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The Sixteenth Annual Conference on Research in Medical Education

Call for Papers and Symposia

The Sixteenth Annual Conference on Research in Medical Education (RIME) will be held in conjunction with the Annual Meeting of the Association of American Medical Colleges (AAMC) scheduled for November 6–10, 1977, in Washington, D.C. The Conference is presented and organized by the RIME Program Planning Committee, which is a committee of the AAMC Group on Medical Education (GME).

Paper Presentations

Section Policy

1. *Problem Statement and Background* – Clarity of research question(s), awareness of relevant research.
2. *Methodology* – Logic of research design, attention to problems of measurement (sampling, reliability, validity), appropriate statistical analysis, appropriate interpretation of data.
3. *Significance* – Addresses important concerns in medical education, awareness of implications of study results for further research and educational practice.

Submission Requirements for Papers/Abstracts

An original and three copies of the paper, seven copies of the abstract, and a one- or two-sentence precis are required. Material not in appropriate format or postmarked after June 20 cannot be considered or returned. Each author will be allotted 15 minutes to make his presentation. Ten to 15 minutes for audience interaction will follow.

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Since the papers accepted for the Conference Program will be photo-reproduced and distributed to Conference registrants in advance of the meeting, the following requirements will aid in achieving a uniform and presentable record on the Conference Proceedings:

1. Use elite type and preferably a carbon ribbon (for the best reproduction); type on one side of the page.
2. Single space (double space between paragraphs), with one-inch margins on all sides.
3. Do *not* include page numbers.
4. Put title and author(s) with affiliation(s) at the top of the first page and address for reprint requests in footnote at the bottom of the first page.
5. Paper *must not* exceed six pages, *including* tables, references, etc.
6. Slides, transparencies, and other visuals must be restricted to five lines or less. If there are more than five lines, it must be presented as a handout. It would be helpful to the reviewers if you would submit with your paper facsimiles of all slides and transparencies containing graphic, tabular, or printed information.

Abstracts

1. Same as items 1, 2, 3, and 4 for *Papers*, above.
2. Abstract *must not* exceed *one* page.
3. Abstract must include all of the following: (*a*) purpose or research hypothesis; (*b*) methodology, including instrumentation, sample, research design, statistical analysis, relationship to existing material; (*c*) results; (*d*) conclusion; (*e*) implication.

Poster Sessions

A "poster presentation" is essentially the presentation of the highlights of research in a display format, with the researcher(s) being available for a specified two-hour period to discuss and exhibit methods and results with interested visitors.

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2. Choose a format suitable to the theme. Experimental formats suitable to the theme are encouraged.

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Submission Requirements

Detailed guidelines for the format of symposium proposals should be requested by writing to the RIME Conference at the address below.

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First named authors and symposium organizers will be notified of Committee action in August. Reproduction of a paper in the Conference Proceedings does not preclude publication in professional journals.

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Only published material specifically cited in the text should be included in the reference section. References should be listed in the order in which they are cited in the text and must be submitted in accordance with the style followed in current issues of the *Journal*, including, in order: author, title, journal abbreviation (*Cumulative Index Medicus* form), volume number, inclusive page numbers, and year; book references should also include editors, edition, publisher, and place of publication. *A detailed style sheet of instructions for listing references is available from the editor.*

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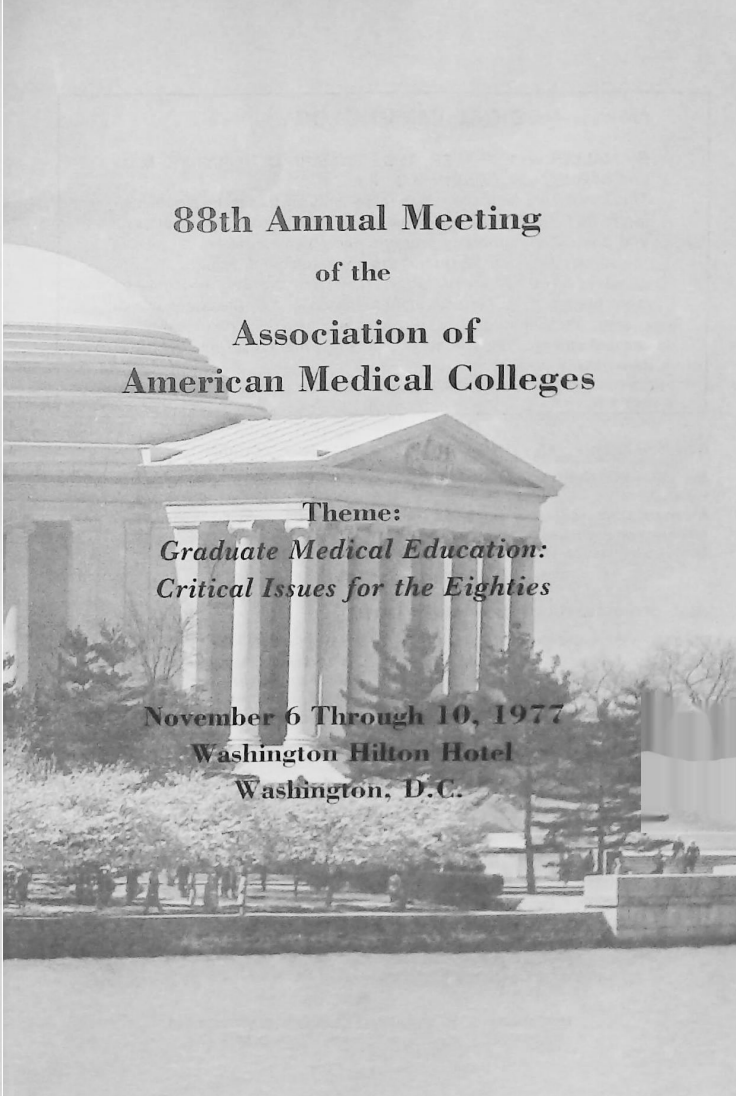
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Role Models for Women Medical Students

Nancy A. Roeske, M.D., and Karen Lake

Abstract—Research about women physicians indicates that career/family conflicts modify professional involvement. At a large midwestern medical school, 192 women medical students were asked their ideas about women physicians as role models. The first- and second-year women differed significantly in their thoughts from the third- and fourth-year women. The former were acutely aware of an identity crisis as a woman. Their anxiety was projected into a need for a fourth-year elective with a woman physician. The third- and fourth-year women had little interest in working with a woman physician. Because of their anxiety regarding a physician's responsibility for patients, the competency of the physician was the major concern of these women; the sex of the teacher was irrelevant to their educational objectives.

Increasing numbers of women are entering medical school. However, there are still relatively few women physicians. Thus, many women medical students have not had an opportunity to know a woman physician prior to entering medical school. This situation has led to questions regarding the need for women physicians to serve as role models for women medical students. The assumptions are that contact with a role model will maximize the woman medical student's eventual involvement in medicine and minimize the emotional distress experienced during medical school (1-3). The experience theoretically should enhance the integration of the woman student's feminine self-concept with the physician's role. A related assumption is that a woman will desire a flexible education schedule, which would enable her to maintain involvement in medicine while she is assuming other responsibilities, particularly for her children. These assumptions are based upon the following facts: the career-family conflict of women physicians has resulted in their less-than-full-time commitment in medicine, and the presence of children has been the most significant factor influencing the time a woman devotes to her career (4).

The purpose of this paper is to review a group of women medical students' stated desire for contact with women physicians, their participation in a senior elective program with women physicians, their current plans for a family, and their desire for a flexible education schedule.

Dr. Roeske is professor, director of undergraduate curriculum, and coordinator of medical education, Department of Psychiatry, Indiana University School of Medicine, Indianapolis. Ms. Lake is a graduate student, Department of Education, Indiana University, Bloomington.

Background

In the fall of 1973 between 40 to 70 women medical students at Indiana University School of Medicine began meeting one evening each month. The majority of the women were first- and second-year

students. Because the women expressed a desire for contact with women physicians, the senior author initiated a plan which evolved into two programs: (*a*) monthly dinner meetings in which women physicians were invited to talk about their professional and private lives and (*b*) senior electives with women physicians.

The women students developed a questionnaire which was sent to all of the women physicians in the state. The physicians were asked whether they would offer a one- to three-month senior elective for medical students. The letter explained the women students' interest in working with a woman physician who might offer a role model demonstrating one woman's method of integrating personal and professional responsibilities. Thirty-six women physicians agreed to participate in this program, which has been in existence for two years. The group included women in private practice, academia, research, administration, and public health. These electives were included in the senior elective book, which describes all educational programs for the senior year.

Results

In the spring of 1976 questionnaires were mailed to 192 women medical students; 145 questionnaires were returned (76 percent). The age range of these women was 21 through 34 years. The number of students who returned the questionnaires was lowest in the first year (29 of 52) and highest in the fourth year (27 of 32).

The students were asked their current area of interest in medicine (Table 1). As might be anticipated, the majority of first- and second-year students were undecided about their area of interest. A role model's potential influence upon the women appears inherent in this fact alone. The women were most interested in internal medicine and family practice. The two other specialties of major interest were pediatrics and obstetrics and gynecology. One might speculate that the women medical students' interest in obstetrics/gynecology reflects the feminist emphasis upon the need for women physicians in this specialty. These women medical students differed from their

TABLE 1

CURRENT PLANS FOR CAREERS IN MEDICINE OF WOMEN MEDICAL STUDENTS AT INDIANA UNIVERSITY, 1976

Area of Interest	No. in Each Class			
	Freshman	Sophomore	Junior	Senior
Pediatrics	2	3	6	6
Psychiatry	0	2	4	2
Internal medicine	3	3	8	9
Family practice	5	7	7	4
Preventive medicine and public health	2	0	0	0
Genetics	2	0	0	0
Obstetrics/gynecology	0	5	4	3
Undecided	15	21	9	1
Radiology	0	1	0	1
Hematology	0	1	0	0
Neurology	0	1	0	0
Dermatology	0	0	1	1
Pathology	0	0	2	0
Surgery	0	0	4	0
Total	29	44	45	27

peers of the past 50 years whose areas of interest were pediatrics, psychiatry, and internal medicine (4).

The parental occupations (Table 2) were similar to those reported in studies of women in medicine over the past 30 years (5–8). A majority of the women's fathers worked at professions and occupations which call for a university degree; therefore, these women medical students originated from a narrow sector of American society. In each class approximately one-half of the women who responded had mothers who worked outside the home. The majority of the employed mothers were teachers in elementary or high schools, and most of the remainder were secretaries or professionals in the health care fields (nurses, social workers). Therefore, these mothers presented a model of combining a career with family responsibilities.

A significant shift in the number of married women is evident when the first- and second-year classes are compared with the third- and fourth-year classes. One-third of the first-year women were married; two-thirds of the fourth-year women were married. The majority of these women had spouses of comparable educational attainment (Table 3). In this regard they differed from their mother's marital pattern. But the married women medical students resembled the general pattern of previous generations of women physicians' marital choice of a professional husband (4).

TABLE 2

OCCUPATIONS OF INDIANA UNIVERSITY WOMEN MEDICAL STUDENTS' MOTHERS AND FATHERS, 1976

Occupation	No. of Students' Parents	
	Mother	Father
Physician	1	11
Other health professions	12	9
Other professions	5	40
Proprietor or manager	3	25
Homemaker	63	0
Education	32	13
Sales	1	6
Military	0	3
Secretary	20	1
Farmer	0	11
Transportation/communication	1	5
Service worker	0	4
Skilled worker	0	8
Semi or unskilled worker	2	7
Student	1	0
Retired or deceased/occupation not given	4	2

TABLE 3

OCCUPATIONS OF HUSBANDS OF 145 WOMEN MEDICAL STUDENTS AT INDIANA UNIVERSITY, 1976

Occupation	No. of Students' Husbands
Medical student	10
Dental, pharmacy student	5
Other student	8
Physician	9
Other health professions	5
Other professions	18
Manager	2
Education	1
Military	1
Skilled	0
Not given	1

The women had a total of 11 children. Five were born while the women were in medical school; the six other children were between 10 and 15 years old. In the women's opinion, the most advantageous time to have children is after completion of all training. The overwhelming first choice of all the women was to postpone having children until after residency training. The second choice was during residency training. This desire to postpone childbearing until the latter part of the formal medical education is reflected in the women's wish to have the option for a flexible education during internship and residency training.

The reasons given by the women for postponing the birth of their children were the possibility of less pressure from

one's profession with the completion of training and a desire to be able to spend time with the children. The women stated that bringing up children was an important job, especially during "the crucial early years of life." The women's comments about children were permeated with remarks indicating an interest in spending time with children, a sense of responsibility for the care and education of children, and a desire to enjoy children. But they voiced concern that if they were in medical school or residency training, their studies would be "seriously neglected." On the other hand, most women indicated the importance of having a child prior to age 30. Some women directly stated their concern about the increased risk of fetal mortality and morbidity if they were an "older primipara." A flexible residency program offers a possible solution to this conflict between profession and children. Only one married woman mentioned that her husband took part in the decision of when to have children.

A comparison of first-year students with fourth-year students reveals a remarkable shift in expressed interest in working with a woman physician. While 99 percent of the first-year women expressed such an interest, only 66 percent of the fourth-year women did so. Only two of the fourth-year respondents had taken senior electives with women physicians. None of the third-year respondents planned to take this elective. With three exceptions the women who expressed no interest in working with a woman physician were single. The three married women medical students who would not consider working with a woman physician were in an academic honors program and intended to become academicians and/or researchers.

Many women expressed reservations about seeking the elective experience merely to be with a woman and pointed out that the criteria for choosing an elective preceptor should include the physician's knowledge, ability to teach the student, and the type of experience with patients. The women commented that a knowledgeable physician who had attributes of sensitivity, kindliness, and understanding of the patient as a person could be either a woman or a man.

The important differences in the women's responses to the question about a senior elective become apparent when the answers are compared by year. The first-year women were overwhelmingly in favor of working with a woman physician. They focused on knowing a woman who has survived medical school and was happy as a woman physician. The third and fourth-year women had made the same statements in 1973 when they were first and second-year students; therefore, they appear to have changed their attitude and focus. For example, the first-year women commented:

> I am interested in learning how women physicians cope with the problem of being physician, wife, and mother and a woman in a predominantly male field. I am sure that I could benefit from such an experience and perhaps find ways that I can cope with these problems through others' experiences . . . I feel that I need more female physician role models. I find myself referring to physicians as "he"—it is discouraging that all of my professors also use "he" when referring to physicians.

Second-year women students said:

> After being swamped by the male approach to medicine, it might be interesting to see if women physicians differ any in their attitude toward patients and any special problems they run into in their practice. . . . I would like to have time with women physicians, since I am still confused as to the exact approach to use with patients and special problems, and would like to see how women physicians handle themselves. . . . I would really like a role model to see how women doctors can handle a practice. By the time I am a senior maybe I will be more comfortable in my role, and I may opt towards other electives. It is extremely hard to say now. . . . I feel a need for a female role model. I think it would be a great help to see close-up another woman in medicine, especially a married woman who has been able to carry out her practice.

One woman said her husband helped her very much around the house but that she would like to talk to another woman physician "to see how another woman balances her practice, running the household, and still have time" to enjoy her husband, see friends, and have time for herself.

Some women stated they already had "a plan for myself." Nevertheless, these women wished to compare this plan with a married woman physician's experience. Several women said, "There is a bond which is between women and can offer emotional support."

The third- and fourth-year students emphasized a physician's knowledge and capability as a teacher and the students' educational objectives. As has been noted, these factors were considered to be critical criteria, and they superseded earlier concern about the sex of the physician. Third- and fourth-year women made the following statements:

> I have had little complaint about learning possibilities with physicians who are men . . . I have enrolled in an elective with a woman but not because she is a woman but rather because I have heard she gives a good elective. I would not seek out a woman for her sex only . . . I find I am more concerned with the medical experience offered than the sex of the physician . . . Women residents with whom I have worked have, in general, been more difficult for me to work with than men.

Three women who objected to the emphasis being placed upon initiating special education programs for women made such statements as, "I just want to be a medical student . . . Women in medicine are accepted when their achievements, both individual and collective, merit it."

Fourth-year women students who had considered, but not selected, senior electives experience with women physicians pointed out the following:

> There are more electives available with men physicians in the field in which I wanted experience . . . I didn't feel a particular need to take advantage of this opportunity . . . I didn't care to single out an elective experience to take on the sole basis of the sex of the preceptor. My first concern was the quality of the experience . . . Picking an elective on the basis of the sex of the preceptor is being discriminatory and not in the best interest of education . . . I was exposed to several women physicians during my senior year. I would not necessarily recommend seeking a woman physician to do a rotation with . . . The quality of any rotation depends upon the quality of the person that I worked with, and this was not, in my experience, sex related.

Only one senior woman medical student commented that working with a woman physician during her senior year gave insight into coping with family and career. This woman had a baby in the middle of her senior year.

Discussion

The relatively low return rate of the questionnaire from the first-year students is thought provoking. It may be that since few of these students are married and since the questionnaire focused upon career/family conflicts and their resolution, the women thought the questionnaire was not applicable to them. On the other hand, it was the first-year women who expressed overwhelming interest in the senior elective program with women physicians. In this behavior they resembled the women's group which had been instrumental in initiating the concept three years earlier.

Another contributing factor to the low

return rate of the first-year students may be the fact that their area of medical interest was still unknown. Therefore, the question about planning one's future education may have been difficult. However, the 80 percent return rate of the second-year students who also indicated indecision about their future area of interest raises questions as to this explanation. It may be that second-year women feel more comfortable about their incipient physician role and, thus, less threatened by questions about themselves.

As has been noted, most of the women students, like their counterparts of previous decades, originated in families where the educational and social background might suggest that emotional support was available to the women students. But the responses of the students with a professional father and mother who worked outside the home could not be differentiated from the responses of the students whose fathers were not professional persons and whose mothers had not worked outside the home. Two factors could be affecting the women's comments: the parental emotional support was inadequate to counteract the women's anxiety, and the maternal role model was insufficient since the mothers' occupations (secretary, schoolteacher, nurse, social worker) did not challenge traditional male occupations.

The women are married to men of equivalent educational and occupational level. Although these women did not spontaneously mention the emotional and financial support provided by their husbands, the importance of this support has been noted by researchers (5, 9, 10).

The women have the personality characteristics of self-reliance, self-confidence, and self-awareness reported by other researchers (5–7, 9). Two personality evaluations, Personality Factors Inventory and the Edwards Personal Performance Schedule, had been administered to all entering first-year students between 1973 and 1976. According to these evaluations, the women are assertive and desire autonomy and achievement. They are also sober, intelligent, emotionally stable, forthright, and imaginative persons.

In spite of strong personality attributes and educational, economic, and social support systems, many women entering medical school experienced a crisis in identity. Their comments were similar to the comments reported by other authors (1–3, 11, 12). The women had anticipated the commitment to medicine with its implied separation from the past. However, they had not anticipated the extent of the psychological conflict; the level of anxiety; the confusion about identity; or the feelings of inadequacy, alienation, loneliness, and depression. They were emotionally shaken by the confrontation with faculty, who referred to physicians as "he." As one woman student noted with dismay, "I am beginning to think of physicians as 'he.'" She was alarmed by her changing self-perception. Another disquieting attitude of some male faculty is one of covert exclusion of women from the student body through the referral to a woman as "girl" or "lady." Either label conveys an impression of a woman's inability to become a member of the profession.

Because of her high level of anxiety, the woman student is susceptible to misperceptions of male behavior. Her reactions may compound the complexity of the problem. The identity disequilibrium and paucity of women physician teachers in the basic science departments (13) lead beginning women medical students to a search for a role model or an interest in a senior elective with a woman physician. But by the third and fourth year, women's anxiety focuses on their ability to care for patients. Thus, extensive and intensive relationships with physicians who are perceived as exceptionally competent is the prime consideration in the choice of a senior elective. In addition, the woman's experiences with patients are of critical importance and nurture her sense of self as a physician. Clinical work reinforces her understanding that knowledge is the basis for coping with anxiety about adequacy and competence. The opportunity to take care of patients is an expression of a traditional feminine role.

The majority of these women have a strong interest in the maternal role. But since they perceive medicine as a demanding profession, they plan to wait until they have finished their formal education before having children. In these thoughts and attitudes they are similar to the women of previous decades, and they are espousing the position of medical school faculties (10, 14–15). It might be questioned whether they have been led to believe that it is impossible to be a good mother and simultaneously to be involved in a rigorous academic program.

If these women adhere to their current plans, they will be interested in a flexible involvement in their profession during the child-bearing years. Their practice pattern should emulate those patterns of previous women physicians with children, that is, working part time or not at all when the children are less than five years old. However, the current social emphasis on small family units (less than two children) and the current interest in a married couple having no children may mean that these women will experience less disruption of their careers than women of previous decades.

Conclusions

The concept that a woman medical student needs and wants a woman physician as a role model oversimplifies the issue. This study indicates that when a woman medical student experiences a crisis in self-concept, she seeks a person who represents a successful resolution of that conflict. The first conflict is whether a woman must possess the traditional characteristics of masculinity in order to become a physician; the second conflict is whether the woman has sufficient knowledge and skill to function as a physician; and the third conflict is whether the woman can combine the physician role and mother role. The woman medical student clearly prefers to resolve the first two identity crises before she has the conflict between profession and motherhood. The decision to resolve one conflict at a time appears to be related to the woman's desire to excel in each role.

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Personality Changes in a Sample Of Women Physicians

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Abstract—Personality changes in a sample of 49 women physicians who graduated from the University of California, San Francisco, School of Medicine were measured by psychological tests and interview procedures. Differences between psychological test scores on entry and 8 to 11 years later were not great in magnitude, but they were consistent. The nature of the changes pointed in the direction of greater effectiveness in the area of work and achievements, more introspection, more certainty about goals, and more awareness and acceptance of traditional role demands. Correspondingly, there was a diminution of strivings for success and needs for impressing others. The most frequently cited changes by the women physicians were increased self-confidence and greater self-acceptance followed by more awareness of nurturant, loving feelings in themselves.

This paper concerns changes in personality over time in young women graduates of the University of California, School of Medicine, San Francisco. The methods of measuring these changes include psychological testing as well as phenomenological or self-report interviews.

The progressions and shifts that take place in students' lives following health education experiences have provided a common interest area for researchers in personality, sociology, and medical education (1–3). Studies focusing solely on female physicians are sparse owing to their small numbers in the profession as well as to the usual barriers and difficulties inherent in conducting all longitudinal research. Currently reseachers conducting investigations involving women doctors have primarily surveyed and recorded their career patterns, that is, practice characteristics, hours worked, and specialties chosen (4–6). Attempting to explain distinctively female career patterns (for example, more part-time work, more career interruptions, attraction to certain specialties, and preferences for salaried positions), the concepts of role strain, role conflicts, and role reconciliations have been advanced (7, 8).

Some attention also has been paid to admission characteristics and to academic performances in medical school (9). The attitude of others toward women physicians represents an additional research facet (10). However, the impact of medical training on the personality of the women students has received little systematic attention. Although anecdotal and case study material exists (11), quantitative indexes of change using multiple

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methods are rare in the literature. The current study is an attempt to fill this gap.

Method and Sample

The sample includes 49 women physicians, all of whom were first interviewed in 1968-69, while they were students at the University of California, San Francisco, School of Medicine. Several reports (12–14) on findings obtained then have previously been published. In 1972 a larger follow-up was initiated by the Institute of Personality Assessment and Research in Berkeley (15); 1,195 men and women medical students and applicants who were students between 1951 and 1967 were studied. As part of this follow-up, each of these 49 women physicians was again seen by the writer in a two and one-half hour structured interview.* In addition to the interview they were asked to retake two tests completed upon entry to medical school: the California Psychological Inventory (CPI) (16) and the Adjective Check List (ACL) (17). Further description of the sample can be found in Table 1, which provides current information relating to the subjects' marital status, age, number of children, and specialty choice.

Results

Table 2 gives means and standard deviations on the CPI for the sample. Forty-two of the 49 took this test on both occasions.

Statistically significant changes have occurred, although, as indicated in Table 2, they are small. Three of the scales revealed a downward shift, at the .05 level or better: Capacity for Status, Sociability, and Good Impression. Interpretational guidelines for the CPI (18) suggest that these changes reflect a reduced concern with prestige and success, the reactions of others, and adaptability for its own sake. There is less need to create a good impression and be concerned with others' evaluation of the self. In this sense the group appears to be both more self-accepting and introspective. On one scale, Achievement via Conformance, there is an upward shift significant at the .05 level, suggesting more acceptance of role demands, more diligence and reserve, and greater tolerance of highly structured situations. This change must be evaluated within the context of the total profile configuration in which Achievement via Independence, Intellectual Efficiency, and Psychological-mindedness remain very high (Achievement via Independence is the peak elevation of the profile); thus, independent appraisals and actions as well as insightfulness and general effectiveness have not been relinquished or even slightly diminished.

Both the entry CPI and the current CPI are indicative of superior functioning in all areas measured by the inventory, including the interpersonal, intrapersonal, and achievement domains. The changes noted are best interpreted as subtle shifts in emphases. The current profile depicts a group which is assigning more weight to inner beliefs and values.

ADJECTIVE CHECK LIST

The Adjective Check List consists of 300 adjectives; subjects are asked to check those which are self-descriptive. The means and standard deviation of the subjects' scores are presented in Table 3.

As was the case with the CPI, the amount of absolute change in scores is

* The original interviews were held with 58 students, who represented 98 percent of the women students from the entering classes of 1964 through 1967. Nine of these were omitted from the current study because of death or withdrawal from medical school or because they could not be contacted for the second series of interviews.

TABLE 1

DESCRIPTION OF SAMPLE OF 49 WOMEN PHYSICIANS, GRADUATES OF UNIVERSITY OF CALIFORNIA, SAN FRANCISCO (UCSF), SCHOOL OF MEDICINE, 1968–1971, ON SELECTED VARIABLES

Variables	No.	Percent
Current Marital Status		
Married	37	75.5
Single	9	18.4
Divorced	3	6.1
Husband is physician	20	40.8
Have children	20	40.8
Medical Specialty		
Pediatrics	11	22.4
Family medicine and general practice (including emergency room)	8	16.3
Internal medicine	7	14.3
Psychiatry	7	14.3
Radiology	5	10.2
Eye, ear, nose, throat	3	6.1
Pathology	3	6.1
Anesthesiology	2	4.1
Dermatology	1	2.0
Public health	1	2.0
Surgery	1	2.0

TABLE 2

CALIFORNIA PSYCHOLOGICAL INVENTORY RAW SCORES OF WOMEN PHYSICIANS TESTED AT ENTRY AND AFTER GRADUATION, UCSF SCHOOL OF MEDICINE, 1968–1971

Scale	At Entry (N = 42)		After Graduation (N = 42)	
	Mean*	S.D.	Mean*	S.D.
Dominance	30.05	5.70	29.36	5.68
Capacity for Status	24.03†	3.22	22.87	3.43
Sociability	27.05‡	4.56	24.92	5.07
Social Presence	39.74	5.64	38.77	5.64
Self-Acceptance	23.64	3.14	23.05	3.03
Well-Being	37.79	4.21	37.90	3.63
Responsibility	33.82	3.60	33.03	3.39
Socialization	38.85	4.37	38.18	3.57
Self-acceptance	31.54	6.55	33.05	5.51
Tolerance	27.18	3.75	26.56	3.24
Good Impression	20.18‡	6.09	17.56	5.55
Communality	25.31	1.95	25.97	1.44
Achievement via Conformance	29.74	3.72	30.77†	3.34
Achievement via Independence	25.51	2.74	26.23	2.49
Intellectual Efficiency	43.44	4.26	44.26	3.90
Psychological-mindedness	14.26	2.42	14.95	2.73
Flexibility	14.03	2.53	13.23	2.71
Femininity	21.61	3.38	22.64	3.52

* Mean scores compared using the *t* test for correlated means.
† $p \leq .01$.
‡ $p \leq .05$.

TABLE 3

ADJECTIVE CHECK LIST STANDARD SCORES OF WOMEN PHYSICIANS TESTED AT ENTRY AND AFTER GRADUATION FROM UCSF SCHOOL OF MEDICINE, 1968–1971

Scale	At Entry (N = 30)**		After Graduation (N = 42)	
	Mean*	S.D.	Mean*	S.D.
Number Checked	53.60	9.47	52.43	8.62
Defensiveness	48.13	10.18	54.13‡	9.61
Favorable	54.57	10.67	59.00†	12.75
Unfavorable	48.87	10.41	45.03	8.98
Self-confidence	53.37	12.17	55.10	12.34
Self-control	50.27	9.02	56.43‡	9.07
Lability	52.70	7.71	49.83	9.57
Personal Adjustment	49.87	10.38	53.57	10.68
Achievement	54.70	12.40	57.70	11.79
Dominance	52.43	12.51	56.20†	12.52
Endurance	52.13	11.52	58.60‡	11.39
Order	51.97	10.00	58.47‡	10.14
Intraception	53.13	7.89	57.33†	10.92
Nuturance	48.10	9.33	51.20	9.41
Affiliation	45.77	11.32	48.40	11.63
Heterosexuality	50.80	11.21	51.97	9.73
Exhibition	48.70	9.97	47.43	10.61
Autonomy	52.87†	11.12	49.90	10.52
Aggression	51.13	9.40	49.87	9.36
Change	52.53‡	11.06	45.73	10.83
Succorance	47.80†	10.07	44.03	10.88
Abasement	47.37	10.12	45.60	12.07
Deference	46.37	11.35	48.57	9.93
Counseling Readiness	55.77	7.88	56.63	9.48

* Means compared using the *t*-test for correlated means.
† $p \leq .01$.
‡ $p \leq .05$.
** Not every incoming class took the Adjective Check List, thus accounting for the discrepancy between the number of entry and graduation inventories.

not large, although 10 scales show statistical significance at the .05 level or better. Upon entry the women scored higher on the following scales: Autonomy, Change, and Succorance. Currently, they are scoring higher on the Defensiveness, Favorable Adjectives Checked, Self-Control, Dominance, Endurance, Order, and Intraception scales. Together, the ACL and CPI findings suggest that the work sector of the lives of these 42 women appears to be enhanced by habits leading to the orderly carrying out and completion of tasks. (The greatest absolute change occurred on the Order scale.) The women appear to have more control over their lives. They are more planful, more thoughtful, less risk-taking, and less subject to mood fluctuations and desires for variety and change than they were at entry to medical school, and they seem to have grown more conservative. At the same time there is an increased sensitivity to inner cues and directions and less dependence on others for help, orientation, and guidance. This tendency to be inner-directed does not preclude caring for others or being protective and concerned when appropriate.

INTERVIEW DATA

In the second series of interviews, the subjects were asked: "How has your concept of yourself evolved since entry into medical school? How would you describe yourself now? What kind of changes have occurred?" The 49 women offered approximately 1.95 changes each. Table 4 sums up the content of these self-reports.

Sixteen percent believed they did not change much or that the changes were essentially external rather than internal; a representative comment may be cited: "There is not much change literally. In my third year I got skinnier but basically I'm the same person—I don't think I could change much." Approximately 10 percent were aware of important changes; one such comment may be noted: "There has been tremendous change—I could write three pages on it. My personality is much more relaxed, and I am accepting myself. I have much more self-confidence."

The leading change noted by the women was increased self-confidence and security; almost half of the group reported such increments. The gist of the comments they made is that they felt more independent and secure—leading to a more realistic recognition of talents, limitations, and needs. Several illustrative remarks follow:

> I have a firmer idea of what I get out of life and what I give. I am much more secure. I found I have a flair for life. . . . I am much more confident. I am doing my own thing and successful at it. . . . I am more self-confident for sure—and more mature. I have more gray hair. I'm more sure of what I want to do and I can do it. I am finding where I'm most comfortable, not where I think people want me to be.

The second leading change involved feeling more loving, compassionate, understanding, and considerate; 36.7 percent of the women reported such feelings. Some of the women connected this feel-

TABLE 4

REPORTED CHANGES IN PERSONALITY IN 49 WOMEN GRADUATES OF UCSF SCHOOL OF MEDICINE BETWEEN ENTRY TO MEDICAL SCHOOL AND 8 TO 11 YEARS LATER*

Nature/Degree of Change	No. citing change	Percent of Group
Nature of Change		
More self-confidence, self-acceptance, maturity	23	46.9
More loving, compassionate, understanding, considerate, feminine, nurturant	18	36.7
More professional, better work habits, more value placed on being a physician	16	32.6
Clearer goals, more aware of what one wants, less influenced by others	11	22.4
Happier and more contented	11	22.4
More aggressive, more militant	2	4.0
Miscellaneous	2	4.0
Degree of Change		
Aware of great change	5	10.2
Aware of little or no change	8	16.3

* Subjects were permitted to cite as many changes as they wished; 1.95 was the mean for the group.

ing with their experiences of motherhood (20 women now have children) and with being married (37 women are married). They say:

> I'm a lot happier now. . . . I have had many good experiences with my children—more than any woman can expect and good experiences with my husband—I feel more comfortable, more loving, more nurturant. . . . Personally, I've really had the chance to learn a lot about love. I can love in satisfying ways. . . . I am not sure I can remember myself then. Having small children, that's the biggest change; it made me grow up a lot. I had to get used to the idea that a little helpless thing is relying on me. You don't get rewards or medals; it reduces you to what you really are; it gives you a little humility about yourself. Motherhood is a tremendous job, and yet it goes unrecognized and unrewarded.

Approximately one third of the women (32.6 percent) noted more competency in the work sector of their life—they felt like "professionals." The following remarks are illustrative:

> Medically I've evolved. I am more aware of how medicine fits into people's lives, how they respond to treatment and costs. I have a more individualized view of what medicine is. . . . I know what kind of practice I want and I know how to use it. I want to be a professional and a mother. I want to learn to cope with both. I find I lean more toward an academic environment. . . . I have become a conscientious physician—I am a "physician," not just a "doctor."

Among the less frequently cited changes were having clearer goals (22.4 percent) and feeling more happy and contented (22.4 percent). Two subjects believed they had become more militant and aggressive and allied with the goals of the women's movement. Also salient is the fact that no woman reported changes which were essentially negative or that implied a diminution of skills or deterioration of affect. Overall, changes reported were nearly always positive.

To illustrate the nature of the individuals involved, one vignette is presented:

Dr. S. P. is an otolaryngologist who resides in the Midwest and is currently working 32 hours a week in a salaried position. She sees about 20 patients a day in her office. Her work is gratifying to her, and she can't imagine doing anything else. Although she is single and does not have family responsibilities, she feels that her work week is ideal. She believes because she has been an extremely conscientious and responsible student all her life, she had missed out on many experiences. However, now her personal freedom is more than adequate—she is doing what she really likes to do and has established a harmonious balance between work and recreational activities. Presently, she takes classes in the crafts and home-buying and enjoys many outdoor sports. In retrospect, she believes she has been a late starter—always putting off activities that were not related to professional accomplishments. When asked how she has changed, she said:

> I was not comfortable with myself as a whole. I had a big guilt trip about how I had to be the best. But I learned you can't be the best unless you spend all your time on it. Although I feel I may have disappointed some mentors who believed I had promise as a researcher and academician, I believe I have made the best choice for myself. I feel more at ease with myself and at peace with everyone else. I enjoy life.

Specificity of Changes

Overall, the data reported here reveal the following:

1. The work sector of the women's lives has become more developed, differentiated, and rewarding. Achievements in work, disciplined habits related to successful work outcomes, and satisfactions connected with accomplishment and productivity continue to be an extremely important aspect of the subjects' lives.

2. Currently, the subjects are more inner-directed and more responsive to internal cues for orientation. Correspondingly, they are less dependent on others to define their goals. They experience less need to gain approval from others in order to ensure personal worth. Social expressiveness and striving for success and high status appear to be diminished.

3. They seem to be more controlled and settled; they are relatively less likely than before to take risks and seek out spontaneous and novel situations. They appear to be more conservative in outlook.

4. Last, perhaps going against the expectation that professional women may become masculinized by the medical educational process, they report feeling more compassionate and nurturant toward others. Many of the married physicians are finding the traditional feminine roles of wife and mother very rewarding.

Do these changes come from specific influences connected with medical education and practice, or do they merely reflect growing older and learning to cope with the vicissitudes of life faced by all women?

Before trying to unravel the nature and some of the causes of the observed changes, there are two caveats. First, the changes under discussion were observed at the group level, although the individual interviews provided considerable case material supporting the general findings. Second, all change is relative to a beginning. At the outset of her professional training, the woman medical student was different from other groups of educated women with respect to personality traits and self-concept; she also differed from male medical students in personality and career motivations (12–14). In order to be accepted to medical school at the time this sample entered (1964 to 1967), women needed to be more independent, ambitious, and concerned with achievement than their peers; the general social milieu of the 1960s did not support the entry of women into medical school to the extent that it does today. Currently, these same attitudes and stances may be less relevant and necessary to the actualization of the present professional and personal goals of the study subjects, given a more encouraging social climate.

Because there is no adequate control for this sample of women, the support for the concept that the changes occurring in the group are unique and specific to them is of necessity speculative. Two empirical studies, however, have some bearing on this hypothesis: Gough and Hall (2) studied the CPI changes of health professional students (male medical students, male dentistry students, and female nurses), comparing their on-entry scores with their scores upon graduation. The pattern of change observed in the sample of women physicians in the present study is different; however, it should be noted that the time between the two testings is greater for the sample reported on here. The study (19) by Grupp, Ramseyer, and Richardson of the effects of age on certain scales of the CPI lends additional support to the concept that the changes in CPI patterning observed among women physicians is not due to age alone.

On logical grounds there is good reason to suppose that the change patterns reported are specific to young women physicians or perhaps more broadly to young women in a taxing profession that demands personal commitment, responsibility, and a high capacity for independent action. The young adulthood of such women is also the time when needs for and responsibilities connected with gaining intimacy, building family ties, and raising children are greatest. The harmonious integration of the professional role with the role of woman, wife, and mother

is a difficult task imposing considerable challenge to the individual. Approximately one half of the 49 study subjects did report moderate to severe role strain at least part of the time. Despite the stresses that they felt, they succeeded at evolving coping strategies for bringing together the different sectors of their life. It could be argued that it is the many and varied demands that they choose to meet that enable them to continue developing their capacities for resiliency and independence and to fulfill, at least occasionally, the demands for subordinate, deferential, and rule-obeying role enactments.

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A Comparison of Personality Types Among Female Student Health Professionals

Agnes G. Rezler, Ph.D., and Joanne Marengo Buckley

Abstract—The purpose of the study reported here was to focus on the personality traits of six groups of women students in medicine, pharmacy, medical technology, physical therapy, dietetics, and occupational therapy. The Myers-Briggs Type Indicator was administered to all groups to measure Extroversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perception. Results show that (*a*) medical students in contrast to the other five groups are guided more by thinking than feelings in their approach to work and people and (*b*) pharmacy students prefer well-planned, routine work in contrast to occupational therapy students who like changing situations and flexibility. Some implications of these findings for the health team are mentioned.

In the present era when increased attention is being focused on women in all professions, it is of interest to examine the unique characteristics and career choices of female health professionals. Previous research has shown that personality characteristics are strongly involved in vocational choice and professional specialization (1, 2). Since each health profession has an approach to health care which is unique in purpose and perspective, it is likely that each field would attract people with distinctive behavioral characteristics.

A brief review of the literature, undertaken to identify major trends in the personality patterns of women students in the health professions, indicates that previous research in the area has focused primarily on measuring personality in single groups of health profession students. In addition, previous research has utilized different kinds of personality tests, making comparisons across groups difficult; and few studies concentrating on or including women students have been reported (3-10).

The purpose of this study is to identify and compare the personality traits of female students in the fields of medicine, pharmacy, medical technology, dietetics, physical therapy, and occupational therapy. Use of the same test to measure personality will permit direct comparisons of these six groups of women students.

Method

All female students enrolled in six health professional schools and colleges at the University of Illinois Medical Center during 1973-74 were requested to participate in the study. The number of students not present at the time that the inventories were administered was negligible.

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The number of students in each sample is as follows: medicine, 43; pharmacy, 79; medical technology, 22; physical therapy, 35; occupational therapy, 31; and dietetics, 20.

The Myers-Briggs Type Indicator (MBTI) was administered to all students. This is a 166-item, self-report, forced-choice inventory which measures the following characteristics stemming from the Jungian personality typology (1):

Extraversion-Introversion (E-I) – "E" people attend to the outer world of people and things in action, making confident use of trial and error. "I" people focus on the inner world of ideas and like to reflect at great length before action.

Sensing-Intuition (S-N) – "S" people tend to be realistic, practical, observant, fun-loving, and good at remembering and working with facts. "N" people tend to value imagination, inspiration, and possibilities and are good at new ideas, projects, and problem-solving.

Thinking-Feeling (T-F) – "T" people tend to analyze, weigh the facts, and think that impersonal logic is a surer guide than human likes and dislikes. "F" people tend to sympathize, weigh the personal values, and feel that human likes and dislikes are important.

Judging-Perception (J-P) – "J" people live in a planned, decided, orderly way, aiming to regulate life and control it. "P" people live in a flexible, spontaneous way, aiming to understand life and adapt to it.

Each of the four bipolar scales of the MBTI yields continuous scores from zero to 200. For example, an E-I score of 125 indicates a tendency toward introversion while a score of 85 indicates a tendency toward extraversion. The strength of a tendency is shown by a score's proximity to 100, with zero and 200 representing the strongest tendencies toward opposite poles on each scale.

Results

The mean continuous scores of students from each professional group were compared using analysis of variance. Table 1 displays the means and standard deviations of MBTI scores for each group of female students.

Significant differences among groups are found on two scales: Thinking-Feeling ($F = 4.67$, $p < .001$) and Judging-Perception ($F = 4.014$, $p < .002$). Post hoc comparisons (Scheffe test) revealed significant differences on the T-F scale between female medical students and two other groups: occupational and physical therapists. On the J-P scale significant differences emerged between mean scores obtained for female pharmacy students and occupational therapists.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF SCORES GAINED ON THE MYERS-BRIGGS TYPE INDICATOR BY SIX GROUPS OF FEMALE STUDENT HEALTH PROFESSIONALS AT THE UNIVERSITY OF ILLINOIS MEDICAL CENTER, 1973–74

Group	No. of Students	MBTI SCALES*							
		E-I		S-N		T-F		J-P	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Medicine	43	97.88	23.18	107.97	19.91	97.23	20.67	96.53	26.20
Pharmacy	79	99.30	27.27	99.08	25.74	105.41	19.67	86.11	24.28
Medical Technology	22	109.18	25.31	95.91	28.32	106.82	24.86	89.45	29.47
Physical therapy	35	93.74	25.92	101.23	27.05	116.60	19.68	101.91	29.28
Dietetics	20	99.50	23.66	98.50	22.26	109.10	21.56	93.70	23.68
Occupational therapy	31	88.94	23.89	100.74	24.55	114.74	15.89	107.77	25.74

* E-I = Extraversion-Introversion; S-N = Sensing-Intuition; T-F = Thinking-Feeling, and J-P = Judging-Perception.

When results are interpreted within the framework of the MBTI, the average female medical student is more likely to prefer reckoning with situations in an analytical, logical manner. In contrast, the allied health student groups, and physical and occupational therapists in particular, showed a tendency to base decisions on issues of personal importance and values. In work situations thinking types are generally decisive and objective but may thus seem hard-hearted; feeling types, on the other hand, are prone to be considerate of others and subjective in their decisions.

Although pharmacy students showed the strongest predilection toward Judging, medical, medical technology, and dietetics students, on the average, share with pharmacists a common preference for the "judging" attitude. Women pharmacy students are apt to have a strong preference for an orderly environment, planning what needs to be done and following through according to schedule. On the other hand, female occupational therapists, and to a somewhat lesser extent physical therapists, prefer to live spontaneously and will adapt easily to changing situations.

High standard deviations are present in each group across all four scales (Table 1) and serve to indicate that a wide range of personality types are represented within these populations of female health professional students. Individual follow-up of students whose MBTI profile deviates greatly from group means may contribute information on personality as it relates to specialty choice or satisfaction with one's career. In addition, MBTI information could also be valuable in career counseling and educational decision-making, since dissatisfaction with clinical experiences might be traced to conflicts between aspects of personality and the roles and functions of a particular health field.

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Internal Review as a Means of Maintaining Quality Education in a Medical School

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Abstract—In order to focus attention on education, the University of Texas Medical Branch at Galveston adopted a system of internal review. The process was initially conducted for courses in the basic sciences by an ad hoc dean's committee consisting of representatives from the teaching faculty, administration, and student body as well as experts in medical education. As a consequence of the experience with the review of the basic science courses, the internal review process was applied to the clinical science courses and the elective programs at UTMB. The activities of the internal review process have resulted in improvements in instructional procedures and structural changes in the medical school's approach to educational planning, implementation, and evaluation.

Medical schools must pursue multiple objectives (research, patient care, education). The danger exists that objectives relating to education may be slighted in attempting to satisfy other objectives. In order to avoid the neglect of the direct educational components of medical school, various methods of increasing awareness of the importance of these components have been attempted. These include establishing new schools with emphasis on teaching, decentralizing medical education in favor of community-based programs, or endless reshuffling and reorganization of curriculum time. The first method is not available to long-established schools, and community-based programs are not feasible for all instructional goals and have particular problems of their own. Reshuffling of curricula often has little effect on instructional improvement.

Evaluation specialists and educational administrators have hoped that evaluation of student outcomes would lead to a process of instructional improvement—an approach popularized by Tyler (1). Unfortunately, as Wergin (2) has pointed out, this approach often has not resulted in the hoped-for program improvements. Although many explanations can be given for the inadequacies of the Tyler model, which are summarized by Wergin, one of the most obvious is that institutions are often not organized administratively either to plan performance assessment of programs or to respond to such assessments when they are made.

Reported here are some methods developed at the University of Texas Medical Branch (UTMB) to facilitate attention to educational effectiveness through a process of internal review. Although the particular procedures and results are partly a reflection of the resources, history, strengths, and weaknesses of a particular institution, some basic principles emerge from the experience which may have implications for educational improvement at other medical schools.

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External-Internal Review

One method of assuring that educational quality is not sacrificed because of competition from other organizational objectives is accreditation. Accreditation is a process in which some external experts, using a set of standards, evaluate the effectiveness of educational programs. Accrediting organizations focus on means and processes as opposed to program outputs. External accreditation has several advantages. It is generally comprehensive, it gives attention to influences on outcomes that go beyond simple measures of cognition, and it provides an overall view of program functioning. Evaluation experts have been critical of accreditation as lacking validity because it is based on judgments which may be unreliable and because the standards which accrediting organizations use are often of tenuous relationship to program consequences (2).

The advantages of setting standards as a method of dealing with the problem of multiple objectives are so persuasive that some system of accreditation seems to be essential in maintaining educational quality. However, the intermittent nature of the evaluations of external agencies and the superficiality of their knowledge of the problems leave much to be desired. If a group of faculty, students, administrators, and educational experts within the institution can perform a process of review of educational programs, appropriate attention to education as an institutional objective might be facilitated. While this process resembles internal accreditation, it is better described as review since the process as described here does not involve any explicit sanctions that can occur in the accreditation process.

Program Development

In 1970 the faculty of UTMB developed and implemented a new curriculum which had, as one of its innovative features, interdisciplinary courses as well as courses organized along disciplinary lines. The interdisciplinary courses—cell biology, neurosciences, introduction to patient evaluation, integrated functional laboratory, endocrinology, immunology, medical ethics, and introduction to clinical medicine—share the curriculum with traditional basic science courses in anatomy, biochemistry, physiology, pathology, microbiology, pharmacology, and preventive medicine and community health as well as with clinical courses. After a few years it became evident that some faculty members found it difficult to adjudicate the demands on their time and energy based upon their commitments to their disciplines and to the interdisciplinary courses. In order to resolve these conflicts, a retreat was held for the basic science chairmen and interdisciplinary course directors. From this meeting the realization emerged that an ad hoc committee should be appointed by the dean to study problems regarding the basic science curriculum.

This committee, which was to be small and contain mostly members active in basic science instruction, had five members, three of them chairmen of interdisciplinary courses and two of them coordinators of other basic science courses. The associate dean for curricular affairs and the director of research in medical educa-

tion were ex officio members of the committee, and the Office of Research in Medical Education (ORME) provided staff services. After a change of deans, there was some hesitancy about the future of the committee and its relationship to the faculty curriculum committee, a large body with one elected member from each department; however, the curriculum committee did not consider its function to be that of curriculum evaluation. After some deliberation the dean enlarged the ad hoc committee to include the chairman of the curriculum comittee, two clinicians, and two sophomore students. Later, two freshman students were added. The charge to the ad hoc committee for review of the basic science core was to review the content and sequence of basic science material, review instructional material to reduce overlaps, review student evaluation procedures, suggest examination schedules and course content sequence, and recommend to the dean of medicine areas of potential improvement in the total basic science core.

The committee decided to obtain an overview before attempting to perform the task of detailed review of instructional materials. The responsibility for examination schedules and course content sequence became an ongoing function of the committee, which acted mainly as a facilitative body in discussions of scheduling and as a judicial body which established certain guidelines for scheduling time and examinations; strong justification was required from course instructors to permit deviations from the established guidelines.

The committee decided to pursue its other charges by requesting specific information from those who were responsible for each course. In the case of the interdisciplinary courses this was the chairman of the course committee; in the case of the disciplinary courses it was either the departmental chairman or an individual who had been designated by the chairman as course coordinator, or both.

The procedure followed was first to request that the course coordinator or chairman answer 25 questions covering six basic areas: administration, faculty involvement and orientation, curriculum planning, evaluation of teaching methods, evaluation of student performance, and future plans.

These answers were circulated to the committee, which then met to discuss the answers with the representatives of the course. Subsequently, members of the committee, and especially the students, wrote reactions to the report and the discussion. The representatives of ORME then summarized the results of the discussion in a report to the committee. The chairman and the ORME staff distilled the discussion into a short report to the course coordinator and chairman indicating strengths, weaknesses, and suggestions for change. Reactions to the committee evaluation were solicited from the course representatives; and the committee, when appropriate, responded to the reactions. This process was repeated for 15 courses in a period of a little over a year.

In February 1976 the committee members met for two days to summarize their recommendations to the dean. Recommendations included detailed discussion of the following: strengthening the role of course coordinator, resolving conflicts between institutional objectives and departmental objectives, increasing the specificity of the information provided to students on what was expected of them, improving the quality of instructional and examination materials and methods, providing methods of increasing the interchange between the basic and clinical sciences, establishing a committee to perform long-range curriculum planning, and vesting the responsibility for continuing monitoring of curriculum effectiveness in a reorganized curriculum committee.

Effects on Policy

A few months after the ad hoc committee for the review of the basic science core was established, the dean appointed a similar committee to review the core clinical sciences. The committee responsible for the elective programs began to review these programs also. Both of these committees have utilized techniques similar to those used by the basic science core committee. Therefore, for several years the individuals responsible for educational policy formulation and implementation were involved with internal curriculum review. As a consequence, those involved voiced considerable dissatisfaction with the existing educational planning and decision-making process in the following areas:

1. Most of those responsible for educational policy-making seemed to be caught up in day-to-day operations to the point that the responsiveness of the institution to external pressures for change was sluggish and intermittent.

2. The curriculum committee, which, according to the faculty bylaws, had statutory responsibility for all matters of policy relating to the curriculum, seemed unable to perform its function, and so these duties had been assumed by the ad hoc dean's committees.

3. When educational changes were proposed, the faculty members often found themselves confronted with a choice of change or no change, without any opportunity to choose from among a variety of options.

Therefore, at the April 1976 faculty meeting the dean of medicine made two proposals for reform. The first proposal was that the faculty bylaws should be amended to permit constituting a new standing committee called an academic planning committee, elected by the faculty, with the following charge: to review problems and opportunities related to the educational process that might have significant impact on the school as a whole, to consider in detail the possible solutions and to evaluate their probable effects, and to present to the faculty feasible alternatives with the committee's recommendations or advice. The second proposal was to amend the faculty bylaws to charge the curriculum committee to concern itself only with those facets of educational policy related to the implementation and evaluation of the curriculum.

In October 1976 the academic planning committee was established and the curriculum committee was reorganized. The reorganization consisted of (*a*) changing the make-up of the committee to ensure that the members were those responsible for the educational planning and implementation in each course (in most cases this was a faculty member who had been designated the course coordinator) and (*b*) dividing the committee into two subcommittees, one for the clinical courses and one for the basic sciences, each of which also included student representatives and representatives of ORME.

At its first meeting in November 1976, the basic science subcommittee agreed that each course coordinator would respond to the 25 questions originally developed by the ad hoc committee. The subcommittee also agreed that student reaction to each course would be solicited on evaluation forms developed jointly by the students, the course coordinator, and the ORME staff. Each monthly meeting of the subcommittee would be devoted to a review of one of the courses so that every course would be reviewed on a pe-

riodic basis. In effect, the procedures originated by the ad hoc committee have been adopted as an ongoing function of a faculty committee supported by provisions in the faculty bylaws.

Effects on Instruction

Many of the effects of the review process are long-term and impossible to predict at the present time. Most of those involved agree that there have been significant immediate effects of internal review on instruction, on those participating as reviewers, and on the course coordinators and chairmen of the courses reviewed.

These effects include the following:

1. The importance of the course coordinator's function has achieved increased recognition, as has the need to obtain course coordinators who have the interest, energy, personal qualities, and resources to perform the role. Existing course coordinators have had their roles strengthened, and new course coordinators have been sought who exemplify the qualities desirable in such individuals.

2. Influential faculty and administrative personnel are demonstrating heightened appreciation and understanding of student attitudes toward the instructional system in medical school; they have made stronger efforts than in the past to alleviate some of the major depressants of student morale and to improve student rapport with faculty. This concern has stimulated increased attention on the part of many faculty members to the students' needs for clear understanding of course objectives and for examinations based on these objectives.

3. Faculty members are demonstrating increased willingness to consult each other across course and departmental lines for the ultimate improvement of student learning.

4. Changes have been made in course procedures to improve learning opportunities (for example, adding autopsies to the pathology course).

Evaluation

Do the effects of the internal review process described here facilitate the long-term educational mission of the medical school? An answer to this question requires determining the validity of the criteria used in conducting the review. A second obvious question is whether the effects are worth the time and effort of the individuals involved or whether a simpler method would suffice.

In regard to the first issue most of those involved believe that the process has been facilitative and that the standards are valid. The general agreement on the validity of the standards probably reflects the fact that the standards arose from assumptions regarding management (for example, the need for accountability, appropriate authority, and resources) and education (for example, the need for concern with individual differences, rapport with students, attention to objectives, active rather than passive learning, and well-organized instructional material). These assumptions are supported by logic and experience; they were generally accepted by both those reviewing and those being reviewed.

The validity of the standards is influenced by the intelligence and sympathy of those applying them. One danger of peer review is that one's peers may avoid too rigorous application of standards to avoid the consequences of having these standards applied to them—the infamous buddy system. On the other hand, too rigorous application of process requirements, such as student-faculty ratios, could make a review process either a mindless exercise or an opportunity for some zealots to impose their methodology on a group of peers.

Problems in applying the standards are created by the fact that some are more important than others, and in certain situations the standards may conflict with one another. Thus, maximizing student morale may not necessarily maximize student achievement.

A further problem with review process standards is that the temptation may exist to be satisfied with the appearance of effectiveness, as demonstrated by adherence to established procedures, without looking for concrete evidence of changes in the learners.

Although this comment may seem to contradict the earlier reservations regarding Tyler's work, the main remedy for these problems is an emphasis on learner outcomes as a criterion for evaluation. Ultimately, the primary significance of the internal review process may be that it prepares the stage for appropriate attention to outcomes as a method of evaluation. Most of the data medical schools collect on learner outcomes are not in a form that would make them useful for evaluating the effectiveness of the instructional process. Some of the most important standards set for the internal review process are those which relate to the existence and effectiveness of outcome measures, such as objectives and valid, reliable evaluation methods. Internal review is not a substitute for outcomes evaluation but is a method of setting the stage for obtaining outcome data or a means of facilitating educational improvement in the absence of such data.

In regard to the second question relating to cost benefits, there is simply no substitute available for the careful institutional self-analysis that the process described implies. With this preliminary internal review as a base, it should be possible to calculate the cost benefits of a continuous review process. Funding agencies will have a strong interest in such information.

Implications

While the curricula of other medical schools may differ from UTMB's mixed system of interdisciplinary and disciplinary courses, the problems of maintaining attention to the educational mission of the school in the face of competing missions is not unique. The experience of UTMB seems to indicate that some process of internal review will stimulate increased interest on the part of faculty to issues of course management and quality control in selecting and utilizing instructors, instructional materials, and evaluation methods. Involvement in the review process also seems to increase interest and involvement of faculty in problems of curriculum planning, design, and implementation. Furthermore, the process encourages reform in a way which supports the faculty's need for involvement and autonomy. Peer pressure may sometimes be a slow and timid method of inaugurating educational change, but changes accomplished in this fashion are most apt to be permanent and effective.

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'Fifth Pathway' in New York State Medical Schools

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Abstract—During the academic year 1975–76, 259 students were enrolled in "fifth pathway" programs in New York and New Jersey. An analysis of students participating in programs in New York state schools revealed that a majority (87 percent) had received their undergraduate training at the Autonomous University of Guadalajara. The choice of graduate training of these students was similar to that of American graduates; however, the proportion of fifth pathway students selecting primary care specialties was significantly smaller than that of their American trained counterparts. Although the desirability of the fifth pathway has been a topic of frequent discussion, it is anticipated that for the next several years increasing numbers of students will be participants. It is, therefore, important to develop, at least on a regional level, uniform standards for admission and performance to assure the quality of this educational experience.

Enrollment in a foreign medical school has become an increasingly viable alternative to those American citizens extremely motivated toward the study of medicine but unable to gain admission into an American medical school. Although it is difficult to obtain precise figures, it is estimated that perhaps 5,000 American students are currently enrolled in foreign medical schools; one school, the Autonomous University of Guadalajara, is reported to accept up to 800 students annually (1).

Almost all these students plan to return to the United States to practice medicine. The most frequent route into the American educational system is for the foreign medical school graduate (FMG) to receive the M.D. with subsequent certification by the Educational Commission for Foreign Medical Graduates (ECFMG). Certification is contingent upon passing an ECFMG examination and is required by most states for licensure.

In an increasing number of instances, however, there are students who have completed the formal curriculum in a foreign medical school but have not received the medical degree. This usually relates to the additional requirement of a year of social service or extra clinical training prior to obtraining the M.D. degree, a condition considered to be unduly harsh by most American citizens because the clinical year is often conducted under little or no supervision. In June 1971, in an attempt to alleviate this problem, the Council on Medical Education of the

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American Medical Association (AMA) published a policy statement recognizing a program that has come to be known as the "fifth pathway" which would permit a year of clinical training in this country for the American FMG under the supervision of an American medical school (2). Successful completion of this year would allow entry into medical graduate training either through individual negotiations with a particular residency program or participation in the National Intern and Resident Matching Program (NIRMP) without the necessity of ECFMG certification. Unfortunately, although more than five years have passed since the AMA's policy statement, inadequate data currently exist concerning the number of students enrolled in fifth pathway programs or the outcome of these students with respect to graduate training. In an attempt to better define enrollment and outcome of students in fifth pathway programs in New York state, the following study was undertaken under the auspices of the Associated Medical Schools of New York.

Methods

All 10 of the medical schools in New York state participated in this survey to identify students enrolled in fifth pathway programs of all affiliated institutions for the academic year 1975–76. Comparable data for enrollment were also obtained from the two New Jersey medical schools. Demographic analysis of foreign medical school attended, home state of residence, and choice and location of specialty training was performed. Comparative data with respect to choice of specialty training of graduates of American medical schools were obtained from the NIRMP. All data were analyzed by the chi-square test for homogeneity, with a level of .05 or less required for statistical significance.

Results

During 1975–76, a total of 259 students were enrolled in fifth pathway programs in eight medical schools in New York and New Jersey, with 250 (97 percent) completing the course in June. The remaining 3 percent represents those individuals who enrolled in midyear, along with two persons who did not satisfactorily complete the program.

The 11 foreign medical schools attended by the 163 students enrolled in New York state programs are listed in Table 1. The Autonomous University of Guadalajara accounted for 141 of the 163 students (87 percent). Mexico, not surprisingly, was the predominant country of origin (88 percent) (Table 1). Seventy percent (114) of these students had home residences in New York or New Jersey.

TABLE 1

FOREIGN MEDICAL SCHOOLS ATTENDED BY FIFTH PATHWAY PARTICIPANTS IN NEW YORK STATE AND THEIR COUNTRIES OF ORIGIN, 1975–76

School/Country	No. of Students
School	
Autonomous University of Guadalajara	141
Far Eastern University of Philippines	4
University of Bologna	4
University of Brussels	3
University of Marseille	2
University of Mexico	2
University of Montpellier	2
University of Santo Thomas	2
University of Grenoble	1
University of Louvaine	1
Kasturba Medical College	1
Total	163
Country of Origin	
Mexico	143
France	5
Italy	4
Philippines	4
Belgium	4
Other	3
Total	163

TABLE 2

CHOICE OF GRADUATE TRAINING OF FIFTH PATHWAY STUDENTS VERSUS NATIONWIDE DISTRIBUTION OF ALL OTHER NIRMP* PARTICIPANTS, 1975–76

Graduate Programs	Fifth Pathway Students				Nationwide	
	New York		New Jersey			
	No.	Percent	No.	Percent	No.	Percent
Primary Care						
Family practice	12	7.8	6	6.2	1,405	11
Internal medicine	56	36.4	38	39.5	4,579	38
Obstetrics-gynecology	12	7.8	6	6.2	640	5
Pediatrics	11	7.1	6	6.2	1,323	11
Specialties						
Psychiatry	10	6.5	4	4.2	420	3
Surgery Surgical specialties	29	18.8	25	26.0	2,156	17.7
Other	13	8.4	1	1.0	491	4.0
Other						
Rotating flexible	11	7.1	10	10.4	1,201	10
Total	154	100	96	100	12,215	100

* National Intern and Resident Matching Program.

TABLE 3

SELECTION OF PRIMARY CARE GRADUATE PROGRAMS: FIFTH PATHWAY STUDENTS (FPS) VERSUS NATIONWIDE DISTRIBUTION, 1975–76*

Programs	FPS New York-New Jersey Combined		Nationwide	
	No.	Percent	No.	Percent
Primary Care‡	147	59†	7,947	65†
Specialty Case§	82	33	3,067	25
Flexible	21	8	1,201	10
Total	250	100	12,215	100

* Nationwide distribution = all other NIRMP participants.

† Chi square = 7.73, 2 *d.f.*, $p < .05$.

‡ Primary care = internal medicine, family practice, obstetrics-gynecology, and pediatrics.

§ Specialty care = all other specialty training programs.

An analysis of graduate training programs selected by the 154 students in New York state schools completing the program compared with fifth pathway graduates of the New Jersey College of Medicine and nationwide data on all American medical school graduates is presented in Table 2. There is no evidence of a difference in selection of individual specialties between fifth pathway participants trained in New York and New Jersey and those graduates from American medical schools; more than one-third of the students in all three groups selected internal medicine. A comparison of students selecting primary care specialties (Table 3) does reveal a difference between fifth pathway graduates in this study and graduates from American medical schools, with the former selecting primary care specialties less frequently than the latter ($P < .05$).

Discussion

The desirability of fifth pathway programs as an approved educational tract is frequently debated. Although the program received AMA approval in 1971, the Association of American Medical Colleges in 1975 rejected a proposal to endorse it; and only 15 of 114 (13 percent) schools have agreed to sponsor these students.* Individual states have been somewhat more accepting, with 19 having passed legislation approving the fifth pathway. An additional 16 states accept students successfully completing this program as applicants for licensure (3). This lack of enthusiasm has resulted in an inadequate data collection system for monitoring student enrollment and quality of individual programs. As an example, although only 259 students were estimated by the AMA to be enrolled nationwide in this program in 1975–1976, 297 participated in the NIRMP in that year (4). Furthermore, in New York and New Jersey alone 259 students were registered during that academic year, with 250 students successfully completing the program as of June 1976. Commencing with the 1977–78 academic year, an estimated 308 students will be enrolled in programs in these two states.

Although a wide variety of foreign medical schools have been represented by students participating in fifth pathway programs in New York state, those students attending the Autonomous University of Guadalajara account for 87 percent of all enrollments.

The reasons for American students entering the fifth pathway program who already have an M.D. degree from a foreign medical school are unclear but may be related to their desire to obtain a further year of clinical training prior to formal entry into the U.S. medical educational process or perhaps to better their chances of matching later in the NIRMP. In this regard the NIRMP data for 1976 indicate the success of fifth pathway students with respect to matching. The percentage of such students who were matched versus those who were not is similar to that of all American medical school graduates (4). It is also unlikely that those students participating in this program who already obtained the M.D. are doing so because of difficulty in passing the ECFMG examinations; in most U.S. medical schools a passing score in the ECFMG examination is a prerequisite for participating in the fifth pathway.

There has been an active lobby at many state legislative levels for laws to compel medical schools to expand the number of students enrolled in the fifth program and to facilitate state licensure of students who successfully complete the clinical year. Two of the more persuasive arguments on behalf of the program are based on the assumptions that such students (*a*) will be more likely to enter primary care specialties and (*b*) will tend to practice in areas where they have obtained their training (5). In New York, which is a debit state with respect to number of physicians trained versus number remaining in the state, this argument is quite appealing to the legislature.

The data for the 1975–76 academic year indicate that 70 percent of students enrolled in New York state programs had home residences in New York and New Jersey. Seventy-six percent of those students who finished the program remained in the New York–New Jersey area for their residency training as compared with 46 percent of students with out-of-state residences who remained in New York State ($P < .05$). Unfortunately, comparative data are not available with respect to graduates of New York state medical schools. In addition, it is too early to determine whether these students will ultimately practice in New York state upon completion of graduate training.

In reviewing the various choices for specialty training undertaken by fifth pathway participants and all graduates of

* Personal communication, secretary, Office of Council on Medical Education, American Medical Association, Chicago, Illinois.

American medical schools, a small but significant difference does exist; primary care was selected less frequently by the former group ($P < .05$). No difference was noted with respect to the distribution of the several primary care specialties. The significance of this finding must be tempered with the possibility that graduates from New York state medical schools may tend to choose primary care less frequently than those graduates from other states. Until comparative data are available, the relevance of this finding remains to be determined.

Conclusion

Data collection with respect to students participating in fifth pathway programs, as well as outcome concerning these students, is far from optimal. Despite the controversy regarding the quality of the undergraduate medical education received by these students and the desirability and/or need for this program to redress existing imbalances in the provision of health care, it is apparent that for the near future increasing numbers of students will be participants. In order to evaluate the quality of education received, as well as to develop uniform standards for admission and performance, it is essential that appropriate monitoring systems be established. The Associated Medical Schools of New York have moved forward to address these matters, developing a uniform policy with respect to admission and quality of education of all fifth pathway programs within the state of New York.

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The Questionnaire as a Data-Gathering Device: Medical School Response Patterns

William C. Hilles, Ben R. Forsyth, M.D., and Henry J. Porten

Abstract—In this article the authors present the findings of a study of the process by which medical schools' internal information systems respond to external questionnaires. A representative sample of six medical schools was selected for the study, which was conducted under the joint auspices of the Association of American Medical Colleges and the Bureau of Health Manpower, Department of Health, Education, and Welfare. The process for completing four national questionnaires was analyzed following site visits and detailed documentation at each school. An overall objective of the study was to estimate the effect of this process on the quality of data supplied. A number of problems with the process which inhibited the provision of reliable data were found. These are highlighted and corrective action suggested both for the institutions completing the questionnaire and for the sponsoring agencies.

The Management Systems Development Liaison Committee was established by the Association of American Medical Colleges (AAMC) several years ago to provide guidance and consultation to its member institutions in the development of management systems. One of its specific charges was the review of the process by which a medical school's information systems respond to external questionnaires.

This study was supported in part by the Bureau of Health Manpower, Department of Health, Education, and Welfare, under contract with the Association of American Medical Colleges; however, any conclusions and/or recommendations made do not necessarily represent the view of this agency.

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There were four major objectives of the study. The first was an attempt to define the method by which the institutions obtained the data with which to respond to these questionnaires. The second objective was to assess the adequacy of the instructions, including the purpose of the questionnaires. The third goal was to determine the usefulness of the aggregated data to the institution responding to the questionnaires. The last objective was an attempt to evaluate the adequacy of the feedback of information to the responding institution. An overall objective of the entire study was to estimate the effect of the process of responding to these questionnaires on the quality of data ultimately supplied.

Method

Six medical schools representing a broad spectrum of internal information systems were selected for this study; three are

private and three state-owned institutions. The latter were closely affiliated with their respective parent universities and were dependent upon the university as a data resource, whereas the private schools were loosely affiliated with their parent institutions and much less dependent upon them as a data resource. All of the six schools employed their own staffs to complete the questionnaires.

QUESTIONNAIRE SAMPLE

The following national questionnaires were selected for the study since it was felt that they were representative of questionnaires received by most medical schools and taken together covered a broad range of types of data: The American Medical Association/Association of American Medical Colleges' Liaison Committee on Medical Education Questionnaires (LCME) (Part I—Financial and Part II—General Information), the AAMC Survey of the Impact of Proposed Federal Fund Cutbacks (a one-time "crash" effort), and the Office of Education's Higher Education General Information Survey (HEGIS) covering both college and university physical facilities. These questionnaires require information concerning medical school financing, enrollment, curriculum, and facilities.

SURVEY METHODS

A site visitors' checklist was developed and used as a guide during the interview process at the six schools. It covered topics relating to the receipt of the questionnaire, respondents' preparation of replies, generation of data, completion process, and usefulness of the questionnaire to the institution.

The site visit team met with those individuals from each school who had the responsibility for providing data for the particular questionnaire under study. In addition, the team met with that individual assigned responsibility for coordinating the completion and review process for the questionnaire. During the meetings between site team and school staff, it was emphasized that the process of supplying the data was being studied and that no attempt was being made to audit or to verify the actual responses given on the questionnaires.

ANALYSIS OF DATA

A detailed descriptive site visit report which was a general review of the respondents' responses to the inquiries of the site team was prepared, following which a detailed examination of the problems encountered by the respondents and some proposed solutions to these problems were offered. In addition, a problem matrix was developed to enable a cross comparison of responses from each medical school.

Results

The questionnaires under review, except for the HEGIS, were received by the medical school deans.

The HEGIS questionnaire was sent by the U.S. Office of Education and had no single entry point to the medical education system. Accordingly, the questionnaire was received by a state agency, parent university, medical school dean, or an organizational unit within the medical school.

Once the questionnaires were received, they were routed to those best able to complete them. Virtually no fragmentation of the LCME I (financial), "Impact," nor HEGIS questionnaires occurred. The LCME II (general), however, was subdivided and answered at remote points throughout the institution because of the varied nature of data requested on this survey instrument.

GENERAL ADMINISTRATION

A great variety of types of personnel were found to be involved in the response process, including faculty, general and academic administrators, administrative assistants, and clerical/secretarial staff. For the most part the coordinators were professional administrators while the primary respondents were administrative assistants.

Problems occurred when the questionnaire was subdivided and sections sent to other offices for response. This usually resulted in the loss of the cover statement containing the goals and objectives. The work time necessary to complete the questionnaire was estimated to vary between several hours and weeks depending on the complexity of the questionnaire, the degree of data reconstruction from source records, and the sophistication of the institution's data retrieval system.

For the repetitive survey intruments—LCME (Parts I and II) and HEGIS—the respondents felt that the deadlines set by the sponsoring agency were reasonable. The impact survey was sponsored by the AAMC in order to obtain information with which to respond to a Congressional hearing concerned with funding of medical schools; therefore, the time available to the schools was very short.

GENERATION OF DATA

The source of data for LCME I and HEGIS differed depending upon the degree of affiliation of the medical school with the parent university. In those institutions closely affiliated with their university, a significant portion of the data needed for these two questionnaires was not readily available nor in a format needed by the schools. In the other institutions the data for these two instruments were more readily available since it was generated internally. Almost all of the data for LCME II and the impact questionnaire were generated internally by the medical school.

In general, all six schools had to reconstruct their data in order to complete the questionnaires. Most of the schools required that their data systems be readily available to meet their own internal management needs. Unfortunately, the design of these systems could not be easily adapted to respond to the external requests. The reconstruction process required consisted of file searches, mathematical computations, typing, and analytical review. Unhappily, this process occasionally introduced significant errors and omissions into the questionnaire responses.

The instructions for the questionnaires were generally thought to be clear. There were few definitional problems in the LCME I, HEGIS, and impact surveys. However, there were major definitional problems for much of the student and faculty data encompassed in LCME II.

USEFULNESS

Once the questionnaires were completed, they had little general application for internal management purposes. Further, the respondents claimed that they seldom had an opportunity to use any of the questionnaires as a source document when responding to other external surveys. Rather than take data from these secondary sources, the respondents preferred to use the data from primary sources, reconstructed if necessary.

Discussion

The medical school functions in an increasingly complex environment. Its decision-making process involves larger numbers of individuals and organizational activities, more alternatives, and greater sophistication in the development and use of mangement techniques. Concurrently, there are demands for an ever expanding amount of institutional data. External requests for data place an addi-

tional load on administrative resources which are often marginal in their ability to deal with the large amount of information required. Under such conditions it is not surprising that medical school administrations, harassed by requests to complete external questionnaires, rely on their staff assistants to distribute and coordinate the assembly of the necessary data. As a consequence the quality of the information provided often deteriorates to the point that the data that are gathered are of little use to either the requesting or responding institution.

In addition, the turnover of medical school administrators has a deleterious effect on the continuity and integrity of institutional data provided to external questionnaire sponsors. However, the role of the deans' support staff in coordinating such data over time is often a welcomed stabilizer. The reassuring words of one veteran staff assistant to a dean indicated that while she was "now with her third dean" over an 11-year span, she was confident that she knew how "to parcel out" sections of a questionnaire to elicit reliable data.

The uneven or uncertain quality of much of the data has serious implications for the requesting organizations since these organizations often rely upon these data to formulate their own positions as well as to influence national and/or local policies. The results of this study emphasize the many problems associated with data collected by national questionnaires and raise some questions concerning polices and positions developed solely on this information. To aid in resolving some of these problems, the authors offer the following recommendations:

1. The sponsoring agency should ensure that those responsible for completing its questionnaire are thoroughly familiar with its purpose and objectives as well as the ultimate use to which the data will be applied. This can be accomplished by providing each respondent with a statement detailing its purpose, objectives, and utility.

2. When new questionnaires are submitted or there are major revisions to existing ones, the medical schools should be given fair warning, thereby enabling them to prepare for these changes.

3. The medical schools should inform the sponsoring agencies of those questions and/or questionnaires that request duplicate information. These repeated questions and redundant surveys should be eliminated. Furthermore, the institution should not hesitate to call upon the AMA and the AAMC to assist in clarifying definitions or instructions used in their questionnaires. In addition, questionnaires that could be answered by the AAMC with data previously supplied should be sent to the Association, thereby releasing the resources of the medical school for other uses.

4. There are some serious definitional and instructional problems with many questionnaires, and these issues should be clarified by the responsible organizations.

5. The primary respondents seldom receive feedback reports from the sponsoring agency. One type of feedback report which many in the schools felt would be useful would be an array of data that would show one school's response compared with that of the other institutions. A study should be undertaken to identify and explore those areas in which comparative statistical reports would be beneficial.

6. A single entry or recording point in each school for all questionnaires may be useful in coordinating repetitive requests for data as well as in routing feedback reports.

The lack of usefulness of these surveys to the internal management of the institutions is unfortunate, but it may be the inevitable result of imposing a single reporting mechanism upon a heterogeneous group of schools.

As has been noted, medical schools which rely extensively on parent universities as the data resource often find the university data system inflexible and unable to meet the school's information needs. This problem is most prominent in the financial data systems. Because of the seriousness of this deficiency, it is recommended that the problem be addressed on a national level and that the parent universities be urged to allow the medical schools greater access to their computerized information systems in an attempt to assist the schools in satisfying their own local management needs.

Attrition from General Practice: Career Patterns Of Toronto Medical School Graduates

Mary A. Fruen, Ph.D., Mary Chipman, and Jan W. Steiner, M.D.

Abstract—Reported here are the results of a study of the degree to which medical careers in general practice versus specialization are pursued by graduates of the University of Toronto Faculty of Medicine in the first six years after the completion of their internships. The retention rates in general practice and residency are documented on an annual basis using the life table method. The annual rate of attrition from general practice dropped substantially after the first three years. Fifteen percent of the initial general practice group dropped out during the first year, 10 percent of the remainder in the second year, and 8 percent of the rest in the third year. In each of the subsequent three years, the attrition rate was 4 percent, 4 percent, and 2 percent, respectively.

Medical career selection has profound importance beyond its significance to the physician and his prospective patients. Information on individual career decisions, taken collectively, provides input for institutional decision-making by medical educators and health care planners.

The maldistribution of medical manpower geographically and among the various areas of medicine has provided impetus for numerous longitudinal studies of correlates of career choice in medicine (1-4). Most investigators have predicted career choice at a single point in time, generally near the end of medical school. However, in an unpublished cross-sectional study of careers of graduates of the University of Toronto Faculty of Medicine, 57 percent of the graduates claimed to have finalized their career choices following the completion of medical school. This finding suggests that information on the prediction of career choice at a given point in the training or career continuum is of little value in decision-making if choice beyond that point may be unstable.

Although, as noted, the career choice of medical students has been extensively studied, few investigations have explored the stability of this choice following medical school. Notable exceptions are the studies by Boverman (5) and the Association of American Medical Colleges (6).

Boverman compared actual career activities of graduates of 10 classes from the University of Chicago School of Medicine with the career decision each individual had reported at the end of his senior year, three to 13 years earlier. Thirty-one percent had shifted their career choices over this interval. However, Boverman points out the lack of generalizability of these findings, postulating greater than normal stability in the career choices of University of Chicago graduates.

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Hutchins (6) surveyed interns from representative samples of American medical school classes of 1960 and resurveyed them four years later. The choices of two-thirds of those in the sample were reported to have been maintained, but no further specific figures were given. Thus, Hutchins' reported results were limited and left questions on the nature and timing of changes.

Another type of related study involves reasons for career changes by physicians. Crawford and McCormack (7) and Harvey (8) investigated the reasons physicians left general practice to pursue other career interests.

Crawford and McCormack questioned 89 physicians on their reasons for leaving Virginia practices in primary care, that is, general practice, general internal medicine, and pediatrics. By far the greatest complaint, expressed by two-thirds of the group, was overwork. However, the timing of these career changes was not noted, and practice conditions may not be comparable with those of subjects used in this study.

Harvey (8) reported that the "most important" reason for leaving general practice in Ontario related to long hours of work (33 percent), and the next most frequently mentioned reason was that the spectrum of problems faced in general practice was too broad (23 percent).

No repeated follow-up to determine medical career stability over time has been reported. To provide preliminary data on the usefulness of conclusions previously based on longitudinal prediction studies of career choice, the present authors describe the extent to which general practice and residency training programs are pursued and the rates of attrition from each. The results should be useful to health manpower planners in their projections and analyses.

Methods

The data included in this study are on the career activities as of September 1 for classes graduating from the University of Toronto Faculty of Medicine from 1965 through 1971 for each year from the year of internship completion through 1972. Thus, the study results in data for seven surveys for the first class (1965) and six surveys for the second (1966) through one survey for the class of 1971. For example, in 1966 graduates of the 1965 class were surveyed on their current professional activities. Through 1972, they were resurveyed annually along with subsequent classes. September 1 after internship completion was chosen as the date for the initial survey because by then most graduates should have been established in their post internship activity.

In the first survey of each class each respondent was classified into one of the following three major categories: "general practice," including general practice, Armed Forces Medical Corps, and emergency medicine; "residency training," including any program related to qualification to enter clinical practice following receipt of the M.D. degree and internship completion, for example, specialty training programs covering residencies and fellowships but not graduate work in the basic sciences; and "other," including any activity other than general practice or residency training, for example, research, teaching, administration, and nonmedical work.

The general practice and resident groups were followed on an annual basis on September 1 by means of two separate "life tables" that show the number and percentage of the initial group which remain at the beginning of each year and the

attrition from that group during the year. The BMD computer program (9) was used for the analysis.

In this study the starting point of each medical graduate's career was the September 1 following completion of internship, and the usual end-point for each graduate was the first major change in his career or status. For example, individual graduates who entered general practice immediately after internship were followed until they left general practice, the study ended, or they were lost to follow-up, whichever came first. In this way it was possible to study the rate at which the group of graduates beginning general practice was depleted and similarly the rate at which those beginning in residency training programs left these programs in successive years.

Results

Response rates by graduating class are shown in Table 1. Complete professional activity data for all survey years were obtained from 1,053 graduates, 94.2 percent of the sample. Partial data were available for an additional 24 graduates, 2.1 percent, for a total of 1,077 graduates, 96.3 percent of those included in the study.

For all classes combined 47.2 percent entered general practice following internship, 48.7 percent undertook residencies, and 4.1 percent were involved in other activities (Table 2). The proportions entering general practice and residency programs were nearly equal except for the class of 1965, which was atypical in that 32 percent began in general practice and 62 percent in residency.

The life tables showing "survival" rates in general practice and residency training appear as Tables 3 and 4. These tables document the number withdrawing from each group and those lost to follow-up for the first six years after internship.

Of the 508 physicians who entered general practice after internships, 15 percent dropped out within the first year (Table 3, Figure 1); in the second year, 10 percent of the remainder left general practice; in the third year the figure was 8 percent; and in the three subsequent years, 4 percent, 4 percent, and 2 percent, respectively. Thus, there was a gradual decline in the rate of attrition from general practice; the "survival" curve decreases in slope after the third year of practice. Overall, 63 percent of the initial general practice population remained at the end of the sixth year.

The life table results summarized in Table 4 and Figure 1 give the attrition from and survival in residency training programs. During the first year following completion of the internship, 18 percent of those who had initially entered residency programs dropped out of residency training and in the second year after internship, 10 percent of the remainder left training. Comparable proportions for the next four years were 8 percent, 34 percent, 51 percent, and 50 percent, respectively. At the end of six years only 10 percent of the study population remained in the residency programs which they had entered immediately after internship. Clearly, varied proportions leaving residencies are attributable to the different lengths of standard residencies.

TABLE 1

RATE OF RESPONSE BY CLASS TO SURVEYS ON CURRENT CAREER ACTIVITY FROM THE YEAR OF INTERNSHIP COMPLETION THROUGH 1972 FOR UNIVERSITY OF TORONTO MEDICAL GRADUATES IN 1965–1971

Graduating Class	Class Size	*Complete Responses for All Surveys		Partial Data		Total Complete and Partial Data	
		No.	Percent	No.	Percent	No.	Percent
1965	126	122	96.8	3	2.4	125	99.2
1966	157	150	95.5	3	1.9	153	97.4
1967	132	122	92.4	8	6.1	130	98.5
1968	179	169	94.4	4	2.2	173	96.6
1969	171	162	94.7	5	2.9	167	97.7
1970	169	146	86.4	1	.6	147	87.0
1971	184	182	98.9	0	0.0	182	98.9
Totals	1,118	1,053	94.2	24	2.1	1,077	96.3

*Complete responses from September of year of internship completion through 1972.

TABLE 2

INITIAL CAREER ACTIVITY AFTER INTERNSHIP BY UNIVERSITY OF TORONTO MEDICAL SCHOOL GRADUATING CLASSES OF 1965 TO 1971

Year of Graduation	No. Responding	Activity					
		General Practice		Residency		Other	
		No.	Percent	No.	Percent	No.	Percent
1965	125	40	32.0	78	62.4	7	5.6
1966	153	73	47.7	75	49.0	5	3.2
1967	130	65	50.0	59	45.4	6	4.6
1968	173	89	51.4	78	45.1	6	3.5
1969	167	85	50.9	78	46.7	4	2.4
1970	147	72	49.0	70	47.6	5	3.4
1971	182	84	46.2	87	47.8	11	6.0
Total	1,077	508	47.2	525	48.7	44	4.1

TABLE 3

ATTRITION FROM AND SURVIVAL IN GENERAL PRACTICE DURING EACH YEAR BY UNIVERSITY OF TORONTO MEDICAL GRADUATES WHO ENTERED GENERAL PRACTICE FOLLOWING INTERNSHIP

Years* Following Internship	Number			Proportion			
	In General Practice at Beginning of Year	Dropping Out†	Lost to Follow-up‡	Dropping Out§	Surviving**	Cumulative††	Standard Error
0–1*	508*	72	84	.15	.85	.85	.02
1–2	352	33	56	.10	.90	.76	.02
2–3	263	18	65	.08	.92	.70	.02
3–4	180	6	59	.04	.96	.67	.03
4–5	115	4	44	.04	.96	.64	.03
5–6	67	1	45	.02	.98	.63	.03

* First one-year interval began September 1 following internship completion.

† Known to have left general practice during the year.

‡ Includes those for whom data are missing, as well as those whose graduating class was part of the study only through the beginning of the year.

§ The ratio of those dropping out during interval to those "exposed to risk," that is, those in group at beginning of interval less one-half those dropping out plus those lost to follow-up.

** The proportion surviving or "survival" rate is the complement of the proportion dropping out.

†† The cumulative survival rate is the proportion remaining in the same professional activity group since internship.

TABLE 4

ATTRITION FROM AND SURVIVAL IN RESIDENCY TRAINING DURING EACH YEAR BY UNIVERSITY OF TORONTO MEDICAL GRADUATES WHO ENTERED RESIDENCY TRAINING FOLLOWING GRADUATION*

Years Following Internship	Number			Proportion			
	In Residency Training at Beginning of Year	Dropping Out	Lost to Follow-up	Dropping Out	Surviving	Cumulative	Standard Error
0–1	525	86	87	.18	.82	.82	.02
1–2	352	34	51	.10	.90	.74	.02
2–3	267	18	58	.08	.92	.68	.02
3–4	191	57	46	.34	.66	.45	.03
4–5	88	38	26	.51	.49	.22	.03
5–6	24	10	8	.50	.50	.10	.03

* For explanation of headings, see footnotes in Table 3.

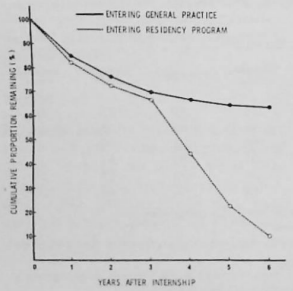


FIGURE 1

Cumulative proportion of University of Toronto medical graduates remaining in residency training and general practice following internship.

Discussion

The life table approach is advantageous for such a longitudinal study of attrition from groups because the results from later cohorts do not have to be available for the total study period before commencing analyses. Thus, the results are more timely. Also, those individuals for whom some data are missing can be included up to that point at which the first missing data appear. All "survival" information is used, up to the closing date of the study or the period the individual is lost to follow-up, increasing the precision of results by reducing the standard error of measurement. This also reduces the selective bias which might occur if these subjects were not included (10).

These life table results must be interpreted with some caution. They do not document the return to general practice of those few individuals who left temporarily. Nor, since respondents did not report the reason for dropping out, do they identify those who leave to enter a family practice residency. Though few in the graduating classes in this study entered these residencies following a period of practice, family practice residencies are becoming more popular and may have greater effects on future results.

The life table results on survival in residency training are difficult to interpret. Residency programs range in length from two to seven years depending on the specialty. Therefore, except in the first resurvey when no dropout could have completed the program, it is impossible to separate those who left having failed to finish programs from those completing residency training and entering specialty practice.

A major disadvantage of the life table approach is the bias arising if subjects are lost to follow-up. Those who have left their practices might be more difficult to locate for survey purposes than those maintaining practices. However, in this study response rate was so high that this difficulty presents little concern.

The decline in the rate of attrition from general practice after the third year of practice is an important finding for health manpower planners. Apparently, individuals find out fairly quickly whether they will be satisfied in general practice and committed to that field. Temporary sojourns in general practice could also be part of a premeditated career plan rather than the consequence of any negative reactions to general practice itself.

In any case, even though a physician might discontinue general practice, both the physician and the health care needs of society could be fulfilled by his temporary service in the field. The physician, after only a year of internship as required postgraduate training, may gain valuable practical experience in general practice, increased earnings, and temporary respite from training. At the same time, the temporary general practitioner may help to alleviate the physician manpower shortage in the primary care sector.

These results should be useful to curriculum designers in medical education, who might consider the extent of career change in determining the appropriate balance between required core material and electives. Data such as these might also be useful in assessing the impact of given undergraduate curriculum in the medical school environment upon career choice.

The data on the timing of departure from general practice, as supported by further study, will aid health manpower planners in making projections and anticipating manpower needs which cannot accurately be done on the basis of initial career activity alone. Knowledge on the timing of departure from general practice might also be useful to those seeking to intervene in this decision. Further data are needed which document the reasons for leaving general practice so that practice conditions might be improved or incentives to maintain the general practice career provided.

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Students' Attitudes Toward Cancer: Changes in Medical School

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Abstract—This study focuses on the development of attitudes toward cancer during medical school. Under consideration were: (*a*) attitudes toward the patient's inner resources to cope with a serious illness such as cancer, (*b*) attitudes toward the value of early diagnosis, (*c*) attitudes toward the value of aggressive treatment, and (*d*) belief in immortality and preparation for and acceptance of death. Changes occurred throughout medical school, especially during the clinical years. More change appears to be related to medical education and experience than to personality. The findings have important implications for the education of medical students.

When a student enters medical school, he brings attitudes and beliefs partially accounted for by his personality traits, familial-cultural-religious background, and past education and life experiences. In school his beliefs and attitudes undergo changes resulting from medical education; interaction with peers, physicians, patients and others; and his perception of society's expectations of the medical profession (1). After medical school his attitudes predispose him to certain actions or behaviors in his practice. The quality of medical care he gives his patients is a reflection of the attitudes he has toward himself, the sick, disease, and life in general. Together with expected attitudinal changes during medical school, changes in personality traits, needs, and values must be considered. Gradual decline in idealistic and humanitarian values along with increasing cynicism and need for autonomy and independence have been noted (2-4). Perricone (5) found that though students become less humanitarian after medical school, they simultaneously become more socially concerned. A drop in benevolence and leadership has been observed during the psychiatry residency (6). The Association of American Medical Colleges' longitudinal study covering medical students from 28 schools revealed a drop in theoretical values and a rise in economic and aesthetic values (3). These changes may relate to shifts in attitudes.

The present study focuses on the development of attitudes toward cancer and cancer patients as medical students proceed through medical school. Answers were sought to the following questions:

1. How do cancer-related attitudes change in medical school?
2. How are attitude changes related to intellectual achievement, values, and open-mindedness measured upon entrance to medical school?
3. How are attitude changes related to changes in values and open-mindedness occurring in medical school?
4. How do attitudes of medical school graduates differ from those of practicing physicians?

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Measurement of Attitudes

Emphasis was placed primarily on cancer because reactions toward this disease often are strongly manifested. Instrumental in the study was the Cancer Attitude Survey (CAS) (7). Based on 600 statements expressing attitudes relating to the care of cancer patients, a preliminary CAS form was given to a group of 163 physicians, 89 medical students, and 13 laymen. Factor analysis of the responses resulted in the identification of three major attitudinal dimensions, namely: (*a*) attitudes toward the patient's inner resources to cope with serious illness such as cancer (CAS I); (*b*) attitudes toward the value of early diagnosis and aggressive treatment (CAS II); and attitudes toward personal immortality and preparation for and acceptance of death (CAS III).

Content examination of the items in CAS II and other nonfactor items, along with correlational analysis of all of these based on data from a new sample of 94 physicians, suggested that CAS II may be separated into two distinct components dealing with early diagnosis (CAS IIa) and aggressive treatment (CAS IIb), respectively. Statements comprising the two subscales and the loadings obtained in subsequent principal component analyses are listed in Table 1. A positive loading indicates a favorable attitude, whereas a negative one points to the reverse. Items defining CAS I and CAS III are listed elsewhere (7).

Subjects and Procedure

As part of a longitudinal study, a battery of psychometric instruments, including the CAS, was administered to students entering five medical schools in 1966 and the same five schools plus two more in 1967. The schools were selected to give wide variation among students in demographic, socioeconomic, intellectual, and biographic factors. The students were retested with the CAS at the end of their sophomore year and again with the complete battery at the end of their senior year. Complete freshman-senior data were obtained for approximately 450 subjects.

Other instruments in the battery were the Gordon Survey of Interpersonal Values (SIV) (8), designed to assess an individual's needs for support, conformity, recognition, independence, benevolence and leadership; the Allport-Vernon-Lindzey Study of Values (AVL) (9), which measures the prominence of six evaluative attitudes in personality: theoretical, economic, aesthetic, social, political and religious; and the Rokeach Dogmatism Scale, Form E (10). Both the SIV and the AVL are forced-choice instruments; that is, the sum of the scores of each subject on each instrument is a constant. This particular characteristic causes singularity in the correlation matrices. To bypass this obstacle, one scale would have to be deleted from each instrument. Preliminary consideration suggested that the SIV recognition scale and the AVL political scale contributed the least to individual differences. They were omitted from all analyses.

Intellectual achievement of students

TABLE 1
CANCER ATTITUDE SURVEY STATEMENTS COMPRISING ATTITUDES TOWARD EARLY DIAGNOSIS AND ATTITUDES TOWARD AGGRESSIVE TREATMENT

Scales	Principal Component Loading*
CAS IIa: Attitudes Toward Early Diagnosis	
Complete history and physical is usually unnecessary in everyday practice	−.66
Proctoscopic examinations should be required in routine physical examinations despite their difficulty for the doctor and discomfort for the patient	+.60
Too often doctors are so busy working with sick people that they can't be expected to do screening procedures and routine complete physical examinations on all who walk into their offices	−.60
Every person should have a complete physical checkup annually	+.63
A physician can be so discouraged by the low cure rate of cancer that he will not feel the need to do routine "cancer tests," especially when he is so busy working with sick people	−.48
Obtaining routine Pap smears is more the patient's responsibility than the doctor's	−.52
CAS IIb: Attitudes Toward Aggressive Treatment	
Pelvic exenteration is such a multilating procedure and has such a low cure rate that there is very little indication for its use	−.39
Only some cancer patients should be treated aggressively	−.64
Aggressive treatment of cancer frequently subjects the patient to illness, pain, and expense without much actual benefit to him	−.78
Patients with cancers of low five-year survivals (for example, esophagus, lung, stomach, pancreas) are not improved by aggressive treatment	−.59
Therapeutic attempts to control a cancer's progress should continue for as long as the patient can be kept alive	+.44
Radical surgery for cancer is rarely indicated in patients over 70 years of age	−.58
In patients with prostatic cancer the results of estrogen therapy are so good that if side effects occur, they should be disregarded	+.28

* Positive loading indicates favorable attitudes; negative loading, unfavorable.

was assessed by their Medical College Admission Test (MCAT) scores.

Change score for each student was defined as the difference between the scores obtained at two testings. Studies of mean change for both the freshman-to-sophomore and junior-to-senior periods on each CAS measure were performed via the Hotelling T^2 statistic followed by *post hoc* individual comparisons between consecutive testing scores (11). To convert mean change into percentages of subjects with specific patterns of observed change and no change, classification based on the traditional 27 percent rule in item analysis was used (12). If, for any given CAS measure, σ is the standard deviation of all change scores, a subject would be said to have experienced a decrease, no change, or an increase on that scale if his observed change score was less than $-.61\sigma$, between $-.61\sigma$ and $.61\sigma$, or greater than $.61\sigma$, respectively. The Hotelling T^2 statistic and *post hoc* individual contrasts were also used to evaluate mean changes in open-mindedness and in the SIV and AVL scales. A level of $\alpha = .05$ was used as the indicator of a significant *post hoc* test.

To explore the relationship between changes and other catalytic factors, linear regression analysis was carried out on the partial covariance matrices, with freshman components in the change scores being held constant. Analysis of this type has been recommended by several authors (13, 14). It allows for the control of differences in the first testing and, therefore, reduces possible ambiguity in the relationship being sought. Similar methodology was used to assess the relationship between attitude changes and shifts in the remaining variables.

To shed light on the possible generation gap between medical school graduates and practicing physicians, attitudes of the seniors in the present sample were compared by the Student's *t* test with those of a sample of 186 physicians. These physicians were chosen from the two groups of physicians whose responses were used in the construction of the CAS and from another group of 64 attending staff members of Memorial Hospital for Cancer and Allied Diseases in New York. The 186 doctors were selected so as to reflect the specialty preferences expressed by the seniors and included family physicians (21 percent), internists (36 percent), surgeons (28 percent), and others (15 percent).

Results

The results are presented in four separate sections to answer the four questions put forth in the introduction.

ATTITUDES, VALUES, DOGMATISM

Examination of the responses to each of the items comprising the CAS scales reveals that, with the exception of CAS III (attitudes toward death), the proportion of neutral responses tends to decrease as students move through medical school (Table 2). This is especially true for CAS IIa and CAS IIb, dealing with early diagnosis and aggressive treatment. In CAS I little change takes place between entrance into medical school and the end of the sophomore year. The decline in CAS I occurs during the clinical years, possibly being related to exposure to patients. For the items in CAS III the proportion of neutral responses remains essentially the same in the three testing occasions. The greatest discrepancies in neutral responses are found between freshmen and sophomores on both CAS IIa and IIb and between sophomores and seniors on CAS IIb alone. Overall, the data indicate that as medical education and experience progress, students display more definite sets of attitudes directly related to patient care (CAS IIa and IIb).

For comparison purposes the proportion of neutral responses for the previously mentioned sample of 94 physicians is also given. The closeness of the percentage of neutral responses for physicians and seniors, particularly on CAS IIa and CAS III, is apparent. In the case of CAS III this consistent attitude pattern perhaps has its root in the religion-bound content of many of the items. For many people questions about death and immortality possibly remain unsettled, and time has no solidifying effects.

Table 3 reports the mean and standard deviation of each CAS measure at the freshman, sophomore, and senior years. The magnitude of the Hotelling T^2 statistics indicates that as a group the subjects underwent changes in all four attitude areas throughout medical school training. Overall change in CAS I, however, appears to be the most substantial. *Post hoc* analysis (at $\alpha = .05$) revealed that during

TABLE 2
AVERAGE PERCENTAGE OF NEUTRAL RESPONSES TO CAS SCALE ITEMS FOR 441 MEDICAL STUDENTS FROM FIVE SCHOOLS STUDIED LONGITUDINALLY AND FOR 94 PHYSICIANS

Scale*	Medical Students			Physicians
	Freshman	Sophomore	Senior	
CAS I	10.9	10.0	7.2	4.2
CAS IIa	11.6	3.2	3.3	4.1
CAS IIb	37.9	14.4	6.5	2.7
CAS III	13.5	14.4	13.5	12.1

* Cancer Attitude Survey. See text for description of the four item-groupings.

TABLE 3

MEANS, STANDARD DEVIATIONS, AND HOTELLING T^2 FOR CANCER ATTITUDE SURVEY SCALE SCORES OF STUDENTS FROM FIVE MEDICAL SCHOOLS MEASURED AT FRESHMAN, SOPHOMORE, AND SENIOR YEARS (N = 441)

Scale	Year			Hotelling T^2*
	Freshman	Sophomore	Senior	
CAS I				
Mean	67.96	70.83†	76.83†	245.43
S.D.	11.76	12.32	11.25	
CAS IIa				
Mean	38.74	38.00	36.60‡	53.37
S.D.	5.83	6.24	6.67	
CAS IIb				
Mean	34.92	33.84‡	32.22‡	45.37
S.D.	5.52	6.96	7.66	
CAS III				
Mean	43.36	43.29	45.05†	27.80
S.D.	9.45	8.62	8.98	

* Differences across years are statistically significant ($p < .01$) for all scales.
† Mean higher than preceding (post hoc comparison at $\alpha = .05$).
‡ Mean lower than preceding (post hoc comparison, at $\alpha = .05$).

both the freshman-sophomore and the junior-senior periods there are increases in CAS I and decreases in CAS IIb. The analysis also points out that the average subject changed his score in CAS IIa and CAS III only during the last two years of medical school, with the former decreasing and the latter increasing during this period.

Following are the percentage of students in various patterns of attitude change and no change from freshman to senior year of medical school: CAS I – decrease 9.3, increase 51.9, no change 38.8; CAS IIa – decrease 33.3, increase 16.5, no change 50.2; CAS IIb – decrease 42.2, increase 17.9, no change 39.9; CAS III – decrease 17.7, increase 31.9, no change 50.4. The proportion of students with attitudinal shiftings is greatest for CAS I and CAS IIb. This finding agrees with the data presented in Table 3 in that mean changes are more substantial in these two scales than in CAS IIa and CAS III.

Not only did the students change their attitudes pertinent to patient care, but also they experienced changes in values and open-mindedness. Table 4 lists the means and standard deviations of the variables measured by the SIV, AVL, and Rokeach Dogmatism Scale at both the freshman and senior years. The magnitude of the Hotelling T^2 statistic documents the overall change in the above variables. *Post hoc* analysis (at $\alpha = .05$) indicated that the group means for SIV support, benevolence, and leadership and AVL economic and social values remained stable. The analysis also showed that increases occurred in SIV independence and AVL aesthetic values and in dogmatism. These findings are consistent with those reported by Hutchins (3), even though there is a 10-year lapse between the two studies. The decline in dogmatism was replicated in a study of students entering the University of Minnesota School of Medicine (15).

FRESHMAN CHARACTERISTICS

The results of the analyses performed to answer the question, "How are attitude changes related to intellectual achievement, values, and open-mindedness measured upon entrance to medical school," indicate that these factors (as assessed by the instruments used in the present study) are significantly related to changes in all attitude areas except CAS IIa. However, the multiple correlations obtained indicate that the freshman characteristics under consideration only explain approximately 4.8 percent of the variance in the changes for CAS I, 6.3 percent for CAS IIb, and 10.2 percent for CAS III.

Thirteen statistically significant correlations were found between individual freshman variables and CAS changes but many seem to be artifactual. Apparent exceptions are the correlation between CAS I and AVL social (+), and those between CAS III and AVL religious (+), social (+), and economic (−) values.

PERSONALITY CHANGES

Overall changes in open-mindedness and values showed some relationship to shifting in all attitude areas but CAS IIb and accounted for about 9.6 percent of the variance in the changes for CAS I, 4.8 percent for CAS IIa, and 11.6 percent for CAS III. The two most meaningful correlations between changes in individual variables are between open-mindedness and CAS I (attitudes toward patients' psychological resources) and between AVL religious value and CAS III (attitudes pertinent to death and dying). No significant relationships were found between changes on any of the SIV values and changes on the CAS scales.

SENIORS AND PHYSICIANS

Table 5 presents CAS data for the seniors and the 186 practicing physicians. Significant differences were found on all scales with exception of CAS III. The data reveal that seniors placed relatively more value on the patient's psychological resources (CAS I) and less emphasis on early diagnosis (CAS IIa) and aggressive treatment (CAS IIb).

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR PERSONALITY VARIABLES* OF STUDENTS FROM FIVE MEDICAL SCHOOLS MEASURED AT FRESHMAN AND SENIOR YEARS (N = 451)

Variable†	Freshman		Senior	
	Mean	S.D.	Mean	S.D.
SIV				
Support	14.81	5.19	15.92	5.66
Conformity	10.54‡	5.57	8.63	5.34
Independence	19.71	5.96	21.88‡	5.96
Benevolence	19.04	5.89	17.86	6.00
Leadership	14.66	6.44	14.40	5.98
AVL				
Theoretical	46.82‡	6.92	44.33	6.90
Economic	37.02	8.31	37.53	8.29
Aesthetic	38.36	8.70	41.58‡	8.39
Social	39.57	7.52	40.69	7.72
Religious	38.45‡	10.03	35.24	10.14
Rokeach				
Dogmatism	145.98‡	22.25	137.03	22.38

* Overall change measured by Hotelling $T^2 = 433.35$ ($p < .01$).
† SIV = Gordon Survey of Interpersonal Values; AVL = Allport, Vernon, Lindzey Study of Values.
‡ Larger mean (*post hoc* comparison significant at the .01 level).

TABLE 5
MEANS AND STANDARD DEVIATIONS OF CAS SCORES FOR 441 SENIORS FROM FIVE MEDICAL SCHOOLS AND FOR 186 PHYSICIANS

Scale	Subjects		*t* Test
	Seniors	Physicians	
CAS I			
Mean	76.83	69.45	6.55*
S.D.	11.25	16.13	
CAS IIa			
Mean	36.60	39.95	−5.50*
S.D.	6.67	7.63	
CAS IIb			
Mean	32.22	38.57	−8.97*
S.D.	7.66	9.03	
CAS III			
Mean	45.05	43.89	1.37
S.D.	8.98	11.20	

* $p < .01$

Discussion

Medical students undergo changes in attitudes related to patient care. These changes occur in two distinct phases. During the first phase students learn the basic medical sciences and acquire didactic knowledge of diagnosis and treatment. Exposure to medicine occurs primarily in the classroom within well-structured situations. By the end of this phase students are more definite in their clinical attitudes and manifest increasing respect for the patient's ability to handle his illness and decreasing belief in the efficacy of aggressive treatment. More substantial changes occur during the second phase, the clinical years, when the training is hospital-based and geared to the practical aspects of medical care delivery. Students are stimulated to make decisions concerning diagnosis and treatment and to evaluate the consequences. Direct contact with patients and heightened awareness of the limitations of medicine probably are among the important factors responsible for the changes observed during this phase. The changes in attitudes may well reflect the real world of medicine as perceived by a more professionally mature student as opposed to the somewhat unrealistic conceptions held when entering medical school.

The personality traits that the student brings into medical school and the personality changes that occur while in school account to a small extent for changes in some attitudes. Attitudes toward the patient's emotional strength in handling a serious illness (CAS I) and beliefs about death and immortality (CAS III) evolve throughout medical school regardless of the intellectual ability of the student (as measured by the MCAT) or the various personal needs he may seek to gratify in his daily interaction with other people (SIV). The only variables relevant to these attitudes seem to be what the student perceives as the most important and satisfying values in life (AVL) and the degree to which he opens himself to others (Rokeach). The patterns of relationship exhibited by such variables appear to be congruent with the interplay among various values as described by Allport and colleagues (9).

Students entering medical school in recent years appear to be more socially conscious and active than their predecessors. The realization of the worthiness of individual human beings in a technology-oriented environment and the awareness of many unsolved problems of society are just a few factors involved in this attitude and behavior shift. Also there are indications that medical schools are placing more emphasis on humanitarianism in the training of physicians and are consciously seeking socially aware students (16). It is not surprising then that recent medical school graduates hold sets of attitudes different from those of physicians. More awareness of human emotional strength and selective reliance on the value of clinical technology may be the trend among the younger generations.

The minimal correlation of personality and value changes with changes in CAS IIa (diagnosis) and the absence of any correlation of these same factors with CAS IIb (treatment) strongly suggest that attitudes toward early diagnosis and aggressive treatment of cancer primarily result from education and experience. The importance of the implications of this finding for the development of specific clinical attitudes during the medical education process is apparent and in agreement with Rezler's conclusions (1). It is the responsibility of medical educators to identify and define desirable and undesirable attitudes and then plan, implement, and reinforce educational experiences that build and encourage desirable attitudes and discourage undesirable ones. The most important factor in clinical attitude development may be faculty behavior in care of patients. If students-becoming-physicians are to be accurate, thorough, and persistent in their diagnostic approach, they should be instructed by faculty members who practice in this manner. Similarly, if treatment of cancer is to be aggressive, students should see positive outcomes for patients from aggressive treatment. In many schools the first exposure to the effects of cancer takes place in the autopsy room. The students' perceptions resulting from such experience should be counter-balanced by simultaneous encounter with patients "cured" of cancer. An appropriate setting might be a follow-up tumor clinic where the student can recognize the medical, supportive, and communication roles of the physician as well as the needs of the cancer patient.

If education affects attitudes, educational experiences should be purposeful.

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A Dynamic Primary Care Curriculum Based on the Problem-Oriented System

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Abstract—The audit of behaviors of health care providers is a valuable tool for learning the essentials of primary care and health care delivery. At the University of Vermont a dynamic curriculum has evolved from the student audits of the practice sites where the training takes place. Evaluation studies to date indicate a positive effect on career goals leading to primary care specialties and a desire to practice in rural settings in underserved areas. This approach to teaching primary care has proven to be effective and has gained high acceptance with the students. They learn that audit is a valuable means of self-education as well as a method for providing quality assurance to the patient.

The audit of medical care in primary care practices has proven to be a valuable tool for teaching the essentials of efficient health care delivery to medical students at the University of Vermont. Practice standards and methods are continually revised based on the audit of the providers of care. The curriculum is likewise updated based on student audits of their experience in each practice.

Over 140 students have completed preceptorships in primary care. The five practice sites involved in this preceptorship are organized on the basis of the problem-oriented system (1, 2), defined here as requiring each practice group to have written "Principles of Practice" (2), to utilize the problem-oriented medical record (3), and to have an ongoing audit in effect. The students are rapidly integrated into the health care team of paramedics, nurse practitioners, and physicians and provide direct patient care for ambulatory private patients. Most of the learning is dependent on their taking an active role both in auditing the preceptors and in being audited themselves. In addition to learning to provide personal comprehensive care with emphasis on long-range planning, they analyze a defined system of medical care which provides quality assurance for the patient, continuing education for providers, and cost containment.

Preceptorships in primary care are not new. The University of Vermont College of medicine offered preceptorships in primary care from 1932 to 1952. Following review by the Curriculum Committee in the mid 1950s these preceptorships were dropped as having failed to achieve their goals since less than 10 percent of the graduates were pursuing careers in family practice. It was feared that unstructured preceptorship experiences might be having negative effects on career choices in primary care. In response to the growing shortage of primary care physicians, the University of Vermont has explored new approaches to the teaching of primary care by the development of a model primary care practice facility and expanded educational opportunities. In 1970 and 1971 a few students spent one or two months at the Promis Clinic in Hampden Highlands, Maine. With the receipt of federal funding in the form of a manpower grant from the U.S. Public Health Service in late 1972, the program was expanded to the point that there are now opportunities for all students to elect preceptorships at any one of the five preceptorship sites.

The preceptorship training program described here was supported by PHS training grant 01-D-000020-04 from the U.S. Department of Health, Education, and Welfare, Region I.

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Description

During the 1972–73 academic year only the Promis Clinic in Hampden Highlands and the Given Health Care Center in Burlington, Vermont, accepted students. During the following year the Castleton Medical Center in Castleton, Vermont, was added, and during the third year of the program the William Beaumont Health Care Center in Peru, New York, and the solo practice of Dr. William Allard in Montpelier, Vermont, completed the preceptorship sites. The sites were carefully selected to fulfill the following requirements before students could participate:

1. The problem-oriented medical record is the organizing principle in the practice.

2. Each group must have a written practice agreement which defines goals and objectives for patient care and commitments to medical actions as well as the responsibilities of all members of the team. This agreement is entitled "Principles of Practice" and is shared with the students at the beginning of each preceptorship. The students evaluate the preceptorships and the practice at the end of each month in terms of how closely the predefined goals and objectives described in the "Principles of Practice" are followed.

3. An internal audit system must be in effect in each practice so that students may take an active role both in auditing and being audited.

4. Changes in the preceptorship are based on the student audits. These audits are fed back to each group monthly and are reviewed at an annual meeting of the students and preceptors.

Much of the initial effort was expended in assisting the various practice groups in implementing a problem-oriented system of care which included a system of internal audit. The problem-oriented system is a set of organizing principles which provide the framework for a defined system of health care. Because the system is explicitly defined, it can be audited, and audit can be used to bring about continued improvements in the quality of care being delivered. The principles on which the system is based are commitments to medical actions. These medical actions are effected through the problem-oriented record, which is the principal tool of the system and is used for communication and audit. Following are the basic components of the problem-oriented system and record:

Data base—The data base (history, physical, physiologic measurements, and laboratory data) must be explicitly defined because this definition provides the universe of facts from which a list of problems are developed and also provides the basis for auditing. The content

and size of the data base is dependent on the needs of the population being served and the resources available to serve that population. Since there is no "best" data base and since the resources available differ from practice to practice, the data base will also differ. The rationale for selection of items in the data base should be clearly stated so that it can be readily reviewed and changed dependent on the results of audit.

Problem list—An agreement must be made that all pertinent medical, social, behavioral, and environmental problems of the patient will be listed. (Problems refer to both what the profession considers as important and what the patient thinks is important.) Because of the potential interaction among problems, the principle of listing all problems is a fundamental component of this system. The problems list serves primarily as a protection for the patient to ensure that no problem is treated out of context. This listing must be updated to reflect accurately the level of resolution of each problem. There must be a single problems list for each patient, and it must be dealt with as an integrated whole by all concerned with patient care.

Plans—Plans must be developed for each active problem in the context of the total problems list. The treatment goals must be stated for each problem. The self-care responsibilities of the patient and the means for educating the patient must be clear.

Follow-up—Follow-up care must be organized by numbered and titled problems and should ensure that problems are efficiently pursued to the highest level of resolution possible.

Audit—The problem-oriented system, like any other system, demands a feedback loop to ensure continued improvement. To be successful, the audit must be educative and not punitive. In health care the quality control mechanism is audit. Audit is the process of comparing observed behavior with standards. The feedback is supplied to individuals by the regularly scheduled audit of representative examples of performance. The audit is based on the ground rules agreed to in the "Principles of Practice." Continuing education is provided through positive reinforcement of problem-solving skills. Quality control is assured by an audit of outcomes of people served by the system. The feedback loop serves as a means of evaluating and correcting standards of health care through the use of information generated by the operation of the system.

The major goal of the preceptorship is to prepare students for the efficient delivery of primary care five years hence. Emphasis is placed on reduction in costs of care through the organization of health care information and the utilization of paramedical assistants, nurse practitioners, and management personnel. The importance of patient education is stressed and exemplified by sharing the medical record with the patient (2). The students are strongly encouraged to explore the management and financial aspects of medical practice. Cost containment is stressed.

Method

Senior medical students who elect the rotation in primary ambulatory care must spend at least one month in the program. A two-month rotation is required for students majoring in family practice. This elective is available to students from other universities when there are openings in the schedule.

Whereas there is general agreement as to the goals and methods at each of the five practice sites, minor variations in implementation exist due primarily to the resources available. The description

which follows is of the preceptorship at the Given Health Care Center, where one-third of the students have matriculated.

The Given Health Care Center is the primary care model practice facility established by the University of Vermont in 1971 to provide comprehensive care for adult patients and teaching and research facilities in health care delivery. The practice group is made up of five internists, two nurse practitioners, six paramedical assistants, a practice manager, part-time auditor, and the necessary support personnel for doing the scheduling and staffing the record room and laboratory. The patient population grew from 4,000 in 1971 to 12,000 in 1976, with an average of over 100 patient visits daily. Most of the house calls are made by a nurse practitioner. Because of teaching, research, and administrative duties, the five internists provide the equivalent of four full-time practitioners.

Prior to starting the preceptorship, the students receive a copy of the "Principles of Practice" of the Given Health Care Center. The students are also given a description of the goals of the program and are encouraged to arrive with a set of their own written goals and expectations. The first two days are spent on detailed orientation, with emphasis on the roles of the nurse practitioners, paramedics, clerical auditors, and practice manager. This is supplemented by ample time for discussion, observation, and participation in each of these positions. Direct patient care for acute episodic illness starts the first day with the introduction of acute illness protocols. The patients are examined by the students following a specific protocol. This is immediately audited by the preceptor, and corrections are made when indicated. The students promptly begin to audit the charts of their preceptors, who review the audit and give the students feedback. The first complete work-up that the student performs is a taped case from the practice. This is thoroughly audited by the preceptor, with emphasis on the problem formulations and plans.

The students usually complete their first comprehensive examination on a new patient at the end of the first week. They perform both the screening examination, usually done by a paramedic, and the physician portion of the examination. The screening portion of the examination is audited by the paramedics, and the procedural and clerical audit are performed by the audit clerk. The preceptor performs the analytic or professional audit. Each patient seen by a student for comprehensive examination is also examined by a preceptor within a week. The accuracy of both the historical data and the physical findings is validated, and the patient is mailed a copy of the completed work-up. This is usually the first time the student has shared a record with his patient.

During the second week the students observe the preceptor and nurse practitioners giving follow-up care to established patients. Emphasis is placed on the use of disease protocols and flow sheets for the care of chronic illness. The students perform follow-up care audits on a sample of the patients seen. Both the physician preceptor and the nurse practitioners must respond to these audits, making appropriate corrections in the chart.

The students are required to respond to each audit of their work and to do over any portion of the completed work-up which is not felt to be analytically sound or appropriate. The audit provides a ready indication of where the student is having problems, and appropriate reading is assigned to correct deficiencies in knowledge. The major emphasis in the

daily audit sessions is on the analytical ability of the student. This is accomplished by challenging the problem formulation and the plans. The audits quickly illuminate areas of disagreement or misunderstanding, and this directs the discussion to areas of need. Improved efficiency in the teaching and learning process is a direct result.

The major emphasis throughout the program is on the care of the ambulatory patient. The students accompany the preceptor on nursing home rounds and are invited to attend all business and management meetings. Hospital rounds are not encouraged, although students may follow any patient they have seen in the office who is subsequently hospitalized. Each student keeps a checklist of his achievements as the rotation progresses. The preceptors review the checklist at the end of each week to ensure that reasonable progress is being made.

At the end of the preceptorship experience the students are encouraged to write their own principles of practice, which they can file for future reference. In addition, they are required to write an evaluation and critique of their experience at each practice site and are asked to compare this with the goals they submitted on the first day of the preceptorship; constructive criticism is strongly encouraged.

Results and Evaluation

To assist in the evaluation of this program, preceptors keep a permanent file on each student. This file includes a list of all patients seen for acute episodic care by diagnosis. Copies of two comprehensive patient evaluations with the attached audits are also kept along with reports of all audits performed by the student and any special projects completed during the preceptorship. The students' critiques of their preceptorship experience, as well as the preceptors' evaluation of the students, complete the file.

The students' critiques are reviewed by each preceptorship group at the end of each month. The preceptorship program is frequently modified based on the recommendations received from the students. After three years of updating and modification, this program is significantly different from the initial one; thus, a dynamic curriculum based on feedback from students is operative. Many of the disease protocols now in use have been designed by students as special projects, and much of the patient education material has also been received and revised by students.

Audit has been a most useful tool in helping students recognize their own deficiencies. Most of these deficiencies do not result from lack of knowledge; but when this is the problem, it is easily recognized and corrected. Most errors are the result of lack of thoroughness in collecting and organizing data or of imprecise logic in integrating data. The latter is most apparent in writing of patient care plans.

The prompt feedback and response to audit have provided powerful reinforcement to the learning process. The students have proven to be excellent auditors of care. Because they begin by auditing their own preceptors, they promptly look at audit as a positive experience. The audit utilizes professional pride to induce motivation for change. This has proven to be an extremely valuable resource to tap because it provides intellectual and emotional capital for further development. The discipline involved in prompt feedback and the insistence on the statement of goals have strengthened the students' ability to formulate logical long-range plans.

A comparison of the charts produced by students in 1973 with those produced in 1976 revealed very significant improvements in the clarity of the records. A review of the audits which had been attached to each chart indicated that the auditors had improved tremendously. The preceptors in 1976 were more uniform and specific in their audits. Thus, while searching for a change in student performance, the investigators discovered a change in the preceptors' performance, which, in turn, was reflected in the students' performance. The preceptorship program has thus been effective in improving the teacher. Since one of the original goals of the program was to provide a strong role model for students, this change in preceptor performance may be the most important contribution. It is not the first time that the teacher has learned more than the student.

Career Choices

In May 1976 a brief questionnaire was mailed to the first 67 students who completed the preceptorship program (graduating classes of 1973, 1974 and 1975). Forty-one responses were received by July 1, 1976. More than half of the respondents were either in family practice residencies or already involved in family practice, and one-fourth were in general internal medicine residencies. Eighty-three percent of the students responding had chosen careers in primary care. Sixty-one percent indicated a preference for practice in rural areas, and half of the students said they preferred to practice in underserved areas. Each graduate was invited to make comments and recommendations for changes in the preceptorship program. Eighty percent responded by making strongly favorable comments, recommending either no change or minor changes in the program. One-fourth of the graduates recommended a longer period of preceptorship time as part of the medical school curriculum.

Costs

One of the advantages of a defined system of care is that even an educational program can be designed to fit the resources, in this case the budgetary limits of a medical school. This preceptorship was designed so that one hour of paramedic or nurse practitioner time and one hour of physician time each day are devoted to supervising and auditing the work of two medical students. A reimbursement formula based on real costs to the participating practice groups was worked out. The program costs came to between $1,000 and $1,100 per student month for administration, evaluation, student travel and living expenses, and reimbursement of the preceptors for the time spent. If two students should be assigned to each participating practice site each month, the costs would be further reduced.

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COMMUNICATIONS

Quality in Medical Practice: A Student Program

Mohan L. Garg, Sc.D., Werner A. Gliebe, and Warren M. Kleinberg, M.D.

Several recent reports described the experiences of the handful of medical schools which have initiated programs in the teaching of quality assurance (1). This communication will provide an updated report of the successes and failures of the quality assurance program at the Medical College of Ohio during 1975–76.

Description

Initially, students were introduced to the concept of staging of diseases (2), that is, breaking down a given disease entity into several degrees of severity. They were also introduced to the concept of "tracer" conditions (3), which when evaluated can serve as an indicator of the overall effectiveness of the system's medical care. Subsequently, the technique of assigning "weights" to isolated segments of the care provided (4) was explained to them. This was done so that students could then develop a weighted minimum care plan for a tracer condition. The task of stage definition served to help students to delineate more precisely the appropriate management plan in the treatment of the tracer condition.

Subsequently, students were provided the charts of two inpatients and two outpatients for evaluation, based on the minimum care plans and audit criteria which they derived. Nine guidelines were outlined for the chart review. Four were designed to identify disease stage, positive and negative items in the medical history, the tracer condition and its utility in evaluation, and pertinent physical findings related to the diagnosis. Five guidelines were established to let students determine whether: adequate assessment was recorded and backed up by subjective and objective recordings, minimal diagnostic workup (based on students' protocols) was carried out, adequate therapy was initiated, patient education was carried out, and outcome of care could be determined from the audit.

Using these guidelines, the students submitted written evaluations of each patient chart. A summary rating scale was also devised for the students and completed by them for each of their audit patients.

Evaluation

Table 1 provides the distribution of scores assigned by students to five elements of care during their audits. The most striking feature of the table is that more than 75 percent of the charts audited were rated as being poor or indeterminate in patient education. This was a significant discovery for the students, generating comments in written evaluations such as, "Patient education not even alluded to in this chart."

Conclusions in the students' written reports also indicated what they had garnered from the project. After some general comments pointing out the inconsistency between inpatient and outpatient charts, one student concluded the following: "It would seem that many of these deficiencies would be overcome if standards were set up for the clinics whereby each student or physician would know precisely what information must be sought and recorded. Then appropriateness of treatment followup and outcome could be much more thoroughly assessed using this condition as a tracer." Thus, some students began to see the need for changes and to make specific recommendations which would enhance the quality of care available for all patients, a significant achievement.

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TABLE 1

PERCENTAGES OF 49 STUDENTS' QUALITY RATINGS FOR SELECTED COMPONENTS OF MEDICAL RECORD

Ratings*	History	Physical	Diagnostic	Treatment	Patient Education
Excellent	16.3	22.4	20.4	20.4	4.1
Average or good	34.7	40.8	40.8	46.9	4.1
Below average	16.3	14.3	16.3	16.3	14.3
Poor	12.3	12.2	12.2	10.2	20.4
Indeterminate	20.4	10.3	10.3	6.2	57.1

* Scale of from 1 (excellent) to 5 (indeterminate).

As expected, not all elements of the program succeeded. The staging tool was not found to be useful for the students since the data base was often insufficient to determine the stage. Of course, this in itself is a comment on a "structural" component of the quality of care provided. Difficulties were also encountered for the assignment of weights to individual procedures. Students did not yet feel competent to delineate precisely the relative importance of a given procedure in patient management. This problem is comparable with the experience at Michigan State University reported by Greenbaum and Hoban (5).

As this comment illustrates, some students also did not feel the tracer concept to be valid for generalizing about the quality of care, an essential theoretical point: "The concept of a tracer condition is good only in the restricted sense that it indicates the quality of diagnosis and care of only that specific disease. It would be dangerous to extrapolate from these findings and use them as an assessment of health care in general."

While some disputed its theoretical validity, other students did find it to be somewhat useful. One student said: "As a time saving device, the tracer concept was found to be quite valuable. It can be argued that the use of a tracer is more a measure of bookkeeping ability than quality of care given. . . . If such audits do no more than encourage careful record keeping, their use is justified."

Conclusions

The students were hesitant and uncertain acting as an auditor, a role for which they felt incompletely prepared and one which threatens the popular conception of "the doctor is the best judge of his work." Yet the students perceived themselves to be involved in the practice of medicine and not simply in performing a hypothetical exercise. In fact, three patients benefited directly from the students' evaluations. Two hypertensive patients were reevaluated after deficiencies in their management were pointed out to the attending physician, and they are now in better control. One additional patient with a poorly controlled seizure disorder has been in good control since the audit disclosed an inadequate medication regimen. The reinforcing value of the three cases contributed to the students' perceptions of the audit process.

The positive change in students' perspectives toward the review process is illustrated by the following representative comment of another student: "Although it will make me nervous, I wouldn't mind if my charts were audited and the results told to me. If I'm not practicing medicine that is up to current standards, I want to know about it. Hopefully, PSRO will be a further incentive for all doctors to keep up with currrent knowledge." Thus, it can be concluded that despite students' initial, tentative resistance, significant strides were made in modifying their perspectives on the review process and the general purpose of professional standards review organizations.

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A Management Development Course for Physicians

Mark S. Plovnick, Ph.D., Ronald E. Fry, and Irwin M. Rubin, Ph.D.

The increasing cost and complexity of operating today's health care organizations has resulted in a corresponding increase in interest by the health care industry in more effective management of these systems. While administrators of hospitals and other delivery organizations have traditionally been involved in developing their management skills, members of the health professions themselves are now becoming increasingly aware of their own needs for more management skills if they are to participate more effectively in the administration of health care systems (1).

While much of this interest has focused on institutional management (that is, hospital or medical school administration), an awareness of the relevance of management skills has begun to filter down to physicians at the delivery level. For example, the American Academy of Family Practice suggests in its requirements for residency programs that up to 35 percent of residents' time be allocated to "community medicine and administrative services including health service administration and electives."

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One obstacle to more widespread interest in management education by physicians has been a somewhat limited perception by many physicians of what "management" is and how it could improve their effectiveness as health care delivers (2). This is due in part to the absence of any formal exposure to management or administrative training in the traditional medical education process. In an effort to provide a more accurate understanding of the relevance and usefulness of management education to physicians and to train physicians in some basic management skills and techniques, a management course for physicians was developed and tested by the Health Management Project at the Massachusetts Institute of Technology Sloan School of Management (3). The remainder of this paper is a description of the content and field-tests of that course.

Course Background

The relevance and potential usefulness of management skills for physicians grow as the complexity, ambiguity, and unpredictability of the medical environment increase, thereby making the coordination of health care resources more necessary and more difficult. Physicians in primary care settings, particularly those utilizing many different types of physicians and other health professionals, seem to face a more complex, ambiguous, and unpredictable environment than most. Therefore, the management course under discussion was designed specifically for physicians in primary care settings and was offered on an experimental basis at three primary care residency programs.

Course Content

The course addresses itself to the needs of physicians to coordinate their own and others' resources in the delivery of care. This coordination or management of care does not include such areas as accounting and budget control but rather the day-to-day management of health workers delivering care. In this context the course focuses on developing physicians' skills in such areas as defining and allocating the responsibilities of different health workers in delivering patient care; resolving conflicts between physicians and other health workers (for example, nurses and social workers), resolving conflicts between physicians and administrators, and dealing with the demands of the leadership role often expected of M.D.s.

These areas are addressed in six weekly sessions, each consisting of a combination of lectures, discussions, case studies, exercises, and simulations and each requiring approximately two hours.

Session I. Factors influencing the coordination of care – One of the most difficult obstacles to the coordination of care in primary care settings is the absence of a systematic way of viewing the inherent problems involved. Often this leads to a focus on the symptoms of management problems rather than the problems themselves and to "crisis management" atmosphere. In this session participants learn a framework for diagnosing the basic issues involved in coordinating primary care and are introduced to a systematic approach to resolving these issues.

Session II. Managing goal conflicts – Because of the often ambiguous nature of the task(s) involved in delivering quality comprehensive health care, health workers often do not have a clear and shared understanding of the specific objectives of the system in which they are working. In this session participants are introduced to methods of clarifying their own and others' goals, methods of identifying conflicts between individuals' goals, and mechanisms for resolving or managing these goal conflicts.

Session III. Managing role conflicts – Many of the difficulties experienced by primary care physicians involve conflicts between various health workers concerning their relative responsibilities or abilities to perform the tasks involved in delivering primary care. Time and energy are often wasted in struggling with and not resolving these issues. This session introduces: (*a*) a framework for identifying "role" conflicts and how they relate to the delivery task and (*b*) a conflict resolution structure for resolving role conflicts and defining health worker roles.

Session IV. Allocating decision-making responsibility – Many types of decisions are made in the delivery of primary care. How these decisions get made, however, is seldom systematically managed, although many of the problems of coordinating care are directly related to the decision-making process. This session develops a framework for determining what decisions are made, what constitutes "good" decisions, who should make them, and how resources should be coordinated in the decision-making process.

Session V. Organization structure and design – Traditional models of organization structure are often inappropriate for the delivery of primary care services. These structures can increase the difficulty of effectively coordinating care delivery. This session explores the problems resulting from inappropriate organization structures and develops approaches to the design of more effective systems for primary care delivery.

Session VI. Managing the change process – Health care today is characterized by many pressures toward change of existing patterns and the introduction of new ones. Some understanding of how people, organizations, and systems change is essential to being effective at initiating and maintaining change. This session focuses participants on some of the basic concepts and skills involved in identifying needs for change and developing effective strategies for implementing change.

Field-Test Sites

Field-tests of the course were conducted during 1975–76 at two family practice residency programs and one combined primary care

medicine and pediatrics program. One family practice program utilized a family practice center within a large hospital for residents' clinical experiences. The other family practice program and the primary care program utilized neighborhood and community health centers in addition to a hospital-based family-practice/primary-care center for residents' clinical experiences.

All three programs utilized a variety of non-physician health workers in their practice settings, including nurses, nurse practitioners, social workers, and community health workers.

Approximately 50 faculty and residents from the three sites participated in the course. Generally the course participants rated the sessions as both relevant and useful. In addition, the majority of participating physicians recommended that a course of this type be included in the core curriculum of their residency programs.* Although the evaluation results are at this time suggestive at best, they do seem to indicate that this type of management training may be a useful addition to medical curricula.

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*Evaluation details are available on request to the first author.

The Comparability of Clerkship Experiences In a Variety of Locations

Irene Gross Klintberg, Ph.D., and Nathaniel Givner, Ph.D.

Numerous approaches have been used to evaluate clinical clerkships in medical education (1–3). While interest has not been confined to any specific type of clerkship, review of various studies suggests that the initial or primary clerkships in such specialties as medicine, pediatrics, surgery, obstetrics and gynecology, and psychiatry have received particular attention. Studies which assess such clerkships in a designated specialty seem to be based on the assumption that common, clearly defined, and comparable entities were under investigation. On the contrary, however, while students may complete the "same" primary clerkship, they frequently do so at different hospitals, clinics, and health care facilities. Thus, inherent in the structure and organization of the primary clerkship, and for many other clerkships as well, is the potential for significant differences in educational experience and learning outcomes despite the fact that conceptually the primary clerkship has been viewed as an experience in which all students will, with minor differences, receive the same degree of exposure to similar problems and learning activities that are thought to be relevant to the overall goals of the clerkship. Although the potential for experiential differences seems obvious, there have been few, if any, studies directly concerned with the importance, effects, and degree of variability

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of student experiences and learning outcomes in the primary clerkship.

Variability in Clerkships

In reality, the apparent assumption that training is similar in various locations may be in error due to several factors. Within certain limitations the student is free to select a clerkship from a number available at different locations which have distinctive characteristics based upon variations in patient populations, emphases of practice groups, and types of patient problems. Also, by its very nature a clerkship is partially unstructured and thus would tend to encourage experiential differences between clerkship sites. Consequently, it would be surprising, if not totally unexpected, that students at different clerkship sites would receive the same degree of exposure to similar problems and clerkship activities with resultant overall comparability of experiences. In view of such influences, it is essential that potential differences in experience and learning outcomes be recognized, evaluated, and judged by medical educators to determine whether the range of variability identified is acceptable by departmental standards.

First, one must ascertain those activities which vary and those which remain stable across time in order to assess the degree of comparability between clerkships. Hopefully, such efforts will provide answers to such questions as: Does the amount of time accorded specific activities vary significantly among clerkships that are a part of the same primary clerkship program? Thus, is the amount of time a student spends in a given activity in large part a function of the particular clerkship he has selected? How stable are the differences which characterize a clerkship over time? Can certain clerkships be identified as having greater stability over time than others? If so, what are the specific characteristics of a clerkship which determine variability or stability?

Where extreme variability between clerkships is found, a number of ramifications are apparent. Selection of a specific clerkship takes on greater significance for the student since the patients encountered and the amount of exposure to specific clerkship activities—the very determinants of learning outcomes—become direct functions of the clerkship chosen. Since it is largely within the context of clerkships that foundations for later training are laid, excessive variability of experience may preclude the acquisition of a uniform minimum level of knowledge and skills which is vital to all students. Furthermore, the primary clerkship is the most extensive, if not the only, direct experience that some students will have in certain disciplines; consequently, significant differences in learning activities may result in the failure of students to obtain certain fundamental experiences critical to their medical education.

Practical Implications

By obtaining answers to questions posed previously, a profile could be developed describing the activities which characterize each clerkship and the stability of these activities over time. Profiles of each clerkship could be continually monitored for validity and acceptable levels of reliability. Obviously, such information would allow program directors to pinpoint with greater precision differences between clerkships, to "flag" possible problem areas for further study, and to account more accurately for differences in learning outcomes which are found. Information resulting from these or similar analyses could also be of practical benefit to students. Such profiles not only would enable a student to select clerkships with emphases most congruent to his learning needs and specialty interest but also would allow him to do so with greater assurance that his expectations will be met since his decision would be data based rather than founded on rumor and hearsay. By capitalizing on both similarities and inherent differences in clerkships, it would be possible to be more responsive to the educational needs and interests of students.

The necessity of assuring comparability of clerkship experiences is of critical importance not only to the basic clerkship program but also to all subsequent clinical training. Failure to identify real and significant differences in primary clerkship training may result in failure to structure subsequent clerkships which

are compatible with the entering skills of the individual student. For instance, suppose that a student has just completed a primary clerkship in surgery and chooses to begin an elective clerkship in the same area. Typically, through a process akin to trial and error, the clerkship supervisor slowly begins to "get a feel" for what the student already knows and can do and then proceeds to provide whatever training is required to meet entry level performance standards of the clerkship. Only after this initial observational assessment can the student truly participate in, take advantage of, and be exposed to the real and unique educational opportunities offered by the more advanced surgical clerkship. Although this capsulized description of the clerkship process is no doubt exaggerated, the fact remains that undue time is often wasted in the "getting to know you" period. On a practical level a profile of the primary clerkship may have better equipped the supervisor to structure initial training to the student's entering level of knowledge so that he can more quickly and efficiently obtain the educational experiences for which the clerkship was designed.

Conclusion

Variability of experience in clinical clerkships is neither inherently good nor bad. On occasions such variability may result in some of the less desirable effects which have been noted. At other times such differences may lead to beneficial and enriching educational experiences. Once the specific objectives for a clerkship have been identified, however, an important aspect of program monitoring would appear to be an assessment of variability of experience and the degree to which it fosters or hinders the development of the basic competencies which have been defined by the clerkship objectives.

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Clinical Learning Without Prerequisites: Students as Clinical Teachers

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Since 1971 senior medical students have originated and taught an elective course in physical diagnosis to entering students at the Stanford University School of Medicine. It has been one of the most oversubscribed courses in the first year. The students unanimously reported that they enjoyed the course more than any other, that it made the basic sciences more comprehensible, and that they were well equipped to work in clinical settings early in medical school. It was the opinion of the tutors that the students were as well prepared as the students taking the traditional faculty-taught course, but this had never been examined by a comparison study. The study reported here was intended to test the ability of these first-year students against that of students from the regular course. This comparison was not designed as a rigorously controlled experiment in educational techniques but rather as an evaluation of two ongoing courses. Hopefully, it will serve as a prelude to full-scale experimentation.

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Methods

Two groups were compared. The experimental group consisted of 17 first-year students who were chosen randomly from volunteers. In the control group were 17 second-year students from the regular faculty-taught course who volunteered to take the examination. Because both groups consisted of volunteers from their class, previous grade-point averages, Medical College Admission Test scores, and sex of both groups were compared. There was no significant difference between the two groups, and each group was representative of its class on these parameters.

Procedure

The experimental subjects were assigned in pairs to senior medical students and received instruction in physical diagnosis for two quarters. Each tutor designed and taught his own course, and each group determined the frequency and content of its learning sessions: one two-hour session per week was the minimum. The content of the course was traditional physical diagnosis exclusive of neurological and pelvic examination. Students knew that they would be expected to take a history, perform a physical examination, and write the results in the standard format and that their skills would be compared with those of second-year students concurrently taking the faculty-taught course.

The control subjects took the standard physical diagnosis course as part of their second-year curriculum. The duration of the course was one and one-half quarters. The student-teacher ratio was four to one, and the time requirement was four hours per week.

Evaluation

One month after their respective courses the subjects were tested. The evaluation consisted of a multiple-choice and fill-in test, a standard written case analysis of an hour-long encounter with a programmed actress-patient, a subjective rating of the student by the actress on interviewing skills and human warmth, and an assessment of attitudes regarding patients using the Osgood semantic differential (1).

All data were analyzed using Student's *t* test for comparison of groups.

Results

There were no significant statistical differences in the performances of the experimental and control groups in the cognitive measurements, with the exception of the vocabulary multiple-choice test on which the second-year students performed better than the first-year students. Both groups did equally well in the written case report of the simulated patient.

The subjective ratings of the students by the actress-patient showed that first-year and second-year students did equally well as groups. There were outstanding individuals in both groups, and the best students from each group were virtually indistinguishable.

A comparison of first-year and second-year scores on the Osgood semantic differential yielded lines which were nearly identical for both groups. First-year and second-year students did not differ significantly in their estimation of themselves or of patients. The similarity of the two groups enabled the investigators to combine them and compare the students' ratings of themselves with their ratings of patients in general. There was a significant difference. The students consistently rated themselves in more complimentary terms than they rated patients.

Throughout the study male and female students did not differ significantly on either cognitive or affective variables.

Discussion

The study indicates that a simple, low-cost method of instruction for first-year students is

as effective as the present one. The student-taught course has the additional advantage of stimulating the senior students to review and practice their own skills in history-taking and physical assessment.

This study had two major flaws. One was that students were chosen randomly from volunteers and not from the entire class; the second is that the Hawthorne effect was operative, since the students knew that they were an experimental group (2).

The study does, however, suggest areas for further investigation: the effect of early clinical learning on performance in subsequent basic science courses, the value of attitude assessment and interviewing skills in selection of medical students (3, 4), and the educational benefits of a medical student teaching a course in his senior year (5).

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A Program To Introduce Medical Students To the Problem of Child Abuse and Neglect

Christian M. Hansen, M.D.

Physicians traditionally have had difficulty with the problem of child abuse and neglect. For a variety of reasons they are often unable to recognize the problem and to admit that it exists. Frequently, they are also unaware of legal requirements to report such occurrences and lack familiarity with the public protective service agency in their state.

In an effort to help future physicians overcome these problems, a pilot summer project under the auspices of the Protective Services Resource Institute has been developed at the College of Medicine and Dentistry of New Jersey-Rutgers Medical School over the last two years. The Protective Services Resource Institute is a federally funded demonstration project which actively supports protective services programs and seeks innovative approaches to the problems of child abuse/neglect. In the summer of 1976 eight medical students were assigned to district offices of the New Jersey Division of Youth and Family Services for eight weeks. The Division of Youth and Family Services is the state agency legally responsible for child protective services in the state. The students, who had completed at least one year at Rutgers Medical School, worked alongside professional social workers with families in which abuse and neglect were potential or actual problems.

Medical students rarely have an opportunity to look at the social as well as the medical problems of the patients they see. This project gave them that opportunity.

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Project Description

The students visited the homes of families under the division's protective services supervision. They helped caseworkers to observe the children's state of health and assisted with any referral procedures which were necessary.

The students were required to keep a daily log of their activities. The following excerpts from these logs give a good description of what they did:

> I helped a mother register her son at an after school program . . . Removed a child from a school and took him to a hospital pediatric clinic to be admitted for child abuse . . . Contacted a health officer concerning high lead levels in a child . . . Met with a health department inspector to examine a home interior for possible sources of lead paint for child with pica . . . Discussed birth control with Mrs. D. . . . Contacted a service for homemakers . . . Went out on a home visit to a hospital concerning R., 17 months old with a bite mark and a hematoma on arm . . . Spent half a day in a youth house and in court . . . Spent the morning talking with D., who was very depressed and needs continuing medical care but can't get it . . . Brought a child to hospital but abuse was unsubstantiated . . . Spoke with the family of D., an anorexia nervosa patient . . . Requested a long bone survey on T. because of suspected abuse.

During the initial orientation sessions the students were asked about what they hoped to accomplish over the summer. They expressed an interest in learning about home environments, assisting caseworkers in helping families, having a new exposure to other classes of people, understanding some of the reasons for abuse and neglect, providing health teaching to families during home visits, understanding how social agencies work, and learning interviewing techniques.

Each week the students met at the Protective Services Resource Institute for training sessions covering various aspects of their work. The training included information about the division, medical and legal problems, and values and attitudes. These weekly sessions were an outgrowth of attempts to overcome a problem which surfaced in 1975 during the project's first year: the need for the students to have a chance to share their feelings with a colleague, either within or outside the agency. Most of the students in 1975 were able to discuss feelings and frustrations with their more experienced casework colleagues. Others were less able to share their anxieties, especially if they felt that their feelings were unusual. When they observed their coworker's ability to control their reactions to tragic human situations, some students felt uneasy. These weekly sessions also provided training in the kinds of skills the students would be called upon to use in their day-to-day work.

In addition, each student helped to give a presentation on medical aspects of abuse and neglect or a related topic at the district office in which he worked. This permitted the students to synthesize the bits of information that they had been collecting into an organized, cogent format. It also allowed workers in the district office to benefit from the knowledge and experience of medical students.

Evaluation

As part of the program evaluation, supervisors of the students in the district offices were asked to describe their reactions to the students. One commented as follows:

> The student brought with her an open mind and the willingness to observe and participate in all cases referred to our unit. These cases included categories of sexual abuse, physical and emotional neglect, physical abuse, failure to thrive, and varied medical problems. . . . She became as concerned about the problems the families were having as any social worker; and, most important, she gained the needed sensitivity to know that no one agency is or can become the problem-solver or cure-all.

Another said:

> The student had sole casework responsibility in a difficult and anxiety-producing case which involved getting the mother of four children committed to a psychiatric hospital for diagnosis; planning for the care of the children; and coordinating the activities and information flow between several other agencies, neighbors, and family members. He did an excellent job, rendering social services to this family in crisis in a concerned humane manner, with very positive results. Ordinarily the depth of responsibility would have been carried by an experienced worker, but the rapidity of the crisis development plus the student's willingness to handle the case influenced the supervisory decision to let the responsibility remain with him.

An additional attempt to evaluate the program involved asking the students whether

they felt that there were any ways in which the experience changed their views of social problems.

One student commented as follows: "Now I really know everyone has, given certain conditions, the potential for abuse. With every experience I injected myself and made it relevant to me; I considered what I could have done. I know I gained more empathy for people." Another said that the program showed him how complex some family problems can be and how long periods of time are required for the slightest improvement.

Finally, one student indicated that the experience had made him more sympathetic and understanding of the problems families have, especially of the problems children have growing up in far-from-ideal homes, and how society may add to these problems.

Conclusion

This summer project provided a group of medical students with community training in child protective services and in other aspects of public agency casework. The students were affected by what they saw. They were pleased and disappointed with some physician responses, they were discouraged by the multiplicity of problems that some families face, and they were encouraged by the efforts of the staffs of some agencies to assist. They were idealistic about the possibility of making social changes which would improve the state of people's lives, and at the same time they were a bit cynical about bureaucracy and the abuse of some public services.

It is difficult to determine whether or not this experience will have a permanent, positive effect on the students in improving their knowledge about, attitudes toward, and practice with family social problems. Nevertheless, exposing the future physician to the professional social worker is an important part of training because increasingly the physician will be a part of the network of family and social services. It will be crucial that he understand the contribution that the social worker and other professionals can make toward the management of family problems. It is especially important for students to have this experience early in their medical education so that the sensitivity and understanding it engenders can become the foundation upon which their further training is based.

Note-Taking and Information Recall: An Empirical Study

Jerry R. May, Ph.D., and Paul R. Miller, M.D.

Students frequently ask whether physicians should take notes during the patient interview. Educators usually answer the question based on their subjective preference rather than on data. Sigmund Freud characteristically took no notes during interviews but relied on his memory to write notes later that evening. Several medical and nonmedical interviewers have continued to use this approach. A recent book on medical interviewing suggests that the decision to take notes should depend upon how comfortable the patient feels about it (1). Proponents of this attitude tend to believe that the doctor-patient relationship is of primary importance in the interview and that note-taking detracts from it. Other educators and clinicians believe that important data are lost if record-keeping is based on later recall. Dr. Lawrence Weed (2), the creator of the problem-oriented medical record, stated that "the medical record is not the record of medical practice; it is the medical practice."

Dr. May is an assistant professor of behavioral sciences and Dr. Miller is a professor of psychiatry, both in the Division of Behavioral Sciences, School of Medical Sciences, University of Nevada, Reno.

The goal of the project reported here was to compare the amount of recorded information from a medical interview by note-taking versus no note-taking.

Method

Forty-six freshman medical students took part in the study during an Introduction to Clinical Medicine course.

A 15-minute videotape interview with a 40-year-old married female who described her symptoms of migraine headache and some of her life history ("personal profile") was shown separately to each of three randomly chosen groups. Group 1 was instructed to take notes during the videotape of the medical interview and to write immediately the pertinent data from the interview. Group 2 took no notes during the interview and was asked to write the pertinent data immediately. Group 3 took no notes during the interview and was asked to write the pertinent data seven days later. The authors developed a list of 51 items from the interview that they believe were pertinent.

Results

Group 1 (15 students) had a mean recall of 32 items; Group 2 (15 students), 22 items; and Group 3 (13 students), 9 items. The standard deviations were 2.26, 5.74, and 4.17, respectively. A one-way analysis of variance revealed that the mean number of items recalled depended upon note-taking and the time elapsed between doing the interview and recording the pertinent information, $F(2, 40) = 68.48, p < .001$. Statistical comparison of the means between the three groups showed that Group 1 taking notes during the interview and recording them immediately after was superior to Group 2 not taking notes during the interview and recording them immediately after ($t = 6.14, p < .001$) and Group 3 taking no notes during the interview and recording the pertinent data one week later ($t = 17.97, p < .001$). Group 2 was superior to Group 3 ($t = 6.60, p < .001$). The amount of variance accounted for by the taking of notes versus no note-taking was 76 percent as calculated by Omega square (3).

Data from three students from Group 3 were dropped because these individuals recalled information from the wrong interview; thus, they confused the specific patient with another patient's symptoms. Although a complete content analysis will not be reported here, it is interesting that one of the most frequently forgotten pertinent items was the patient's name.

Discussion

The results of this study suggest two major considerations. First, note-taking facilitates recall. Second, there is a progressive decay of memory recall with the passage of time between the interview and the recording of data. Recall of information is an essential component of quality clinical care. These findings suggest that medical records will probably be more complete and more accurate if notes are taken during an interview and recorded immediately.

The study was a preliminary effort to design a project that would allow the manipulation of note-taking to account for a large proportion of the variance. The videotape interview provided an excellent means of reducing the variability of the interview. The next step in the research strategy will be to have each subject interview a live patient. This will approach clinical reality more closely.

The present data do demonstrate the superiority of note-taking for recall of important information. The authors suggest that educators teach students how to take notes without this activity interfering with the doctor-patient relationship. Since both patients and their medical records are essential to the medical practice, it follows that developing a relationship with the patient and simultaneously obtaining accurate medical records are critical skills to be learned.

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EDITORIAL

The Evaluation of Administrative Performance

Assume that you have just been invited to visit a large academic medical center for the purpose of reviewing the administrative performance of the health center vice president and the deans of the health professions college. The review committee has been asked to draw up its own criteria. What are the questions that should be answered? What are the outcome performances that should be measured?

A debate currently rages in management circles concerning the relative importance of the personal qualities of the individual administrator versus his business performance capabilities. Theodore Levitt, in the July 1974 issue of the *Harvard Business Review*, suggested that there really is not a "right" way for a manager to operate or behave. There are only ways that are appropriate for specific tasks of specific institutions in specific situations faced by administrators with specific temperaments and styles.

Probably half of the review team would agree that the personal qualities of the manager are the most important consideration. Despite the difficulty involved in measuring characteristics of a personal nature, all of the team would likely agree to watch for certain leadership characteristics including: democratic, permissive, participative, autocratic, distant, and directive. One reviewer might well suggest that it really is difficult to evaluate administration because of the difference in the amount of power various administrators are given. The nature of the hierarchy peculiar to the institution is a complicating factor.

The other half of the review team would likely stress measurement of the current progress of the health center. Are new buildings being built? How many department chairman vacancies are there? How many research dollars are awarded each year?

Michael Cohen and James G. March, in their review of university presidents (*Leadership and Ambiguity*, 1974), point out that reliable criteria by which to measure administrative success are relatively few. In their study, success measures included: growth in programs, resources, students, faculty, salaries, and facilities; recognized high quality of students, faculty, and programs; balanced budget; and respect exhibited for the administrator by the faculty, the board of trustees, and the community. While the administrator's success may at first appear obvious to reviewers, upon closer analysis it becomes evident that success within the institution being reviewed is more closely related to a time period in the institution than to the individual performance of its current administrator. The health center's performance is a combination of past leadership and the economic conditions of the state and the country. Paul Dressel (*Handbook of Academic Evaluation*, 1976) suggested that the assessment of the university's productivity is a complex task as university management changes from year to year and the style of management goes from one scheme to another.

Today's vice president is more than a handmaiden of the former administration. The management of day-to-day operations, as the decisions of previous administrations are modified and carried out, is a significant factor in the institution's development. Admittedly, it is difficult to evaluate this moving picture. It takes approximately three years to implement a new program and five to seven years to plan and build a new building. Therefore, evaluation of the current administrative performance must emphasize the administrator's ability to prepare the institution for the next few years. Martin Kenneth Starr, in his *Production Management, Systems and Synthesis* (1964), pointed out that long-term planning includes the creation and development of a totally new enterprise. Accurate anticipation of changes through precise planning is the only way long-range synthesis can be achieved. The planning approach utilized by the vice president or dean is a very important factor in the success of the academic institution. The comments by Bernard M. Bass in the March 1977 issue of *American Psychologist* are most helpful in this matter. He suggests that we have a great many laboratory studies

but only a few practical examples of the fact that group decisions are better than those made by individuals. He suggests that in a five-year study of industrial firms considering the location of 118 plants, the best possible decisions were those made by a committee or task force, and decisions by a board of directors or executive committee were seen as more effective than those made by an individual executive. Michael Maccoby, in *The Gamesmen* (1976), indicated that in his review of managers today's gamesman is driven not to build empires but rather to organize winning teams. Reviewers, therefore, would do well to note the administrator's ability to enlist and take into account the cumulative wisdom of advisers.

After considerable discussion, the review team would probably reach a compromise position on the issue of personal qualities of the individual and the business performance of the institution. Both of these elements could be brought to light in a management review concerned with the institution's ability to initiate and respond to opportunities that meet its overall purpose.

Five identifiable areas should be considered in such a review:

1. The stages of institutional development. Key elements to be taken into account in the evaluation of leadership were outlined by Larry Greiner in a review of studies of institutional growth in the July 1972 issue of the *Harvard Business Review*. The evaluation dimensions include: the age of the organization, the size of the organization, the stage of evolution, the stage of revolution, and the growth rate of the industry. The juxtaposition of all of these elements at any given point in the institution's growth narrowly prescribes appropriate management actions.

2. Leadership behavior. Ralph Stogdill summarized leadership and group performance behavior research in his *Handbook of Leadership* (1974). Three basic types of leadership styles are identified: (*a*) Person oriented, (*b*) autocratic-restrictive-task oriented, (*c*) socially distant, directive, and structured. Neither person oriented nor autocratic-restrictive-task oriented leadership is consistently linked to productivity. Structuring expectations is the single pattern that contributes positively to group productivity, cohesiveness, and satisfaction. Research concerning the interaction of the values, personality, and behavior of the leader with those of subordinates is scarce. However, several studies suggest that extreme homogeneity in leader-follower characteristics may be dysfunctional to exercise of leadership and group performance.

3. Goal achievement. The goals of an institution are the means to achieving the purpose of that institution. They are signposts along its planning continuum. The clarity of the expression of each goal and the understanding and support of the goals expressed by other administrators, faculty, and students can be measured. The implementation plan for each goal and the estimated time frame should be well thought out. Past performance in the form of an administrative batting average for goals achieved can be obtained.

4. Selection of personnel. There are several questions to be answered. What are the qualifications of the new appointments? What is the competency level of the individuals who are promoted? Are the criteria for promotions clearly defined? How are individuals deemed incompetent handled? Does the administrator appoint well qualified individuals to the administrative leadership positions? To what extent is the administrative team a homogeneous group?

5. Planning performance. The outcome performance of an institution is determined by the stage of development of that institution, the leadership behavior exhibited, the appropriateness of and support generated for the institutional goals, the selection of personnel to carry out the goals, and the ability of the administrator to plan properly for the desired outcome performance. Are the right goals being set? Is there room for innovation in the organization, and is innovation planned for? The curriculum innovation at Case Western Reserve University School of Medicine several years ago was no accident. The research development at the University of Washington School of Medicine in Seattle in the last several years is more than just good luck.

RALPH W. INGERSOLL, PH.D.
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DATAGRAM

Income Analysis of University-Owned Teaching Hospitals

The AAMC Department of Teaching Hospitals recently conducted its sixth annual survey of income, expense, and general operating information for university owned teaching hospitals. The survey questionnaire was mailed to 63 hospitals, of which 61 responded. However, due to unanswered questions, incomplete responses, or unprovided comparative data, the tables that appear below have been constructed on the basis of fewer than 61 responses. Questions used for this year's survey (which was based on fiscal 1975 data) were selected to provide continuity with the surveys and Datagrams of previous years. Last year's (fiscal 1974's) survey questions were altered from cash base to accrual income reporting. This practice was continued for the current survey.

Hospitals Receiving State Funds

Thirty-eight of the responding university-owned teaching hospitals were awarded state appropriations as a source of income during fiscal 1975. For these institutions, such appropriations represented their largest single source of income, totaling in excess of $296 million, or 22.4 percent of all income received by those facilities awarded state appropriations (Table 1). Although state appropriations as a percentage of total operating income were slightly higher in 1975 than during the previous year (21.2 percent in 1974), the trend over the past six years, while not completely uniform, has shown a steady decline in the percentage contribution of state funds to the budgets of the responding teaching hospitals; for example, state appropriations constituted approximately 26 to 28 percent of the total income of teaching hospitals awarded state funds in fiscal years 1970–72. At the same time, Medicare's percentage contribution to the total income of these institutions has continually risen and in fiscal 1974 replaced Blue Cross as the second leading source of income for university-owned teaching hospitals receiving state funds.

Thirty-five of the 38 publicly owned university teaching hospitals* that reported source of income data were awarded state funding, while only three of the 21 privately owned institutions received such appropriations. The dollar amount of state appropriations ranged from just above $900,000 to more than $18.6 million. Nineteen of the 38 teaching hospitals (50 percent) that were awarded state appropriations received between 1 and 20 percent of their operating incomes from such funds, 34 percent (13) of these hospitals received between 21 and 40 percent of their incomes from state funds, and only six of these institutions (16 percent) depended upon state appropriations for between 41 and 60 percent of their operating incomes. Comparing these figures with those of previous survey years (Table 2) further illuminates the declining role played by state appropriations in the budget of responding hospitals. In fiscal years 1970–72, between 60–68 percent of the responding hospitals awarded state funds received over 20 percent of their total operating incomes from such funds, whereas in fiscal 1975 only 50 percent of such hospitals had state funds account for more than 20 percent of their incomes. The mean state appropriation awarded to the responding teaching hospitals in fiscal 1975 was approximately $7.8 million.

In many cases, state appropriations functioned as a third party payer and provided the necessary dollars, at least in part to support the provision of services to partial pay or indigent patients who would otherwise be unable to afford such services on their own. While it is not possible to distinguish, in the strictest sense, between patient care and educational appropriations, state funds apparently were utilized for teaching purposes at a number of the responding hospitals. The problem of making the distinction is compounded by the fact that hospitals contracting with the state provided specific types of services to certain groups of patients (for example, those receiving radiation therapy or psychiatric care) and do not always refer to funding for such services as state appropriations.

Table 1 identifies aggregate totals of income from various sources for responding teaching hospitals receiving state appropriations for the period from fiscal 1973 through fiscal 1975. Although the relative importance of state appropriations as a source of income has been diminishing over the six survey years, the percentage of total operating income accounted for by state appropriations remained relatively stable over the three-year period presented in the table. It is also interesting to note that self-pay as a percentage of total income has been generally declining since 1970, the first survey year, with the marked exception of 1974. Relative increases in income from Medicare seem to have countered the downward trend in the contribution of state appropriations. The other sources of income appear to have remained relatively stable as proportions of the total.

Hospitals Receiving No State Funds

The sources of income for those responding teaching hospitals that were not recipients of state appropriations for the period from fiscal 1973 through fiscal 1975 are presented in Table 3. Blue Cross' contribution to the total operating income for teaching hospitals without state funding, though remaining fairly stable over the three-year period, still represented the largest source of income in fiscal 1975 (26 percent). Medicare payments as a percentage of the total income continued to increase in fiscal 1975 (24.6 percent) and may soon be challenging Blue Cross as the leading

* The University of California hospitals and clinics at Los Angeles, San Diego, and San Francisco were treated as publicly owned facilities for purposes of this survey and analysis.

TABLE 1

SOURCES OF INCOME OF UNIVERSITY-OWNED TEACHING HOSPITALS WHICH WERE AWARDED STATE APPROPRIATIONS

(IN THOUSANDS OF DOLLARS)

Source	Fiscal 1975 (N = 38)		Fiscal 1974 (N = 30)		Fiscal 1973 (N = 28)	
	Amount*	Percent	Amount*	Percent	Amount†	Percent
State appropriation	296,415	22.4	190,138	21.2	164,925	22.7
Blue Cross	195,129	14.7	126,656	14.1	119,724	16.5
Commercial insurance	173,179	13.1	123,543	13.8	109,841	15.1
Self-pay	112,575	8.5	101,423	11.3	57,154	7.9
Medicaid	165,216	12.5	115,247	12.8	110,789	15.3
Medicare	239,209	18.1	148,145	16.5	92,876	12.8
County appropriation	17,174	1.3	13,679	1.5	10,488	1.5
City appropriation	186	<.1	0	0	355	<.1
Additional welfare payments	15,662	1.2	15,209	1.7	10,144	1.4
Other	108,999	8.2	63,535	7.1	49,303	6.8
Total	1,323,744	100.0	897,575	100.0	725,599	100.0

* Reported on an accrual basis.

† Reported on a cash basis.

TABLE 2

PERCENTAGE OF RESPONDING TEACHING HOSPITALS BY PROPORTION OF TOTAL OPERATING INCOME RECEIVED FROM STATE APPROPRIATIONS, 1970 THROUGH 1975*

Year	Percentage Total Operating Income from State Appropriations			
	1–20 Per cent	21–40 Per cent	41–60 Per cent	61–100 Per cent
1975 (N = 38)	50	34	16	0
1974 (N = 30)	43	40	17	0
1973 (N = 28)	47	32	21	0
1972 (N = 34)	35	35	27	3
1971 (N = 34)	32	44	15	9†
1970 (N = 30)	40	27	33	0

* Reported on a cash basis for 1970 through 1973 and on an accrual basis in 1974 and 1975.

† One hospital in first year of operation received 100 percent of its operating income from state appropriations.

TABLE 3

SOURCES OF INCOME OF UNIVERSITY-OWNED TEACHING HOSPITALS WHICH WERE NOT AWARDED STATE APPROPRIATIONS
(IN THOUSANDS OF DOLLARS)

Source	Fiscal 1975 (N = 21)		Fiscal 1974 (N = 24)		Fiscal 1973 (N = 15)	
	Amount*	Percent	Amount*	Percent	Amount†	Percent
Blue Cross	205,218	26.0	186,123	26.4	88,573	25.8
Commercial insurance	137,062	17.3	106,118	15.1	56,124	16.4
Self-pay	91,967	11.6	89,158	12.7	30,663	8.9
Medicaid	108,962	13.8	90,481	12.9	51,443	15.0
Medicare	194,802	24.6	168,500	23.9	67,991	19.8
County appropriation	1,555	0.2	1,383	0.2	144	0
City appropriation	778	0.1	859	0.1	433	.1
Additional welfare payments	6,491	0.8	6,094	0.9	3,727	1.1
Other	43,833	5.6	55,173	7.8	44,200	12.9
Total	790,668	100.0	703,889	100.0	343,298	100.0

* Reported on an accrual basis.
† Reported on a cash basis.

TABLE 4

SOURCES OF INCOME BY TYPE OF CARE IN UNIVERSITY-OWNED TEACHING HOSPITALS, FISCAL 1974 AND 1975*
(IN THOUSANDS OF DOLLARS)

Source	Fiscal 1975 (N = 50)†				Fiscal 1974 (N = 46)‡			
	Outpatient		Inpatient		Outpatient		Inpatient	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Blue Cross	25,731	10.4	341,369	23.9	14,760	8.8	273,733	23.8
Commercial insurance	25,501	10.4	251,431	17.6	13,887	8.3	180,120	15.6
Self-Pay	60,221	24.5	105,846	7.4	45,064	26.9	138,916	12.1
Medicaid	39,284	16.0	211,807	14.9	21,209	12.7	163,235	14.2
Medicare	37,184	15.1	368,960	25.9	30,328	18.1	270,002	23.4
State appropriations	21,557	8.8	61,928	4.3	20,324	12.2	62,282	5.4
County appropriations	2,780	1.1	7,880	0.6	1,064	0.7	3,057	0.3
City appropriations	345	0.1	619	<.1	406	0.3	453	0
Additional welfare payments	2,305	0.9	19,868	1.4	1,819	1.0	14,902	1.3
Other	31,276	12.7	56,400	4.0	18,571	11.0	45,313	3.9
Total	246,184	100.0	1,426,108	100.0	167,432	100.0	1,152,013	100.0

* Data reported only for those hospitals able to separate income into inpatient and outpatient categories.
† Income reported on an accrual basis for 1974 and 1975.

source of income. The "self-pay" category, which increased substantially as a percentage of total operating income between 1973 and 1974, appears to have leveled off in 1975, while the "other" category (which includes such income sources as overhead from sponsored programs, workman's compensation, and government contracts for patient care) continued its decline over the three-year period as a percentage of the total operating income. Commercial insurance and Medicaid as percentages of the total income had decreased during fiscal 1974 but appear to have reversed this downward trend in fiscal 1975.

Income By Type of Care

The increased percentage contributions of Medicaid and commercial insurance patients as sources of income for inpatient and outpatient services are highlighted in Table 4, which compares the sources of income for the respondents by type of care for fiscal years 1974 and 1975. The increases in Medicaid and commercial insurance for 1975 were offset by percentage decreases in self-pay and state appropriations as income sources in both the inpatient and outpatient areas. In fiscal 1975, Medicare revenue varied for each type of care, increasing its share of inpatient operating income to 25.9 percent from 23.4 percent, while decreasing its share of outpatient income from 18.1 percent to 15.1 percent.

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BOOK REVIEW

Medical Education and the State: The Changing Pattern in Ten Countries. RONALD V. CHRISTIE. Bethesda, Maryland: Fogarty International Center, 1976. 142 pp. Cloth, $4.40 (DHEW Publication No. [NIH]76-943)

The topic of this book is important and certainly needs discussion among medical educators as well as legislators. An earlier publication from the Organization for Economic Cooperation and Development attempted to report on problems and opportunities in medical education for countries with national health programs. That report and this book suffer from the same defects, which stem actually from the virtues of the authors. Those who are best able to examine and discuss these problematic areas, the most experienced, generally are also encased in the traditional armor of their views on medical education and medical care. The emphasis in the discussions then tends to focus on the difficulties that the medical educators have with the state: since the state reflects society's values, the financing often interferes with traditional attitudes and approaches of the medical educators.

Christie has an abundance of the credentials required for an analyst of state impact on medical education. He has been a professor of medicine in Britain and Canada, a medical school dean in Canada, and a professional observer in a dozen countries and many dozen medical schools. His book suffers from the weight of this authority. The book is excellent of its kind, but one should not look to it for answers to the hard questions of how to deal flexibly and usefully with the increasing burden of public pressures on medical education to produce solutions to society's medical care problems and of how medical schools can respond flexibly to the need to maintain traditional standards under such pressures. It is, however, informative, reasonably objective (I will demur on this a bit later), and deals with the critical issues at the intersection of the forces of medical education and the state. It fails to distill from these observations conclusions as to the value of state controls, if they have any, and it fails to suggest accommodations or to visualize any different form that medical education might take, given the existing and growing powers of the state in this field.

For Christie, the medical educational system is not what might be changed; it's the state's role in funding. To him the state is the source of funds, not policy. The public is to give the money; the medical schools and the medical educators will supply the rest.

First, the virtues of the book. Despite the reference to "10 countries," the basic comparisons touch five in detail: the United Kingdom, the United States, Canada, Australia, and Sweden. He did visit 10 countries over a four-year period, and there are appendices with briefer observations on New Zealand, Finland, Ireland, Denmark, and Norway. Because of Dr. Christie's background, the priorities are relayed in the order in which the subjects are treated: We begin with "Financial Support of Education," go on to "Financial Support of Research," "Regulation of Professional Standards," "Medical Schools," "Expenditures," "Medical Manpower," "Teaching Hospitals," and "Laboratory Services in Teaching Hospitals," and wind up with "Family Practice and Community Medicine," "Undergraduate Curriculum," and "Postgraduate Education."

In the areas he knows best his views and conclusions are wise and apt. He writes: ". . . most effective is a dean with wide executive authority who can be criticized at faculty meetings for any decision he makes and who must have the agreement of his faculty before making any major decision." And, "Lack of effective leadership is a more common complaint than arbitrary or despotic leadership. It remains true that a poor chairman can quickly spoil a good department." He provides intersting data on the relative numbers of full-time faculty in the different countries and variations in operating costs. The United States and Sweden, for example, have roughly one full-time teacher per student; in Canada the ratio is 1 to 3; in Australia, 1 to 10; and in the United Kingdom, 1 to 16. Expenditures reflect equally wide variations. Operating costs for Canadian schools are half of those of the United States, British schools about a quarter of those of the United States, and Australian schools about a third.

Christie fails to comment on the implication of these figures on the quality of the product. Are Australian medical school graduates less capable than U.S. or Canadian doctors? Are U.S. doctors 16 (or even four) times better than British? Two or three times better than Canadian? Ten times better than Australian?

Sir Oliver Lodge is credited with the comment that if a deep sea fish were to engage in scientific research, the last thing he would discover would be water. So Christie never questions the axioms of his geometry. Although he sees the growing separation, both functional and geographic, of the medical school from the university, he still staunchly holds to university-based medical education. The grip of the shibboleths leads to some ludicrous contradictions, sometimes on the same page. For example, he writes: "In general, the Universities appear to be only too glad to be rid of the heavy financial burden and other complications of medical education and the medical schools have flourished under this arrangement." This is followed by, "If academic and educational standards are to be maintained, it seems important that the medical school should be affiliated with the University." To some degree this seems to stem from his bias against medical education in socialist countries, where support for medical education is drawn from the ministry of health. He believes only the ministry (or department) of education should support medical education, out of fear of "the risk of taking medicine away from its academic environment and reducing it to the level of a training college." Which is the evil to be shunned at any cost.

Corollary to this is his axiomatic support of the principle that a medical school must engage in medical research. He is candid about the level of most "research" in medical schools. He says: "Few of those involved in academic departments will admit even to themselves that their research is pedestrian or unprofitable, and those departments engaged in mediocre research are sometimes the last to recognize excellence in others." Nevertheless, on the next page, he writes that "the value of research is in providing teachers who can give undergraduates a practical grounding in the scientific background of medicine." Pedestrian approach? Mediocre grounding?

In every country in the world, people cry out for more or better medical services, easily accessible, dignified, and of modern quality. Can medical schools utilize the state's interest to modify the rigidities of their traditional forms to accomplish this? Or is it something doctors in practice and medical educators should ignore and let society adopt other mechanisms to achieve? Should the medical educator fix his eye only on the future, wiping out disease in the next generation? No jam today?

It is disappointing that Dr. Christie did not come to grips with this tension in the field. This is one of the reasons he cannot deal adequately with "Family Practice," although it is a chapter itself; he is bemused with the traditional concept of the hospital as the teaching locus. He states that "the nursery for learning primary care is still the hospital," although we know so well that to glorify the hospital as the center is to minimize ambulatory care and even eliminate it from practical consideration among the graduates.

He takes too many things for granted as given—for example, absolute numbers as indicators of manpower shortages, rather than addressing himself to system defect corrections and alternative means of care. Which is also why, perhaps, he misinterprets the role and function of the physician's assistant and utters a comment of the most arrant sexist quality. He sees the physician's assistant (male!) as a potential competitor to the doctor in private practice, while with the nurse "with special training and experience," being female, "this hazard does not arise." And he ends the chapter on that note: "The nurse practitioner, rather than the medical associate, seems to be the best answer to the clinical help which is needed by the general practitioner if his work is to become more effective in relieving the shortage of family doctors."

Understanding the differences and the similarities in national approaches to medical education and state support of that education is important. Such knowledge can help us and other countries to improve and expand the

system of medical care and aid in the struggle against disease, disability, and untimely death. It is no help to that understanding to ignore the responsibility of medical education to social need, attending only to the public responsibility to medical education as visualized by the educators.

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LETTER TO THE EDITOR

Evaluating Medical Students

A recent conversation with one of our senior medical students caused me to reflect on the nature of our evaluation processes of students. This medical student had spent some time in my office reviewing evaluation reports of his junior clerkships. Following his review, he commented on several items to me. He observed that one of his evaluation reports in pediatrics was made by a faculty member whom he had never met. Presumably, this faculty member had lent his or her name to observations which other members of the staff in a more junior status had passed on.

The second observation related to a rating of a deficiency in the utilization of original literature and library resources. The student indicated that he recalled the single event which he believed was responsible for this observation. He had been asked one day on rounds to review some material on a particular subject and somehow failed to obtain the requisite information by the time rounds came the following day. There had only been one such event during the clerkship. Apparently, a global judgment was made on the basis of this single happening.

Following this conversation, later the same day, I reviewed assessments with another student who had served on a pediatric service divided into two subspecialty areas each of three-week durations. One report was glowing, with an outstanding in every category. The other report was a mediocre one with comments that the student was "flip and childish" at times. This contrasted with the previous ranking of excellent "emotional maturity."

I am certain that these observations could be repeated ad infinitum in medical schools all over the country. The hazards in the observations of the clinical work of medical students are great. There are the limitations of brief contact, particularly with senior faculty members, who often rely on resident physicians for appraisal of a student. Obviously, new clinical assignments are situations in which the medical student has a high anxiety level because of his new role and his place in the hierarchy of the medical team. Further, it would appear that if we are to make assessments as to the "emotional maturity" of the student, analyze his character structure, and assess his moral nature, we should have the humility to note that such processes require more time, a more neutral setting, and a setting which is free of the contribution of the individual nature of faculty members and resident physicians. The student does not operate in a human vacuum, and his behavior may very well be responsive to that of the faculty. There are surely many circumstances in which the student is reacting to some kinds of provocations with behavior that would otherwise not be in evidence.

We need to recognize the seriousness of assessments often made hurriedly to complete reports and which then become a part of the student's permanent record. We know that letters that are sent from the dean's office in support of residency applications utilize this information heavily, and casual statements may significantly affect a student's career and future life.

I would, therefore, make a plea that all medical schools which have not done so to study thoughtfully the nature of the evaluation process of students as well as residents in clinical training and to pay particular heed to those elements which deal with assessment of personality and character structure. It is only if we continue to review the procedures that we follow in our institutions that we can properly fulfill a legitimate, humanistic role.

ALBERT LIEBMAN, M.D., *assistant dean, University of North Dakota School of Medicine*

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