EDUCATION

Following the Flexner Report, the nature of medical school teaching became more standardized in the United States. In general, a four-year formal structured program became the norm. There was a series of basic science courses the first two years followed by two years of clinical education. This program remained largely unchanged in the majority of medical schools for the next 75 years.

Except for minor adjustments, the College of Medicine followed the standard until recently. In the 70's in response to a national concern about a perceived shortage of physicians, the College of Medicine implemented a 12 quarter curriculum, shortening the total time to 3 years. One-hundred and fifty students per year were accepted instead of 120 which had been the case for some time previously. The program ran from 1972 to 1979 when the 4 year, 16 quarter curriculum was reintroduced (6). About the same time a few problem based learning sessions were introduced into the curriculum.

The results of a national study in the mid 1980's criticized the traditional way medicine was taught. In response to this Dean Robert Waldman initiated a review of the Nebraska program. The curriculum committee, with input from members of the faculty, began to initiate some changes. Problem based learning, use of standardized patients, decreased lecture hours and an increase in small group sessions were introduced along with other changes; however, no extensive overhaul of the curriculum was carried out.

In 1989 the Dean appointed four blue ribbon committees to study the curriculum: a Committee on Educational Goals, a Committee on Evaluation, a Committee on Ambulatory Education, and a Committee on Basic Science Curriculum. (40) As a result of these evaluations, a new and significantly different curriculum was proposed. This information was provided to the faculty and their input was requested. Meetings were carried out with Department Chairs, and efforts were made to keep the faculty informed about the committees' activities. In 1991, an integrated curriculum was proposed. In brief, an integrated curriculum eliminates teaching by subject, i.e. anatomy, physiology, etc., and instead teaches by systems, i.e. anatomy, physiology, etc. of the cardiovascular system, taught as a unit. Students have increased
responsibility for their education and the system is changed from faculty oriented teaching to a student oriented learning system. Student evaluation is done by a combination of tests including objective, essay, and small group participation.

The original group appointed by Dean Waldman to assess UNMC medical educational programs concluded that the existing curriculum failed to prepare students for the complexities of medicine in the future. It did not recognize that medical students were adult learners and forced students to deal with too much information. The object of the new program was to provide students with the tools to acquire the information they needed by focusing on problem solving and interpretive skills.

Six subcommittees of the Curriculum Committee were formed to make recommendations for and evaluate a new curriculum. It became apparent that the new curriculum would require more faculty and more faculty time, especially the clinical faculty. After a manpower analysis, it was determined that sufficient faculty would be available to carry out the new program. On the basis of information from the subcommittees, a new curriculum was developed and proposed to the faculty. In March 1992 the general faculty voted to accept this new curriculum.

The new first year curriculum was initiated with the entering class in August 1992. Subsequently, the new curriculum for each year was introduced as this class reached it so that at the end of four years the entire curriculum had been introduced. Subsequent entering classes would follow the new curriculum.

In the first year four core courses emphasizing normal structure and function are covered in sequence during the morning hours. These are structure of the human body core, cellular processes core, neuroscience core and function of the human body core. In the later part of the morning, several times a week, a problem based learning experience is introduced wherein students are presented with information about a patient that relates to the subjects being covered in the appropriate cores and they are to “solve” the problem. Two afternoons a week are devoted to integrated clinical experience in which the bio-psycho-social aspects of medicine are presented and discussed. Each student has a three week rotation with a primary care physician during the first year. At the end of the year a comprehensive examination is given.
## First Year Curriculum — Normal based

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<tr>
<td>P.M.</td>
<td>PBL — Problem-Based Learning (Approx. 2-3 hours per week)</td>
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*—Introduction to Medicine in the 21st Century — Three day orientation

## Second Year Curriculum — Organ based

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<th>May</th>
<th>USMLE Step 1</th>
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</thead>
<tbody>
<tr>
<td>A.M</td>
<td>Introduction to Disease Processes Core</td>
<td>Cardio/Pulm/Ent/Endo Core</td>
<td>Neuro/Ophth/Psyh Core</td>
<td>Hem/Onc/MS/BLS/Derm Core</td>
<td>GU/GI Core</td>
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Integrated Clinical Experience — Two afternoons per week

## Third Year Curriculum

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</thead>
<tbody>
<tr>
<td></td>
<td>Family Practice</td>
<td>Pediatrics</td>
<td>Surgery</td>
<td>Internal Medicine</td>
<td>Psych</td>
<td>Ob/Gyn</td>
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## Fourth Year Curriculum

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In general the second year follows the same format. However, the morning core programs are more oriented toward the abnormal. These are introduction to disease processes core, cardiology/pulmonary/ear, nose and throat/endocrinology core, neurology/opthalmology/psychiatry core, hematology/oncology/musculoskeletal/basic life support/dermatology core, and genitourinary/gastrointestinal core. Problem based learning sessions are still carried out several times a week in the latter part of the morning related to the material being presented in the core course at that time. The afternoons continue to be devoted to integrated clinical experience two afternoons a week. At the end of the year the students must take the United States Medical Licensing Examination (USMLE) Step I.

The last two years are devoted to clinical teaching much as in the traditional curriculum. In the third year there are mandatory rotations in Family Practice, Pediatrics, Surgery, Internal Medicine, Psychiatry, and Obstetrics-Gynecology.

In July of the fourth year, each student takes an elective in a basic science field. A number of programs have been developed by each of the basic science departments and the students elect one of these programs. The rest of the fourth year is devoted to elective one-month rotations in various clinical areas. At the end of the year the student must pass the USMLE Step II.

Because of the involvement of multiple departments and classes in this integrated program, an Educational Support Office was opened in May 1992. Various aspects of the curriculum are integrated and coordinated at this office. Appropriate information is sent to the faculty and other administrative matters are handled here. The overall supervision of the integrated program and the entire curriculum is the responsibility of the Associate Dean for Curriculum.

The College of Medicine is involved in a significant number of other educational programs. In the early 1930’s, classes in medical technology and radiologic technology were offered under the egis of the College of Medicine. Classes in other allied health programs were added as time went on. Finally in 1972 the School of Allied Health Profession was established within the College of Medicine and an Associate Dean for Allied Health was appointed. Programs continued to expand and in 1997 at the time of the 25th anniversary of the founding of the School of Allied Health Professions there were 10 programs: Clinical Perfusion, Cytotechnology, Diagnostic Medical Sonography, Medical
Nutrition, Medical Technology, Nuclear Medicine Technology, Physical Therapy, Physicians Assistants, Radiation Therapy, and Radiography. (68) Tables 7 and 8 lists the divisions School of Allied Health Professions in 1980 and in 2002.

In 1972 there were 123 students registered and in 2002 there were 335. There were no full time faculty members in 1972, whereas at the present there are 30. There were 38 clinical affiliation sites in 1972 and 610 clinical affiliation sites and health professionals were involved in teaching students in 2002.

The College of Medicine had already increased the number and scope of its Graduate College programs by 1980. Basic graduate degree programs in specific departments, (i.e. anatomy, biochemistry, etc.) and a medical science interdepartmental area graduate program were, and still are, offered. The interdepartmental area program is somewhat more flexible and the degree is awarded in medical science as opposed to anatomy, biochemistry, etc.

In 1980, anatomy, biochemistry, medical microbiology, pathology, and physiology and biophysics departments offered degrees in their specific fields and were also involved with 10 other departments in the interdepartmental area program. In 2000 the changes in “specific” degree programs were due mostly to departmental name changes. Biochemistry and Molecular Biology, Cell Biology and Anatomy, Pathology and Microbiology, Pharmacology, and Physiology and Biophysics had degree programs in each of their fields and each of these departments were involved with nine other departments in the medical science interdepartmental program.

### Table 7

**Divisions of the School of Allied Health Professions - 1980**

| Biomedical Communications (discontinued 1992) | Physical Therapy Education |
| Health Services (discontinued 1985) | Physician Assistant Education |
| Nurse Anesthetist (discontinued 1982) | Radiologic Technology |
| Medical Nutrition Education | Nuclear Medicine Technology |
| Medical Technology | Radiation Therapy Technology |
Table 8
Divisions of the School of Allied Health Professions - 2002

Clinical Perfusion Education  Nuclear Medicine Technology
CT/MRI  Physical Therapy Education
Cytotechnology  Physician Assistant Education
Diagnostic Medical Sonography  Radiography
Medical Nutrition Education  Radiation Therapy Technology
Medical Technology

In 1980, there were 100 students registered in the graduate programs including 21 in the medical science area. In 2000, there were 101 students registered including 13 in the medical science program. In 1980, there were 15 PhD degrees awarded including three in medical science and 10 masters degrees including 2 in medical science. In 2000 there were 24 PhD degrees awarded including 3 in medical science and only 2 master degrees in biochemistry and molecular biology. As noted there was no significant change in the number of students registered in the graduate programs between 1980 and 2000. However, there was an increase in the number of PhD's awarded in 2000 as compared to 1980 and a decrease in the number of master's degrees. A discussion of the significance of this is outside the scope of this report.

An MD/PhD program was first offered 15 years ago. At that time it had no centralized financial or administrative support. The departments of Pathology and Microbiology had the most active programs and actively supported students with MD/PhD objectives. An MD/PhD Scholars Program was created in 1994. The College of Medicine Research and Development Committee became responsible for the Program. The Associate Dean for Research and Development chairs the MD/PhD Scholars Program Committee which is a subcommittee of Research and Development.
Interested individuals must make their desires to enter the program known at the time of, or before, their application to the College of Medicine. Students are selected for admission into the program on the basis of excellent undergraduate GPA, MCAT scores, research experience and scientific motivation as judged by an extensive interview. Those accepted, "MD/PhD Scholars," receive an annual stipend and their tuition is waived for both medical and graduate school. The training program begins during the summer prior to their first year of Medical School when the students participate in a summer research program which will provide exposure to several of the PhD Graduate Programs.

Scholars participate in the course work of the first two years of Medical School and spend the summer between the first and second years involved in initial studies on a specific research topic. After the second year of Medical School, the student enters his/her selected program as a full-time graduate student. Two or three years will be needed to complete the graduate program after which the student joins that year's third year class in Medical School and completes his/her last two years.

There were some interns in the University of Nebraska Hospital shortly after it opened in 1917. However, the first residency was in surgery in 1947, followed by programs in internal medicine, obstetrics and gynecology, psychiatry and pediatrics in the late forties (3). The programs expanded both in variety and the number of positions. In 1980-81 there were 16 accredited core residency programs with 272 house officers. In addition there were 6 accredited subspecialty programs. There were 39 family practice residents at UNMC, plus 14 at the Lincoln Memorial Education Foundation. In the 2000-01 academic year there were still 17 accredited core residency programs with 389 house officers. Some programs had been discontinued and others started but the total number remained the same. There were 12 accredited subspecialty programs.

The family practice program had expanded. There were 24 residents at the Lincoln Medical Education Foundation and 49 at UNMC including 27 military (Air Force). In 1992 a rural residency program within Family Practice was started and at the present time there are 4 residents in Scottsbluff, 5 in Grand Island, 4 in Kearney, and 3 in North Platte.
Table 9
UNMC Residency/Fellowship Programs

Anesthesiology
Dermatology
Family Practice – Omaha
Family Practice – Lincoln
Internal Medicine
  Hematology/Oncology
  Gastroenterology
  Pulmonary
  Cardiology
Neurology
OB/GYN
Ophthalmology
Oral Surgery
Orthopedics
Otolaryngology
Pathology
Pediatrics
  Pediatric GI
Psychiatry
  Child Psychiatry
Radiology
Surgery
Urology

In 1990, the Legislature approved the establishment of a Rural Health Education Network for the purpose of exposing students to the delivery of health care in rural areas of Nebraska (34). It was funded in 1991 and at first only medical students participated in the program. However, other Colleges of the Medical Center were soon involved and now medicine, dentistry, pharmacy, nursing and physicians assistant programs are all involved. In the new College of Medicine curriculum, all students spend 3 weeks between the first and second year in a rural setting, plus two months in the third year. This is now an extensive network of communities and approximately 1,000 preceptors are involved in the program.

About that same time the Rural Health Opportunities Program (RHOP) was instituted. The Colleges of Medicine and Dentistry, in conjunction with Chadron State College and Wayne State College participate in this program. Incoming freshman at either college with an interest in going into medicine or dentistry are able to save a spot in either school on entering college (36).

A number of “community outreach” programs have been developed in the past 20 years. The programs are diverse and do not necessarily fall under the egis of a specific medical center entity. As a result the following list does not cover every outreach program in which UNMC is involved. However, it will serve to illustrate the extent of the College of Medicine’s involvement in educational programs.
Table 10
UNMC Residency/Fellowship Programs
2000-2001

Anesthesiology
   Pain Management
Family Practice - Omaha
Family Practice - Military
Family Practice - Lincoln
Internal Medicine
   Hematology/Oncology
   Gastroenterology
   Pulmonary
   Cardiology
   Geriatrics
   Endocrine
Neurology
Neurosurgery
Nuclear Medicine
OB/GYN

Ophthalmology
   Oral Surgery
   Orthopedics
   Otolaryngology
   Pathology
       Hematopathology
   Pediatrics
       Pediatric GI
       Pediatric ID
   Psychiatry
       Child Psychiatry
Radiology
       Interventional Radiology
Surgery
Urology

*Mini-Medical School*, started in 1995. It offers to the public free-of-charge, a number of evening programs on various subjects (i.e. the brain, cancer, women’s health, etc).

*Community Health Line*, started in 1984. It is the longest running locally produced health program in Omaha radio and has been hosted by Dr. Bill Gust and Tom O’Connor for the past 13 years. It covers a variety of health issues.

*Life Quest*, a television program covering medical topics of interest. It was discontinued in the year 2000.

*Health Watch*. Segments on KETV (Channel 7) started in 1993. At the present time it is hosted by Dr. Jose Romero. It airs four times per week, 10 pm on Saturday, and three 5 pm segments during the week. The Thursday segment is always a live in studio interview with Dr. Romero.

*Health Science Meet*. An event open to all eighth grade students in the State. Students must do a health science project in their region. The best projects qualify to come to Omaha in the summer for the Health Science Meet. It was started in October of 1992, with the first students coming to UNMC in June of
1993. About 60 students qualify for Omaha each year. Hundreds participate at the regional level.

**KMTV (Channel 3)**. Segments with Dr. Bruce Buehler, a question and answer format is used with the TV anchorperson questioning Dr. Buehler about medical subjects in the news.

**UNMC Community Academy.** Ninth grade students spend three days per week for six weeks at the Medical Center (Tuesday, Wednesday, Thursday). A different "subject" is covered each week. The program hopes to turn the student on to science, math, and/or opportunities in the health care science field (66).

UNMC has been involved in continuing education for some time, i.e. the 30th Family Practice Review Course was held in 2001. The number and variety of material offered has increased significantly since the first Family Practice Review. At present the Center for Continuing Education is involved in the accreditation of the following programs.

Departmental rounds are reviewed and accredited by the Center upon request of the departments. Various review programs, symposia, and programs on multiple subjects focusing on such things as endoscopies are held on campus or at appropriate locations within Omaha. Additionally the Center is involved in the organization and/or accreditation of programs in such diverse locations as Hawaii and Utah. Taped programs for interactive self instruction are available as well as self evaluation material in some journals.

These examples are by no means inclusive of all of the continuing education programs in which the Medical Center is involved but serve to illustrate the degree of that involvement.

The College of Medicine has made significant progress regarding gender and equity issues during the last 20 years. An Office of Student Equity and Multicultural Affairs exists which has a number of programs oriented to recruiting and retaining minority students. The office purchases from the American College Testing Service the names of minority students with scores in the upper 25%. These students are contacted and offered an opportunity to be placed in the prospective student data base. This has resulted in many more minority students ultimately applying for admission.

The office has established affiliations with several colleges with a high minority student population. Faculty from these schools are invited to come to UNMC to meet College of Medicine faculty members as well as look over the research going on and in general get some orientation to our program. Faculty from the College of Medicine go to these schools to present material on their
research and to establish a closer liaison. Student with appropriate GPAs are urged to apply to the University of Nebraska College of Medicine. A few students spend summers at UNMC working with researchers. Once a minority student is registered and attending school, the Office of Student Equity and Multicultural Affairs attempts to assist in any way possible, from checking on schools for their children if they are married or checking on housing availability to providing counselors to whom the student can talk and attempt to solve personal problems.

To further enhance the College of Medicine's effort at recruiting and retaining minority students, Dr. Kristie Hayes was appointed Assistant Dean for Students and Multicultural Affairs in February of 2002. It is not within the scope of this report to record all of the many ways in which the College of Medicine is increasing its effort to recruit and retain minority students but the above will serve as an illustration.

In 2001, UNMC started a program titled NU-PATHS with UNL. The program recruits talented minority students who are seniors in high school or after their freshman year at UNL. Students who are accepted must maintain a cumulative GPA of 3.25. Those considering the College of Medicine must have a cumulative GPA of 3.50. Each student has an NU-PATHS advisor, a UNL advisor, and a UNMC discipline specific representative to guide them through the program. The first student from the program entered the College of Dentistry in the fall of 2002.