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The Emergence of the Family Practitioner: An Historical Analysis of a New Specialty

Robert M. Lewy, M.D.

Abstract—The family practitioner evolved as a specialist to replace the rapidly disappearing general practitioner. The lack of adequate postdoctoral medical education programs for general practitioners, the changing role of the general practitioner in relation to the specialist, and the lower status and different working conditions of the general practitioner compared with the specialist contributed to the decline of general practice. Those who attempted to develop the specialty of family practice actively sought to remedy the deficiencies of general practice by providing intellectually rigorous postgraduate programs, by providing a unique area of expertise, and by providing specialty status.

The introduction of the family practitioner has restimulated interest in personal, comprehensive medical care. The general practitioner, a compassionate adviser to the family in matters of health and disease, represented the family's source of such care. However, from 1931 to 1974 physicians classifying themselves as general practitioners decreased from 83 percent to 18 percent, and there was a concomitant rise in the number of specialists. While the technology of medical care improved, the delivery of personal health care did not.

The number of general practitioners continued to decline in spite of strong public demand for their services. Several large public opinion studies (1) demonstrated the public's highest regard for the general practitioner. Weiskotten's study (2) showed that specialists, even though they were not specifically trained as general practitioners, were spending much of their time in this role.

General practice faced extinction because of the changing nature of medical education in the post-Flexnerian era; the changing role of the general practitioner in relation to the specialist; and the difference in working conditions, renumeration, and status between the general practitioner and the specialist.

While the Flexner report resulted in a shift in medical education that accentuated its scientific and biomedical components, no comparable impetus was given to comprehensive general care. The availability after World War II of vast amounts of government and private research funds helped create a new type of academic role model, the "scientist-physician." Unlike the clinician, the scientist-physician is primarily interested in research rather than clinical skills and close personal contact with patients. As the

Dr. Lewy is a Robert Wood Johnson Clinical Scholar at Columbia University and a research associate and assistant attending physician in the Department of Medicine, College of Physicians and Surgeons, Columbia University, New York City.

scientist-physician became the prototype for optimum patient care, increasing numbers of medical students chose the scientist-physician role over the clinician role. In a comparison of graduating Harvard Medical School classes in 1962 and 1970 (3), the proportion of medical students characterized as scientist-physicians increased from 39 percent to 65 percent, while medical students characterized as clinicians decreased from 30 percent to 25 percent.

In addition to the difficulty general practitioners had in defining a unique area of expertise, the model of solo general practice created professional and personal problems. The scientist-physician, trained to care for acute, intensive conditions in the scientific research atmosphere of the university hospital, may not find managing patients with self-limited, emotional, or chronic complaints much to his liking. The time demands of solo general practice can interfere with family, vacation, and continuing education. The responsibilities of solo office practice often encourage professional isolation. In spite of the long irregular office hours, general practitioners often receive less pay than specialists with shorter, more regular hours.

General Practice Organization

In 1946 a section on general practice within the American Medical Association was established to give voice to the mounting problems and decreasing numbers of general practitioners. Its first chairman, Wingate Johnson (4), foresaw the need for the general practitioner to evolve into the broader role of family practitioner. The family practitioner, as opposed to the general practitioner, should be better prepared to "emphasize treatment of the whole man," including psychosocial and family problems. Unlike the general practitioner, he should be more capable of relating to consultants and of coordinating total care.

By 1947 the section had developed into the American Academy of General Practice. Its educational goals were to encourage and assist physicians in preparing, qualifying, and establishing themselves in general practice and to assist in providing postgraduate study courses for general practitioners. The academy tried to implement these goals by establishing medical school departments of general practice, appointing qualified general practitioners as clinical professors in the basic subjects, instituting a medical student lecture series in the art of medical practice, and developing preceptorships in general practice.

The only program of any consequence was the University of Wisconsin preceptorship program, which was designed to provide medical students with the opportunity to appreciate the social, economic, cultural, and environmental factors in the practice of personal medicine so as to interest them in careers in general practice. However, a critical review of the 30-year experience with the preceptorship program revealed no evidence that it ever encouraged students to enter the field of general practice (5).

By 1956 it became evident that the Academy of General Practice was not successfully meeting its educational objectives. The Executive Committee of the American Medical Association requested that the Council on Medical Education in Hospitals form a study group, the Committee on Preparation for General Practice, to analyze objectively and make recommendations for the best preparation for general practice. The committee, in its 1959 *Report of the Committee on Preparation for General Practice* (6), recommended the formation of several pilot two-year graduate programs specifically designed to teach general practice.

Residencies

The proposed general practice programs were designed to ensure the ability of the physician to provide medical care for all family members. To maximize experiences in personal and continuing care, the core of the educational programs was designed around the continuous care of selected patients. During the first 18 months residents had an integrated experience in learning the basic diagnostic, therapeutic, preventive, and rehabilitative aspects of clinical medicine and pediatrics. The final six months were reserved for obstetrics or further training in a medical or pediatric subspecialty.

Sixteen programs in general practice were initially approved. These were rapidly expanded to 165 programs offering 783 positions by 1963. With only 47 percent of the available positions ever filled and with over half of these filled by foreign medical graduates, the general practice residency programs were the least sought after clinical residency. Within 10 years most of the general practice programs had closed.

The general practice residency programs failed because they did not address the major problems facing the new "specialty": the absence of an academic base, the undefined role of the general practitioner in relation to the specialist, and the difference in working conditions and status between the general practitioner and the specialist.

Those who developed and administrated the general practice residency programs did not take the steps necessary to define and develop a body of knowledge unique to general practice. Often the programs were located in hospitals unaffiliated or only peripherally affiliated with university teaching centers. Therefore, the developers were not able to teach general practice in medical schools, to generate any substantial research interest, or to change the outmoded model of the isolated solo general practitioner with little access to programs of continuing education.

The residency programs themselves, although often carefully thought out, were not structured to allow the resident a unique identity as a general practitioner. Because the resident was required to rotate among the traditional specialties, he quickly became a "second class" physician on every service. Experienced general practitioners were often not even members of the teaching staffs at the institutions, and so by default much of the teaching was left to specialists.

Commissions

By the early 1960s it seemed clear that if general practice were to survive, a reevaluation of the function of the general practitioner in the medical care system was necessary. Ward Darley, executive director of the Association of American Medical Colleges, concerned that the practice of medicine was too slow in broadening the emphasis from the diagnosis and treatment of episodes of illness to the areas of prevention and rehabilitation, stimulated an assessment of the direction of medical care. Recognizing that fragmentation of medicine into specialties increases fragmentation of patient care, he became a strong advocate for the concepts of comprehensive and family medicine (7).

At the same time four independent study commissions set out to explore the future of general practice. The commissions underscored the continuing need for some type of physician to deliver comprehensive, continuing health care. However, they concluded that if general practice were to survive, changes in the future training and functioning of general practitioners would be necessary.

The World Health Organization (WHO) Expert Committee on General Practice met in July 1963 to assess the

current and future status of general practice and to consider what improvements might be made to keep those in the field abreast of modern knowledge in medicine. Its report, *Training of Physicians for Family Practice,* recommended that a postgraduate study program specifically designed to meet the needs of the general practitioner should include mechanisms for continuing education, research in family medicine, and the teaching of medical students. To increase the effectiveness of the model of solo general practice, the practitioner should be trained to work with auxiliary and paramedical personnel (8).

The American Public Health Association and the National Health Council formed the National Commission on Community Health in 1962 to explore the impact of the changing patterns of health and disease. The Task Force on Comprehensive and Personal Health Services, chaired by Isadore Ravdin, described the role of the personal physician in upgrading health care services: the personal physician should be trained to deliver comprehensive, continuing, and preventive care; he should be responsible for coordinating all sources of health care to result in an integrated program; and he must be considered a specialist and be given status, renumeration, and professional privileges equal to other specialists (9).

In the early 1960s the American Medical Association, concerned with the state of postgraduate medical education, requested the Citizens Committee on Graduate Education, chaired by John S. Millis, president of Western Reserve University, to conduct an external review of the nation's internship and residency programs. The Millis report (10) became a forerunner of the development of family practice residency programs, and Dr. Millis became known as the grandfather of family practice. The committee recommended that the term "general practitioner," devoid of its once revered status, be discontinued and "a monument be built to him."

Few hospitals and few specialists have considered comprehensive and continuing care to be their responsibility, and few general practitioners are qualified to fulfill this role. In order to provide comprehensive care of a higher quality than that rendered by the general practitioner, the personal physician must be expert not only in the biomedical aspects of care but also in the psychosocial aspects of care, and he must be able to focus on the whole person residing in a complex social milieu. The personal physician must also be expert in the diagnosis and treatment of illness and in "symptomatic and rehabilitative care that helps a person to maintain or to return to as high a level of physical and mental health and well being as he can" (10).

Following the failure of the general practice residency programs and encouraged by the Millis inquiry into graduate medical education, the Ad Hoc Committee on Education for Family Practice of the Council of Medical Education of the AMA was appointed in 1964 to review the AMA's policy regarding the future of general practice and to recommend further educational changes in the training of general practitioners. The ad hoc committee recommended five guidelines for the graduate education of physicians intending to become primary care specialists (11):

1. Because teaching should stress comprehensive and continuing patient responsibility rather than the episodic handling of acute conditions, mere rotation among the services would not be sufficient. The graduate program should be divided so as to provide time on the specialty services as well as on a comprehensive and continuing service, subsequently known as the model practice unit.

2. In addition to the traditional medical specialties, a new body of knowledge that constitutes the bulk of the program should be taught. Although good primary care physicians acquire much of their skill and wisdom from experience, there is a body of knowledge that can be taught which will facilitate their becoming outstanding primary care providers. This new knowledge, even though not yet fully defined nor developed, should form the theoretical framework for holistic care.

3. Surgical experiences should concentrate on emergency care and the management of preoperative and postoperative patients.

4. The level of training should be equal to that of other specialties. To equate the new specialty with others, a specialty board that gives certifying examinations and confers diplomate status should be established.

5. There should be the opportunity for individual variations in the graduate programs.

The independent study commissions, in agreeing on a conceptual change in the functions of the general practitioner, had more difficulty identifying that changed function with a new name. The reports of the WHO expert committee and the Ad Hoc Committee on Education for Family Practice consistently referred to "family physicians and family practice." The National Commission on Community Health used the term "personal physicians," while the Millis report favored "primary physicians." Millis specifically objected to the term "family practice" because he felt family relationships were not necessary to the functions of such a physician. Nevertheless, despite his objections, the term "family physician," as described and defined in the Willard report, gained widespread acceptance as the name of the new physician specialist who would "provide medical care within one or more specialty disciplines in medicine, would assume responsibility for providing continuous and comprehensive care for the individual patient within the family contexture, supplying portions of that care himself when appropriate and coordinating portions obtained by referral or consultation with other physicians and allied health personnel" (11).

To define the actual content of family medicine, the Committee on Requirements for Certification, chaired by Carol Whitten and composed of representatives from the American Academy of General Practice and the AMA Section on General Practice, met in 1966. The core content of family medicine was designed not only to give the family physician a basic knowledge of all areas of medicine, but also to present the family physician with a broad approach to illness in its behavioral, social, and environmental aspects. In addition to training in the clinical aspects of medicine, the core content of family medicine included a wide range of areas of importance, including research and practice evaluation and the economic, legal, administrative, and ethical aspects of patient care (12).

Evolution of Specialty

The evolution of a new specialty requires a definition of content, the development of graduate training programs, the development of specialty departments in medical school, the establishment of standards, the development of mechanisms to ensure adherence to the standards, the development of continuing education programs to ensure maintenance of these standards, and the generation of research

programs to further the unique body of knowledge.

McWhinney (13) refined the content of family practice as proposed in the Whitten report (12). It was McWhinney's contention that the unique field of action of family practice is finding the "earliest departure from normal." He felt that the family physician must be able to evaluate symptoms, signs, and diagnostic tests; know the prevalence, incidence, distribution, and natural history of disease; know the physical and mental development of human beings from birth to adult life; understand human behavior and psychodynamics; and understand the social influence on the presentation of disease.

By the late 1960s many of the requisite steps necessary for creating the specialty of family practice were well under way. The Whitten report defined and outlined the basic content of family medicine. The Willard report outlined the form of graduate and undergraduate training programs. Although it was still too early to establish standards and develop mechanisms to ensure adherence to those standards, continuing education and research were emerging as major components of the new specialty.

In view of the severe limitations of the general practice residency programs, several major organizational changes were recommended in the formation of the family practice programs. The residency program would have to extend to three or even four years instead of two to make the length of training comparable with that of the other specialties. The family practice resident, rather than just rotating through the various specialties, would remain on and be identified with the family practice service throughout his training. He would learn relevant aspects of other specialties through joint consultations or by spending time on their services. A major part of the residents' time would be spent in the model family practice unit, where the unique knowledge and skills of family practice could be taught by experienced family practitioners. To emphasize that the discipline is distinct from other clinical departments, at least some of the programs would be based in a separate unit within the university. As a result of these steps, family practice as a specialty could more easily compete for prestige, honor, and academic status than could general practice as a non-specialty.

Description of Residencies

Three essential and unique features of the family practice program distinguish it from the previous general practice programs as well as from the other specialty programs: the model practice unit and the inclusion of behavioral science and community medicine into the curriculum. The model practice unit serves as the major teaching base for the resident. Through progressive responsibility within the model practice, the attitudes, concepts, and skills of family practice are taught. The resident is responsible, under supervision, for providing continuous and comprehensive care to a group of patients who should represent a cross section of the community. Emphasis is on ambulatory patients, disease of high incidence, chronic disease, health maintenance, and rehabilitation. The resident is responsible for his patients who become hospitalized or for those who might require home care. The model practice unit requires a nucleus of fulltime family physicians equivalent in position and status to other clinical faculty.

Community medicine provides the resident with an understanding of the health needs of a population. As an applied discipline it is based on epidemiology, biostatistics, and environmental health. Increasing the awareness of the health of the community is expected to be translated into greater awareness of the resources and needs of a region. A greater appreciation of the health patterns of the community should lead to a greater understanding of the health needs of the individual (14).

The social and behavioral sciences should foster a more holistic approach to medicine. Sociology, anthropology, and psychology should form the basis for integrating cultural, social, and psychological elements entering into health and illness. An approach to the training of family practice residents in behavioral science developed by Bock and Egger (15) calls for the family physician to develop skills of people management and a continuing relationship with the patient as an individual, as a member of a family, and as a member of a community.

Board of Family Practice

The first battle regarding the new specialty of family practice occurred over the creation of the Board of Family Practice. Later there were disagreements about the type of training programs and the basis for accrediting residency programs. The general practice group strongly wanted a Board of General Practice. However, in view of the previous failure of the general practice residency programs, they agreed upon a compromise Board of Family Practice. The general practitioners thought that a formal division of labor between primary and secondary care would reduce the role of the primary care provider to a triage officer. Surgery was cited as an issue. The general practitioners wanted more emphasis on surgical experience instead of family-oriented experiences. They referred to those trained only in family medicine as "medical eunuchs."

Internists and pediatricians, who provide primary care as part of their work, also opposed a division of labor. Their opposition centered on whether this new specialist would threaten their territory in primary care.

The specialty boards in pediatrics and internal medicine responded by developing a dual certification in family medicine. A combined four-year hospital-based program, two years in pediatrics and two years in internal medicine, would prepare the physician to practice family medicine. This move, which was in no way intended to produce family physicians, was widely interpreted as a method of frustrating the infant Board of Family Medicine.

By 1968 the AMA Committee on Medical Education established a Family Practice Committee to implement the Willard report (11). By early 1969, 15 pilot residency programs in family medicine were approved. Concurrently, the Committee on Requirements for Certification of the American Academy of General Practice (AAGP) was finalizing plans for a family practice certifying examination. In early 1969 the AAGP and the AMA set their requirements for board eligibility. Shortly thereafter, the AMA approved family practice as the newest medical specialty.

The original 15 pilot programs grew to 321 fully approved family practice residency programs with 4,675 residents in training and 11,000 certified family practitioners by 1976. Of the 119 U.S. medical schools, 78 currently have departments of family practice, 15 have divisions of family practice, and an additional seven are actively considering some type of family practice program.

Early Difficulties

As the family practice programs developed in the early 1970s, several of the originally conceived prerequisites of family practice training remained only par-

tially fulfilled. The programs had difficulties in being university based, implementing curricula in community medicine and the behavioral sciences, and recruiting experienced teachers of family medicine.

Although the majority of medical schools have departments or divisions of family medicine, the vast majority of family practice residency programs remain based in community hospitals unaffiliated with medical schools. The development of many small, isolated, non-university-affiliated programs may or may not represent a desirable trend.

Although community medicine and behavioral science became identified as areas of knowledge essential to the family practitioner, no uniform process exists whereby the content of those fields could be taught. While some programs virtually ignore community medicine, others, usually those affiliated with university departments of community medicine, present formal units in the content areas of community medicine. Similarly, no process, guidelines, or standards exist to teach the behavioral sciences. Again training varies among programs. Some, following the Bock and Egger model (15), present integrated units, while others merely rely on the skills of a consulting psychiatrist or social worker to teach the behavioral sciences in relationship to clinical medicine. Others experiment with behavioral modification techniques, biofeedback, and transcendental meditation.

To avoid the pedagogical pitfalls of the general practice programs, experienced family practitioners were to be the teachers in the developing family practice programs. Because of the rapid proliferation of the residency programs, a severe shortage of qualified teachers of family medicine quickly developed. To alleviate the shortage, the Society for Teachers of Family Medicine and the American Academy of Family Physicians have been working to upgrade teachers' skills and have been actively recruiting qualified teachers of family medicine from an increasing pool of recent graduates.

Early Successes

The family practice programs were successful in establishing university departments of family practice, introducing family practice to medical students, establishing a research base in family medicine, establishing programs of continuing education, and attracting residents.

The introduction of departments or divisions of family medicine into nearly 100 of 119 U.S. medical schools has legitimized family medicine as an academic discipline. Academic departments of family medicine, by providing role models of family practitioners and by encouraging undergraduate medical education in family practice, assure a future supply of family practitioners. Research in family medicine, particularly in health care delivery and education for family practice, is increasing.

Family practice has successfully pioneered in continuing education. The Board of Family Practice requires 300 hours of continuing medical education and a recertification examination every six years. Although no data are available to measure whether these requirements actually bring new knowledge to the physician that can be used to improve patient care, other specialty groups are looking into similar requirements.

The creation of a new type of family physician with specialty status, with an academic base, with a specific and unique skill, and with a well-defined role in the medical care system has contributed to the early success of family practice.

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Student Decision-Making and Performance In a Flexible-Time Curriculum

Robert A. Barbee, M.D., and Sarah M. Dinham, Ph.D.

Abstract—Three consecutive classes (213 students) entering the University of Arizona College of Medicine under a flexible-time three-year curriculum were provided the option of extending their program by a year or more. Of the 30 percent who availed themselves of this option, a majority did so because they desired a better personal or academic "life-style" rather than for specific academic reasons. Most continued to pursue medical interests during the free time which became available to them. Through none of the usual admission data was it possible to predict which students would choose to extend their program. At the time of graduation students completing the curriculum in three years achieved scores on the Part II examination of the National Board of Medical Examiners comparable with those earned by students who extended for a four-year program. Nonacademic factors may be of greater importance than academic factors in student acceptance of accelerated curricula.

In the past several years virtually all American medical schools have undertaken extensive analyses of their curricula. For some schools the result has been an organizational change either toward or away from organ system instruction. For others curriculum reassessment has led to increases in elective opportunities for students. In most cases the question of curriculum duration, raised at least in part by the presence of federal financial incentives, has been much debated. As a result of various changes in curriculum duration the traditional four-year curriculum has become only one alternative for achieving the M.D. degree. Also available have been four-year programs offering an option for three-year completion, three-year programs with options for four years, and three-year programs with no planned options, according to a report of the Three-Year Curriculum Study undertaken by the Association of American Medical Colleges. The availability of programs offering flexibility of curriculum duration has meant that many students have had opportunities to select their rate of progress toward the M.D. degree for their own reasons.

In January 1972 the faculty of the University of Arizona College of Medicine voted to inaugurate a flexible-time three-year curriculum, beginning with the class entering in August of that year. Under the new curriculum all students entered a program which permitted completion of the requirements for the M.D.

Dr. Barbee is associate professor of internal medicine and Dr. Dinham is director, Office of Medical Education, University of Arizona College of Medicine, Tucson.

degree in 34 calendar months. At any time, at the student's option, the program could be lengthened to three-and-one-half, four, or even five years to suit individual needs and interests. This report concerns the students in the first three such classes who exercised their option to extend their program. In it the authors describe in detail the process of program extension; review demographic, attitudinal, and performance comparisons of students who extended their programs with those who did not; address the issue of predicting which students will be extenders; and offer conclusions concerning student responses to a curriculum of flexible length.

Three-Year Curriculum

During the College of Medicine's first five years (1967 to 1972) the curriculum was patterned on the traditional four-year model in which departmental basic science courses were taught during the first two years, followed by a year of clinical clerkships and an elective fourth year. The three-year curriculum instituted in 1972 represented both a 10 percent decrease in total contact hours and a shortening of the summer vacation periods. Basic science courses were taught during a 56-week Phase I, clerkships in a 48-week Phase II, and both clinical and basic science electives in a 36-week Phase III.* At matriculation, this curriculum plan was explained to students, and their option to extend the program was described. The procedure for extending a program was as follows. When in the student's opinion it would be beneficial to extend, the student petitioned the Curriculum Committee, reviewed the decision with the associate dean, and planned an alternate program. Although others were involved in the discussion, the decision was made entirely by the student. Because of the structure of the basic science curriculum and the fact that departmentally taught courses were offered only once a year, a student's decision during Phase I to extend his program often required a full added year prior to the start of clinical clerkships and lengthened the total program to four years. A student's decision to extend the Phase II or Phase III program typically lengthened the total program by only a few weeks or months. Most students who extended their programs did so during the period that they were studying the basic sciences, generally making their decision within six months after entering medical school.

*Some changes and rearrangements of time allocation occurred between 1972 and 1977; since 1975 the curriculum has included a 64-week Phase I, 48-week Phase II, and 30-week Phase III. The class entering in 1977 begins a newly designed four-year program.

Methods

In February 1970, two years prior to the faculty decision to make a curriculum change, the Arizona Longitudinal Study was initiated. This study has focused on student performance and curriculum evaluation factors measured before and after curriculum change. Data collection has included admissions data such as demographic information, undergraduate grade-point averages, and Medical College Admission Test scores as well as data collected at several points in the curriculum using the following instruments: National Board of Medical Examiners (NBME) minitests and the Career Attitudes Inventory and Medical School Environment Inventory (the latter two were developed as part of the AAMC Longitudinal Study of the Class of 1960). A questionnaire concerning students' medical school expectations and advance knowledge is also administered during the first orientation day in an

attempt to assess such variables as academic confidence, alternative career thoughts, and student perceptions of factors which might contribute to success in medical school. The NBME Parts I and II examinations are administered to all students at the end of basic science course work and in April preceding their graduation.

For students who extended their medical program beyond the standard 34 months, extensive personal interviews were conducted to learn the specific reasons for the decision to extend. When it seemed appropriate, instructors were also questioned concerning the students' academic performance. It was possible to identify three primary reasons why students chose to extend their programs; (*a*) quality of life—the student's desire to improve the quality of personal or academic life by decreasing the time demands of the program; (*b*) health—a specific illness (for example, coccidioidomycosis), pregnancy, or accidental injury preventing the student from maintaining a full academic load; and (*c*) academic—either overt failure of a course or a decision to drop one course so that marginal performance in the others might be improved.

The data analyses were conducted to test hypotheses of differences between "extending" students and students remaining in a standard 34-month program. Statistical analyses for group differences for the various demographic, attitudinal, and performance variables were performed using chi-square and one-way analysis of variance procedures.

Results

Among the 213 entering students in 1972, 1973, and 1974, 64 (30 per cent) chose to extend their programs beyond the standard three years. Numbers for each class and the reasons they gave are shown in Table 1. Except for the 1972 class, in which health reasons were given with unusual frequency, the vast majority extended because they wanted a quality of life which the three-year program did not provide them. Concerns for a more well-rounded social life and a desire for a less intensive academic pace predominated. Rather than fearing academic failure, several students felt that they would achieve more academic depth by extending their program of study.

Analysis of admissions data for the extenders and their entering classmates revealed few differences. Not surprisingly, students extending for academic reasons had scored lower ($p \leq .05$) on two Medical College Admission Test (MCAT) subtests; students extending because of academic difficulty also had expressed during orientation somewhat less confidence in their ability to meet the demands of medical school ($p \leq .05$). Demographic characteristics, career choices, and performance on the NBME test during the orientation period were virtually identical for extenders and nonextenders.

A second series of analyses focused on students entering Phase II, the clerkship phase, of the curriculum (this group consisted of students making normal progress through the standard three-year program, plus students from the preceding class who had extended their program and consequently were entering clerkships a year "behind"). Extenders and their classmates were compared using the NBME minitests (administered at the end of traditionally first-year and second-year courses) and the NBME Part I examination. There was no difference in performance between the extenders and nonextenders on the minitest. On the NBME Part I examination extenders outscored nonextenders on some subtests, and the reverse was true on other subtests; these results varied from year to year for the three classes studied. For only one class was there a difference for NBME Part I total. When the students' reasons for extending their programs were considered, students who extended for academic reasons had lower NBME Part I total scores ($p \leq .05$) than did either the other extenders or the three-year students.

Another area of study concerned how students used the time made available by extending. Categories of students' activities are listed in Table 1. Some attended school only part time, and some did not register for one semester.

The flexible-time curriculum was planned to permit not only basic science students but also students in their clinical years to extend their programs. As the students reached their clerkships and then their elective courses, however, fewer than expected extended their clinical work. Only seven students in the first three classes extended their clinical education for six months or longer; this choice meant that they graduated in December or January and made special internship arrangements. A somewhat larger number of students extended their clinical work by six to 18 weeks. The students extending during the clerkship and elective phases of the curriculum did so primarily to take advantage of unique clinical opportunities.

In the flexible-time curriculum a graduating class was composed of students who progressed at the standard rate through the 34-month program plus others who began earlier and extended to a longer program. At the time this article was written, NBME Part II data were available for two of these "mixed" classes: the class graduating in 1976 consisted of 43 three-year nonextending students and 25 students who had extended their programs, and the class graduating in 1977 consisted of 60 nonextending and 26 extending students. In four of the six NBME Part II subscores as well as in the total score, the class of 1976 nonextenders outscored extending students ($p \leq .05$); there was no difference between those extending because of academic necessity and those extending for other reasons. Class of 1977 NBME Part II

TABLE 1

NUMBERS OF EXTENDING STUDENTS, REASONS FOR PROGRAM EXTENSION, AND STUDENTS' ACTIVITIES DURING FREE TIME IN THE UNIVERSITY OF ARIZONA THREE-YEAR FLEXIBLE-TIME MEDICAL CURRICULUM

Student Characteristic	Entering Class		
	1972 ($N = 71$)	1973 ($N = 71$)	1974 ($N = 71$)
Number extending	22	22	20*
Reasons for extending			
Quality of life	12	15	18
Health	6	1	0
Academic problems	4	6	2
Activities during free time			
Required course work only	7	5	2
Required and other course work	11	16	12
Other	3	1	4

* Two of these students dropped from school permanently, one for academic reasons and one for a career change.

results showed no differences between extenders and nonextenders. Data on the house staff performance of these graduates are not yet available.

Discussion

The idea that a medical student may choose, or even be encouraged to individualize, the time taken to earn the M.D. degree is relatively new in American medical education; traditionally, the degree has been earned in four years unless academic failure, ill health, or a combined-degree program supervened. Today, in most schools with flexible-time curricula the standard four-year program is shortened to three years for certain students, usually upon the approval of the appropriate administrator or faculty committee. Depending upon the school, up to a quarter of a class may be allowed or encouraged to exercise such an option.

This report concerns the opposite arrangement—extending a program from three years to more, under guidelines understood by the student prior to matriculation. When the 34-month curriculum was implemented at the University of Arizona College of Medicine, it was clearly understood that not all students would find the pace compatible with their learning style, career goals, or intellectual capacity. There was no way to predict student response to this option, nor was it possible to anticipate the manner in which the basic science faculty would implement a shorter curriculum. As the first class progressed through its first basic science courses and encountered several examinations, the percent of students choosing to extend from three to four years approached 30 percent. A majority reached this decision for quality-of-life reasons. For the most part these students expressed a desire to spend more time in nonmedical pursuits rather than to endure the rigorous intensity of the three-year curriculum. Time for family, social life, and nonacademic activities was most frequently cited. Other students, fewer in number but equally vocal, felt that the quality of their academic experience would be enhanced by a more leisurely pace. In most instances students in this group chose to do basic research during the free time available to them. Only four students were required to repeat the basic science phase because of academic failure. Several in the quality-of-life category, although passing all courses at the time of their decision to extend, expressed concern that failure might occur if they did not lighten their academic load. Gross anatomy and histology were the courses most frequently dropped for this reason.

Following the experience of the first three-year class, students in subsequent classes tended to make their extending decision earlier in the year; a few did so during the first two weeks of classes. The previous class' part-time students were a major influence; they were clearly enjoying a more leisurely academic pace and were perceived by the new students to have a better quality of life. By the time the third class entered, almost all extending students were expressing quality-of-life reasons for their decision.

Except for a somewhat lower prior academic performance among students who extended because of academic failure, there was no way to predict who in an entering class would choose the option to extend. Neither gender nor marital status correlated in any way. A questionnaire administered during orientation to assess students' perceptions of how well they would perform also failed to predict those who would extend. Only subjective impressions based upon interviews with students could be used in the search for predictor variables. For many extending students fatigue appeared to be a dominant factor. For some of the brightest students, extending their curriculum offered an opportunity to satisfy a desire for the academic quality that might be missing in the three-year program. A few members of the faculty who did not favor the new curriculum tended to reinforce this feeling by implying that the students would be better prepared for their clinical work if they slackened their pace. A critical factor among the quality-of-life students appeared to be a reluctance to allow their medical education to dominate their overall life-style, both during medical school and for the future. Although these students expressed a dedication to medicine, they appeared to resent the fact that it might preclude them from enjoying what they viewed as a well-rounded personal life.

Students who continued through the 15-month Phase I, the nonextenders, included several who were older than their classmates. Many also cited financial and time considerations in moving toward a three-year graduation. Individually, students not extending appeared to be more achievement oriented and less questioning of their education.

Proponents of traditional four-year curricula have suggested that the advantages include time for reflection and assimilation of material. There are no objective data upon which to judge this alleged advantage. When members of the first three-year graduating class were surveyed concerning the extending option, the great majority expressed satisfaction with their decision not to extend. Most indicated that given the opportunity for such a choice, they would again make the same decision.

At least on the surface it would appear that a major objective of the flexible-time curriculum was accomplished—to allow each student to progress at a pace commensurate with his desires and capabilities. Most students made decisions which were well thought out and arranged well-planned alternative programs. They achieved an acceptable level of achievement while progressing at their own pace.

A significant limitation in the flexible-time arrangement was the fact that basic sciences courses were offered only once each year; students, therefore, were required to wait several months after dropping a course before it was again available to them. Not only did this leave them with time on their hands, but also it caused many faculty members to become uneasy about "part-time" medical students, since to some faculty members a student's program extension represented a curricular failure. Most students extending during the basic sciences part of the curriculum spent their time very productively; only a minority took the minimum number of classes required to complete the basic sciences. Students who extended during their clinical work used their time primarily for clinical work. "Late" graduation did not greatly hamper students in their internship arrangements; all obtained quite adequate positions.

Certainly, a flexible-time curriculum is not without problems, most of which are difficult to assess objectively. However, the University of Arizona curriculum has provided an opportunity for studying an important element of student decision-making and its effect on academic performance. From all available data, it appears that students are entirely capable of determining their own pace without significant detriment to either their commitment to medicine or their academic performance.

Evaluation of Clinical Training in the Community

Michael J. Gordon, Ph.D., Ralph R. Hadac, and C. Kent Smith, M.D.

Abstract—An evaluation approach is presented that is designed to deal with the complex educational problems associated with community-based teaching. Such problems include using instructors with limited training in teaching, ensuring comparability of student experiences, monitoring students' performance in dispersed settings, and maintaining adequate communications among involved parties. The approach is based on a careful delineation of information needs and data sources followed by the design and strategic combination of evaluation instruments in order to promote efficiency in data collection. An application of the approach is described for an undergraduate clerkship in family medicine taught at multiple sites at the University of Washington School of Medicine. Nine instruments are described for eliciting information from four sources to satisfy the needs of five groups associated with the course. Sample results are presented suggesting that the approach is effective and may prove useful to others involved with teaching in dispersed settings.

Just a few years ago medical students typically began their medical education with two years of preclinical training in lecture halls, libraries, and laboratories. They then spent their last two years of training on the wards of university-affiliated teaching hospitals. After an explosion of new teaching approaches, today's medical student begins meeting patients in his first year. These early encounters increasingly take place in the offices of community physicians and often extend to nursing homes, neighborhood clinics, social agencies, and patients' homes.

This rapid change in undergraduate medical education has taken place in response to a number of social and economic demands affecting health care delivery and training. A shift in social emphasis toward primary care produced a need for new primary care teaching sites. Various cost control programs and advances in medical technology have reduced the number of hospital teaching cases available. At the same time demands for greater availability of health care have markedly increased medical student enrollments. Finally, the rising costs of medical education have made the bedside teaching approach formerly preferred by medical school faculty an expensive luxury.

A partial answer to these demands has been found by sending medical students beyond the walls of the university medical center for portions of their training. Physicians practicing in the community have been entrusted with a progressively larger share of the responsibility for training medical students. These physician-teachers are attracted to this expanded role primarily by personal satisfaction derived from their student contacts.

These recent changes have been hailed by many as an enlightened response to a number of rational demands. However, others have warned that medical schools are in danger of returning to pre-Flexnerian apprenticeship programs devoid of scientific discipline and freed from the elaborate safeguards which have served to make American medical education the world standard in quality.

Critics have raised a number of serious issues to challenge the concept of community-based teaching: (*a*) community-based teaching faculty typically have only tangential ties to the university and little or no formal training in teaching; (*b*) students dispersed in widely varying sites are likely to have experiences of limited comparability, (*c*) there is little opportunity to monitor the quality of the students' educational experiences in dispersed settings, and (*d*) adequate communication between university-based course coordinators, community-based faculty, and students is difficult to maintain.

Such criticisms are hard to disregard. Thus, it is particularly important that off-campus training programs develop comprehensive systems of evaluation in order to monitor their effectiveness. The purpose of this paper is to present an evaluation approach designed to meet the unique needs of community-based clinical education programs and to describe the implementation of such an evaluation system in the context of one such course.

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Dr. Gordon is research assistant professor and Mr. Hadac is research associate, both holding appointments with the Office of Research in Medical Education and the Department of Family Medicine. Dr. Smith is associate professor and vice chairman of the Department of Family Medicine. All are at the University of Washington School of Medicine, Seattle.

Course Description

The exemplar course, entitled Continuity Clerkship and introduced in 1974, is an elective for second-year medical students at the University of Washington School of Medicine. Each student spends one morning a week in the practice of a physician preceptor for a period of nine continuous months. Students typically see patients with their preceptor, gradually assuming greater involvement in the patient care process as they gain skills and knowledge through their other course work. Each student becomes closely involved with a special group of "longitudinal care families," one of which is selected to be the subject of a student report focusing on comprehensive, continuous care for the family.

The four objectives of the course are to teach an approach emphasizing continuity and comprehensiveness of health care, to teach the application of selected clinical and procedural skills, to provide exposure to clinical manifestations of basic principles learned in the core curriculum, and to introduce some aspects of family practice management. Students enrolled in this elective also enroll in an accompanying weekly seminar series.

Evaluation

Evaluation of the continuity clerkship begins with the premise that evaluation is the collection and analysis of information for the purpose of making decisions (1). To this end a decision grid was designed (Figure 1) which identifies the decisions to be made by students, preceptors, the controlling department, course coordinators, and those supplying future funding. These decisions are divided into three time periods: prior to the course, during the course, and subsequent to the course. The grid also identifies the kinds of information needed to make all the

		DECISION-MAKING GROUP			
		STUDENTS	PRECEPTORS	DEPARTMENT OF FAMILY MEDICINE ADMINISTRATORS	COURSE COORDINATORS
Before the Course	DECISION	Whether to take the course.	Whether to accept teaching responsibility.	How to determine the number of preceptors needed and a fair compensation.	What training to provide for new preceptors.
	INFORMATION NEEDS	Information from prior years on course content, and student evaluations.	Information from prior years on costs and benefits.	Data on student enrollment. Information from prior years on preceptor costs.	Prior data from preceptors and students.
During the Course	DECISION	Where to focus efforts to maximize learning.	How to most effectively aid student learning.		How to ensure receiving current information on course status.
	INFORMATION NEEDS	Feedback from preceptors, patients, and other students.	Feedback from students, coordinators, and other preceptors.		Feedback on periodic basis from students and preceptors and site visit reports.
After the Course	DECISION*	Whether to specialize in primary care.	What changes in teaching strategies to make next year.	How to satisfy University requirements and document student competencies.	What changes in course planning to make for next year.
	INFORMATION NEEDS**	Feedback from preceptors and coordinators and summary of new learning experiences.	Feedback from students, coordinators, and other preceptors.	Evaluation information from preceptors and documentation of student experiences.	Documentation of all feedback and suggestions.
FUNDING SOURCES		*Whether to provide funds for next year. **Documentation of course records.			

FIGURE 1

Decisions related to a nine-month continuity clerkship at the University of Washington School of Medicine and associated information needs of decision-makers at three points in time. (Information needs determine evaluation methods.)

decisions that could be foreseen in the evaluation of this course. It thus serves as a table of specifications for the development of specific evaluation strategies.

With evaluation specifications in hand, course developers designed methods to permit each source of information to be used in addressing several information needs. Conversely, each need was analyzed to identify all of the available information-gathering methods which could help in satisfying the need. Although these procedures appear complicated, the initial rationale and planning permitted the developers to devise an evaluation system which minimized the collection of data and maximized the utilization of data collected.

Figure 2 presents a concise summary of the resultant system. It shows the cross-referencing index of information needs, the appropriate information sources, and the methods and instruments devised to gather the necessary information. Each information need was served by an average of over three independent methods, and each method was used to satisfy an average of over three information needs. Details of the system are described in subsequent paragraphs.

A comprehensive evaluation system must provide effective mechanisms for transferring information from those who possess it to those who require it in order to make decisions. However, an effective system cannot be limited to a set of written evaluation instruments. Open communications among all participants is equally necessary, and this requires provision for face-to-face discourse. Thus, the continuity clerkship includes weekly seminar meetings between students and coordinators and bimonthly meetings between preceptors and coordinators. The evaluation instruments described in the following paragraphs serve the purpose of more systematically collecting data, often of a quantitative nature, which are not readily accessible by verbal means. They also serve as checklists to ensure that key information is adequately gathered.

In the discussion that follows, emphasis has been placed on a description of the

written instruments since the use of meetings and discussions for evaluative purposes is commonplace. In most cases the instruments themselves are less important than the systematic approach employed to satisfy informational needs. A strategic combination of instruments provides necessary information with a minimum of disruption and duplication. The system presented here consists of nine instruments utilizing inputs from students, preceptors, patients, and course coordinators.

STUDENT-ORIGINATED EVALUATIONS

Evaluation information from students is obtained by means of four instruments.

Student experience logs and summary reports—Students are asked to record selected details about each patient contact on a special log form. Information reported includes a description of the medical problem, level of student participation, site of the encounter, and type of patient. The logs are turned in weekly and prepared for computer processing, which permits quarterly summary reports of the clinical experiences for each student and for the course as a whole.

Course coordinators use the log data in evaluating the adequacy of preceptorship sites and the range of student experiences. The logs have helped preceptors compare the experiences that they offer students with the experiences provided at other sites. The extent to which course objectives are being met and changes in levels of student involvement can also be monitored by means of log summary reports. Students have reported that the summary reports provide a useful record of the depth and breadth of their clinical experiences. Some examples of information provided by the log summaries are shown in Table 1.

In the first year of use, 1974, the logs identified a number of problems. Longitudinal care patients were found to be

		DECISION-MAKING GROUP BY TIME PERIOD (FROM FIGURE 1)									
INFORMATION SOURCE	METHOD	STUDENTS			PRECEPTORS			DEPARTMENT/ COORDINATORS			FUNDING SOURCES
		Before	During	After	Before	During	After	Before	During	After	After
STUDENT	Experience Logs	●	●	●		●	●		●	●	●
	Student Progress Report					●			●	●	
	Student Assessment Form	●			●	●	●	●	●	●	●
	Longitudinal Care Report	●	●							●	●
	Weekly Student Seminars*		●						●		
PRECEPTOR	Preceptor Progress Report				●			●	●	●	●
	Preceptor Feedback Form		●	●		●					
	Student Evaluation Form			●						●	
	Bimonthly Preceptors Meetings*					●	●		●	●	●
PATIENT	Patient Feedback Form		●								
COORDINATOR	Site Visit Report				●		●			●	

*Not discussed in text.

FIGURE 2

Matrix of evaluation methods and their applications showing multiple uses for each method (rows), and combinations of methods to meet particular information needs (columns).

TABLE 1
SELECTED SUMMARIES DESCRIBING NUMBER AND KIND OF PATIENT CONTACTS FOR 35 STUDENTS ENROLLED IN A NINE-MONTH CONTINUITY CLERKSHIP AT THE UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE, 1975–1976

	Fall Quarter	Winter Quarter	Spring Quarter
Problem management			
Total no. of problems	1,007	1,094	526
Average no. of problems per student	27	31	16
Level of responsibility (in percent)			
Primary	20	34	42
Assisted	35	39	36
Observed	46	27	22
Type of patients (in percent)			
New patients	68	59	64
Ongoing patients	23	32	30
Longitudinal patients	9	9	6
Procedures			
Total no. of procedures	281	218	99
Average no. of procedures per student	7	6	3
Level of responsibility (in percent)			
Primary	29	46	45
Assisted	30	33	32
Observed	41	21	23
Site of experience			
No. of patient contacts at each site			
Office	1,060	1,003	495
Hospital	120	138	67
House call	12	9	5
Nursing home	21	2	13
Emergency room	2	5	2

difficult to obtain. Some preceptors failed to increase the responsibilities of students as they progressed through the courses, and there were virtually no house calls made by students. As a result of information provided by the logging system, course coordinators have been able in many cases to offer suggestions to resolve indicated discrepancies and to enrich the students' experiences. Problems common to many preceptors, such as obtaining longitudinal care patients, were addressed at meetings with the preceptors in which remedial actions were formulated.

Student progress reports—Periodically throughout the year, students are asked to complete a brief evaluation form which surveys satisfaction in each of 10 areas, including level of responsibilities, degree of supervision, pace of patient contacts, and family orientation. Open-ended comments are also solicited, and the form is used by the course coordinators as a preliminary screening mechanism which allows students to voice their concerns

before they turn into major problems. The data have shown that at any particular time approximately 10 percent of the students are experiencing some discomfort in their preceptors' offices. By discussing the situation with students, the coordinators have often helped students to openly approach their preceptors. In unusual cases it has been necessary for the coordinators to intervene in the relationship between student and preceptor in order to facilitate a more satisfactory arrangement.

Student assessment of training site—This form is completed by students at the end of each quarter in order to evaluate the strengths and weaknesses of the individual preceptorship sites. Students are asked to rate the adequacy of the preceptor, his staff, and his style of practice. These forms are used by coordinators to assess the quality of training in each preceptor's office, to provide the basis for specific feedback to the preceptors from the coordinators, and to plan educational activities for the preceptors. With the students' permission copies of the evaluations are returned to the preceptors. In several cases where verbal exchanges between the student and preceptor have failed to resolve difficulties, written comments by the student have had a greater impact in facilitating changes.

Longitudinal care report—The experience logs demonstrated that the task of obtaining a small panel of patients to be the special focus for longitudinal care is not easy. In pursuit of this goal students are asked to prepare a brief written report based on their longitudinal patient contacts. The report has helped to focus student attention on the longitudinal aspects of the care they provide and has spurred students to cultivate more intensively relationships with patients and their families. The reports demonstrate a surprising degree of insight by the students. Preceptors who have not been able to arrange for longitudinal care of families have gained greater enthusiasm after reading the reports of students other than their own, and the number of student/patient encounters designated as longitudinal has steadily increased since this requirement was initiated. Thus, a project originated to allow preceptor and coordinators to evaluate a student's grasp of longitudinal care concepts has been instrumental in encouraging both students and preceptors to focus more attention on this important goal.

PRECEPTOR-ORIGINATED EVALUATIONS

Three instruments are used to acquire information from preceptors.

Preceptor progress report—A meeting of coordinators and preceptors is held at approximately two-month intervals. At each meeting preceptors are asked to complete a brief questionnaire to provide the coordinators with information on the current status of the preceptorships and any problems which may be emerging. This form, like the student progress report, is intended to allow the coordinators to facilitate informally the relationship between preceptors and students. The form also provides the coordinators with information on loss of office productivity and economic impact due to the student's presence. This information has proven useful in establishing levels of preceptor compensation and for documenting requests to granting agencies which provide partial support for this important teaching activity. Preceptors have reported an average productivity loss of about 25 percent during teaching periods. Significant departures from this norm, high or low, have proven to be predictive of student dissatisfaction. These reports have generally indicated an extremely low incidence of problems

but have provided an opportunity to clarify issues on the same day they are presented.

Preceptor feedback to students—Preceptors who are new to the teaching role often find that confronting students with direct feedback is an uncomfortable task. With the help of students, a feedback form was designed which is intended to be used as the basis for quarterly discussions between preceptor and student. Students also complete the form as a self-evaluation so that preceptors and students can compare impressions of the students' performance and progress. In this way students and preceptors can jointly acknowledge problems and progress and can clarify differences in perception. The form has proven to be useful as a vehicle for planning new experiences, revising supervisory procedures, and otherwise modifying the experience to make it more rewarding for both the preceptor and student. On occasion students have used this opportunity to encourage the preceptor to become more demanding in his teaching.

University of Washington (UW) student evaluation form—At the completion of each term preceptors are asked to return an official evaluation form which becomes a part of the student's permanent medical school record. The most important function of these forms is their use in building a narrative for the dean's letter of recommendation to residency programs. The close working relationships which normally develop between students and preceptors and the procedures for providing mutual feedback described previously give students ample opportunities to correct deficiencies and weaknesses, and the reports seldom contain revelations which have not been previously discussed with students.

PATIENT-ORIGINATED EVALUATIONS

Patient feedback to students—Second-year students are often unsure of their role with regard to patients. A brief questionnaire given to patients has been helpful in allowing students to see themselves as patients see them. Personal characteristics such as dress or manner have occasionally been brought to the student's attention by the patients in this manner. For the most part the form has been useful in bolstering students' confidence by indicating that patients are accepting them in their new, but still uncomfortable, physician role.

COORDINATOR-ORIGINATED EVALUATIONS

Site visit reports—The course coordinators periodically make visits to training sites while the student is attending. The report format outlines the procedures involved in a site visit so that each preceptor knows in advance the topics which will be covered, the observations that will be made, and the office staff who will be interviewed. The format of the report has served as a checklist for each preceptor to review the educational experience he is offering; to present problems, concerns, or comments to the coordinators; and to help in the arrangement of an orderly and pleasant visit to his office.

Conclusions

Off-campus clinical courses such as the one described in this paper are acknowledged to require more elaborate evaluation than campus-based courses, which have closer faculty scrutiny and exist within the framework of a formal communications network. The following paragraphs recap the issues challenging community-based medical school teaching and summarize the role of evaluation in meeting these challenges for one such course.

1. Community-based faculty typically have only tangential ties to the university and little or no formal training in teaching. The evaluation system described has demonstrated how community faculty can be made aware of educational issues and be provided with needed educational skills such as planning, pacing, and giving feedback to students. Faculty members have responded to this approach with interest and rapid improvement.

2. Students dispersed in widely varying sites are likely to have experiences of limited comparability. Experience logs and other data have demonstrated that the majority of off-campus settings have provided students with experiences comparable in breadth, number of clinical encounters, and levels of responsibility. Periodic comparisons of each training site with the average have identified maverick sites. In some cases maverick sites represented unusual conditions well worth understanding and preserving. In other cases discrepant teaching settings represented teaching problems to be resolved.

3. There is little opportunity to monitor the quality of students' educational experiences in dispersed settings. In the evaluation system described, educational quality is monitored directly or indirectly by six of the nine instruments discussed (all but those involving informal feedback to the student and the University of Washington evaluation form). Observed data are consistent in demonstrating a high level of educational quality. Community-based teachers are notable for their enthusiasm for teaching, an elusive factor demonstrated to be highly correlated with both student satisfaction and learning.

4. Adequate communication between university-based course coordinators, community based faculty, and students is difficult to maintain. The system described demonstrates that communication can be maintained adequately through a carefully conceived program which includes student seminars, preceptor meetings, and simple evaluation reports. The evaluation data and their interpretation have served an invaluable function in identifying the issues and problems about which it is important to communicate.

5. Finally, the evaluation system has served two additional unanticipated functions of great importance. The system was an integral part of the course development conducted with the course faculty members and thus served to underscore the seriousness with which the objectives of the course were to be approached. Also many community faculty members were at first uncomfortable in playing such a central role in the clinical training of students. Two years later the evaluation results attest to their ability to meet this challenge. They now assume their enlarged responsibility not only with the confidence of the medical school faculty and administrators but also with well deserved pride in their accomplishments.

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A New Teacher in Medical Education: The Family Nurse Practitioner

Len Hughes Andrus, M.D., Mary O'Hara-Devereaux, Bill D. Burr, M.D., and Janet L. Mentink

Abstract—At the University of California, Davis, family nurse practitioners who are faculty members in the Department of Family Practice have proven to be effective teachers of medical students and family practice residents. These faculty members, new to the medical school scene, have demonstrated competency in the teaching of clinical medicine within their area of expertise, are extremely well received and sought after by students, are effective role models as clinicians in the education-service settings, and expose trainees to and prepare them for the team concept in the delivery of care.

Family nurse practitioners have played an increasing role in the teaching of medical students, residents, faculty, and practicing physicians over the last six years in the School of Medicine at the University of California at Davis. In this article the authors report these activities, discuss some of the problems and issues involved with nonphysician clinical faculty members, and state their conclusions as to the positive impact this process has on physician education.

Medical Student Education

Since the inception of the Department of Family Practice in the School of Medicine in 1970, the faculty has been developing and implementing educational programs in primary care for a variety of students. The department houses a Family Practice Residency Program and Family Nurse Practitioner Program, and the faculty is responsible for teaching patient evaluation to freshman medical students. The department offers a variety of electives for medical students throughout their four years, with emphasis on interdisciplinary learning experiences in the belief that the health care team is the most effective and efficient means of delivering primary care. The first attempt at achieving this goal was the development in 1970 of a family advocacy course in which a medical student, a family nurse practitioner (FNP) student, and an undergraduate pre-health-science student formed a team that worked with a family over several months. The purpose of the course was to give the student team members experience in functioning as an advocate for the family and to teach them about family dynamics. This course was rated highly by the students, and its interdisciplinary nature was particularly valuable as the students found that they have unique and complementary backgrounds and experiences to offer to one another and to the family. Early experiences with the course and the problems and issues that arose when students from different disciplines and different levels of skills worked together emphasized to faculty the importance of teaching the interdisciplinary process to beginning medical students whose premedical training is usually the antithesis of the team effort.

The next step was to form interdisciplinary course committees in the department to assure input from both medical students and the FNP faculty. The development of interdisciplinary environments in which the faculty can critique, plan, and implement a curriculum is an educational experience for the faculty as well as for the students.

In 1972 the FNP faculty developed an intensive week-long program for the teaching of physical assessment, Introduction to Patient Evaluation for Family Nurse Practitioners, which required "patients" on whom the FNP students could practice their new history-taking and physical assessment skills. The FNP students and faculty launched a program aimed at recruiting volunteers from the general campus and the medical student population. This was known as the "Lend Your Body" program. The response was favorable from the general campus and from the freshman medical students. The medical students proved to be particularly good subjects; they were able to give the FNP students valuable feedback about the techniques and the comfort of the examination. The medical students also found the program beneficial as it not only served as a clinical laboratory where they could learn physical examination techniques from FNP faculty but also gave them the opportunity to experience a physical examination from a student clinician. Later in the year when the medical students began to learn to do physician examinations, they made a reciprocal request of the FNP students.

As a result of these initial activities, an educational exchange has evolved between each new class of FNP and medical students.

The women medical students found they had much in common with the predominantly female FNP students and faculty. The students organized some special "rap" sessions concerning the role of women in medicine. Special physical examination sessions were added to the medical school curriculum at the request of the second-year women medical students to develop pelvic examination skills. FNPs were patient models for the examinations and acted as instructors with the M.D. faculty.

These activities have generated other cooperative learning experiences among the health science students. One example of reciprocal effort occurred when the first-year medical students organized for FNP students an anatomy review using cadavers. The success of the student exchange activities is demonstrated by the fact that some medical students prefer to have FNPs as preceptors for their early learning experiences in history-taking and physical examination skills. Because FNP education focuses on these clinical skills, the faculty is highly competent in teaching beginning medical students.

Residency Education

FNP faculty members participate in joint practice with residents in the Family Practice Residency Program at the University of California, Davis, Sacramento Medical Center. This team relationship in the care of patients offers an excellent opportunity for several different types of

Dr. Andrus is professor and chairman of the Department of Family Practice, Ms. O'Hara-Devereaux is lecturer and codirector of the Family Nurse Practitioner Program, Dr. Burr is associate professor and acting director of the Family Practice Residency Network, and Ms. Mentink is a lecturer in the Family Nurse Practitioner Program. All are at the University of California, Davis, School of Medicine.

learning experiences. The FNP is able to teach the resident many unique skills and attitudes common to nursing education as well as those she has developed during her training as an FNP, for example, management of chronic illness, care of the elderly, health screening, counseling, and family planning.

FNP faculty members have helped the residents gain experience and confidence in making home visits. Residents rarely have had exposure to the home environments of their patients and frequently feel uncomfortable with this very important aspect of family practice. They also have the opportunity to learn about prenatal patient education by working with an FNP faculty member who is coordinator of the Home Style Delivery Program in which the pregnant mothers are delivered in a room with a home-like setting at the Sacramento Medical Center. In this setting the resident has a team education experience in pre-, intra,- and post-partum care.

The FNP faculty also contributes to resident education by participating in medical audits of the problem-oriented medical record.

FNP students who are on the resident's team join in these educational experiences under the guidance of the FNP faculty. They assist in evaluating the resident's interviewing skills by critiquing with him videotaped interviews with programmed patients; the residents do the same for the FNP students. In addition to participating in scheduled teaching conferences for residents, the FNPs in a master's degree program have presented papers at both the first and second annual University of California at Davis Family Practice Resident Research Conferences.

It is evident that FNP faculty are important and productive educators in the FNP residency program. Acceptance by the residents has been very positive, and it is felt that this success is enhanced by the mutual trust and respect gained from team practice.

Continuing Education

There are two major areas of formal continuing education experiences for physicians which are sponsored by the Department of Family Practice. One is the annual Family Practice Refresher Course, which is planned for both the family physician and family nurse practitioner. It includes topics of common interest to FNPs and family physicians, and special sessions of interest to each group independently are arranged. This type of programming provides the physician participants with a view of health care that they would not ordinarily receive in a postgraduate medical education conference. The FNP faculty members take an active role in planning and securing faculty for some of the sessions. For example, they have presented popular sessions for the physician participants on preventive care and psychosocial aspects of care in community health practices.

The other major formal continuing education program is the preceptor education workshops for practicing physicians, which prepare them for the role of clinical teacher of medical students, family practice residents, and FNP students. The FNP faculty has major responsibility for designing the workshop format and content.

Although both these formal programs have been viewed as successful by participants and faculty, the single most effective educational experience for physicians has been an 18-month preceptorship in which an FNP student works with a physician in his office. This arrangement produces a long-term teaching relationship between the physician and the Department of Family Practice which provides many educational opportunities, for

example the once-a-month, day-long site visit of an FNP faculty member to the FNP student and physician preceptor in the field for the purpose of both teaching and evaluating the team. During this visit there is a two-way educational exchange between the visiting FNP faculty member and the physician about the educational program as well as the matter of patient care. In addition, the FNP faculty member serves as a channel through which medical school resources such as literature and names of referral sources can be tapped by the physician.

Problems and Issues

There is a growing consensus that health care is best delivered by an interdisciplinary team of professionals, especially in the primary health care arena. In spite of this, few health science schools have educational opportunities of an interdisciplinary nature for their students. This is a result of the development of schools for the health care disciplines that are administratively and educationally isolated from one another. One remedy to this situation is for schools of medicine actively to recruit and appoint nonphysician clinical faculty to their departments in order to expose medical students and residents to other points of view and role models. This exposure sets the stage for the student physician's acceptance and understanding of the role of others in the provision of health care services. One example is the utilization of the family nurse practitioner for teaching history-taking and physical examination to freshman medical students as described here.

Educational value is but one advantage of interdisciplinary cooperation. Cost effectiveness is another. It is becoming increasingly apparent that the era of abundance of federal and state dollars for health science education is rapidly coming to a close. The existence now of separate schools and faculties within the health sciences is an expensive structure to continue. Legislators and educational planners at top administrative levels are encouraging health science faculties to seek ways of working together in teaching in order to avoid duplication of effort. Many manpower development grants for primary care professionals, particularly the family physician, primary care nurse practitioner, and physician's assistant, encourage projects to address the need for integration and efficient utilization of faculty and educational resources.

There are some problems related to opening medical school faculty to such nonphysician members. Medical school committees dealing with appointments, promotions, and merit salary increases may find the consideration of family nurse practitioner candidates for the professorial series problematic under usual criteria for appointments. These committee members need to be educated concerning the skills and role of the FNP, and they must develop appropriate criteria and guidelines for them. Another problem relates to salary. Salary scales for physician faculty members vary depending on which specialty they represent. This salary is related to the private marketplace in that it reflects the income level of the physician specialist practicing in the community as well as the income the physician faculty member generates for the school. As long as this system prevails, FNP salary scales should be developed in a similar manner.

The most difficult problem of all will be attitudinal. Although the number of nonphysician faculty members who teach in clinical programs has increased in recent years, most of them have been in the social and behavioral sciences, especially in clinical psychology. Other nonphysician clinicians, such as podiatrists,

have been accepted by some medical schools and not by others. Although FNPs are medical clinicians who have demonstrated competence, they may appear to some medical faculty to be usurping a role better filled by a physician. At the University of California, Davis, acceptance of this new teaching role of the FNP has ranged from that of extreme enthusiasm by the medical students who are the recipients of the teaching to complete rejection by some medical school faculty members who question the appropriateness of nonphysicians teaching clinical skills to medical students. Experience at Davis has shown that even the most skeptical faculty members, after having direct experience working with the FNPs, become strong advocates of these new clinical faculty members. In addition, the FNP faculty members have proven to be not only effective team members in providing medical services but also valuable academic colleagues in participating in programs of continuing education for family practice residents, fellow faculty members, and physicians in private practice.

Although the physician faculty members enjoy teaching basic skills to medical students, many prefer and are more enthusiastic about their diagnostic and treatment teaching responsibilities in the curriculum; therefore, they have come to welcome supplementation of their teaching activities by the family nurse practitioner, who is able to teach history-taking and physical examination to medical students in an enthusiastic, relevent, and easily understood manner.

A National Survey of Medical School Obstetrics And Gynecology Departments, 1965 to 1975

William N. Spellacy, M.D., Sharon A. Birk, and William C. Buhi

Abstract—Representatives of 108 departments of obstetrics and gynecology completed a written questionnaire in 1976 designed to assess the changes that had occurred in the teaching resources of the departments for the years 1965, 1970, and 1975. There was a statistically significant increase in the number of students per clerkship during that decade. In addition, there was an increase in the numbers of full-time faculty members, residents, beds, and patients. As a consequence, the teaching ratios improved. This might explain in part the increased numbers of medical students selecting obstetrics and gynecology as a career.

Recently, both federal and state governments have pressed medical schools to increase the size of their classes (1). There are many potential problems resulting from such increases, and occasionally these are not dealt with by long-range planners. For example, in the clinical departments the increased numbers of students may result in diminished teaching effectiveness unless more faculty members, beds, and patients are also added. This problem, along with the national trend toward a reduced number of births, may uniquely affect departments of obstetrics and gynecology. The present survey study was undertaken to provide deans and chairpersons with a firm data base describing the current situations of their departments and trends during the past decade. The survey assessed the medical student teaching resources, that is, the numbers of full-time faculty members and the ratio of faculty to students and the number of residents, beds, surgical and obstetrical procedures, and curriculum hours. It is only with such information that correct planning decisions can be made for the teaching activities in reproductive medicine during the next decade.

Methods

In the fall of 1975 a 20-item questionnaire was developed, and it was mailed to the chairperson of each of the 112 medical school departments of obstetrics and gynecology on January 19, 1976. After eight weeks only 67 questionnaires were returned; therefore, the remaining 45 departments were contacted again. During the next six weeks the total number of respondents had reached 90, and after three more mailings the total was 108 (96.4 percent).*

This report is adapted from a presentation at the Annual Meeting of the Association of Professors of Gynecology and Obstetrics in New Orleans, Louisiana, March 1, 1977.

Dr. Spellacy is professor and chairman of the Department of Obstetrics and Gynecology of the University of Florida College of Medicine in Gainesville. Ms. Birk and Mr. Buhi are research associates there.

* The data summarized in this report do not include information from Vanderbilt, Georgetown, Baylor, or Creighton universities.

All of the data submitted were reviewed; and where apparent inconsistencies existed, the department was recontacted in order to clarify the answer. For some items the chairperson felt no response was appropriate; therefore, fewer than 108 entries exist for most items. The data were placed on punch cards and appropriately analyzed with the aid of a computer. Determinations were made of the variable frequencies, means, and standard error of the means. Where comparisons were made between different years, determinations were made of the critical differences using the Tukey test for multiple comparison procedures only on matched pair data (N=62) (2). Those comparison means which were based upon a smaller number of departments were, therefore, different from those describing each year. The probability (p) values were taken from two-tailed tables, and only values of less than .05 were considered to be significant.

Results

The size of medical school classes has increased dramatically over the past decade. The mean number of students per class changed from 99.9 to 115.0 to 148.2 in the years 1965, 1970, and 1975, respectively; and the difference between each increment is statistically significant (the critical difference is 7.7 [$p < .001$]). During the same years the duration of the core clerkship rotation has not significantly changed (1975 mean, 6.9 weeks); thus, the number of medical students on each clerkship rotation has significantly increased ($p < .001$). The mean numbers of students per clerkship rotation for the years 1965, 1970, and 1975 are 15.9, 16.3, and 17.8, respectively. The percentage of schools having 6 to 15 students per rotation has decreased from 61.6 percent to 45.1 percent, while the percentage having 21 to 25 students per rotation has tripled (5.0 percent to 15.2 percent) and the percentage having more than 30 students per rotation has more than doubled (3.3 percent to 7.7 percent).

There has been a gradual movement toward a full-time teaching faculty in all academic departments. The mean numbers of faculty members for departments in 1965, 1970, and 1975 are 6.4, 8.8, and 11.3; and each change is siginficant ($p < .001$). The frequency of different size faculties by schools for these years is shown in Table 1. It can be seen that the percentage of units having less than five has decreased and the percentage having 11 to 15 has almost doubled.

The numbers of residents being trained in obstetrics and gynecology through university programs have significantly increased during the past 10 years ($p < .001$). The mean numbers in the departments for the years 1965, 1970, and 1975 are 13.8, 16.4, and 18.7. The distribution of these numbers is shown in Table 2, and it should be noted that the percentage of programs training less than 10 residents decreased by one-half while the percentage training 26 and more rose 12.8-fold (1.7 percent to 21.9 percent) during that decade.

As the medical student class size and teaching personnel increased, the space needs of obstetrics-gynecology departments also increased. The changing number of obstetric beds is given in Table 3. During the decade there was no significant change in the number of obstetric beds per department, with the mean numbers for 1965, 1970, and 1975 being 70.2, 67.8, and 69.5.

The number of gynecologic beds did significantly increase during these years, as is seen in Table 3. The percentage of units having more than 125 gynecology beds almost doubled during the decade (3.6 percent to 7.2 percent). The mean numbers of gynecologic beds per department for the years 1965, 1970, and 1975 were 49.1, 53.5, and 56.9 ($p < .001$).

The total number of deliveries per year in the university obstetrics-gynecology

TABLE 1
NUMBER OF FULL-TIME FACULTY MEMBERS IN DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY IN U.S. MEDICAL SCHOOLS, 1965 TO 1975

No. of Full-Time Faculty	Schools, by Year					
	1975		1970		1965	
	No.	Percent	No.	Percent	No.	Percent
Less than 5	20	19.2	20	25.6	30	49.2
6–10	36	34.6	38	48.7	21	34.4
11–15	26	25.0	10	12.8	8	13.1
16–20	8	7.7	8	10.3	2	3.3
21–25	11	10.6	2	2.6	0	0.0
26–30	3	2.9	0	0.0	0	0.0
Total	104	100.0	78	100	61	100.0

TABLE 2
NUMBER OF RESIDENTS IN DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY IN U.S. MEDICAL SCHOOLS, 1965 TO 1975

No. of Residents	Schools, by Year					
	1975		1970		1965	
	No.	Percent	No.	Percent	No.	Percent
Less than 5	2	1.9	4	5.1	6	10.0
6–10	15	14.3	14	17.9	13	21.7
11–15	24	22.9	25	32.1	18	30.0
16–20	24	22.9	13	16.7	11	18.3
21–25	17	16.2	12	15.4	11	18.3
26–30	12	11.4	5	6.4	1	1.7
More than 30	11	10.5	5	6.4	0	0.0
Total	105	100.0	78	100.0	60	100.0

TABLE 3
NUMBER OF OBSTETRICS AND GYNECOLOGY BEDS IN DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY IN U.S. MEDICAL SCHOOLS, 1965 TO 1975

No. of Beds	Schools, by Year									
	1975				1970				1965			
	Obstetrics		Gynecology		Obstetrics		Gynecology		Obstetrics		Gynecology	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Less than 25	6	6.1	20	20.8	7	9.5	23	31.1	5	8.9	14	25.5
26–50	38	38.4	35	36.5	32	43.2	27	36.5	25	44.6	23	41.8
51–75	24	24.2	19	19.8	11	14.9	7	9.5	6	10.7	8	14.5
76–100	11	11.1	10	10.4	8	10.8	6	8.1	6	10.7	5	9.1
101–125	7	7.1	6	6.3	3	4.1	5	6.8	7	2.5	3	5.5
126–150	6	6.1	3	3.1	8	10.8	3	4.1	3	5.4	0	0
151–175	5	5.1	2	2.1	3	4.1	2	2.7	1	1.8	1	1.8
More than 175	2	2.0	1	1.0	2	2.7	1	1.4	3	5.4	1	1.8
Total	99	100.0	96	100.0	74	100.0	74	100.0	56	100.0	55	100.0

departments has not significantly changed over the past 10 years. The mean annual number performed per department in 1975 was 3,891. The distribution of deliveries for the schools is shown in Table 4.

As the number of full-time faculty and residents and the number of gynecologic beds increased between 1965 and 1975, so did the number of gynecologic surgical procedures; and the increase was significant ($p < .001$). The mean numbers of minor surgical cases for 1965, 1970, and 1975 were 1,150, 1,485, and 1,846. The percentage of departments doing more than 2,000 minor cases per year was more than tripled from 1965 to 1975 (10.5 percent to 32.6 percent).

The number of major gynecologic operations performed per year in university hospital obstetrics-gynecology departments also significantly increased during the last decade, and the data are shown in Table 5. The percentage of units with more than 1,000 major cases per year doubled from 1965 to 1975. The mean numbers of major operations per year for the departments in 1965, 1970, and 1975 were 784, 1,024, and 1,418 ($p < .001$).

The time that obstetrics-gynecology faculties have outside their core clerkship to teach reproductive medicine is important. Most schools provide curriculum hours during the basic science years and some elective time in the senior years.

TABLE 4

NUMBER OF DELIVERIES PER YEAR IN U.S. MEDICAL SCHOOL HOSPITALS, 1965 TO 1975

No. of Deliveries Per Year	Schools, by Year					
	1975		1970		1965	
	No.	Percent	No.	Percent	No.	Percent
Less than 1,500	15	14.4	12	15.6	8	13.6
1,501–2,500	24	23.1	20	26.0	17	28.8
2,501–3,500	17	16.3	10	13.0	9	15.3
3,501–4,500	15	14.4	9	11.7	6	10.1
4,501–5,500	7	6.7	9	11.7	3	5.1
5,501–6,500	12	11.5	4	5.2	6	10.1
6,501–7,500	4	3.8	3	3.8	4	6.8
7,501–8,500	5	4.9	1	1.3	3	5.1
More than 8,500	5	4.9	9	11.7	3	5.1
Total	104	100.0	77	100.0	59	100.0

TABLE 5

NUMBER OF GYNECOLOGIC MAJOR SURGICAL PROCEDURES PER YEAR IN U.S. MEDICAL SCHOOL HOSPITALS, 1965–1975

No. of Procedures Per Year	Schools, by Year					
	1975		1970		1965	
	No.	Percent	No.	Percent	No.	Percent
Less than 500	16	17.8	18	34.0	18	46.2
501–1,000	28	31.1	16	30.1	10	25.6
1,001–1,500	19	21.1	10	18.9	5	12.8
1,501–2,000	7	7.8	4	7.5	4	10.2
2,001–2,500	10	11.1	1	1.9	1	2.6
2,501–3,000	2	2.2	1	1.9	1	2.6
More than 3,000	8	8.9	3	5.7	0	0.0
Total	90	100.0	53	100.0	39	100.0

The ability of department faculties to teach the increased material content, such as sexuality, contraception, neuroendocrinology, reproductive physiology, and primary health care of women, is aided by having this additional curriculum time. The mean number of nonelective, nonclerkship hours for the obstetrics-gynecology departments significantly increased from 18.6 to 51.6 hours from 1965 to 1975. In addition, there is a more effective use of the time during the clerkship (3). A consequence of this may be the significantly increased number of students deciding to enter the field of obstetrics and gynecology (4). This changed from a mean per school in 1965 of 4.3 to 9.6 in 1975 (critical difference 1.5; $p < .001$).

Discussion

Major changes have occurred in medical education during the past decade; and in order to be able to plan for the future and to be certain that the quality of the educational experience in reproductive medicine is not altered, periodic assessments of these responsibilities and resources must be undertaken. The 1975 national medical school survey, which is summarized in this report, was an attempt to gather the data so that this assessment could be done. Unfortunately, there are no prior comprehensive surveys of departments of obstetrics and gynecology available for comparison. The data presented here may, therefore, serve as a benchmark for future comparison studies.

The results of this survey suggest that although the responsibilities for teaching obstetrics and gynecology have significantly increased during the past decade, especially in terms of student numbers and curriculum content, the resources (personnel, space, and material) to accomplish the teaching have also increased. This trend should be continued in order that medical students be better equipped to understand and partake in the management of world population control and female health assessment and care.

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A Systematic and Comprehensive Approach To Teaching and Evaluating Interpersonal Skills

Marsha Grayson, Catherine Nugent, and Stuart L. Oken, M. D.

Abstract—This study addressed one problem with current methods for teaching and evaluating interpersonal skills: the failure to include a wide range of behaviors reported in the literature as contributing to patient dissatisfaction and noncompliance. To address this concern, the authors developed a comprehensive interpersonal skills training program and a pretest-posttest evaluation. The tests were administered to two student groups, one of which received the interpersonal skills instruction. The student group exposed to the training exhibited a significant positive change from pretest to posttest. Additionally, the change for this group was significantly greater than the change for the group not exposed to interpersonal skills instruction.

With the advent of specialized medicine and technology, patients have become increasingly dissatisfied with the care they receive. Studies of patient satisfaction reveal that patient discontent, expressed verbally as well as through litigation, is often the result of ineffective communication between patients and their health care providers (1–3). Moreover, recent patient compliance studies indicate that the practitioner-patient relationship affects patients' adherence to medical regimens (4–7).

The traditional philosophy of medical education presupposed that students could not be taught how to interact with their patients and that a reasonably mature and intelligent individual would learn the required skills through experience. Thus, educators assumed that student practitioners developed effective communication skills during the time spent on clinical sites with patients. However, recent studies indicate that mere exposure to patients does not improve students' ability to attend to the variety of behaviors required for effective practitioner-patient interaction (8–9).

Recognizing that the traditional approach in this area has been of questionable effectiveness, a growing number of medical curricula have included material relating to interpersonal skills. In a few cases researchers have attempted to measure the efficacy of teaching interpersonal skills. While these investigators generally report a significant increase in student learning after instruction, the training and evaluation concentrate mainly on empathy skills (10–12).

Although empathy is crucial to the practitioner-patient relationship, it is only one of the skills required to facilitate communication with patients. Lack of empathy has been cited as a major source of patients' discontent; however, satisfaction and compliance studies document additional practitioner behaviors that inhibit effective interaction: using technical language; failing to provide adequate information; viewing the patient as a disease possessor rather than a person; and disregarding the patient's dignity, privacy, and comfort (4–7, 13).

Thus, the practitioners' ability to structure and organize questions effectively, to recognize their own and their patients' behavior, to be aware of and attend to the environment, and to provide, clarify, and summarize information all play a significant role in the communications process. These interpersonal skills cannot be viewed in a vacuum; each needs to be assimilated into an integrated teaching and evaluation program incorporating a wide range of behaviors.

The study reported here was designed to examine student learning from interpersonal skills instruction and to address the need for comprehensively teaching and evaluating these skills. An instrument, Hopkins Interpersonal Skills Assessment (HISA), was developed to assess students' observations and interpretations of a variety of discrete interpersonal behaviors. Prior and subsequent to the interpersonal skills training, this test was administered to two student groups—one group which received the instruction and a second group which did not.

Subjects

As the instrument for the pretest and posttest is the same, a significant and positive change might be due to retesting. To ensure that any such change would not be attributed to familiarity with the test, the HISA was administered to two student groups: 33 health associate students from the Johns Hopkins University who received Interpersonal Skills Training (IST) and 38 physician's assistant students from another university who did not receive Interpersonal Skills Training (No IST) until after this study was completed. With this latter group, the learning effects of the HISA can be determined. For example, if the No IST group does not show a significant gain from pretest to posttest, then a significant gain for the IST students would not be due to a test-retest effect.

Both student groups are trained to perform a wide range of primary care tasks and receive instruction in the biological-medical and psychological-sociological sciences. To integrate the biomedical and psychosocial aspects of health, the health associate curriculum is divided into a modular structure relating to developmental life cycles (from birth to dying and death). In addition to this basic structure, there are a few clinical courses which introduce material independent of the modular sequence. The first semester skills course emphasizes those clinical skills required for initial patient assessment: interpersonal, history-taking, and physical examination skills. During this time the instruction is continued on clinical sites where the health associate students experience direct patient contact.

In the physician's assistant program, the first semester courses emphasize the basic sciences but also include one course on human behavior and another on physical examination skills. The students are not exposed to a course on interviewing until their second semester.

The health associate students and the physician's assistant students took the HISA pretest at the beginning of their two-year program in September 1975 and the posttest at the end of their first semester in December 1975.

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Ms. Grayson is an instructor, Ms. Nugent is a training coordinator, and Dr. Oken is an assistant professor, Health Associate Program, Johns Hopkins University School of Health Services, Baltimore, Maryland. Dr. Oken also is an assistant professor, Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine.

Interpersonal Skills Training

Teaching interpersonal skills challenges the medical educator with a body of information which cannot be formulated into discrete patient prescriptions. Interpersonal skills instruction should prepare the students to respond with flexibility and creativity to the diverse individuals and situations they will encounter in practice. Training in this area requires that the student practitioners explore their own feelings and attitudes and determine how these color their perceptions of patients' behavior. Maximizing communication between practitioner and patient is the goal of interpersonal skills training.

COURSE CONTENT

To achieve this goal, the following objectives were pursued in the course: (*a*) to provide the student practitioners with the understanding and ability to deal with their own emotions as these affect the practitioner-patient interaction, (*b*) to provide the student practitioners with the ability to analyze patient and practitioner behaviors which occur during interactions (for example, verbal and nonverbal behavior), and (*c*) to provide the student practitioners with methods for facilitating the flow of information in patient encounters (for example, arrangement of setting and facilitative responses).

Interpersonal skills were defined as a set of behaviors that focus on the transmission and reception of information in a practitioner-patient interaction. To delineate these behaviors, five categories were defined encompassing 35 behaviors. The five categories and one behavioral example within each category follow: observance of social amenities (introduces self to patient in a respectful and friendly way), sensitivity to patients' feelings (follows up on nonverbal cues), interchange of information (summarizes what patient has said to clarify for both patient and practitioner), organization and structure of interview (effectively and smoothly moves from one major area of questioning to another), and attention to environmental factors (seats self in an appropriate manner in relation to the patient).

COURSE PROCESS

The initial course activities facilitated the students' exploration of their own knowledge and experience while identifying those areas warranting further attention. Using the students' previous experience as a starting point, the faculty introduced sensitivity-type exercises, readings, lectures, practice, and videotaped interviews with playback in order to supplement and increase students' abilities in interpersonal skills.

For example, a five-part exercise was designed to facilitate the students' understanding of their emotions as these impact on communication with patients and to provide the students with methods for dealing with difficult patients. The students were faced with increasingly complex tasks as they moved from each step: (*a*) using a structured questionnaire, students individually identified their own personality traits; (*b*) through a guided interview with a classmate, students explored and amplified their personality traits and assessed ways in which the traits might affect clinical practice; (*c*) during a followup lecture/discussion, students examined the relationship between their personality traits and motivations for becoming a helping professional; (*d*) through a feeding exercise, students experienced their responses to helping and being helped; and (*e*) to synthesize the above information, the students developed a detailed psychodrama in which they portrayed the type of patient and the type of care-delivery situation in which they anticipated the greatest difficulty.

Throughout the course, sessions were designed to translate cognitive information into skills. An example of this is the use of trained patients in small-group videotaped practice interviews. Each practice interview group was composed of one faculty member, one student-facilitator/camera-person, and one student interviewer. During the practice session the student interviewer stopped the interaction with the patient whenever the interviewer felt the need for guidance or information from the attendant faculty member and student. During these breaks the student interviewer received assistance with regard to both the process and the content of the patient interview. When the interview was completed, the videotape was reviewed to facilitate exploration of the interviewer's behaviors.

In addition to these and other in-class activities, students received further instruction from clinical social scientists during their patient encounters on clinical sites. The clinical social scientists taught interpersonal skills, psychosocial aspects of case histories, and health education skills. While interpersonal skills instruction on clinical sites continued throughout the curriculum, the core in-class training began immediately after entry to the program and continued for two months, totaling approximately 18 hours.

Measurement Instrument

The HISA was designed to measure the direction of student learning from the interpersonal skills instruction. The instrument was derived from the educational objectives of the course, thus providing continuity between instruction and evaluation. The HISA assessed the students' ability to perceive and interpret interpersonal behaviors during videotaped simulated patient-practitioner interactions.

A medical practitioner, behavioral scientist, and training coordinator designed the HISA cases, scripts, and multiple-choice questions. The test included four videotaped interview segments between health practitioners and patients, with trained actors and actresses playing both roles. The health practitioners in each scene portrayed appropriate and inappropriate interpersonal behaviors. These behaviors were drawn from the five categories utilized in course development: social amenities, sensitivity to patients' feelings, interchange of information, organization and structure of interview, and attention to environmental factors. In each scene the patient presented a health problem common in primary care medicine: back pain, localized swelling, venereal disease, and headache. In addition, the patients simulated affective states frequently observed in patients: pain, depression, fear, and anxiety.

Following each interview segment students were asked multiple-choice questions requiring them to identify appropriate and inappropriate behaviors and to explain the consequences of the behavioral techniques shown in the interviews. For each multiple-choice question there was one correct answer and three to four incorrect answers. Students received a score of one for each correct answer and a score of zero for each incorrect answer. Additionally, students were asked to rate each interview segment on a scale of one to 10 to elicit their evaluation of the overall quality of each practitioner-patient interaction.

Results

The effects of the intervention were assessed by comparing the mean scores of the two groups using student's *t*-tests.

Table 1 provides a comparison of the pre- and post-HISA scores for both groups. The IST students scored significantly higher on the posttest than on the pretest. The most significant changes occurred for those students who scored

lowest on the pretest; for this group the lowest pretest score was 12 and the highest posttest score was 16.

As shown on Table 1, the mean score of students who did not have instruction in interpersonal skills (no IST) did not change significantly from pretest to posttest. As measured by the HISA pretest, the two groups were comparable in their initial perceptions of appropriate and inappropriate interpersonal behaviors. However, after exposure to the interpersonal skills training, the IST group scored significantly higher than the student group which did not receive the training.

Table 2 presents a comparison of the two student groups' scores for the five interpersonal skills categories which were the conceptual framework of the instruction and the HISA. The group exposed to the instruction showed a significant and positive mean change in three of the five categories: organization and structure of the interview, sensitivity to patients' feelings, and interchange of information.

The IST students showed the greatest mean change from pretest to posttest in the first of these categories, organization and structure of the interview. This category includes cognitive skills such as summarizing for patients, using open versus closed questioning, and avoiding leading questions. The IST students' scores also increased in the category, sensitivity to patients' feelings. Behaviors in this category are in the affective domain and include facilitating expression of patients' feelings, expressing empathy and understanding, and recognizing and avoiding practitioner bias and discomfort during the interview. The third area which showed a positive increase in student learning for the IST group, interchange of cognitive information, includes both affective and cognitive skills, for example, ensuring patient understanding, summarizing for the patient, and using vocabulary consistent with the patient's background. The positive change observed in these three categories suggests that learning occurred in both the affective and cognitive domains.

TABLE 1

COMPARISON OF MEAN HISA PRETEST AND POSTTEST RESULTS BETWEEN THE STUDENTS EXPOSED TO INTERPERSONAL SKILLS TRAINING (IST) AND THE STUDENTS NOT EXPOSED TO INTERPERSONAL SKILLS TRAINING (NO IST)

Mean Score	IST Group ($N = 33$)	No IST Group ($N = 38$)	*t* Score
Pretest	17.39	16.82	+1.24
Posttest	19.27	17.13	+3.57*
Change	+1.88	+0.29	+2.18†
t Score	+3.91*	+0.53	

* $P < .001$.
† $p < .05$.

TABLE 2

COMPARISON OF MEAN HISA PRETEST AND POSTTEST RESULTS FOR FIVE INTERPERSONAL SKILLS CATEGORIES FOR THE STUDENTS EXPOSED TO INTERPERSONAL TRAINING (IST) AND THE STUDENTS NOT EXPOSED TO INTERPERSONAL SKILLS TRAINING (NO IST)

Interpersonal Skills Categories	Mean Pretest Score	Mean Posttest Score	Mean Change	*t* Score
Organization and structure of interview				
IST	4.30	5.31	+0.91	+3.42*
No IST	4.18	4.45	+0.26	+1.01
Sensitivity to patients' feelings				
IST	8.06	8.90	+0.88	+2.47*
No IST	7.82	8.13	+0.32	+0.95
Interchange of information				
IST	3.33	3.82	+0.49	+2.27*
No IST	2.97	3.18	+0.21	+1.07
Social amenities				
IST	1.48	1.91	+0.42	+0.72
No IST	1.39	0.87	−0.53	−2.37*
Attention to environment				
IST	4.36	4.39	−0.03	−0.15
No IST	4.34	4.16	−0.18	+0.77

* $P < .01$.

The scores of IST students did not change significantly in the two remaining categories: observance of social amenities and attention to environmental factors. In fact, analysis of the individual items in the first category showed that students' scores decreased significantly with respect to one of the specific behaviors: explanation of the practitioner role. Although no significant increase was observed in the second category, the IST students' scores did improve for one specific behavior included in this category: the effects of the seating arrangement on the interaction.

The pretest-posttest scores of the student group that did not receive the interpersonal skills instruction showed no significant change in four of the five categories. However, in the area of social amenities, these students' scores decreased significantly from pretest to posttest.

Both student groups were asked to assess the overall quality of each of the four interviews presented in the HISA. This question was designed to obtain a measure of the students' perception of the practitioner interviewing style in each interview segment. The first three interviews were examples of poor practitioner-patient interactions while the fourth interview represented an appropriate interaction. As shown in Table 3, the IST students' ratings showed a significant negative change for the first three

TABLE 3

COMPARISON OF PRETEST AND POSTTEST RATING OF EACH INTERVIEW FOR THE STUDENTS EXPOSED TO INTERPERSONAL SKILLS TRAINING (IST) AND THE STUDENTS NOT EXPOSED TO INTERPERSONAL SKILLS TRAINING (NO IST)

Interview	Mean Pretest Score	Mean Posttest Score	Mean Change	*t* Score
One				
IST	3.15	2.45	−0.70	−2.95*
No IST	3.05	3.08	+0.03	+0.07
Two				
IST	5.33	4.75	−0.61	−1.90†
No IST	4.79	4.39	−0.39	+1.11
Three				
IST	4.97	4.33	−0.64	−2.48*
No IST	5.11	5.05	−0.05	−0.14
Four				
IST	8.67	8.73	+0.06	+0.19
No IST	9.00	8.84	+0.16	+1.53

* $P < .01$.
† $P < .05$.

interviews, demonstrating their ability to assess appropriately the qualtity of these interviews. For the fourth interview a positive change was anticipated: however, the students' ratings did not change from pretest to posttest. Thus, these students perceived the fourth interview as an appropriate interaction both before and after the interpersonal skills course. However, the scores of the students with no interpersonal skills training did not change significantly for any of the interviews.

Discussion

Although there has been a recent surge of interest in interpersonal skills in medical education, Simpson (14) maintains that many institutions continue to believe the myth "that merely leaving students around patients for a time is likely to be good for them and they are bound to pick up all sorts of balanced social viewpoints from exposure to the 'splendid animals' by some sort of intellectual osmosis." However, this myth has been seriously questioned by investigators. Barbee and Feldman (9) observed that students in clinical training actually decreased in their interviewing skills when not exposed to instruction. Helfer and Ealy (8) studied all classes of medical school, including residents. They did not find a pattern of increasing ability in interviewing skills with increasing years of clinical practice.

In the present study the interpersonal skills training included classroom activity and patient contact in simulation and clinic. The studies cited and the results shown here indicate that these two components play an integral role in the learning of interviewing skills. The students exposed to interpersonal skills training showed a significant positive net change in their ability to perceive and interpret interpersonal behaviors. However, the students who were not exposed to interpersonal skills training showed no significant change. Thus, it would seem that without formal training in interviewing, students cannot adequately acquire these skills.

Various training programs to increase student-practitioners' competence in interviewing and evaluation of these programs have focused on a specific area within the domain of interpersonal skills. Rasche, Bernstein, and Veenhuis (10) assessed changes in students' "understanding" responses. To measure changes in empathy skills, Werner and Schneider (11) utilized the Affective Sensitivity Scale. Adler and Enelow (15) measured the change in students' cognitive learning, while Pacoe and colleagues (12) used empathy, attitude, and personality measures to show a change in student learning. In the study reported here the investigators evaluated a wide range of behaviors from the affective and cognitive domains.

The students exposed to interpersonal skills training showed positive and significant learning in three of the five interpersonal skills categories; the positive change in the organization and structure category is particularly encouraging, indicating that the instruction addressed a significant problem that the students encounter in their early interviewing work. The results for the two categories in which the students' scores did not improve provide objective information for modifying and refining the curriculum by emphasizing these behaviors in the interpersonal skills course. Thus, the results demonstrate how a pretest-posttest based on course objectives, such as the HISA, provides continuous feedback for further curriculum development.

In the future the students' varying levels of expertise will be stratified on the basis of their HISA pretest scores.

Following this stratification, the students will be directed to instruction commensurate with their varying abilities in this area. Similarly, the posttest will be used to distinguish those students who do not improve after instruction. These students' scores will be examined in conjunction with their clinical site evaluations to determine the areas that may warrant additional work.

A variety of forces affect the student in training. It would be presumptuous to assume that the IST students obtained these skills as a result of a single interpersonal skills course. It would also be erroneous to conclude that the students obtained these skills through clinical experience alone. Rather, the instruction was the focus of a concerted curricular effort to train competent and humane practitioners. Enhancing students' ability to perceive and interpret interpersonal behaviors is the first step in an on-going program to improve patient-practitioner communication.

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The Effect of Certain Rater Roles On Confidence in Physician's Assistant Ratings

Fred J. Dowaliby, Ph.D.

Abstract – Previous research on the psychology of confidence suggests that the more confident a rater is in his judgment the more accurate is his rating. The purpose of the present study was to investigate possible differences among raters in their confidence in competency ratings which they had provided. Results indicated significant differences due to the rater's interpersonal role with the ratee and the particular aspect of competence rated. Greater simple structure of competence ratings when adjusted for rater confidence is also shown. Rater confidence is discussed as an index for rater selection and as a moderator variable for competence ratings.

A vast amount of research on the psychology of confidence was performed during the early 1900s. An examination of that literature (for example, references 1 and 2) suggests that the more confident a rater is in his judgment the more accurate is his rating. In many of those studies inanimate objects were rated in terms of certain physical properties (for example, pressure, weight, length of lines, and tone) for which objective and reliable measuring devices were employed in generating criterion data. The results generally indicate that the amount of confidence in ratings is positively related to the accuracy of ratings. In interpreting these findings, Seward (1) suggests that "speed and accuracy are the objective, and confidence the subjective accompaniments of completeness of data."

A measure of raters' confidence in his ability to provide performance ratings could provide useful information if raters systematically vary depending on their role and relevant contact with the ratee. Such systematic variations between raters should reflect the completeness of relevant information available to the rater and, therefore, the accuracy of underlying judgments.

As expressed by Dowaliby and Andrew (3):

> One way in which raters differ is in terms of their relationship with the ratees. (That this would affect the accuracy of ratings) is plausible to the extent that different rater-ratee relationships result in varying amounts of pertinent information being available to the rater. For example, it might be the case that (medical) faculty members would best be able to provide ratings of medical knowledge, whereas clinical coordinators would be in a better position to provide ratings on clinical aspects.

Moreover, it is also likely that an individual rater's confidence in his ratings would vary depending on the aspect of competence rated. The underlying premise is that no single rater has complete knowledge of a ratee in terms of all aspects of competence being rated in applied situations. The research on rating scales performed at the University of Utah (4) in which different rating scales for evaluating attending physicians were completed by different types of raters (for example, patients and head nurses) underscores this perspective.

Dr. Dowaliby is research associate, National Technical Institute for the Deaf, Rochester, New York.

There would seem to be at least two applications of a measure of rater confidence. One might be to provide information for the selection of raters. Such an application would be particularly feasible if it were shown that certain classes of raters systematically varied in terms of their expressed confidence in providing performance ratings. A second application would be to use a measure of expressed rater confidence as a covariate for performance ratings. Adjusting competence ratings in terms of rater confidence should remove differences between raters due to the availability of varying amounts of relevant information. These applications follow from Seward's position that confidence is the subjective counterpart to completeness of data.

The purpose of the present study was to investigate possible differences in rater confidence among raters whose primary role with the ratee was either professorial or administrative or that of an employer. It was hypothesized that significant differences among these three types of raters would be observed in terms of rater confidence. It was also hypothesized that such differences would vary depending upon the particular aspect of performance rated. Certain aspects of adjusting individual performance ratings in terms of rater confidence were also explored.

Method

The ratees were 354 physician's assistants who were scheduled to complete their formal training programs within three months or who had just completed their formal programs within the preceding three-month period.

RATING SCALE

Fifty-one aspects of physician's assistant competence were derived from the results of a critical incident study conducted for the National Board of Medical Examiners in 1960 by the American Institute for Research. Each of these aspects comprised the stem of a competency rating item. Each aspect was presented on a separate page of the rating booklet and each had six adjectives as responsive alternatives. The first page of the rating booklet provided a set of instructions to the rater and requested him to indicate his primary relationship with the ratee.

The second paragraph of those instructions focused specifically on the confidence scale which was placed directly below each competency rating item. In each case the confidence scale read, "Your confidence in the above rating." This was followed by five adjective-type response alternatives, ranging from "minimal" to "maximal." Raters were instructed to check the "unable to judge" circle if they felt totally unable to judge the ratee in terms of that particular rating item. They were asked to complete the particular rating item if they felt at least minimal confidence in so doing and then to indicate their confidence in their rating.

PROCEDURE

The director of the physician's assistant training program in which each ratee was or had been enrolled was contacted and asked to identify and request ratings from a faculty member who was sufficiently knowledgeable about the ratee's clinical performance. Of the 620 rating booklets mailed, 354 were completed and returned, representing a 57 percent return

rate. Integer values of zero and one through five were assigned, respectively, to indicated rater confidences of unable to judge and minimal through maximal confidence. Thus, 51 numerical representations of rater confidence (one per competency rating item) were available from each of the 354 rating booklets returned. The following analyses were performed on this data base.

Results and Conclusions

A principal factor analysis of the data base was performed in order to explore the dimensions of rater confidence and to reduce the 51 expressions of rater confidence to a more parsimonious set for further analyses. Several varimax rotations of varying numbers of factors and expressions of confidence were performed in an exploratory fashion. The final solution consisted of 47 expressions and three factors which were interpreted as: (*a*) a medical/clinical aspects factor that correlated with expressed rater confidence in providing ratings of medical knowledge, judgment, and other aspects of clinical competence; (*b*) a personality characteristics factor that correlated with expressed rater confidence in ratings of various personality and ability traits; and (*c*) a patient-related factor that correlated with expressed rater confidence in providing ratings of aspects of interactions between physician's assistants and their patients. These three factors accounted for 57 percent of the common variance of 47 expressions of confidence. This was not surprising and suggests that rater confidence in performance ratings may vary depending on the particular aspect of competence rated.

Factor scores were then generated for each of these three factors by a conventional regression ("complete estimation" [5]) method. This technique yields factor scores in standardized form with a mean of zero and a standard deviation of one.

Raters were requested to indicate their primary relationship with the ratee in the space provided on the first page of the rating booklet. On examination of that information, the investigators found that 260 of the 354 returned booklets were classified into one of three rater role categories: professors/instructors (n = 131), administrators (n = 103), and physician employers (n = 26). The remaining 94 were not unequivocally classifiable and were, therefore, excluded from the following analyses.

A two-way mixed effects analysis of variance was performed on the factor scores, with the rater role as a fixed effects variable and competence aspect as a random effects variable. A summary of the results is reported in Table 1. As shown, a significant rater role main effect

TABLE 1

SUMMARY OF RESULTS OF ANALYSIS OF VARIANCE OF RATER CONFIDENCE BY THREE RATER ROLES AND THREE ASPECTS OF PHYSICIAN'S ASSISTANT COMPETENCE

Source of Variance	S.S.	df	M.S.	F
Mean	0.213	1	0.213	–
Rate role (A)	59.790	2	29.896	38.300*
Error	200.594	257	0.780	–
Competence aspect (B)	2.394	2	1.197	1.266
AxB	31.877	4	7.969	8.429*
Error	485.978	514	0.945	

* $p < .01$.

and a significant role by competence aspect interaction were observed (*p*s < .01). The competence aspect main effect was nonsignificant. The means and standard deviations for each of the rater roles by competence aspect are shown in Table 2. Significant specific effects were examined using post-hoc Sheffé contrast techniques. The results of contrasts performed on the rater role main effect indicated that both professors/instructors and physician employers expressed significantly greater confidence than did the administrators in providing competence ratings across all of the included aspects of physician's assistant competence ($p <$ .01).

This finding is consistent with the viewpoint that expressed confidence of a rater in his ratings is indicative of the amount of relevant contact between the rater and the individual rated. Program administrators have less contact with physician's assistant students than do either professors/instructors or physician employers. Presuming that the amount of pertinent contact between a rater and ratee influences the amount of relevant information available to the rater, the results are also consistent with Seward's (1) summary statement that "confidence is the subjective accompaniment of completeness of data."

The role by competence aspect interaction was similarly analyzed for significant specific effects. The results indicated that both professors/instructors and physician employers expressed significantly greater confidence than administrators in providing performance ratings of both medical/clinical aspects and personality characteristics. The physician employers, however, expressed significantly greater confidence than both the professors/instructors and administrators in providing ratings of patient-related aspects of physician's assistant competence (all *p*s < .01).

This finding is also consistent with the preceding discussion since physician employers have more opportunity to observe their assistants working with patients than either program administrators or professors.

Previous relevant contact between a rater and the ratee is probably a necessary but not sufficient condition for accurate performance ratings. The validity of underlying judgments would seem to be influenced effectively by the amount of relevant interpersonal contact. The results of the present study suggest that a rater's expressed confidence in his ratings reflects relevant contact. As has been noted, one use of such information could be the selection of raters. The present study suggests that, overall, administrators of physician's assistant training programs are the least qualified to rate physician's assistants. This is noteworthy in that administrators are often asked to provide such evaluations.

TABLE 2

NUMBER OF RATERS, MEANS, AND STANDARD DEVIATIONS OF RATER CONFIDENCE FOR EACH COMBINATION OF RATER ROLE, BY COMPETENCE ASPECT

Rater Role	No. of Raters	Competence Aspect: Medical/Clinical Aspects Mean	Medical/Clinical Aspects S.D.	Personality Characteristics Mean	Personality Characteristics S.D.	Patient-Related Aspects Mean	Patient-Related Aspects S.D.	Rater Role Mean
Professorial	131	0.453	0.578	0.127	0.901	−0.078	1.195	0.167
Administrative	103	−0.615	1.274	−0.318	0.988	−0.199	0.790	−0.378
Employer	26	0.279	0.501	−0.027	0.565	0.567	0.595	0.273
Aspect means	260	0.012	–	−0.065	–	−0.061	–	−0.038

TABLE 3

SUMMARY OF ARBITRARY TESTS OF THURSTONE'S PRINCIPLES OF SIMPLE STRUCTURE FOR VARIMAX FACTOR ANALYSES OF RAW, MULTIPLICATIVELY-WEIGHTED, AND SIMPLE LINEAR REGRESSION RESIDUAL RATINGS

Principle*	Test Statistic	Weighted Method: Unadjusted Raw		Multiplicative		Simple Linear Regression Residual	
		f	Percent	*f*	Percent	*f*	Percent
Each row of the factor matrix should have at least one zero	Number of items (rows) with at least one $\|r\| \leq .10$	18	41.0	20	45.4	43	97.7
If there are m common factors, each column of the factor matrix should have at least m zeros	Number of factors (cols) with at least 6 $\|r\| \leq .10$	2	33.3	1	16.0	4	66.6
For every pair of columns of the factor matrix there should be several variables whose entries vanish in one column but not in the other	Number of pairs of loadings per item with one $\|r\| \leq .10$ and other $\|r\| > .50$	21	3.2	20	3.0	70	10.6
For every pair of columns of the factor matrix a large proportion of the variables should have vanishing entries in both columns when there are four or more factors	Number of pairs of loadings per item with both $\|r\| \leq .10$	20	3.0	8	1.2	70	10.6
For every pair of columns of the factor matrix there should be only a small number of variables with nonvanishing entries in both columns	Number of pairs of loadings per item with both $\|r\| > .50$	0	0.0	0	0.0	1	0.1

* Taken from Reference 5.

The results of additional analyses suggest that such expressions of rater confidence could also serve as a covariate for competency ratings. The raw competency ratings and two methods for combining, for each of the items, the competency rating with the confidence rating were compared. The two combining methods were a "multiplicative" and a "regression residual" techniques. The multiplicative method consisted of the simple multiplication of the competence ratings by the confidence rating individually for each item. The regression residual technique, also on an item-by-item basis, consisted of the arithmetic difference between the raw rating and the rating predicted by the simple linear regression of the competency rating on to the confidence rating. The resulting three sets of ratings (unadjusted raw, multiplicative, and regression residual) were separately factor analyzed. The same principle factor analysis, using a six-factor solution and varimax rotations, was employed for each set.

The same factors appeared in each of the three solutions, which were compared in terms of the simple structure of the factor patterns. This concept is generally discussed as an ideal property of orthogonal factor patterns and breaks down into Thurstone's five principles (5). Those principles and corresponding test statistics are shown in Table 3. The application of those tests to each of the three factor patterns yielded the results shown. As is indicated, the regression residual method conformed markedly better to the principles than either the other combining method or the raw ratings. This means that there is markedly greater

simple structure to the factor pattern from the regression-adjusted competency ratings and suggests that competency ratings may be more accurate if rater confidence is appropriately taken into account. The effects of these and other adjustments on psychometric properties of competency ratings, such as reliability and validity, should be addressed by future research.

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A Comparison of D.O. And M.D. Student Performance

Thomas J. Stachnik, Ph.D., and Ronald C. Simons, M.D.

Abstract—The performances of students from two medical colleges, one allopathic (M.D.) and one osteopathic (D.O.), at Michigan State University in a first course in psychiatry are compared. Although the M.D. students had scored significantly higher on the Medical College Admission Test, there was no difference in examination performance in the psychiatry course, which included measures of both basic information and of skill in diagnostic clinical application.

The Michigan College of Osteopathic Medicine became a component college of Michigan State University (MSU) in 1969 and moved to the MSU campus in East Lansing in 1970. An allopathic* college of medicine had been established at MSU in 1966. Both schools have emphasized humanistic and family-practice-oriented medicine. The relationship between the two schools was an intricate one, with independent administrative structures and independent student selection procedures and yet with many shared departments, mostly preclinical ones. For this reason and because the osteopathic college was the first to become part of an accredited university, a circumstance likely to be repeated elsewhere if the MSU experience is successful, the situation in East Lansing received considerable interested scrutiny. The initial history of the two schools was detailed in a series of articles by John Walsh in *Science* during 1972 (1–4).

The likelihood of competition between the schools was remarked on by Walsh, who noted: "The presence on the same campus of two schools of medicine, one training M.D.'s and the other doctors of osteopathy (D.O.'s), would seem to guarantee a sibling rivalry along the lines of Cain and Abel" (4). Walsh quoted the dean of the osteopathic college as acknowledging that "a lot of practicing D.O.'s thought the move to MSU was a plot to sell us out to the state medical society" (4). Walsh also noted that "as a medical minority group the D.O.'s tend to be cohesive and hypersensitive about second-class medical status" (1).

Some segments of the M.D. community expressed concern about the extent to which osteopathic medical schools, previously independent of the university system, had absorbed the lessons of scientific medicine. There was also concern about the academic aptitude of the students themselves. Were osteopathic students largely unsuccessful applicants to allopathic schools and hence likely to perform less well academically than their allopathic counterparts?

A comparison of Medical College Admission Test (MCAT) scores of the two groups of students would seem to justify that concern (Table 1). The 40 separate means presented in Table 1 can be viewed as 20 pairs of scores, each pair consisting of the D.O. and M.D. mean scores for an MCAT subtest for a given class cohort. If neither the D.O. nor M.D. students consistently scored higher, one would expect that in approximately 10 of the pairs the D.O. mean would be higher and in the remaining 10 the M.D. mean would be higher. But the M.D. mean is higher in 17 pairs and the D.O. mean higher in only three.

Furthermore, the three instances where the D.O. mean is higher all occur on the quantitative subtest (years 1971, 1972, and 1975), yet over the full five-year period performance on the quantitative subtest favors the M.D. students (542.4 to 554.0). This is explained by the fact that the D.O. superiority in 1971, 1972, and 1975 was 2, 3, and 8 points, respectively, while the M.D. superiority was 36 points in 1973 and 35 points in 1974. Not only the direction but also the magnitude of the differences in the pairs of scores on other subtests suggests that M.D. students should be superior to their D.O. counterparts. While the only instances of D.O. student superiority are the differences of 2, 3, and 8 points, the three largest differences favoring the M.D. students are 56 (Verbal Ability, 1974), 46 (Science, 1973), and 45 points (Science, 1974).

For the past four years the authors have taught in both medical colleges. During that time they failed to note any consistent differences between the academic performance of M.D. and D.O. student cohorts; both their classroom and clinical performances appeared to be so strikingly similar that a close comparison of examination scores would be needed to reveal differences if any existed. Of course, the most significant comparative questions concern the effect graduates of each of these schools ultimately will have on the nation's health, and these questions involve considerations of geographic deployment and choice of practice activity as well as those of medical competence. To date, only academic competence can be reported on; other more salient measures must remain for the future. However, since the authors thought their data might contribute to alleviating some of the concern about D.O. competence alluded to earlier, they chose to make and to report all of the comparisons possible.

The data presented in this paper were

TABLE 1

MEAN MEDICAL COLLEGE ADMISSION TEST (MCAT) SCORES FOR D.O. AND M.D. STUDENTS AT MICHIGAN STATE UNIVERSITY, 1971–1975

Entering Class	MCAT Scores							
	Verbal Ability		Quantitative Ability		General Information		Science	
	D.O.	M.D.	D.O.	M.D.	D.O.	M.D.	D.O.	M.D.
1971	501	514	524	522	512	533	496	529
1972	520	525	557	554	513	519	526	531
1973	515	552	530	566	515	542	505	551
1974	500	556	530	565	512	542	519	554
1975	536	559	571	563	525	531	539	549
Mean of means	514.4	541.2	542.4	554.0	515.4	533.4	517.0	542.8

Dr. Stachnik and Dr. Simons are both associate professors of psychiatry in the College of Human Medicine and the College of Osteopathic Medicine at Michigan State University, East Lansing.

* "Allopathic" is the term used by osteopathic physicians to refer to their M.D. colleagues since "medical" can refer to both. Unfortunately, though no better term exists, allopathic has never caught on, perhaps because it carries to most ears an undeserved cultish connotation.

drawn from examination results in an introductory course in psychiatry. As it happened, psychiatry was the first clinical department voting to be administered jointly by the two colleges and thus was the first clinical department to present students in the two schools with comparable instruction and comparable evaluation. The comparisons come from a post hoc analysis of test score data gathered in the course of routine instruction rather than from an expressly designed experimental procedure; a testing procedure designed specifically to compare D.O. and M.D. student cohorts theoretically might produce different results. However, it is doubtful that such a politically sensitive procedure will soon be carried out. In fact, a number of reasons were suggested as to why the present comparison should not be made, one being a widely held impression that the number of minority students was higher in the osteopathic college and that as an educationally disadvantaged group, they might be expected to do less well. However, Table 2 shows that the percent of minority students admitted to the D.O. program was markedly lower from 1971 to 1973 but that in 1974 and 1975 the numbers and percentages of minority students being admitted to the two colleges were very similar.

TABLE 2

NUMBER AND PERCENT OF MINORITY* STUDENTS IN THE D.O. AND M.D. PROGRAMS AT MICHIGAN STATE UNIVERSITY 1971–1975

Entering Class	No. of Minority Students		Total No. of Students		Percent Minority Students	
	D.O.	M.D.	D.O.	M.D.	D.O.	M.D.
1971	2	17	37	85	5	20
1972	6	13	69	89	9	15
1973	8	19	76	93	11	20
1974	21	25	84	106	25	23
1975	20	25	99	105	20	24

* Minority is defined as male/female students who are members of the following racial/ethnic groups: black, Chicano, Puerto Rican, Cuban, native American, and Asian American.

Method

Psychopathology was taught in a partially self-instructional format, supplemented with minilectures, illustrated audiovisual material, and small-group discussions, with M.D. and D.O. student cohorts in separate but virtually identical courses. The initial course format (Format I) was used for two years and then massively revised (Format II).

FORMAT I

The students taught under Format I were D.O. students ($N = 67$) just completing their first year and M.D. students ($N = 39$) in the middle of their second year. There were two instructors in the D.O. class and two in the M.D. class; one instructor was common to the two classes. Students were assigned readings in Redlich and Freedman's *The Theory and Practice of Psychiatry* (5). On completion of each week's reading students took a self-test of items which emphasized points the instructors considered most important. Answer keys were provided. Once each week the class met for two hours in discussion sections (half of the class with each instructor) to watch illustrative audiovisual material and to clarify issues raised by the readings.

FORMAT II

The students taught under Format II again were D.O. students ($N = 77$) just completing their first year and M.D. students ($N = 83$) in the middle of their second year. There were four instructors in the D.O. class and two in the M.D. class; one instructor was common to the two classes. The text used was *Modern Synopsis of the Comprehensive Textbook of Psychiatry* by Freedman, Kaplan, and Sadock (6). A self-instructional workbook (7) was also employed which not only contained self-test questions and answers but also detailed paragraph-by-paragraph instructions on what information was to be learned from the reading assignments in the text. Audiovisual material and short clarifying lectures were presented in one-hour weekly sessions to the entire class, and weekly one-hour small-group sessions (half the class with each instructor) were again used for discussion and clarification as in Format I. Format II has been described in greater detail elsewhere (8).

FINAL EXAMINATIONS

The final examinations in Format I assessed both knowledge of basic information and skill in diagnostic clinical application. Knowledge of basic information was assessed with objective test items (matching, completion, multiple-choice, and true/false) drawn largely from the self-test items in the workbook. Out of a possible 82 points on basic information, 73 were common to the M.D. and D.O. examinations and are used for the present comparison. Videotapes of patients with various behavior disorders and paper-and-pencil case vignettes were used to assess diagnostic acumen. The same videotapes and case vignettes were used to test both groups of students.

The final examinations in Format II again assessed both basic information and clinical application. Objective test items were used to assess knowledge of basic information, but, though comparable, items were not identical on the D.O. and M.D. examinations. The items were comparable in that they were drawn from the same item pool (workbook), were addressed to the same topics, and within those topics generally tested the same concepts (those considered to be most important and/or most readily assessed with objective test items). The application portions of the D.O. and M.D. examinations employed videotapes and case vignettes as in Format I and again were identical for the two groups.

Results and Discussion

The results of the D.O. and M.D. students' final examination performance under Formats I and II are presented in Table 3. The most striking feature of the results is the similarity in the performance of the two groups. The largest difference in the six comparisons presented is 2.2 raw score points on the basic information portion under Format I (73 total points were possible) and favors the D.O. students. At the customary two decimal places the difference falls just short of significance ($p > .05$). Although four of the five remaining comparisons favor the M.D. students, differences are miniscule and none are statistically significant.

The fact that the M.D. students, who as a group had substantially higher MCAT scores, performed no better in the course than the D.O. students can be explained in at least two ways. One explanation is that MCAT scores are poor predictors of academic performance, an hypothesis for which support is readily available in the literature (9). Furthermore, since the psychopathology tests included a clinical application portion and no component of the MCAT directly measures potential clinical competence, the predictive value of the MCAT scores would be further diminished. An alternative explanation is that specific features of the psychopathology course limited its potential for the discovery of real differences in academic competence between the groups. The fact that the comparison described in this paper was made in an introductory course constituted a limiting condition. Like most introductory courses in clinical subjects, this course is designed

TABLE 3

FINAL EXAMINATION SCORES IN PSYCHOPATHOLOGY FOR D.O. AND M.D. STUDENTS AT MICHIGAN STATE UNIVERSITY, 1971–1975

Scores	Format I†		Format II‡	
	D.O.	M.D.	D.O.	M.D.
Basic Information				
Mean*	63.3	61.1	74.1	75.4
S.D.	3.74	7.89	5.88	5.79
Clinical Application				
Mean*	14.3	14.7	11.9	12.1
S.D.	3.32	3.69	2.27	1.97
Combined Basic Information and Clinical Application				
Mean*	77.6	75.7	85.9	87.4
S.D.	4.72	8.97	7.31	6.63

* A combined estimate of the standard error of the difference between the means (for Format I—1.1, .48, and 1.3, respectively; for Format II—0.9, .34, and 1.2) was obtained as follows:

$$s_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

† t values for the three comparisons are 1.98, .74, and 1.42; degrees of freedom: $N_1 + N_2 - 2 = 104$. None of the comparisons is statistically significant.

‡ t values for the three comparisons are 1.34, .54, and 1.25; degrees of freedom: $N_1 + N_2 - 2 = 158$. None of the comparisons is statistically significant.

to help a large group of students learn some new terms and rudimentary skills in the hope of making a subsequent clerkship a more profitable experience. It can be reasonably argued that the range of scores produced in an elementary course is artificially narrow (most students learn most of the material, few students do very poorly) and thus potential differences in student abilities do not emerge. Further, in the self-instructional format which was used to convey most of the new information covered in the course, students were told exactly what it was they were to know, and tests were straightforward assessments of their comprehension and retention of this specified body of material. A more conventional lecture course with long reading assignments in which students must determine what material is important and, therefore, likely to appear on tests might not yield the same results.

Conclusion

The authors have reported here on student performance in the only course in which it has been possible to collect comparative data in a systematic fashion. However, they have had the opportunity to teach and work closely with many M.D. and D.O. students in a wide variety of clinical, academic, and research settings. Though no hard supporting data can be presented, the authors' strong impression is that the within-group variance greatly exceeds that which exists between groups, and they predict that a more extensive comparison between the two groups (should it ever be politic to perform one) would confirm this impression.

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COMMUNICATIONS

Continuing Medical Education: Establishing Requirements and Coordinating Teaching Activities

Vincent A. DeLuca, Jr., M.D.

Continuing medical education (CME) is now the "in thing" in medicine and, as a result, is growing rapidly. Many organizations have been involved in CME activities with little apparent integrated activity. These organizations presently include the newly organizing Liaison Committee on Continuing Medical Education (LCCME), the American Medical Association (Physician's Recognition Award), community hospitals, medical schools, state medical societies, and medical specialty societies. It would seem appropriate to coordinate efforts and develop guideline definitions of CME.

LCCME

The LCCME, when becoming functional, should continue the existing policy of the AMA of evaluating and accrediting medical societies to conduct site visits of hospitals and other medical groups for the reciprocal purpose of evaluating CME programs and granting accreditation. The LCCME should define the criteria by which an organization can become accredited. In general, an accredited organization should have the ability to provide meaningful CME for certain physician groups. In addition, the LCCME should work with medical specialty societies and encourage them to develop general CME guidelines for its individual members.

Medical Specialty Societies

Medical specialty societies include such diverse groups as the Family Practice Academy, American College of Physicians, American College of Surgeons, and American Gastrointestinal Association. These groups are best qualified to develop CME guidelines for their members. Grassroot chapters of these medical specialty societies, for example, state chapters of the American College of Physicians, would be better qualified to determine, recommend, and monitor the CME needs and patient care performance of their members than national organizations. The guidelines developed by the medical specialty societies should be coordinated by the LCCME.

Hospital CME Committees

The general guidelines developed by the specialty societies can be further implemented at a local level in hospital settings in conjunction with hospital CME committees. The hospital CME committee would then attempt to develop appropriate and meaningful CME programs for its physicians by use of the medical specialty guidelines. In addition, specific CME programs in each hospital developed by these committees would be influenced by data obtained from medical audit data, professional standards review organization data, self-assessment examination, and hospital patient care performance of the physicians with hospital appointments.

The hospital CME committee should have representation from its major physician specialties, that is, family practice, general medicine, surgery, pediatrics, and ophthalmology. With the guidance from these medical specialty groups and with appropriate use of the guidelines obtained from the specialty societies, the hospital CME committee could then develop an individual profile of CME activities and the patient care performance of each physician. The CME committee would then refer the data on each physician to the hospital medical department in which he has an appointment. The chief of each department would then be responsible for evaluating the data and making appropriate recommendation for each physician biannually to the hospital executive committee for reappointment to the hospital staff and for reviewing the extent of the physician's hospital privileges.

The in-hospital setting may not be applicable to certain physician groups, such as physicians without hospital appointments or physicians who are in a highly specialized area of medical care. In these special situations the medical specialty organization to which the physician belongs would be responsible for making proper CME and patient care evaluation of its members.

Physicians' Recognition Award

The Physicians' Recognition Award (PRA) is sponsored by the American Medical Association and is obtained by physicians on a voluntary basis by means of completing an application which documents CME activities for the three-year period immediately preceding the application.

In order to obtain certification, a physician must acquire 150 credit hours of CME activities, which are divided into categories I through VI. Category I can only be acquired from an institution accredited by the AMA; Category II can be obtained from nonaccredited institutions; Categories III and IV can be obtained from publications (papers and books) and exhibits; Category V can be obtained from nonsupervised individual CME activities, such as use of audiovisual materials, reading journals, providing consultations, patient care review, and selfassessment; and Category VI involves other meritorious learning experiences. In order to obtain an award, a physician must have at least 20 hours of Category I yearly.

Category I is further defined as being "a planned program of CME with sufficient scope in depth coverage of a subject area or theme to form an education unit that is planned, coordinated, administered and evaluated in terms of educational objectives that

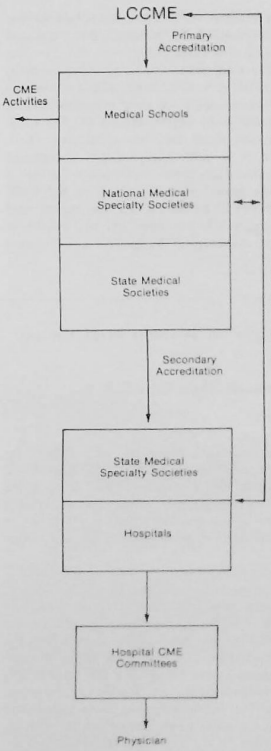


FIGURE 1
Possible interaction of organizations and institutions involved with continuing medical education (CME) activities. The LCCME is the Liaison Committee on Continuing Medical Education.

Dr. DeLuca is associate clinical professor, Yale University School of Medicine; director of medical education, Griffin Hospital, Derby, Connecticut; and chairman of the Continuing Medical Education Committee of the Connecticut State Medical Society.

give a defined level of knowledge or a specific performance skill to be obtained by physicians participating in the group."

There has been value to this categorization, primarily because it has stimulated institutions to obtain credit for their programs and to evaluate more objectively the kind of CME activities which they are sponsoring. However, it is quite apparent that Category I requires considerable redefinition so that it meets more amply the needs of the CME activities of physicians. At the present time Category I is too restrictive and would be better replaced by the specific determination of the educational needs of a physician by his medical specialty group as previously described.

Also at present a physician's CME activities are automatically recorded when he files an application for a PRA. However, it would be more meaningful if the CME activities of each physician were assessed and evaluated in conjunction with hospital CME committees, medical specialty societies, or the state medical society.

Figure 1 illustrates the potential coordination of CME activities and medical institutions.

Office for Women in Medicine: A Model for Social Change

Katherine Alden Finseth, M.D.

An innovative program, the Office for Women in Medicine (OWM), has been developed at Yale University School of Medicine to aid professional women in overcoming some of the barriers which they face in the traditionally male-dominated medical profession.

A variety of problems face women entering medicine as well as other professional fields. Among those discussed in the literature are: lack of visible role models (1); difficulty establishing and maintaining mentor-protegeé relationships (1); exclusion from informal communication channels (2); debilitating "micro-inequities" in daily life (3); lower salaries (4); discrimination in hiring, promotion, and recognition (4); limited access to opportunities for career advancement (5); and the existence of a narrow range of medical specialties traditionally considered "acceptable" for women (1, 4, 6). Numerous factors also discourage women from considering the medical profession even before application to medical school (1). The OWM has elected to concentrate its efforts on assisting women at the medical student, postdoctoral trainee, and faculty levels.

Dr. Finseth is assistant professor of public health and liaison officer for women at Yale University School of Medicine and medical director of the Patient Care Studies Department at Yale-New Haven Hospital.

Description

At the recommendation of the advisory Medical School Council, the administration approved in 1975 the creation of an Office for Women in Medicine at Yale. The OWM is staffed on a full-time basis by a staff assistant and part-time by three women medical school faculty members; the latter also serve as liaison officers (LOs) for women between the School of Medicine and the associate provost of Yale University who is responsible for minority and women's affairs. One of the LOs is the official director of the office, which has a modest budget to carry out its activities.

Programs and activities of the OWM have been developed on an ad hoc basis and also with specific reference to findings in the literature on women in the professions. The functions of the OWM fall into several broad areas: negotiating grievances, increasing visibility of women in medicine, and providing social and professional support.

Yale was faced with a number of necessary changes (7) by the passage of Title IX of the Education Amendments of 1972, which prohibits sex discrimination in educational institutions receiving federal funds. An LO has worked closely with the medical school administration in identifying areas of noncompliance with Title IX and rectifying these.

NEGOTIATING

The OWM receives grievances regarding treatment of women at the medical school. It also initiates and carries out investigations of possible "class-action" grievances on the initiative of the LOs. In cases of alleged discriminatory practices (for example low salaries or delayed promotions for women faculty members), an LO explores possible courses of action and appropriate channels for formal complaints. If the aggrieved party wishes, an LO can accompany her to provide support during her discussion with others or even act on her behalf if she feels unable to confront others regarding the discriminatory incident(s).

Specific remarks of actions disparaging to women are noted from time to time. Cumulatively, these have a discouraging effect on women professionals' morale (3). The OWM seeks to identify such episodes and delivers a prompt, although politely worded, reprimand.

INCREASING VISIBILITY

The OWM carries out a number of widely publicized activities designed to increase the visibility of women students, trainees, and faculty members to each other and to the medical community in general. Weekly luncheon meetings for medical students feature women faculty members and house officers. The OWM sponsors a series of guest lectures by prominent women in medicine, with cosponsorship of the various academic departments. A pictorial exhibit, "Women as Healers," was featured at the Yale Medical Library in 1976. The LOs speak in person and through the news media to academic and community groups about women in the medical profession.

Women on the Yale School of Medicine faculty are concentrated in the lower research and academic positions, and this low faculty status contributes to their "invisibility." The OWM strives to involve more women in the administrative decisions of the medical school in order to enhance their status as a group.

PROVIDING SUPPORT

Because of the exclusion of women from traditional "old-boy" networks of information and referral, medical women are further hampered in professional advancement. The OWM has been seeking to fulfill several of the functions of an "old-girl" network until a critical mass of women is available in the profession to maintain this interchange without assistance; these functions relate to faculty job placement, employment for spouses when one member of a dual-career couple is recruited to Yale, grant procurement, and orientation to the New Haven community. In addition, the OWM maintains a small library of materials on women in medicine.

Through its various activities and by virtue of having an identifiable, comfortable office space, the OWM provides channels for women in the medical community to meet and talk with other women. The assumption is that as women become acquainted in an informal setting, they will find it easier to establish mentor-protegeé and supportive relationships with each other. The OWM has also coordinated more formal "support groups" (8) for discussion of concerns in the development of a professional identity and the resolution of conflicts between professional and personal goals.

Discussion

The most important element in the success of the OWM has been the school's provision of staff assistance and a modest amount of space and funding.

The system of LOs linking the associate provost's office with each of the schools in the university (for example, Law, Medicine, Art and Architecture, and Yale College) enhances the position of the medical school's LOs in speaking for women's concerns within

the School of Medicine. This arrangement also permits identification of problems which affect women throughout the university.

The Standing Committee on the Status of Women, which is chaired by one of the LOs, identifies problems affecting women in the medical school, advises the LOs on various matters, and works closely with the deans in policy development. Its diverse student and faculty composition provides a broad base for making strong recommendations to the administration. Among the issues which have been considered by the committee during the past two years are pregnancy and parenthood leaves of absence, on-call rooms for medical students, shared-schedule residencies, house officer recruitment and selection, reproductive health hazards at the medical school, and affirmative action.

The growing body of literature on women in medicine and their performance and problems attests to the need for concrete assistance for women entering medical careers. Knowledge and concern, however, are not enough. Tangible administrative support, faculty time commitment, and the involvement of a broader segment of the medical community are needed.

The Office for Women in Medicine at Yale has been described in detail here as one model of how these factors can be combined within a medical school to have an impact on the lives of women in the medical profession.

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Medicine, Humanities, and Integrating Perspectives

K. Danner Clouser, Ph.D.

Given slightly ambiguous data, not everyone sees the same pattern nor reads into them the same signs. And this author may be more jittery than most. Nevertheless, the faint pattern he perceives emerges from the conjunction of three independent opinion pieces recently appearing in a leading medical journal, *The New England Journal of Medicine*. Nothing is wrong with the articles individually; rather the cause for concern is what might be read into them, or the impression they convey when seen as a group.

Franz Ingelfinger (1), though not specifically discussing humanities, deplores attempts to make physicians jacks-of-all-trades and not masters of medicine. Arthur Dyck (2) tells of an emerging field called "medical ethics" and Harvard University's progress in this field. Anthony Moore (3) refers to medical humanities as "a new medical adventure" and describes his course on classic literary works.

Dr. Clouser is professor of humanities at the College of Medicine, Milton S. Hershey Medical Center, Hershey, Pennsylvania.

But out of this otherwise harmless trio one might be sensitive to the following pattern. In Ingelfinger's piece there seems to be an assumption that all this extramedical knowledge which society is expecting a physician to have requires the "adding on" of bodies of information, the accumulation of more facts, the assimilation of more specialties. And Dyke seems to accentuate this by bringing word of still another speciality (medical ethics) being elaborately developed and added on as yet another requisite of an adequate medical education. Moore then swings to the other extreme, presenting a whimsical potpourri course where ideas scatter like dandelion seedheads in the wind. Can these extremes be our only alternatives?

Old Facts – New Understandings

One of the harsh realities of medical education is information overkill. The daily dumping of facts threatens to suffocate even the best of students. Consequently the strategy of the humanistic disciplines must be not to add additional knowledge but rather to help the students process and reflect on the facts and concerns with which they are already swamped. Disciplinary perspectives should be integrated into medical education and not simply added as additional bodies of knowledge or facts to be remembered. The humanistic disciplines should enrich the student's medical knowledge, their clinical skills, and their creative curiosity about medical matters. In an art course perceptions could be sharpened, and sensitivities to visual stimuli and their implications could be heightened; influences on perception caused by our moods, beliefs, and theories could be vividly experienced. In historical analysis students could enlarge their medical knowledge by studying the changing, evolving nature of health and disease and the integral role of social, economical, and political factors on such changes; they could come to a much deeper understanding of the doctor-patient relationship by teasing out the influencing variables and the historical roots. Through the imaginations of novelists, playwrights, and poets, students could encounter the experience of suffering and the means of surviving; they could analyze the portrayed roles of physicians and thereby piece together their own self-images. In doing philosophy, the students could develop a knack of discerning and explicating pivotal conceptual points and of discovering and questioning underlying assumptions; students might once again be excited by the conceptually interesting and curious aspects of medicine.

In short, art, literature, philosophy, history, law, and religious studies must each pursue its subject matter and method with respect to medicine, developing perspectives and skills relevant to the practice of medicine. This is not so much an added body of knowledge as a restructuring of a student's cognitive and conative apparatus through which experience is perceived, understood, and assimilated. Perhaps it is like the commonly reported psychotropic drug effect on perception whereby old familiar stimuli impinging on the senses are nevertheless seen in a new light, with heightened sensitivity and in creatively new relationships. Medical schools – like other professional schools – are conceptual ghettos; we can get locked into seeing the world, ourselves, and others in a single, uniform way. To remain alert, perceptive, undogmatic, and open to new clues, we need to be immersed now and again in other perspectives. How salutary it would be to go from total immersion in a gross anatomy laboratory, where a mechanistic view of the body is rightly and necessarily engendered, to a literature course in which the students are led by great artists and writers (some physicians) to experience other ways of viewing the human body. There has been considerable rhetoric about treating the patient as a whole person. What better way to impart substance to this expression than through the humanities; what better way to accomplish it than by first treating the medical student as a whole person.

Teachers and Teaching

The method of doing all this is important. Two extremes must be avoided, neither of which, used exclusively or together, would accomplish the goal. One is the occasional and fleeting appearance of "the humanist" lightly seasoning grand rounds, panel discussions, or corridor conversations. The other is

the large lecture course in which there is simply another daily deluge of information on the already submerged students (worsened by bringing in a series of guest lecturers, each a specialist in the topic for that day).

Rather, these ends can be achieved only in small discussion groups, where there is opportunity for back and forth pursuit of a point, where a participant's argument in the fifth week can be shown to be contradictory to one he gave in the second week, where students can learn to articulate and to disagree with each other amiably and creatively. The point is to entice and to help the students in thinking creatively, persistently, and rigorously.

Lastly, all this requires dedicated teachers who are willing to spend the time to teach in small groups and really get inside the student's head. The humanities teacher must be constantly involved in the medical world (reading its journals, sitting in its classes, attending its panels and lectures, and serving on its committees) and must not be overly concerned with his purist, professional peers who look askance at what they regard as disciplinary dilution. Of course, the teacher must do his share of scholarly work, but his priorities must be in order. Useful interdisciplinary scholarship grows from immersion at the interface—from helping, teaching, interacting, and listening.

However, a solid foundation of courses and occasional clinical involvement are not enough. Years ago the comment generally heard was, "Why don't students get all this before they come to medical school?" Now one mostly hears, "Why isn't this material integrated throughout medical school during clinical years, residency, and continuing education?" This integration will take considerable skill and experience in order to meet real needs while avoiding contrivance and interference. To be sure, this is but one small part of medical education, yet one well worth doing and worth doing well.

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Using Ratings of Primary Care Tasks As a Guide to Making Curricular Decisions

Larry A. Sachs

In this report the author describes the use of survey results as an aid in making decisions concerning curriculum development. In addition, he compares the responses from a group of graduating medical students with the responses from a group of community physicians regarding agreement of opinion concerning primary care practice.

Mr. Sachs is a research associate in the Division of Research and Evaluation in Medical Education, Ohio State University College of Medicine, Columbus.

Background

The primary care component of the undergraduate medical curriculum has remained vaguely defined. Thus, a five-year study* was begun in 1975 at the Ohio State University with the goal of developing, implementing, and evaluating a family-oriented primary care component for the senior clerkship portion of the curriculum. One major component of the developmental process was to identify knowledge, skills, techniques, and attitudes important to the practice of primary care and to determine the adequacy of preparation in these areas under the existing curriculum.

* This study, the Family-Oriented Primary Care Project, is supported in part by grant 05D000622-PEDos from the Bureau of Health Resources Development, Department of Health, Education and Welfare.

Method

A questionnaire consisting of a sample of 26 items, chosen by the project faculty on the basis of possible importance in primary care practice, was constructed. It was hoped that an examination of these selected items could provide valid decision-making information for this curriculum development.

Graduating medical students in the 1976 class were asked to rate each item on its importance to the practice of a primary-care physician according to the following scale: 1 = essential, 2 = very important, 3 = important, 4 = somewhat important, and 5 = minimally important. Additionally, they were asked to rate each item in terms of how well the present curriculum had prepared them in that regard. The scale values were: 1 = very well prepared, 2 = well prepared, 3 = prepared, 4 = somewhat prepared, and 5 = not at all prepared.

The idea was to investigate student preparedness in relation to item importance. A major concern, however, was whether students could accurately assess importance. Two recent studies have verified that this was a valid concern. DeRoy (1) reported large differences between the amount of emphasis faculty members feel should be placed on elements of an autopsy and the amount of emphasis students perceived in autopsies they observed. London and Green (2) showed substantial agreement between family medicine residents and family medicine faculty on the tasks that a family physician should do. However, when a group of physicians whose specialties were not family practice rated the same tasks, their ratings differed markedly from those of the family medicine residents and faculty.

A group of practicing physicians from central and southeastern Ohio were asked to rate each of the 26 items in terms of its importance in their own primary care practice. The physicians in this sample were ones that might serve as preceptors, or at least have some contact with the students, when the proposed family-oriented primary care curriculum moved into its community-based component. Thus, a direct comparison of the students' importance ratings with that of community physicians could be made.

Results

A total of 156 fully completed student questionnaires and 53 faculty questionnaires were returned. Item mean ratings are given in Table 1. Over 80 percent of the items had means of less than 2.5, indicating that the physicians and students rated those items as very important to essential. There is agreement between the two groups on the relative importance of the items, with the rank order correlation of the 26 physician importance means and the student importance means being .90.

Of major concern was the relative difference between the importance ratings and the preparedness rating for each item. Direct comparisons were confounded by the difference in the scale values. Therefore, a linear transformation was used to convert the student preparedness means to the "same distribution" as the physician importance means, and a second linear transformation was used to convert the student preparedness means to the "same distribution" as the student importance means. Differences between item importance and preparedness were then analyzed. The same pattern emerged when using the physician importance ratings in computing the differences as when using the student importance ratings. The items identified as needing the most improvement in student preparedness relative to importance were emergency management of poisoning and drug overdose, emergency management of acute traumatic injury, and development of effective office organization and management techniques. The items with the best student preparedness relative to importance were performance of spinal tap, placement of urinary catheters, and management of normal pregnancy and delivery. The remaining 20 items all had difference scores of less than one standard deviation unit.

TABLE 1

ITEM RATINGS OF IMPORTANCE BY COMMUNITY PHYSICIANS AND BY SENIOR MEDICAL STUDENTS AT OHIO STATE UNIVERSITY (1976) AND OF PREPAREDNESS BY THE STUDENTS

Item	Physician Importance (N = 53)		Student Importance (N = 156)		Student Preparedness (N = 156)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Techniques for establishing patient/doctor relationships	1.58	.93	1.79	.90	2.66	1.04
Knowledge of techniques used in securing patient compliance with health measures	2.13	1.00	2.13	.92	3.62	1.02
Use of anticipatory guidance at various developmental and aging states	2.69	.99	2.62	.96	3.76	.88
Counseling in sex education and family planning	2.43	1.14	2.30	.90	3.58	1.05
Counseling concerning alcoholism and drug abuse	2.66	1.09	2.35	.89	3.83	.91
Use of diagnostic approach to evaluate prominent symptoms not immediately recognizable as a specific disease	1.75	.94	1.86	.86	3.05	.91
Formulation of a general management plan for diseases frequently encountered	1.55	.75	1.69	.70	2.99	.91
Knowledge of indications and contraindications of routine immunizations	1.68	.96	2.04	.88	3.18	.98
Performance of spinal tap	2.49	1.15	2.27	1.09	2.56	1.13
Placement of urinary catheters	2.49	1.12	2.62	1.16	2.69	1.17
Removal of foreign bodies from eyes	2.34	1.11	2.31	1.01	3.13	1.18
Management of abscesses	2.23	.95	2.30	1.01	3.20	1.05
Management of burns	2.36	1.00	2.31	1.02	3.57	.99
Management of upper respiratory illness	1.58	.77	1.90	.90	2.46	.82
Management of chronic dermatologic diseases such as acne, psoriasis, eczema	2.66	1.02	2.35	.95	3.75	.98
Diagnosis of acute abdominal pains and the referral for surgical treatment	1.30	.57	1.54	.66	2.62	.76
Diagnosis and treatment of venereal disease	1.94	1.05	1.83	.78	2.53	.83
Management of normal pregnancy and delivery	2.28	1.15	2.41	1.12	2.86	.92
Emergency management of poisoning and drug overdose	1.75	.88	1.83	.90	3.51	.84
Emergency management of acute traumatic injury	1.72	.86	1.86	.88	3.47	.96
Performance of cardiopulmonary resuscitation	1.34	.73	1.43	.83	2.59	1.11
Appropriate consultation and referral with other physicians	1.65	.81	2.12	1.00	2.80	1.00
Appropriate referrals to other professionals such as allied health, clergy, social workers	2.45	.91	2.44	1.03	3.53	1.00
Knowledge and use of health agencies, programs, services	2.77	.95	2.54	1.02	4.18	.90
Knowledge of various health payment plans such as Blue Cross, Medicare, Medicaid	3.49	.95	2.64	1.09	4.65	.68
Development of effective office organization and management techniques	2.49	1.05	2.47	1.08	4.56	.73
Average Item*	2.15	.53	2.15	.34	3.28	.62

* The "average item" mean is the average of the 26 item means, and the standard deviation is the standard deviation of these means (not the average of the 26 item standard deviations).

Conclusion

In this study agreement existed between senior medical students and community physicians on the importance of selected items in the practice of a primary care physician. If the 26 items are dichotomized on importance to above average and below average, the physicians and students are in total agreement. Students generally indicated that they were only somewhat prepared on many of the items. Discrepancies between importance ratings and preparedness ratings were viewed as providing valuable information for curricular decisions. For example, the faculty has planned a strong emergency management experience for the project, a decision made in part due to this survey.

Project faculty members have gathered valuable information by reviewing each item individually and in relation to the other items. The results of this survey will also be used as base-line data as an aid in evaluating the effectiveness of the family-oriented primary care curriculum after it has been fully implemented. Future administrations of the survey should indicate whether curricular revisions have been successful in helping to strengthen areas previously identified as in greatest need of improvement.

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A Diagnostic Aid for Medical Education

Richard B. Friedman, M.D., Ellouise Beatty, Donald Korst, M.D., and Patricia Friedman

An important part of a physician's clinical training involves developing the ability to formulate medical diagnoses. Training in medical problem-solving traditionally begins at the end of the second year of medical school with a course in physical diagnosis and continues through postgraduate medical training.

While considerable effort has been expended both in analyzing how a physician goes about medical problem-solving (1, 2, 3) and in formulating computer models to mimic effectively this process (4–7), very little has been done to develop improved methods for the teaching of diagnosis skill. This element of medical training remains dependent on the students' developing diagnostic skill through first-hand patient contact and observing senior physicians. Through years of intense daily patient contact, the young physician develops his own "data base" of symptom probabilities, disease incidence, and factor correlation.

Researchers developing automated diagnostic systems have been cognizant of the scarcity of hard numerical data for their medical data bases. Therefore, they have limited their efforts to small medical subareas (4–7). Engle and colleagues (8, 9), recognizing the limited scope of previous attempts at a computer-based diagnosis, decided to develop a system capable of handling a general spectrum of hematological disorders. While their Bayesian Diagnostic Model (HEME) was primarily aimed at assisting physicians in determining a correct patient diagnosis, it is apparent that it contains elements of the medical data base

Dr. Friedman is an assistant professor in the Department of Medicine and Department of Human Oncology, Ms. Beatty is a project specialist, Dr. Korst is a professor of medicine, and Ms. Friedman was formerly a project specialist, all at the University of Wisconsin Medical School, Madison.

that had previously not been available for clinical teaching. In addition to producing a ranked listing of differential diagnoses, the HEME program presents a detailed analysis of the five most likely diseases. For each of these disorders it prints: the score received by that diagnosis (0 to 100), a listing of patient findings that favored that diagnosis, a listing of patient findings which were against that diagnosis, a listing of suggested tests not already done on the patient that would favor the diagnosis, and a listing of suggested tests not done that would be against the diagnosis.

The ability to present a detailed analysis of diagnostic reasoning for a particular case is valuable in teaching medical diagnosis since it permits the student to follow the detailed logic that goes into a final medical diagnosis. The HEME system provides this detailed analysis and was, therefore, combined by the authors with a brief questionnaire which consisted of that subset of historical (57), physical examination (47), and laboratory (67) items normally gathered by the student on the day of admission.

Method

The program was made available to all third-year medical students rotating through the Hematology Service at the University Hospitals of the University of Wisconsin Medical Center (18 beds) during a 15-month period. The students were instructed to submit all new undiagnosed cases for computer evaluation. The university hospitals serve primarily as a referral center, often admitting patients already diagnosed at other hospitals. Therefore, only a small minority of cases seen and reviewed fell into this category. Each time a new and undiagnosed patient was admitted to the service, the student would work up the patient in the traditional manner and write his findings and formulation in the chart. Once this was completed, he would fill out the computer intake questionnaire listing only those findings and laboratory data already recorded in the chart and in no case returning to the patient for additional data. Each morning all completed questionnaires were collected, keypunched, and entered for processing on a Univac 1108 computer. Within a few hours the resulting HEME case analysis was returned to the students. The students were then free to examine the computer analysis, compare it with their own formulation, and discuss it with the house staff and/or their tutors.

Results

During the trial period 52 cases were submitted for computer analysis. Four percent of these patients were eventually found to have nonhematological disorders or ones not in the model's data base. Of the remaining cases, the computer analysis of the admission data included the correct final diagnosis in its detailed formulation in 80 percent of the cases. In each of these cases it provided the student with a detailed symptom-by-symptom analysis of the correct diagnosis. In 16 percent of these cases the program correctly included the final diagnosis in its detailed analysis when the student had failed to include it in his own formulation.

Although it was requested that students enter only cases for which there had been no prior diagnosis or therapy, the scarcity of such cases, coupled with the student's desire to use the program, resulted in the finding that the majority of cases entered had been previously diagnosed. Only one quarter of the cases were truly previously undiagnosed and untreated. For these cases the computer's differential diagnosis listing of the first five diagnostic possibilities, based on initial historical, physical examinations, and laboratory data, contained the correct final diagnosis more often (87 percent) than that of the student (57 percent).

At the conclusion of their rotation, all students who had access to the program were asked to fill out a questionnaire soliciting their impression of the value of the system. Eighty-nine percent of those responding indicated that they had submitted at least one case to the program and that it took an average of 14 minutes to complete the intake questionnaire. They were then asked to rate various elements of the program on a scale from zero (excellent) to five (very poor). They found the data forms easy to understand (1.13) and easy to complete (1.08). They rated the case analysis printout as accurate (2.18) and easy to understand (1.57). They felt the program was definitely useful for educational purposes (1.64), that the differential diagnosis listing (1.93) and symptom analysis (1.86) were most useful, and that the additional test suggestions were helpful (2.14). When asked whether they had discussed the case analysis with anyone, 57 percent of the students indicated they had talked it over with members of their house staff, and 35 percent had done so with a senior staff member.

Conclusion

Computer diagnosis can assist the clinician through its ability to present a detailed diagnostic analysis of data collected on a patient. In addition, it has the ability to document clearly and comprehensively the logic behind its differential diagnosis, which makes it an excellent tool for teaching medical decision-making.

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The Need for a Health Science Audiovisual Resource List

Malcolm H. Brantz and Paul M. McIlvaine, Ph.D.

The University of Connecticut Health Center Library's Learning Resources Center (LRC) maintains an audiovisual (AV) collection of approximately 2,500 titles exclusive of audiocassette journals. Medical educators, both within and outside the health center, use these resources heavily in their teaching programs. A key philosophy of the LRC in providing its services is: The next best situation to owning an AV program is being aware of its existence and availability. As a result of this philosophy, the LRC has acquired and uses an extensive collection of health science catalogs, union lists, and bibliographies.

Through experience in providing reference services to LRC patrons, the authors have defined a major recurring problem. This is the lack of a single comprehensive reference tool which lists the productions of the nearly 1,000 health science AV distributors. Without this reference tool there is an awareness gap between currently marketed health science AV programs and the medical educators. One reason for this gap is the rapid increase in the number of audiovisual producers over

Mr. Brantz is the director of the Learning Resources Center in the Lyman Maynard Stowe Library at the University of Connecticut Health Center, Farmington. Dr. McIlvaine is a librarian in the Learning Resources Center.

the last few years. Another factor is the widely held assumption that audiovisual materials are inherently different from print information. There are differences; however, a number of descriptive characteristics are common to both. Both have title, physical descriptions, production or publishing dates, abstracts, intended audiences, and prices and can be arranged by subject categories. The above characteristics are used to alert educators of currently marketed print materials.

One example, *Books in Print* (1), is an annual compilation of the offerings of 3,800 U.S. publishers listing approximately 430,000 books. Arrangement is by subject, title, and author. This reference tool is found in virtually every library and in many book stores throughout the country. There is a similar tool for medicine, *Medical Books in Print* (2), which lists over 28,000 books. However, there are no comparable reference tools for health science AV materials. Most health science professionals are aware of the National Library of Medicine's AVLINE project. AVLINE is not a comprehensive listing of health science AV materials but is a highly selective listing of nationally available quality programs (3).

There are only four possible ways to locate an AV program. One way is to search AV producers' catalogs. A second way is to rely on special listings, such as subject bibliographies, resource books, and union lists. However, these are always limited in scope, quickly dated, and never comprehensive. A third option is to produce an AV program. Problems inherent in in-house production arise from the duplication of effort by repeating existing programs. Also most experienced AV producers will agree that it takes considerable amounts of time and money to produce quality programs. Finally, the searcher may contact a colleague. Yet the colleague faces the identical problem—the lack of a single comprehensive tool listing AV programs.

The most commonly used of these four methods is the searching of health science AV catalogs. Over the past three-and-one-half years the LRC has actively sought health science AV catalogs to be incorporated into a comprehensive catalog collection. Extensive use of this resource has uncovered some shortcomings with the catalogs.

Survey

A recent survey was undertaken to define the shortcomings (4). The study was based on a random sample of 640 producers' catalogs in the LRC. The researchers analyzed the following bibliographic elements in each of 64 sample catalogs: title, physical description, subject index, title index, summary, audience, and date of production. While all producers gave titles and most gave physical descriptions, only a quarter of the catalogs had title indexes, and less than 20 percent provided subject indexes. The title and subject indexes are helpful to the educator in finding an AV program quickly. Roughly half of the catalogs contained a program summary, audience

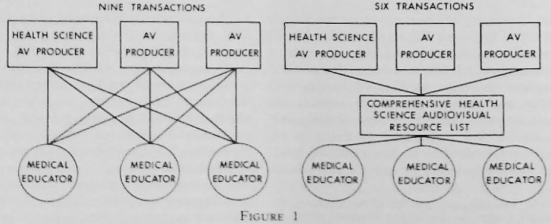


FIGURE 1
Medical educator's and audiovisual (AV) producer's information exchange reduction as a result of a comprehensive health science resource list.

level, or date of production. These elements are central in making sound judgments as to which AV program will meet the needs of the medical educator. In addition, using catalogs is extremely time-consuming and unproductive and probably leads to some needless production.

Discussion

Catalogs will always remain a major marketing tool for producers of health science AV programs. Their impact can be improved by including the elements from the above survey. But even with the improvement of catalogs, there still remains a major awareness gap between the productions of medical AV producers and medical educators. Furthermore, producers have no unified sure way to publicize their product to all potential users as do the publishers of books.

Conclusion

To bridge this awareness gap, an AV reference tool should be compiled which includes a subject index, an alphabetical title listing, and a distributors' directory. The alphabetical title listing should include physical descriptions, sources, and summaries. Both public and private health science AV producers' programs should be included. To assure currency, the resource tool should be an annual publication which lists recent productions. Such a reference tool will simplify the selection process for the medical educator. This simplification is demonstrated in Figure 1, which is based on an illustration by Cravens and colleagues (5).

The LRC is in the process of establishing an AV data base. It now contains 5,000 titles, and new programs are continually being added. The purpose of this project is to establish an up-to-date listing of AV programs.

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Interpersonal Process Recall: An Innovative Technique

Elissa P. Benedek, M.D., and Christine M. Bieniek, M.D.

The transformation of a medical intern to a first-year psychiatric resident is a complex and emotionally charged process. Problems inherent in this transition and techniques for achieving it have been extensively discussed in the psychiatric literature. In this paper three specific skills are described which the novice psychiatric resident must begin to learn: interviewing techniques, self-observation, and empathy. In addition, curriculum effective in accelerating the learning process, that is, "interpersonal process recall" (IPR) (1), is discussed.

Training techniques for achieving the three objectives are varied and not mutually exclusive. Miller and colleagues (2) point out that the educational and developmental goals of residency training and corresponding methods of psychiatric education must be made explicit. Experience with IPR has led these

Dr. Benedek is clinical associate professor and Dr. Bieniek is clinical instructor, Department of Psychiatry, University of Michigan Medical School, Ann Arbor.

authors to believe that the goals of interviewing, innate self-observation, and empathy can and should be enhanced by specific training for residents. Although IPR has been used as a technique with teachers, court personnel, medical students, counselors, and police officers, it had not yet been widely used in the teaching of psychiatric residents. Following is a description and evaluation of initial efforts in the use of this technique in a psychiatric training program.

Course Description

The basic IPR course was taught initially at the Ypsilanti State Hospital in the fall of 1974 by two experienced instructors in 14 two-hour sessions, divided into two units. The participants included first-year residents in general psychiatry and some child fellows (trainees in child psychiatry). Their backgrounds were highly diverse and included, among others, a pediatrician, a surgeon, an ear-nose-throat specialist, a board-certified psychiatrist, and a resident who had just completed medical school.

The complete course material, including all units, consisted of six hours of prepackaged film and videotape, a student manual, "Influencing Human Interaction," and reprints of several basic articles describing the course and practical uses of it. A brief description of the course itself is contained in the introductory statement of Unit I:

> . . . the basic purpose of the lessons you are about to engage in is to teach you to listen more closely, to become more deeply involved and to respond to another in such a way as to encourage that person to go further, to explore deeper, to cooperate, and to change. We will help you achieve these skills through a series of specific learning experiences, each of which is designed to help you achieve a certain dynamic interviewer developmental task.

Comments by residents about this unit were interesting and varied from the expression of gratitude by the more naive residents for providing them with specific techniques for responding to patients to a more sophisticated questioning of the appropriateness of using these techniques with severely disturbed patients and children. The residents were then instructed to try out what they had learned in their daily interactions with patients, staff, friends, and relatives; this subsequently led into a lively discussion about these personal experiences. Here many of the anxieties of the transition from the medical model to the psychiatric model surfaced, and the residents found they were not alone in their concerns.

The second unit, a two-hour block, was introduced via a videotape lecture in the following manner:

> This next unit is designed to help you further tune your third ear. The ability to help a client know some of his more subtle messages, moods and feelings . . . is determined by two factors. First is practice at labeling feelings, especially interpersonal feelings—finding words for . . . the general characteristics of gut level emotion. Second is the ability to overcome your own resistances to becoming involved in a psychologically intimate and meaningful way with another human being.

This is achieved by using a series of filmed simulation exercises; the trainees are instructed to imagine themselves alone with the person on the screen and to let that person have an impact on them. They are then asked the following types of questions by the instructor: What did you feel? What were your bodily sensations? When else in your life did you feel that way? What did you think? What would you do or say? What would you really like to do or say? What did you think the person was feeling and thinking about you?

A laboratory experience served to begin the process of self-exploration by the residents. They could comment about their feelings while watching the films and while listening to others describe their own experiences. This led to useful discussions about similarities and differences in responses and about the manner in which age, sex, social class, and other background facts affected the reactions of participants. Frequently, these observations produced emotionally charged disclosures about a resident's personal background. At such times some of the residents wanted these discussions to continue further, while others were clearly relieved when the leaders concluded the session.

In the next few units the students were taught the core of the training program. First, they were asked to interview another trainee about a personal problem as in the first unit. This time the inverview was videotaped. At the conclusion of the tape the student interviewer was joined by the instructor, who acted as the "inquirer." The videotape recording was played back, and the inquirer encouraged the student-interviewer to relive the interview experience in as much depth and detail as possible, thereby helping the trainee to remember what he was thinking, feeling, and fantasizing at the time of the interview. The inquirer was careful not to be judgmental or to convey any criticism or evaluation to the student. The goal of the inquirer was to promote learning of the process of empathy, interviewing techniques, and self-observation by the trainee.

As the residents reviewed the videotapes, they could observe their interview strategies and be explicit about their goals. They recognized subtle messages which they neither received nor reacted to because of fear of involvement with their peer-client. On one hand, the residents developed increasing group unity and said that they looked forward to coming to the IPR sessions where they could meet as a group and explore personal feelings, concerns, and anxieties. On the other hand, they looked to the group to structure how much personal exploration would be allowed by the instructor. Some asked that IPR be developed into a therapy group experience, while others commented with some anxiety that therapy was not the stated goal of the course. Since, in fact, the course had been explicitly defined as a training experience in interviewing skills, self-observation, and empathy and not as group therapy, the trainees frequently had to be reminded of the previously determined contract.

The next developmental task consisted of teaching the student the inquirer role, which was described by Kagan (1) as confronting and assertive but not judgmental. The trainees learned the inquirer role by doing and by modeling, with the instructor acting as expeditor and resource person. As soon as this role was mastered, the trainees began to act as inquirers for their fellow students. They also started to work in mutual recall sessions where both student-therapist and student-patient recalled thoughts, feelings, and fantasies stimulated during the interview. Additionally, videotapes were shown of experienced therapists working with actual clients in mutual recall sessions.

Evaluation

Although the course was not evaluated formally, the residents were surveyed as to their attitudes about the training experience. In addition, supervisors who watched these residents during initial sessions were queried about changes they perceived subsequently. Generally, the residents expressed pleasure in the course and the methods of teaching. In particular, the co-instructor method seemed useful in that residents were given more individual attention and were exposed to alternate viewpoints. The co-instructor format also assured continuity of the course in the event of absence of either instructor due to illness or vacation. The residents commented that nowhere in their prior training had they been encouraged to look at themselves and at their resident peers. After the novelty of being videotaped wore off, they mentioned that they were able to perceive mannerisms and ways of interacting with others that would have been impossible for them to learn without the technical aid of the videotape machine. They also noted the growth of the majority of the residents in technical skills, particularly empathy, self-awareness, and interviewing techniques, which had been the primary aim of the course.

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Testing Physical Diagnosis Skills with Videotape

Paula L. Stillman, M.D., Darrell L. Sabers, Ph.D., Doris L. Redfield, and Dennis Stewart

Many techniques have been developed to assess physical diagnosis skills, but none of them is entirely adequate. The value of a short-answer written examination is limited. Tests using slides or photographs do not allow for the demonstration of movement, which is important to many diagnoses. Ideally, the evaluation of physical diagnosis skills should include the examination of actual or simulated patients (1) and should be observed by faculty physicians using objective scoring criteria. Such a method would be costly in terms of physician time, and it would be difficult to achieve a high degree of interrater and intrarater reliability for the evaluators.

Elaborate videotape testing systems have been developed to incorporate motion, still pictures, and sound into test stimuli. The most widely used systems have been in driver training and licensing. Aetna Life and Casualty has produced the National Driver's Examination, the Drivotrainer System, and the Iowa DrivoTEST. The DrivoTEST system was developed at the Transportation Safety Research Center, University of Iowa, in 1971 for administration to driver license examinees and consists of a videotape test with feedback after each response and computerized scoring. The expense of these systems has precluded their widespread use in classroom instruction. In fact, the DrivoTEST System is so expensive that it is currently not used at all.

An inexpensive videotape testing system has been developed by members of the Department of Pediatrics and Department of Medical TV-Cinematography at the University of Arizona College of Medicine. In this paper the authors describe the development and validation of a test using this system to assess observational skills which are important for accurate physical diagnosis.

Dr. Stillman is currently coordinator and Dr. Sabers and Mrs. Redfield are educational consultants for the Preparation for Clinical Medicine Program. Dr. Stillman is also assistant professor in the Department of Pediatrics. Mr. Stewart is program manager, Department of Medical TV-Cinematography. All are at the University of Arizona College of Medicine, Tucson.

Description

The system is designed so that visual displays for each item appear on a color TV monitor. At the completion of each display a multiple-choice question appears on the monitor. The machine then stops ("still-frames") to wait for the student to respond to the item. When the student presses one of the four buttons on a responder box, the answer is recorded and the videotape is restarted. The correct answer is then displayed with an explanation of that answer. Any related instructional material may be presented at this point. All examinees hear the same explanation regardless of the option chosen. The feedback is thus a linear program to ensure uniformity of instruction. This type of feedback has been shown to be effective in enhancing student learning (2, 3).

When this project was initiated, commercial still-framing equipment was available but costly, and so engineers from the Medical TV-Cinematography Department modified an available videocassette player (SONY model number VP 1000) so that it was capable of still-framing. A responder box (H.S. Cover Company, Buchanan, Michigan) containing an IBM punchcard was attached to the modified equipment to enable students to control the amount of time between presentation of items and to record responses.

The SONY VP 1000 had been purchased in 1975 for $900. The responder box plus parts for the modification cost $125 in 1976, and about five hours of an engineer's time was needed for installation. A team of media specialists spent approximately 60 man-hours to prepare and record the instructional and testing material. General maintenance of the equipment is estimated to be approximately $50 annually, with no additional costs incurred due to the modification. The media specialists estimate that they can produce a major revision in the program in about 15 hours and could develop an entirely new test and instruction package in less than 40 hours. A similar system can be easily set up at any medical center. The cost of implementation would be dependent upon the availability of existing equipment.

Test Development

Faculty members of the Department of Pediatrics identified physical findings with which they thought every student should be familiar. Included were common skin rashes, gross birth defects, and normal and abnormal neurological reflexes. Visual displays such as slides, X-rays, videotape segments, and film strips were produced or located for each item. More than 100 items were selected and recorded on videotape. A multiple-choice question was written for each item. Several of the questions required recall-type answers, but most called for interpretation or problem-solving responses.

To provide data for item selection, medical students enrolled in a pediatric clerkship at the University of Arizona College of Medicine took the test individually and in small groups. The best 40 items were retained based on an item analysis and subjective evaluation. Content validity of the resulting test was ensured by checking the extent to which the final 40 items represented the original table of specifications. The final 40 items were thus judged to be content relevant, statistically sound, and easily displayable on videotape.

Validity and Reliability

The validity of an achievement test is based on the analysis of content; the above procedure satisfied the criteria for content validity. Because comparison of performances of groups expected to differ provides additional data on the validity of a test, the test was administered to individuals belonging to four groups: pediatric residents at three different stages of training and third-year medical students. The results are as follows: medical students (N = 35), mean of 7.14, S.D. 7.4; first-year residents (N = 12), 78.8, 9.8; second-year residents (N = 11), 81.8, 11.9; third-year residents (N = 7), 85.7, 4.1. These results indicate a trend for higher levels of training to correspond with higher mean scores. This trend, significant at the .01 level, provides evidence of the validity and the reliability of the test. Test reliability was also estimated by use of the split-half technique. A coefficient of .77 was obtained for the 65 examinees.

Conclusion

This testing system is a relatively inexpensive, valid, and reliable method for assessing student observational skills in physical diagnosis. The test is administered individually, allowing the student to take as much time as needed to answer without affecting or being affected by other students. An individual test has a special advantage in a medical school where it is difficult to convene large groups of students for concurrent examination. Medical students and house staff have reacted favorably to the videotape examination. This testing technique is applicable to fields other than medicine and can serve as a supplemental instructional device.

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Experiences with a Combined Perinatal Clerkship For Third-Year Medical Students

Carl W. Trygstad, M.D., and John Buster, M.D.

Third-year students at the University of California at Los Angeles School of Medicine spend six weeks in pediatrics and six weeks in obstetrics/gynecology clerkships. In the past both clerkships have been offered at each of the four UCLA-affiliated hospitals which have responsibility for third-year student instruction. Because of the close working relationship of the faculty in pediatrics and obstetrics at one hospital, it was decided to teach appropriate segments of these two clerkships, utilizing an integrated perinatal approach. The objectives of the program were to compare the results of teaching obstetrics and pediatric neonatal medicine as a perinatal continuum with the results of the traditional separate clerkships and to assess the benefits and liabilities of the use of this integrated approach to teaching.

Description

During the academic year 1975–76 two combined clerkships were offered at Harbor General Hospital. The combined clerkships were alternated with two traditional clerkships. Students who chose both pediatrics and obstetrics/gynecology rotations at Harbor General Hospital were randomly assigned to either the combined 12-week clerkship or to the traditional separate six-week clerkships. A few of the latter group elected to take one of the clerkships at other hospitals and were excluded from further analysis. During the 12 weeks of the combined clerkship the student spent three weeks in gynecology and three weeks on the pediatric inpatient ward. This was similar to the traditional separate clerkships. In the remaining six-week period the students took the perinatal part of the clerkship, receiving coordinated experience in obstetrics, the neonatal nursery, and the pediatric outpatient clinics, including a well-child clinic and an acute ambulatory walk-in clinic. In the traditional clerkships obstetrics was taught as a separate component of the obstetrics/gynecology clerkship. In a similar manner neonatal and ambulatory pediatrics were taught as a component of the pediatric clerkship.

Teaching rounds for the perinatal aspects of the combined clerkship were made by a team consisting of faculty from both pediatrics and obstetrics. Examples of topics discussed on these rounds were problems with blood group incompatibility and subsequent jaundice, infectious diseases of the perinatal period, an approach to respiratory distress based on both maternal and fetal factors, and care of the infant born to a diabetic mother. Whenever possible, the students followed the expectant woman from the prenatal clinic through delivery and made daily visits to both the mother and infant in the postpartum period. In addition, opportunity was available for follow-up in a well-child clinic for some of the infants whom the students had delivered. During the neonatal segment of the traditional clerkship the students saw all infants who arrived in the nursery, but no emphasis was placed on obstetrical problems or the condition of the mother during the prenatal or intrapartum period. Obstetrics was taught separately. During the entire clerkship a daily one-hour seminar schedule was maintained in which pediatric and obstetrics/gynecology subjects were discussed on alternate days. In the traditional clerkships separate pediatrics and obstetrics/gynecology seminar schedules were maintained.

Evaluation

Subjective evaluations of the perinatal clerkship by faculty and students and objective evaluation were undertaken. The latter consisted of an analysis of scores on examinations of the National Board of Medical Examiners (NBME). In addition, individual objective examinations were given by the faculties of both the Department of Pediatrics and the Department of Obstetrics/Gynecology.

Analysis of NBME Part 1 examination scores showed that there was no difference between those students who took the combined clerkship and the group which took the six-week pediatric and obstetrics/gynecology clerkships at this hospital. Analysis of NBME Part 2 examination showed that those students who took the combined clerkship had significantly better overall scores than those students who took either pediatrics or obstetrics in the traditional clerkship ($p < .05$, Student's t test for nonpaired values). The average scores on the individual pediatric or obstetric subcomponents on the examination for those students who took the combined clerkship were higher than were the scores of those who took separate pediatric and obstetric/gynecology clerkships; however, the difference was not statistically significant. There were no significant differences between the two types of clerkships in relationship to the numerical grades subjectively given to the students or in the departmental written examinations.

Conclusions

Experience with a combined perinatal clerkship has led the authors to believe that this teaching approach has numerous advantages but also some disadvantages. The learning experience of following a woman through pregnancy and delivery and taking care of her newborn infant in the nursery has a great appeal to students and faculty. The faculty members feel that this might be the normal sequence which the students would be expected to follow when they enter practice. The combined clerkship also allowed flexible use of space and facilities for teaching and permitted students to make up portions of the clerkship which they missed because of illness. In addition, the extended period of time with an integrated house staff and faculty gave a better chance for subjective evaluation and also for feedback to the students in relationship to their performance.

One of the disadvantages of the clerkship related to the lack of day-by-day correlation between the lecture-seminar topics and the current clinical experience of individual students; the students would have liked the seminars to have been given repetitively during the clerkship so that they could have attended the gynecology seminars while on gynecology, the pediatric seminars while on pediatrics, and the perinatal seminars while on the perinatal part of the clerkship. The faculty did not think it was feasible to give repetitive seminars to small groups of students and preferred to devote extra time to the combined perinatal rounds.

A second problem was that there had been some confusion by the students as to what was expected from them early in the clerkship. This was true especially for those students who took the combined clerkship at the beginning of their junior year before experiencing some of their other major clerkships. This confusion was related to the students' feeling that in the combined clerkship they had too many roles at one time and that it would be easier to cope with a more limited body of knowledge. However, the major problem with the clerkship seemed to be a lack of distinct faculty role models. Although the rounds in the perinatal portion of the clerkship were given jointly by a pediatric and an obstetrical faculty member, there was a lack of individuals with expertise in both obstetrics and neonatal medicine. This has been noted at other schools which have attempted similar integrated clerkships.* Hopefully, a resident training program in which first-year pediatric residents spend time on the obstetrical service and first-year obstetrics residents spend time in the pediatric neonatal nursery will alleviate this problem in the future.

As a result of the advantages, even though they may be partly subjective, the combined clerkship was adopted for the following academic year and was the only third-year experience in obstetrics/gynecology and pediatrics offered at Harbor General Hospital.

Dr. Trygstad is associate professor of pediatrics, University of California, Los Angeles, and Dr. Buster is assistant professor of obstetrics and gynecology there. They codirect the Perinatology Clerkship at Harbor General Hospital, Torrance, California.

* Personal communication from John A. Lamont, M.D., McMaster University, 1976.

EDITORIAL

The VA-Medical School Relationship

The relationship between the Veterans Administration and the medical schools goes back to 1946. In that year the VA adopted a policy to affiliate its hospitals with medical schools under the general understanding that in those hospitals the VA would retain full responsibility for the care of patients, including professional treatment, and the medical schools would accept responsibility for all graduate education and training.

That the relationship has been mutually beneficial was strongly reaffirmed in a recent report of the National Academy of Sciences (NAS), *Health Care for American Veterans*. Released on June 3, 1977, the report represented the culmination of a three-year study of VA medical facilities conducted by the Assembly of Life Sciences of the National Research Council (NRC), the latter an arm of the National Academy of Sciences. The Veterans Administration had been directed by Congress in 1973 to negotiate an agreement with the NAS for the landmark review.

Pointing to the VA-medical school relationship, the report asserts, "The VA policy of affiliating with medical schools . . . has resulted in an extensive, complex, and varied pattern of mutual dependence: of VA hospitals on medical schools for physicians, and of medical schools on VA hospitals for resources essential for educational and research programs. These relationships have been beneficial to all parties concerned.

"For the VA, the affiliation relationships are very closely related to the quality of acute inpatient care in VA hospitals. In the sample of hospitals studied . . . the only examples of outstanding quality of care were found in hospitals that are highly affiliated. The only hospitals found to be delivering inadequate care were unaffiliated. For the medical schools, the VA affiliations are important primarily because their educational programs require access to acute-care patients to teach medical students and to train residents . . . . The quality of care furnished to the nation's veterans has improved, and the educational enterprise has been promoted."

Another positive view of the benefits flowing from the affiliation relationships recently was expressed by an ad hoc committee of the Association of American Medical Colleges (AAMC). That committee, established to address issues of concern to both the Veterans Administration and the academic medical centers, met in Washington, D.C., on January 25, 1977, with senior VA officials.

Looking to the future, existing affiliation agreements between the medical schools and the VA should be strengthened, and, where none now exists, new agreements should be developed if sufficient funds can be made available to support new affiliations without compromising present ones. In the process of strengthening ties, it is important that sharing agreements be expanded and that the VA regionalization program be implemented.

Authorized by Congress in 1966, sharing agreements permitted and encouraged VA hospitals with underutilized, specialized, scarce, and costly resources to share those resources with academic medical centers, community hospitals, and clinics. Not only the VA but also the health care community at large has reaped substantial benefits from the sharing agreements. The concept of VA regionalization has been promoted through a series of legislative actions over the last 10 years. Those actions were intended to enhance the efficiency of the VA health care system through the most effective use of all resources available to the Veterans Administration in a specified area. The regionalization structure currently comprises 28 medical districts.

In summary, the Association concurs with the findings of the National Academy of Sciences study regarding the importance of the VA-medical school affiliation agreements in improving the health care of the veteran and the research and educational programs of the Veterans Administration. It urges the extension, expansion, and strengthening of affiliation agreements through, among other means, more extensive sharing agreements and the selective, discrete, and sensitive implementation of the VA regionalization program. Finally, the Association agrees with a recommendation of the report, *Health Care for American Veterans*, calling for a joint VA-medical school study of affiliation agreements for the purposes of long-term planning.

This editorial is based on a summary of proposed testimony by the Association of American Medical Colleges before Congressional committees on the report of the National Academy of Sciences, *Health Care for American Veterans*, and on actions taken by the AAMC Executive Council on September 16, 1977.

DATAGRAM

Family Income of Medical School Applicants And Acceptees and of College Students

Recent newspaper articles have compared the family income levels of medical students with the income levels of all U.S. families. The conclusions these articles draw suggest that medical schools accept relatively few low-income students and a rather large percentage of high-income students. Comparisons of income for all U.S. families with the family income of accepted medical students alone, however, ignore the fact that medical schools can select students only from the applicant pool and that the applicant pool is drawn from those who complete the programs of college studies required by medical schools for admission. This Datagram, therefore, examines the income levels for all U.S. families, for families with third- and fourth-year college students (who make up the pool of potential applicants), and for families with actual applicants and acceptees to medical school. The examination is based upon income data from the 1974–75 academic year.

The data in Table 1 indicate that the low income range, that is, families with incomes under $10,000, covered 36 percent of all U.S. families, 19 percent of families with third- and fourth-year college students, 15 percent of families with medical school applicants, and 12 percent of families with medical school acceptees. In this group a difference of 17 percentage points exists between all U.S. families and those of third- and fourth-year college students (undergraduates), 4 percentage points between families of third- and fourth-year college students and applicants, and 3 percentage points between families of medical school applicants and acceptees. For those with family incomes under $5,000, the differences were even less, with the greatest difference, 6 percentage points, being between all U.S. families and families of third- and fourth-year college students and the least, 1 percentage point, being between medical school applicants and acceptees. The middle income range of $10,000 to $19,999 showed the least disparity, with 42 percent of all U.S. families, 39 percent of families of third- and fourth-year college students, 36 percent of families of applicants, and 35 percent of families of acceptees. The highest income range, $20,000 and over, showed the greatest disparity, with 22 percent of all U.S. families, 42 percent of families of third- and fourth-year college students, 49 percent of families of medical school applicants, and 54 percent of families of acceptees. Again, the greatest margin, 20 percentage points, is between all U.S. families and families of third- and fourth-year college students, and the smallest, 5 percentage points, between medical school applicants and acceptees.

Another illustration of the income differential between the groups under consideration is made through a comparison of median incomes. Although the median family income of $20,900 for accepted medical school applicants is 62 percent higher than the median income ($12,900) of all U.S. families, it is only 17 percent higher than the median family income ($17,900) of families of third- and fourth-year college students, and only 6 percent higher than the median family income ($19,700) of families of medical school applicants. (Medians are computed from percentage distributions assuming uniform distribution of percentage points for the income interval in which the median falls.)

In summary, medical schools do accept slightly smaller percentages of low income students and slightly larger percentages of high income students than are represented in the applicant group. The percentage of low income families in the medical school applicant group is also smaller than among families of third- and fourth-year college student population. However, the greatest disparity in all family income categories occurs between the third- and fourth-year college students and all U.S. families. It appears that relatively few individuals from low income families and relatively large numbers of the individuals from high income families attain the educational level of the third- and fourth-year of college. The data suggest, therefore, that the family income levels of accepted medical students are controlled more by the family income levels of those who reach the educational level of the third- and fourth-year of college and those who apply to medical school than by the selection criteria of the medical schools themselves.

ROBERT J. BOERNER, *director, Division of Student Programs, Association of American Medical Colleges, Washington, D.C.*

TABLE 1

FAMILY INCOME OF ALL U.S. FAMILIES, OF FAMILIES WITH THIRD- AND FOURTH-YEAR COLLEGE STUDENTS, AND OF FAMILIES OF MEDICAL SCHOOL APPLICANTS AND ACCEPTEES, BY PERCENTAGES OF FAMILIES IN VARIOUS INCOME RANGES

Family Income	All U.S. Families 1974*	Families of Third- and Fourth-Year College Students October 1975†	Families of Medical School	
			Applicants for 1976–77‡	Acceptees for 1976–77‡
Under $5,000	13	7	5	4
$5,000–9,999	23	12	10	8
$10,000–14,999	24	20	20	19
$15,000–19,999	18	19	16	16
$20,000–24,999	10	15	16	17
$25,000 or more	12	27	33	37

* From *Money Income and Poverty Status of Families and Persons in the United States: 1974*, Series P-60, No. 99, July 1975, U.S. Bureau of the Census.

† Derived from *School Enrollments—Social and Economic Characteristics of Students: October 1975*, Series P-20, No. 1 303, U.S. Bureau of the Census.

‡ Based on data compiled by the Association of American Medical Colleges from responses to the questionnaire accompanying the Medical College Admission Test application. Includes only the 29,671 applicants and the 12,758 acceptees to the 1976–77 first-year class who took the MCAT in 1975 and reported gross combined parental income for 1974. Includes those with independent family units. Percentages for acceptees do not add to 100 due to rounding.

BOOK REVIEW

Recent Trends in Medical Education. ELIZABETH F. PURCELL (Ed.). New York: Josiah Macy, Jr. Foundation, 1976. 277 pp. Cloth, $7.50

Recent Trends in Medical Education may be considered a sequela to the *Changing Medical Curriculum*; both are publications by the Josiah Macy, Jr. Foundation representing compilations of papers presented at conferences held in 1970 and 1975 respectively. The difference in the titles of these two conferences reflects a shift in fundamental issues confronting medical schools. While medical education was concerned in the 1950s and 1960s predominantly with how young physicians should learn what everybody agreed they ought to learn, today the issue is the physicians themselves, their role in the health care system, and the goals of medical education. The earlier era resulted in many manifestations of curriculum reform. Today's emphasis may eventually lead to a different kind of physician and a new system of medical care. Moreover, if this is the underlying trend in medical education today, we see in this book only a few isolated examples of efforts that are not simply responses to pressures exerted from outside the medical education system.

As in the past, the premedical education/admission process is overshadowed by the 3:1 ratio of applications to actual admissions to medical schools. The situation is aggravated by the dearth of tools for assessing the personal characteristics desirable in candidates for medicine, by the issue of minority representation (which incidentally has gained sufficient prominence to be before the U.S. Supreme Court), and by the cynicism of premedical students regarding their college education. Efforts to improve the interface between premedical and medical undergraduate education are under way through the revision of the Medical College Admission Test, the search for noncognitive assessment tools, and a better definition of the premedical undergraduate curriculum in its relationship to medical education. In the light of special admission programs, it is somewhat surprising to learn that the accepted applicant in 1975 still came from the same socioeconomic background as in 1970, and that medical schools seemed to favor a traditional, production-oriented individual over the innovative, self-propelled adventurer. A major change is evident in the proportional and absolute increase in women admitted to medical school.

The two major curriculum changes discussed in this volume are the three-year curriculum and the independent study programs. The three-year curriculum, introduced by several schools under pressure from state legislatures, is presently under critical national review. There seem to be serious problems with the shortened program unless it is accompanied by careful interdigitation with both premedical and graduate medical program planning and accords to each student the freedom of choosing an individualized time schedule for reaching the stated objectives. It is suggested that shortened (or lengthened) curricula should be paired with independent study programs in which the pace of learning is part of the development of the student's self-directed learning style assisted by the faculty and the availability of various learning and testing resources. Regionalization of medical and other health professions education has been initiated by numerous medical schools. These efforts involve networks of universities and hospitals within a state, as exemplified by Illinois, or the mobilization and sharing of resources throughout an entire geographic region, as with the WAMI Program (Washington, Alaska, Montana, Idaho). Both regionalization and independent study programs place new responsibilities on medical school faculty. Successful programs depend increasingly on precise definitions of institutional educational objectives, effective student evaluation procedures, and skillful program administration by the college or the school. They also require the fullest engagement of new technologies in communication and learning resources.

With diversification in medical education and the abandoning of lockstep curricula, individual student evaluation becomes critical. The National Board of Medical Examiners (NBME) has greatly refined and expanded its capability to measure cognitive skills, while also exploring new methods for assessing professional competence. The NBME's success in this respect will have a significant impact on further developments at all levels of medical education.

The most far-reaching future changes in medical education probably will derive from social and technical developments which occur outside academic medical institutions. The increasing demands for more adequate primary health care and for a better interdigitation of health care with other social services have spurred medical schools to reassess some of their institutional goals and objectives. These changes are not limited to curricular adjustments but involve patient care resources and interaction with the community as a whole. Equally important is the potential impact on medical education and practice of full and innovative applications of computer technology. Unless well-reasoned efforts are undertaken to link our enormous technological capability with emerging patient care systems and medical education, our adjustments will remain piecemeal and probably ineffective.

In many respects, *Recent Trends in Medical Education* is an implicit if not explicit appeal to the medical education establishment for such an effort. A certain reluctance or anxiety on the part of some of its members to face realities is apparent not so much from what is said as from what is omitted.

The volume touches only marginally on the relationship of undergraduate to graduate medical education and remains totally silent on the issue of institutional responsibility to help the practitioner maintain his competence. It is hoped that the Josiah Macy, Jr. Foundation will explore this new frontier in medical education and assist the medical education community in facing this new challenge more openly.

EMANUEL SUTER, M.D., *director, Division of Educational Resources and Programs, Association of American Medical Colleges, Washington, D.C.*

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LETTERS TO THE EDITOR

Premedical Advising: Williams

If, as a result of Dr. Bruhn's Communication, "The Ills of Premedical Advising," in the August 1977 issue of the *Journal of Medical Education*, he is not buried by a pile of irate letters, it will be only because the postal service lost them. It is just exactly his arrogant attitude and sweeping generalizations that infuriate well-intentioned premedical advisers, those of us trying to assist a serious group of young people who wish to enter medical school today. Williams College has been educating premedical students for many years. Of the 54 members of the class of 1977 who applied, nearly 80 percent were accepted at 45 different medical or dental schools across the nation.

Space limitations prevent my discussing fully the philosophy behind premedical advising and career counseling in general. I do wish, however, to challenge several of his points.

He says, "Studies of successful applicants to medical school indicate that admissions committees are effective in selecting students who succeed academically in medical school." In talking to Williams graduates who have gone on to medical school, I generally get the impression that the work there is not very challenging intellectually but rather that there is just a lot of it. An alternative interpretation of this remark is that regardless of whom one selected from the vast majority of applicants, they would "succeed academically."

Under "Problems," he says, "Superior students who will 'make it' are felt not to need advice." If an emotionally mature student with demonstrated academic ability has decided that he or she wants to apply to medical school, why should I advise that student away from this decision? I can and do suggest specific schools where I feel the student has a good chance of admission, based on the experience of previous Williams applicants. Has Dr. Bruhn, by any chance, recently spoken to a 17- to 21-year-old who is having trouble deciding what to do with his future? It is an extremely perplexing situation to be in. Dr. Bruhn does not seem to comprehend how hard it is to make undergraduates listen to suggestions that they look into other health professions when they have their hearts set on the M.D. I have convinced a few to apply to dental school, but optometry, pharmacy, podiatry, and inhalation therapy are so far removed in the student's mind from medicine and dentistry that it is almost hopeless to try.

Dr. Bruhn says, "There are no professional or institutional rewards for being a premedical adviser." This belittles the very sincere efforts made by many colleges to do this advising properly. I receive a stipend in addition to my regular teaching salary, and I have secretarial help. I disagree totally with his suggestion that advisers should be free of teaching. Presumably, he would agree that the four years spent in getting an M.D. are educational in nature. It is the faculty members at the undergraduate institution who best know the strengths of the students in an educational context, and they are best suited to evaluate the applicant's intellectual strengths for medical school.

He says, "Premedical advisers may have little or no idea of the curriculum changes in the basic sciences in medical school. . . ." Thank goodness for the superb annual publication of the Association of American Medical Colleges, *Medical School Admission Requirements*. This publication attempts to put some order into the various curricular programs that face the student applying to a dozen or more schools.

Under the "Applicant Pool" section, I would point out that over the past three years, 14 black Williams students have been accepted at 21 different medical and dental schools, and we have seven such applicants in the current group. Far from discouraging them, I have for almost 10 years worked closely with such students. I find it hard to believe that Dr. Bruhn is unaware of the sensitive issues involved in advising a racially mixed group of premedical students. We regularly have black students accepted with grades lower than those of white students who are rejected. The black students have

much to offer; they usually have worked hard and deserve their opportunities, but it is not easy to cope with the two standards of admission.

Under "Conclusion," I disagree that "premedicine and medicine are worlds apart." The sizes of the budgets and campuses differ markedly, but the entire eight-year period is really a continuum, with increased focus in the latter years on human health care. The first-year medical student wears a white coat but is really little different from the college senior in maturity. The attitudes of medical schools have tended to exaggerate the difference, and I would welcome any increased communication between the undergraduate colleges and medical schools. Remarks such as Dr. Bruhn's are not helpful in this regard.

There are presumably colleges around the nation where severe budgetary restrictions make it impossible to offer effective and informed premedical advising, but there are many dedicated individuals who put a tremendous amount of time into this work.

JAMES F. SKINNER, PH.D., *is professor of chemistry and premedical adviser, Williams College.*

Premedical Advising: Toledo

In the August 1977 issue of this journal Dr. John G. Bruhn paints a rather negative picture in the Communication, "The Ills of Premedical Advising." I would like to add that there are groups trying to narrow the gap between the medical schools and the premedical adviser. For example, the National Association of Health Profession Advisors meets jointly each year in the same location as the AAMC Annual Meeting. The national organization is supported by four regional organizations. In the Central Region we meet every other year with the regional Group on Student Affairs AAMC. In the joint meeting last spring, admissions officers and premedical advisers discussed the new Medical College Admission Test. The other major topic jointly discussed was financial aid for medical students. In Michigan, there is a Council of Deans which meets with premedical advisers every fall, rotating the meeting to each medical school campus every third year.

Looking to the 100 major suppliers of medical school freshmen as listed in the October 1974 issue of the *Journal of Medical Education*, I find that Alpha Epsilon Delta is present on more than one-third of the campuses. This national premedical honorary society now has over 110 active chapters which disseminate information to the premedical students on their campus. All AED sponsors are volunteer faculty members who are highly interested in students. They would all welcome the recognition and support of the medical schools in their area.

One final word about advisers who do not recommend students with grade-point average (GPAs) below 3.4. From the University of Toledo in 1977, 26 students were accepted into medical schools granting the M.D. degree. Three of those students had GPAs below 3.4, and I would not want any one of them to be left out of medical school because all three were very rich in the noncognitive factors that Dr. Bruhn desires. Some schools are looking for this kind of student, at least in Ohio.

JAMES R. STEBBINS, *premedical adviser, University of Toledo.*

Future of Pathology

I would like to take issue with Dr. Goodale and Dr. Gander regarding the Delphi study of pathology department chairmen on the future of pathology (November 1976 issue of the *Journal of Medical Education*). Several points arise in the reading of this; unfortunately, objections also arise.

1. Of 143 chairmen requested to participate, apparently only 31 replied. Is this barely 22 percent response sufficient to provide valid or important data? The 31 who did reply have clearly selected themselves out of the general mass of chairmen of pathology, and this in itself suggests the possibility of an element of bias. Were the 31 perhaps overconcerned about the future of pathology, or, as one might deduce from some of their responses, simply uneasy in the practice of being chairmen of pathology? What was it that caused the 112 supposedly responsible other chairmen of pathology not to reply? Did they feel that the study was not worth their time, are they simply unconcerned about the future of pathology, or does their nonresponse reflect a confidence in the practice and future of pathology not shared by the 31 who did reply?

2. Some of the responses shown by this select group of chairmen carry doubtful and maybe unfortunate implications. For example, most of the 31 who replied considered that "the pathologist will play a resurgent role in medical student education by bridging the gap between the basic sciences and clinical medicine." The implication here, not presently supported by data or references, is that (*a*) there is indeed a gap between the basic sciences and clinical medicine, (*b*) this gap is somehow inappropriate or improper and should and could be bridged, and (*c*) pathologists in general are at least partly to blame for this. Many pathologists and clinicians, and indeed pathology chairmen, might not wholeheartedly agree with any of these three points. It is easy to see how such feelings might arise in the mind of a pathologist who is in any way a "failed clinician," or one hounded by an ignorance-guilt neurosis.

3. Amongst the 31 who responded, there seems to be an opinion predominant that "increasing subspecialization will occur in anatomic pathology." It is arguable that subspecialization can be a form of professional vice. To attain the stature of a "superspecialist" carries with it an aura which deters challenge, averts discovery of weaknesses, and protects a soggy ego. Such stature may comfort the idle in that they can thereby avoid the hard work of remaining familiar with the rest of medicine. Furthermore, it is one form of entry into the club of frequent world travel to a variety of meetings; this in itself, of course, may also represent a device to avoid the horrid task of having to do an ordinary day's work and the responsibility of making clinically relevant decisions. These comments refer mostly to the pursuit of a subspecialty to the exclusion of more general activity. I believe there to be the greatest difference between this and the alternative pattern of professional activity, but no such distinction was made in the paper.

4. Perhaps my greatest concern was that some of the implications were not illustrated in a way which ensures that other than pathologists would fully understand them. For example, "For pathology to remain a viable medical specialty, pathologists will need to define clearly their roles in the practice of medicine," was thought likely to occur by 88 percent, and 94 percent thought that it should occur. I worry about the possible reactions of a nonpathologist who reads this. Will he assume that the majority of these chairmen who replied are not clear about their roles in the practice of medicine? Will he further assume from this that nonacademic pathologists are also significantly unclear about their roles in the practice of medicine? Or, on the other hand, will he assume that this indirectly indicates the more reassuring conclusion that the 78 percent of the chairmen who did not reply are by contrast perfectly clear about their own roles in the practice of medicine as well as the roles of the nonacademic pathologist?

5. Finally, I cannot help wondering how far the small minority of chairmen who replied and, indeed, other academic pathologists might compare with their nonacademic colleagues as prophets of the future. A recent American Medical Association study has shown that nonteaching internists function better at service work than do teaching internists. Is it possible that nonacademic pathologists, with their ears very close to the ground, may similarly be able to perform better than this minority selection of their academic colleagues at predicting pathology futures?

T. J. MUCKEL, M.D., F.R.C.P.(C), *director of laboratories, Chedoke Hospitals, McMaster University School of Medicine, Hamilton, Ontario, Canada.*

Bedside Teaching

The conclusion of the article by Hill and colleagues, "Teaching in Clinical Surgery: At the Bedside or in the Seminar Room?" in the July 1977 issue of this journal, suggests that seminar teaching is comparable with bedside teaching when the results are analyzed by written tests of cognitive information.

I do not take exception with the fact that specific factual information can be taught by a variety of techniques, but I seriously question the implications that the advantages of patient contact teaching are intangibles. The development of skills of observation, the correlation of physical findings and clinical observation with the clinical problem, the demonstration by the faculty physician of a physician role, the interaction of physician and patient in problem-solving, and many other aspects of patient-oriented teaching can and should be treated as specific learning objectives.

There is no doubt that it requires more effort and logistical organization to provide the patient setting for repetitive teaching of certain clinical problems. All too often we center on the evalution of only the cognitive aspects of this complex learning situation. Rather than reduce our instruction laboratory to a seminar setting, I would suggest that we should spend more time studying ways to analyze the various aspects of complex clinical instruction and design methods for looking at each aspect objectively.

ROLAND FOLSE, M.D., *professor and chairman, Department of Surgery, Southern Illinois University School of Medicine.*

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THE MALTREATED CHILD: The Maltreatment Syndrome in Children — A Medical, Legal and Social Guide (3rd Ed.) by **Vincent J. Fontana,** *New York Foundling Hospital, New York City, and* **Douglas J. Besharov,** *United States National Center of Child Abuse and Neglect, Washington, D. C. Foreword by* **Mother Loretto Bernard.** The Third Edition of this vital text clearly and concisely presents the problems of child maltreatment, their nature, causes and extent; and the means to deal with them. Among the text's outstanding features are a statistical outline of child abuse, a discussion of social and medical manifestations and preventive measures, and a review of methods of differential diagnosis. *'77, 176 pp., 11 il., $12.50*

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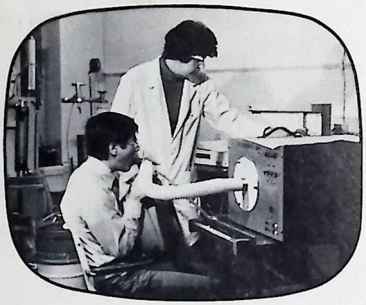
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