health and Dentistry) with support from AHEC have taken baccalaureate (indicated by solid arrows) and master's degree programs (indicated by broken arrows) off-campus. The stars (*) below represent the seven sponsoring schools.

<table>
<thead>
<tr>
<th>Program</th>
<th>Sponsoring School</th>
<th>Off-Campus Site (Degree)</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>UNC-Chapel Hill</td>
<td>Fayetteville (B.S.N.)</td>
<td>'85</td>
</tr>
<tr>
<td>(Baccalaureate and Master's Degree in Nursing)</td>
<td></td>
<td>Charlotte (M.S.N.)</td>
<td>'76-80</td>
</tr>
<tr>
<td>UNC-Charlotte</td>
<td></td>
<td>Gastonia (B.S.N.)</td>
<td>'87</td>
</tr>
<tr>
<td>Western Carolina University</td>
<td></td>
<td>Marion (B.S.N.)</td>
<td>'86</td>
</tr>
<tr>
<td>UNC-Greensboro</td>
<td></td>
<td>Hickory (B.S.N.)</td>
<td>'86</td>
</tr>
<tr>
<td>East Carolina University</td>
<td></td>
<td>Wilmington (M.S.N.)</td>
<td>'85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Edenton (B.S.N.)</td>
<td>'86</td>
</tr>
<tr>
<td>Public Health</td>
<td>UNC-Chapel Hill</td>
<td>Fayetteville (M.P.H.)</td>
<td>'79</td>
</tr>
<tr>
<td>(Master's of Public Health in Health Policy and Administration)</td>
<td></td>
<td>Wilmington (M.P.H.)</td>
<td>'86</td>
</tr>
<tr>
<td></td>
<td>UNC-Chapel Hill</td>
<td>Goldsboro (M.P.H.)</td>
<td>'82</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raleigh (M.P.H.)</td>
<td>'72, '75</td>
</tr>
<tr>
<td></td>
<td>UNC-Chapel Hill</td>
<td>Greenville (M.P.H.)</td>
<td>'79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hickory (M.P.H.)</td>
<td>'82, '85</td>
</tr>
<tr>
<td></td>
<td>UNC-Chapel Hill</td>
<td>Asheville (M.P.H.)</td>
<td>'75</td>
</tr>
<tr>
<td>Dentistry</td>
<td>UNC-Chapel Hill</td>
<td>Greensboro (B.S.)</td>
<td>'86</td>
</tr>
<tr>
<td>(Dental Auxiliary Teacher Education)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* UNC Schools of Nursing
* UNC-CH School of Public Health
* UNC-CH School of Dentistry

→ Baccalaureate program
→-→ Master's degree program
Allied Health

Training in a number of community settings is available for students in physical therapy, occupational therapy, medical technology, radiologic technology, rehabilitation counseling, recreation therapy, respiratory therapy, and speech and hearing sciences. Training opportunities are also available in medical records, dietetics and community health.

In addition to the primary affiliated university schools at UNC-CH, ECU, and WCU, other allied health schools use clinical sites in the AHEC regions as a part of their student’s training. These include private colleges and campuses of the community college system.

Dentistry

Dental students at the UNC-CH School of Dentistry participate in a range of required and elective community training experiences in the AHECs during their four-year program. Students also participate in AHEC rotations during their senior year. Dental Auxiliary Teacher Education (D.A.T.E.) students complete a one-semester student teaching internship at community colleges throughout North Carolina.

Nursing

Students in baccalaureate, graduate and associate degree nursing programs receive clinical training at sites throughout the AHEC regions. Training takes place in community hospitals, health departments, extended care facilities and other settings. Practical nurse and nursing assistant students also receive training at AHEC sites. Special AHEC nursing initiatives developed during 1980-1985 are described on page 11.

Pharmacy

All undergraduate pharmacy students from the UNC-CH School of Pharmacy take a one-semester academic externship in an off-campus setting, which provides intensive exposure to pharmaceutical practice in retail and hospital settings. These experiential programs are strengthened by the involvement of voluntary community practitioner-instructors who complement AHEC-based faculty. Students seeking the doctoral degree in pharmacy also have opportunities for off-campus research and training.

Public Health

Students at the undergraduate and graduate levels at the UNC-CH School of Public Health participate in required off-campus training with a wide variety of agencies and health facilities in the AHEC regions. Field training is offered for the students in the school’s Departments of Health Policy and Administration, Health Education, Public Health, Nursing, Nutrition, Biostatistics and Maternal and Child Health. Students in Community Health Education at ECU are involved in off-campus field training. Also, students in many health disciplines receive training in public health settings in the AHEC regions.

Practicing health professionals in several locations in North Carolina have received their Master's degree in Public Health through the off-campus MPH program of the Department of Health Policy and Administration of the UNC-CH School of Public Health. Two such programs are offered concurrently in widely separated areas of the state.
Students at the health science schools receive clinical training in settings throughout the AHEC regions. These settings include hospitals, health departments, clinics, state agencies, pharmacies and rehabilitation centers. AHEC support includes identification of clinical sites, training for preceptors, housing and travel expenses for students and supervising faculty.
Residency Programs

The AHEC Program has developed 300 new primary care residency positions. Of these, about 180 are in family practice with the remainder in general internal medicine, pediatrics and obstetrics-gynecology. As a result, in 1984 family practice residency positions constituted 29% of all primary care residency positions in North Carolina, compared to only 8% in 1974.

New family practice residency programs have been established at the Mountain, Charlotte, and Fayetteville AHECs. A general internal medicine residency has been established in the Wilmington AHEC. A Department of Family Medicine and a family practice residency have been established at the Eastern and Northwest AHECs under the leadership of the ECU School of Medicine and the Bowman Gray School of Medicine. The number of family practice residents has increased at Duke, UNC-Chapel Hill, and the Greensboro AHEC. The AHEC Program has supported the expansion of residency programs in internal medicine, pediatrics, and obstetrics-gynecology where these programs already existed in 1974.

In addition to developing and supporting primary care residency positions, in 1983-1984 the AHEC Program was involved with about 900 months of residency rotations from the university medical centers to AHEC settings.

Changing Character of Primary Care Residencies in North Carolina

The percentage of Family Practice Residents has increased from 8.2% in 1973-74 to 29.0% in 1983-84.
Location of Primary Care* Residency Training Supported in Part by NC AHEC Program (1984)

Resident training takes place at the AHECs and at university medical centers (in affiliation with the AHECs).

RetentionPolicy

The number of primary care physicians trained in AHEC residencies who enter practice in North Carolina has exceeded expectation. In addition, many of these physicians have settled in the smaller rural towns.

For example, of the 252 primary care residents trained in AHECs between 1977-82, 159 (63 percent) are practicing in North Carolina. Of the 159 physicians, 79 are in family practice of whom 45 (57 percent) are in towns under 5,000 people. The following chart summarizes the retention of primary care residents completing training in AHECs in 1982.

<table>
<thead>
<tr>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total AHEC Primary Care Residents Completing Training (1982)</td>
<td>50</td>
</tr>
<tr>
<td>AHEC Primary Care Residents Remaining in North Carolina to Practice (1982)</td>
<td>35</td>
</tr>
<tr>
<td>AHEC Primary Care Residents Remaining in North Carolina in towns under 5,000 (1982)</td>
<td>18</td>
</tr>
</tbody>
</table>

*Primary care specialties include Family Medicine, General Internal Medicine, Pediatrics and Obstetrics-Gynecology.
The AHECs, in association with affiliated health science schools, offer continuing education (CE) programs and technical assistance to practicing health professionals in all areas of the state for two purposes. The first is to assist health professionals in providing the best possible health care. The second is to encourage them to stay in rural or underserved areas by providing local access to professional growth opportunities.

AHEC CE programs are based on the assessment of needs for each region, agency or discipline. All AHECs seek the guidance of advisory groups of local health professionals and conduct evaluations of their program efforts. AHEC CE programs range from brief lectures to full college courses and are often developed in co-sponsorship with health agencies or educational institutions. The university health science schools serve as major resources for planning and teaching of AHEC programs throughout North Carolina.

Technical assistance, a form of individualized continuing education, may take the form of consultation services, assistance to health agencies on educational concerns and other related services.
AHEC Continuing Education: 1983—1984

From July of 1983 through June of 1984, approximately 72,800 health professionals participated in continuing education programs sponsored by AHEC. These programs represented a total of 306,400 contact hours.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Programs</th>
<th>Hours</th>
<th>Attendance</th>
<th>Contact Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allied Health</td>
<td>409</td>
<td>2,277.4</td>
<td>10,883</td>
<td>64,636</td>
</tr>
<tr>
<td>Dentistry</td>
<td>105</td>
<td>736.5</td>
<td>2,268</td>
<td>14,649</td>
</tr>
<tr>
<td>Medicine</td>
<td>1,675</td>
<td>2,264.9</td>
<td>35,265</td>
<td>62,731</td>
</tr>
<tr>
<td>Nursing</td>
<td>476</td>
<td>3,921.0</td>
<td>12,893</td>
<td>106,781</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>88</td>
<td>246.0</td>
<td>1,887</td>
<td>5,840</td>
</tr>
<tr>
<td>Public Health</td>
<td>96</td>
<td>636.3</td>
<td>3,680</td>
<td>22,595</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>112.0</td>
<td>877</td>
<td>2,853</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>114</td>
<td>566.5</td>
<td>5,049</td>
<td>26,315</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2,993</strong></td>
<td><strong>10,760.6</strong></td>
<td><strong>72,802</strong></td>
<td><strong>306,400</strong></td>
</tr>
</tbody>
</table>

Location of Continuing Education Programs for Health Professionals (1983–84)

Continuing education programs are sponsored by the nine AHECs for health professionals practicing in their regions. In 1983–84, programs were conducted in 82 of the state's 100 counties.
Medical Specialty Consultation Clinics

A special form of continuing education sponsored by AHEC is the provision of consultation clinics by faculty of the four Schools of Medicine and the UNC-Chapel Hill School of Dentistry. The clinics involve consultation on patient care problems between university-based faculty and community practitioners, and may also include medical residents and students as a part of their training.

Location of AHEC Consultation Clinics (1983–84)

In 1983–84, medical faculty representing 22 medical subspecialties conducted 2,117 consultation clinics in 35 locations in the AHEC regions; dental faculty conducted 140 clinics in five locations.
AHEC SUPPORT OF OTHER HEALTH PROGRAMS

During the past 12 years, the AHEC Program has assisted other special initiatives for health professionals. The AHECs provide a framework for linking community and state agencies and the health science schools in special programs to ensure the efficient and effective use of public and private funds.

The NC AHEC Program has facilitated the dissemination of information and coordination of training for various university-based programs in child neglect and abuse, intraoral radiography, dental assistants, aging, infection control, preventive medicine and specialty training for nurses. AHECs have cosponsored continuing education programs with state health professional societies, health care associations, campuses of North Carolina's community colleges and technical institutes and other post-secondary educational institutions.

In addition, the AHEC Program has established collaborative/supportive relationships with federal, state, and local programs which seek to improve the supply, distribution, retention or quality of health professionals. These include the National Health Service Corps, Health Systems Agencies and Professional Standards Review Organizations at the federal level, and at the state level the N.C. Division of Health Services, and the Office of Rural Health Services (ORHS). The ORHS program was established to help medically underserved areas establish primary health care centers and to assist primary care physicians to select such areas in the state as their practice sites. ORHS provides technical assistance to doctors as they establish their rural practices. The goals and efforts of the AHEC Program and ORHS have been cooperative and complementary in improving the distribution and retention of primary care physicians in North Carolina.

The NC AHEC Program has provided financial and/or organizational support to the following programs and activities:

—Family Nurse Practitioner Programs
—Health Careers Orientation Programs
—Medical Education Development Programs for Minority and Disadvantaged Students
—Off-Campus Degree Programs (see page 12)
—Health Manpower Data Collection
—Nursing Graduate Outreach Programs
—Graduate Nurse Residency Programs
—Health Promotion/Patient Education Training
—Perinatal Nurse Outreach Program
—Biomedical Interdisciplinary Curriculum Project
AHEC INFORMATION AND EDUCATIONAL SUPPORT SERVICES

The continued development of the library and educational resource services at the nine AHECs has led to increasing awareness of the importance of these services to the recruitment and retention of health professionals. Each AHEC center is staffed by professional librarians and audiovisual specialists, who, like other AHEC faculty and staff, have educational and service responsibilities in each county of their respective regions.

Library and Information Services

An integral component of the North Carolina AHEC Program is the Library and Information Services Network which links the nine AHECs with the four academic health sciences center libraries (Bowman Gray School of Medicine of Wake Forest University, Duke University Medical Center, East Carolina University, and the University of North Carolina at Chapel Hill). This network, which extends to the National Library of Medicine, assures that all health professionals in the state have access to needed information which in turn enables them to provide the highest quality health care.

All AHEC libraries offer a range of services similar to those available at the academic health sciences libraries, including literature searches, reference and circulation services. Materials not in the AHEC libraries can be acquired through the interlibrary loan system. Each AHEC library has a large collection of books, journals, and audiovisual materials.

Each AHEC has collected audiovisual programs which are available on loan to support undergraduate, graduate and continuing education programs. The AHECs have developed a computerized audiovisuals catalog which lists audiovisual resources available within the AHEC Program network. The catalog describes the more than 8,100 audiovisual materials owned by the regional AHECs and the university health science libraries. Microfiche copies of the catalogue have been distributed to all North Carolina hospital libraries and health care agencies. In 1983-84, over 86,000 individuals used materials through the network.

AHEC libraries also serve as a link between regional AHECs and community health professionals. They have established contacts with hospitals, educational institutions, local libraries and health agencies. Many have been instrumental in establishing library and information services at these agencies and institutions.

Biomedical Communications Services

Some AHECs provide support to educational activities through the production of audiovisual materials, the provision and maintenance of audiovisual equipment and the enhancement of continuing education programs through the use of audiovisual materials. This area of service has become known as biomedical communications which includes medical television, scientific photography, medical illustration, instructional design, and audiovisual equipment services. The biomedical communication specialists at the AHECs support AHEC educational programs also provide outreach services to health care agencies and organizations in their regions.
AHEC Library and Learning Resources Center Services (1983-1984)

**Libraries**

Circulation
- Print and non-print .................................. 72,923

Interlibrary Lending
- Loans filled ........................................... 52,617

Information Services
- Database Searches .................................... 5,328
- Reference Services .................................. 40,884
- Additions to the Collections ....................... 7,587
- Hours of Outreach Services ......................... 2,099

**Learning Resources Centers**

Audiovisual Productions ............................... 5,105

Educational Support
- Hours of Outreach Services ......................... 1,888
- Continuing Education Programs .................... 931
- Program Preparation ................................ 9,675
North Carolina has made significant strides during the past decade to improve the availability of health care to all its citizens. This has been accomplished by improving the supply and geographic and specialty distribution of health professionals. These gains reflect the success of a number of programs designed to meet the state's health care needs. Although there has been important federal and local support for some of these programs, the major source of funding has come from appropriations by the North Carolina General Assembly.

Despite this progress, a majority of the state's counties are still in need of additional primary care physicians. Recently conducted AHEC surveys also suggest a growing need for additional personnel in a number of allied health disciplines.

Changes in the population and the health care delivery system pose new challenges to efforts to maintain and improve an adequate distribution of qualified health professionals. Among the issues needing immediate attention are: continuing education, retention of existing health care personnel, and continued efforts to improve the representation of minorities in a variety of health careers.

North Carolina Active Licensed Health Care Practitioners ('74, '83)

Displayed below are data on the numbers of health professionals in those disciplines licensed by the state. All show an increase from 1974-1983, with a corresponding improvement in the ratio of practitioners to population.

<table>
<thead>
<tr>
<th></th>
<th>Active Practitioners</th>
<th>Active Practitioners per 100,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>5,395</td>
<td>8,426</td>
</tr>
<tr>
<td>Dentists</td>
<td>1,706</td>
<td>2,424</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>2,590</td>
<td>3,546</td>
</tr>
<tr>
<td>Physical Therapists</td>
<td>415</td>
<td>869</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>16,576</td>
<td>34,206</td>
</tr>
<tr>
<td>Licensed Practical Nurses</td>
<td>8,404</td>
<td>13,880</td>
</tr>
</tbody>
</table>

Source: Health Services Research Center, UNC-CH
Physician/10,000 Population Ratio for North Carolina and Other Non-Metro Counties (1970-80)

North Carolina non-metropolitan counties have shown continued improvement in their average physician/population ratios while comparable non-metropolitan counties in the rest of the United States have shown only slight improvement in their average ratios.

Change in Physician/Population Ratio by County (1963–73)

During 1963–1973, before the development of the statewide AHEC Program, 43 counties experienced a worsening physician-to-population ratio; the ratio for 16 counties was unchanged and 41 counties experienced an improved ratio.

TOTAL ACTIVE NONFEDERAL PHYSICIANS
Sources: American Medical Association;
Health Services Research Center, UNC-Chapel Hill
Change in Physician/Population Ratio by County (1973–83)

During the period 1973–1983, after the creation of the statewide AHEC Program, the Office of Rural Health Services and other health manpower programs, 89 counties experienced an improved physician-to-population ratio, the ratio for 4 counties was unchanged and the ratio worsened in only 7 counties.

TOTAL ACTIVE NONFEDERAL PHYSICIANS
Sources: American Medical Association;
Health Services Research Center, UNC-Chapel Hill
SUPPLY AND DISTRIBUTION

Need for Health Professionals in North Carolina

The North Carolina AHEC Program has sought to document the current supply and distribution of health professionals, and to assess projected needs for the future. In 1981 the AHEC Program conducted statewide surveys in four major allied health professions: medical laboratory technology, respiratory therapy, radiologic technology and physical therapy. Community hospitals, health departments and other employers of these professionals were surveyed concerning current staff, the number of existing budgeted vacancies, turnover rates, and projected needs for new staff in 1985/1986. Needs were assessed for different categories of staff, from the managerial to the assistant level. The surveys have provided the only information on these disciplines for North Carolina and have been used in planning educational programs to meet projected needs.

Employers projected increased needs for all four disciplines, with the greatest anticipated need in respiratory therapy (64%) and physical therapy (62%).
Primary Care Physicians/10,000 Population Ratio by County (1983): Continuing Need

Although the ratio of physicians to population has improved in the overwhelming majority of North Carolina counties (see page 26), there is still a significant number of counties with poor ratios. One-third of North Carolina's counties have fewer than four primary care physicians for every 10,000 persons.

- More than 7 physicians per 10,000 people (15 counties)
- Between 4 and 7 physicians per 10,000 people (51 counties)
- Between 2.5 and 4 physicians per 10,000 people (24 counties)
- Fewer than 2.5 physicians per 10,000 people (10 counties)

*Active non-federal physicians
Source: Health Services Research Center UNC-Chapel Hill in cooperation with the N.C. Board of Medical Examiners
The North Carolina AHEC Program grew out of two concurrent and related trends. The first was a growing statewide and national concern in the 1960's regarding the supply and distribution of health care professionals, particularly primary care physicians. Many counties in the state were experiencing worsening physician-to-population ratios, particularly in rural areas and small towns. The second trend was a growing interest in community-based training of health professionals as a way to encourage high-quality community health care. In 1946, the commission that recommended that the UNC-CH School of Medicine be converted to a four-year program, also recommended that the School "be integrated effectively and continuously with a statewide network of hospitals and health centers insofar as these volunteer to cooperate." Its on-campus curriculum firmly in place, the School began some decentralized training of medical students in the 1960's through affiliations with six community hospitals in the state. Persuant to strong support by the School's faculty, several community hospitals and their medical staffs, the UNC-CH School of Medicine applied for and was awarded a five-year, $8.5 million federal contract on September 30, 1972 to establish three AHECs in North Carolina. These were the Area L, Charlotte and Wilmington AHECs.

In 1973, a group of distinguished medical educators was commissioned to study medical education in North Carolina. The group recommended that: The Board of Governors of the University of North Carolina prepare a plan to build upon the concept of AHECs and to develop a statewide system of medical and health education based in hospitals. In 1974 the Board of Governors proposed and the North Carolina General Assembly funded the expansion of the three AHECs and the development of six new centers to complete a statewide network. The appropriation included funds for the construction of educational facilities needed to carry out the program. All nine centers were in operation by 1975, with educational facilities, faculty and staff in place.

The General Assembly further provided for the establishment through AHEC of 300 medical residency positions in four primary care specialties: internal medicine, pediatrics, obstetrics-gynecology, and family medicine. Many of these residents received all of their training at the AHECs, some at AHEC Family Practice Centers.
The development of the statewide AHEC program marked the involvement of the other medical schools in the state. The Bowman Gray School of Medicine of Wake Forest University was identified as the primary affiliate for the Northwest AHEC; the Duke University Medical Center assumed primary affiliation with the Fayetteville AHEC and the East Carolina University Schools of Medicine, Nursing, Allied Health and Social Work became the primary affiliates for the Eastern AHEC. The UNC-CH School of Medicine, including its Department of Medical Allied Health, assumed direct responsibility for the Greensboro, Mountain and Wake AHECs along with its existing responsibilities in Charlotte, Wilmington, and Area L. Additionally, the Program established affiliations with the UNC-CH Schools of Pharmacy, Dentistry, Nursing and Public Health to provide community-based education. Since that time, several other campuses of the University of North Carolina system have entered into agreements with individual AHECs to serve their regions. For example, Western Carolina University in Cullowhee serves seven western counties of the Mountain AHEC region with education programs in nursing and allied health.

From these agreements and arrangements, the schools and the AHECs developed or expanded off-campus training for their students in clinical sites throughout the state. The network of AHEC library and media services was developed in cooperation with the four university health science libraries and continuing education programs for practicing health professionals were developed and offered in all AHEC regions. Some significant trends in the AHEC Program have included the growth in educational opportunities for all health disciplines, the increase in multi-disciplinary programs and the growing network of cooperative affiliations with other health care and educational agencies. There has been a significant trend in funding sources. Although federal funds initially provided 45% of the total budget and state funds accounted for 55%, this ratio has changed. The proportion of the AHEC budget provided by state and local funds has steadily increased to 65.6% and 34% respectively, with federal support at less than 1%.
64.3% of the budget goes to support the nine AHEC regions and their education program activities. 19.8% supports primary care residencies created since 1974. 14.7% supports resources at the health science schools for AHEC activities, such as: continuing education programs, the supervision of off-campus students, and consultation services.

Support of AHECs: $14,846,953
Residency Grants: $4,500,000
Support of Health Science Schools: $3,342,465

TOTAL: $22,689,418
Changes in Sources of AHEC Funding (1972–84)

The percentage of funding provided by the North Carolina General Assembly for AHEC has steadily increased over the past twelve years, while the percentage of the budget received from federal funds has decreased correspondingly. Local funds provided by the nine AHEC regions now represent a third of the AHEC budget.
Capital Projects

In 1974, the North Carolina General Assembly appropriated $23,500,000 for the renovation or construction of facilities which would expand the capability of community hospitals to provide clinical education and training programs. The educational facilities authorized and constructed included: family practice centers, clinical areas, clinical support areas, generalized educational areas, libraries, learning resource centers, audiovisual production areas, and administrative and faculty offices.

<table>
<thead>
<tr>
<th>AHEC</th>
<th>PROJECT</th>
</tr>
</thead>
</table>
| Area L | Edgecombe General Hospital  
          Halifax Memorial Hospital  
          Nash General Hospital  
          Wilson Memorial Hospital |
| Mountain | Memorial Mission Hospital  
             St. Joseph’s Hospital Family Practice Center Education Building |
| Northwest | Catawba Memorial Hospital  
             Forsyth Memorial Hospital  
             Rowan Memorial Hospital  
             Watauga County Hospital  
             N.C. Baptist Hospital Family Practice Center |
| Wake | Wake County Medical Center |
| Wilmington | New Hanover Memorial Hospital |
| Fayetteville | Family Practice Center  
               Clinic Education Building  
               Administrative Building |
| Charlotte | Charlotte Memorial Hospital |
| Eastern | Albemarle Hospital  
            Beaufort County Hospital  
            Bertie County Memorial Hospital  
            Carteret General Hospital  
            Chowan Hospital, Inc.  
            Craven County Hospital  
            Lenoir Memorial Hospital, Inc.  
            Onslow Memorial Hospital  
            Pitt County Memorial Hospital Family Practice Center  
            Pungo District Hospital  
            Roanoke-Chowan Hospital  
            Sealevel Hospital  
            Tri-County Health Services  
            Tyrrell County Hospital, Inc.  
            Washington County Hospital  
            Wayne Memorial Hospital |
| Greensboro | Moses H. Cone Memorial Hospital Family Practice Center |
AHEC Locations

- Northwest AHEC (Bowman Gray School of Medicine)
- Wake AHEC (Wake Co. Memorial Hospital)
- Greensboro AHEC (Moses H. Cone Memorial Hospital)
- Mountain AHEC
- Area AHEC
- Charlotte AHEC (Charlotte Memorial Hospital)
- Fayetteville AHEC
- Wilmington AHEC
- Eastern AHEC (East Carolina University School of Medicine)
CHALLENGES FOR THE FUTURE

During its development the NC AHEC Program has demonstrated local, regional and statewide needs for health professionals, such as physicians identified in the early 1970’s and the nursing shortage of the era. The AHECs have identified five issues which are of growing importance to health care delivery system. In its 1985-1990 Plan, the NC AHEC focuses on multidisciplinary education and training activities for the various health professional needs.

1. Aging

There is a statewide imperative to address the issues of health care for North Carolina’s rapidly growing older population. There are human, financial and organizational reasons to prepare health professionals and agencies to meet the needs of older persons. Disease prevention and rehabilitation are receiving more attention and a greater emphasis is being placed on the avoidance of institutional placement for the elderly. These trends call for a multidisciplinary approach to health care and to the training of health care providers. The AHECs have recognized that the issue of health care for the elderly is a priority for their regions and have outlined educational activities to address these concerns in the 1985-1990 Program Plan.

2. Management Training and Cost Containment

During the 1980s, health service agencies and providers have been experiencing increased pressure to contain costs while continuing to improve quality. In this changing environment, the need for more cost-effective management has become increasingly important in planning, production, personnel, patient care, and the growth of the health care delivery system. Since the beginning of the 1980s, there has been a significant increase in the demand for cost-effective management of health care agencies and services. The AHECs, in their 1985-1990 plans, have outlined activities which will relate to the education needs of agencies and professionals in their regions seeking to contain health care delivery costs.
3. Mental Health

A troubling shortage of psychiatrists in the community mental health centers in the state led, in 1984, to the creation of a statewide task force to study the situation and to recommend a course of action to the Director of the North Carolina Division of Mental Health, Mental Retardation and Substance Abuse Services (MH/MR/SAS). The task force concluded that the AHEC model would be valuable in providing community-based training for psychiatry residents and other trainees and in making educational resources available to mental health care professionals in all communities. The NC AHEC Program has now been asked by the General Assembly to develop such activities in cooperation with the AHECs, the four medical school Departments of Psychiatry, other university programs which train mental health professionals, the Area Programs of the Division of MH/MR/SAS and mental health professionals practicing in North Carolina.

4. Health Promotion and Disease Prevention

Many maladies affecting North Carolinians today are costly to treat in both human and monetary terms, and yet are often preventable. These illnesses can often be attributed to inadequate preventive health care, poor health practices, lifestyle choices and harmful environmental factors. Health promotion and disease prevention activities are perceived as a means to achieve both improved health...