

# A Core Course in Family Medicine for Second-Year Medical Students

James E. Crutcher, MD  
Hiram L. Wiest, MD  
Hershey, Pennsylvania

This article, the third in a series on a predoctoral curriculum in family medicine, describes the processes of developing, implementing, and evaluating the second-year medical school core course at The Pennsylvania State University, The Milton S. Hershey Medical Center. It describes the methods used during the 1974-1975 academic year, the eighth year of the department's teaching program.

Three basic teaching modalities are currently employed: (1) faculty and residents present significant problems in family medicine in seminar groups (17 students), (2) then students take turns working on clinical problem-solving exercises and leading seminar discussions, and (3) selectives, based on practice tutorial methods, are offered in five areas: illness in the family, role of the family physician, community medicine, individual study, and practical skills.

Evaluation by students and faculty indicates many positive values in the curriculum at this stage of development. Plans for the coming year will focus upon increasing the variety of teaching methods and improving the efficiency of faculty effort.

In the two previous papers in this series, Leaman<sup>1</sup> presented an overview of the Department of Family and Community Medicine philosophy and methods of curriculum development, and Wiest and Kennedy<sup>2</sup> discussed the implementation of this philosophy in the teaching of family medicine to first-year medical students at The Milton S. Hershey Medical Center. This paper describes the educational objectives, the methods for teaching those objectives, and the evaluative techniques used in the core course for second-year medical students.

The second year of medical school is dominated by the study of disease processes involving intricate detail on a cellular or subcellular level. The in-

tense concentration necessary to master this microscopic detail often results in a loss of perspective for the student. It is easy to forget that the bizarre mitotic figure under the microscope was once part of a person with problems and feelings. In counterpoint to this, the philosophy of family medicine calls attention to the person with the disease process and emphasizes basic approaches to helping people with their medical problems in an office or ambulatory setting.

## Educational Objectives

The specific objectives of the second year focus on approaches to common office problems with common solutions. An attempt is made to develop attitudes, cognitive knowledge, and practical skills used in dealing with these problems.

The identification and transmission of desirable attitudes is most difficult in any educational setting. In the university setting emphasis, and therefore importance, is often put on the

esoteric or unusual, and the common illnesses of people seem mundane and unworthy of in-depth study. Somehow even the future neurosurgeon has to be taught to realize that 90 percent of headaches are ordinary tension syndromes and not space-occupying masses. Hodgkin<sup>3</sup> has published a striking series of graphs based on his own medical education in the British system showing the imbalance between experiences in the hospital as a student and intern and those in his first year in general practice.

In the traditional basic science curriculum, common diseases are often de-emphasized. Not much is said about the pathophysiology of the common cold or otitis media, and the overall impression conveyed to medical students is that these illnesses are less than acceptable diseases to study, even though they afflict almost everyone. The pathology of Cushing's disease is taught ad infinitum, but exogenous obesity may not be mentioned. Family medicine has placed common problems in the academic setting to encourage study, to promote development of skills in diagnosis and treatment, and to stimulate future research.

The "practical skills" concept emphasizes those techniques that are useful in the office in dealing with common problems. Although most medical students know how to cannulate a dog's artery, it appears more important that they learn how to recognize hemolytic streptococcus or how to examine urine sediments under the microscope.

The teaching of attitudes, knowledge, and skills is combined in the second year to provide unusual insight into usual diseases in ordinary office practice. The combination permits development of an overall approach to common problems and better equips the student to separate the common

From the Department of Family and Community Medicine, The Milton S. Hershey Medical Center, The Pennsylvania State University, Hershey, Pennsylvania. Requests for reprints should be addressed to Dr. James E. Crutcher, Instructor, Department of Family and Community Medicine, The Milton S. Hershey Medical Center, The Pennsylvania State University, 500 University Drive, Hershey, Pa 17033.

**Table 1. Distribution of Second-Year Curricular Hours**

	Fall	Winter	Spring	Total
Behavioral Science	—	44	—	44
Humanities	—	—	22	22
Family and Community Medicine	22	22	22	66
Subtotal	22	66	44	132
Total Curriculum Time	278	297	136	711
% of Curriculum Time	7	22	32	18

problem from the unusual problem with common prodrome.

### Curricular Context and Methods

Introducing the concepts of family medicine into the undergraduate medical curriculum is an innovation which has generally presented multiple problems to neophyte faculty members nationally. Our experience at Hershey indicates that the second-year core course presents more difficulties than does the first-year course. An example of this educational challenge occurred two years ago. Second-year students protested because of our continued use of correlation conferences as a major part of our teaching program. Their protest was based upon the fact that a new course combining clinical science and pathology had been introduced by other departments during that year, and the new course used many clinical examples in the teaching format. Our presentation of clinical conferences, a tradition since the school began in 1967, was now viewed as redundant. Furthermore, we made the error of combining first and second-year students in the same large lecture hall with resulting complaints that the material, if appropriate for first-year students, was too simple for second-year and, if appropriate for second, was over the heads of first-year students. Large classes save faculty time but often produce ineffective learning experiences for students.

Based upon many different experiments with a variety of teaching modalities, we have now designed a second-year curriculum with only minor modifications for the coming academic year. We believe that the current pattern is quite viable and worthy of consideration for use at

**Table 2. Problem-Solving in Family and Community Medicine Topics for Discussion**

Symptoms  
 Health status examinations  
 Injuries  
 Neoplasms  
 Infectious diseases  
 Emotional problems  
 Central nervous system  
 Respiratory  
 Eye  
 Ear, nose, throat  
 Gastrointestinal  
 Genitourinary  
 Endocrine and metabolic  
 Dermatology  
 Cardiovascular  
 Hypertension  
 Blood diseases  
 Pregnancy  
 Congenital anomalies  
 Musculo-skeletal

other medical schools. Further comments on evaluation of the course will be made in a later section.

Two other innovative departments, behavioral science and humanities, are also engaged in teaching required and elective courses in the second year. The curriculum time is divided as shown in Table 1.

The 86 second-year medical students spent a total of 66 hours in the family medicine course. Thirty-three hours consisted of seminars with an average of 17 students per group. Thirty-three hours were devoted to

practice tutorials or independent study. The latter portion of the curriculum required students to choose one of five tutorial selectives.

### Seminars

Small group seminars formed the basic teaching method for second-year medical students. Five groups of 17 students each met with one or two staff physicians from the Department of Family and Community Medicine for one hour per week for 33 weeks. The class meetings took place in seminar rooms in the medical center.

The first 22 weeks were spent discussing significant problems in family medicine. The problems were selected according to the emphasis scores developed by the College of Family Physicians in Canada.<sup>4</sup> The emphasis score combines the relative frequency of problem presentations in ambulatory practice with the seriousness of the condition and the intervention capability of the physician.

The teaching of these common problems was done in "waves," a rotational method that allowed one faculty physician or family medicine resident to present the same subject to each of the groups over five weeks' time. While the presenter rotated, one staff physician stayed with each group full time to act as a moderator and to become a person whom the students could know well. The presentation was informal and students had ample opportunity to interact with both the presenter and the group leader. A list of topics discussed is presented in Table 2.

There were several advantages to this wave system. It allowed the presenter to become an "authority" on his topic. By presenting the same topic five times over five weeks, he had ample time to do appropriate literature search and gain experience in his subject. He also became very familiar with the more common questions asked and was able to modify his presentation to cover them. This format also economized on physician and resident time. A new preparation was required only once every five weeks instead of weekly.

Finally, the subject matter could be kept very broad, concentrating on approaches and methods of thinking rather than on details of diseases.

Clearly, all of dermatology or the entire cardiovascular system cannot be covered in one hour, no matter how talented the teacher. The emphasis was on a generalist's approach to the problem, highlighting critical approaches to common problems within various body systems.

During the eleven weeks of the spring term, the format of the seminar changed, with the students being given a chance to solve problems themselves. A series of clinical problems was written that would challenge the student to think and to apply the material presented during the "waves." The small group membership and leader remained the same.

Each problem was designed to present a typical situation that emphasized not only common medical diseases but also psychosocial problems. Both types of problems were set in a believable clinical situation that portrayed real-life problems and required mature clinical decisions.

A typical problem and the instructions given to the students are presented below:

*Mr. Ted Cramer is a 65-year-old retired truck driver. He has had a poor education and his language is rather rough. While in the examining room you observe that he is very uncomfortable and he seems very impatient and anxious to leave. The interview proceeds as follows:*

*Dr: How are you doing today, Mr. Cramer?*

*Pt: My wife made me come!*

*Dr: Why?*

*Pt: Trouble with my bowels – it's nothin', Doc.*

*Dr: What kind of trouble?*

*Pt: I got piles for years and years – won't stop bleedin'.*

*Dr: How much do you bleed?*

*Pt: Water's red when I'm done – some bright red on the paper. Only when I go, it's really nothin'. Give me some pills to fix it up.*

*Dr: Before we can talk about helping you, I need some more details. Is there any pain when you have a bowel movement?*

*Pt: Na! Just some blood and not always that.*

*Dr: How long has this been happening?*

*Pt: I told ya' – years and years. All the drivers have piles – nothing unusual at all.*

*Dr: Then why are you here today?*

*Pt: I told ya' – my wife made me come. Gettin' worse, also gettin' more and more hard to go – gotta push harder and harder.*

*From further questioning you find that Mr. Cramer has been in excellent health and is taking no medication.*

*The physical examination is consistent with that of a 65-year-old male in good health. Vital signs show a blood pressure of 190/84 mm Hg, pulse 105 beats per minute, respirations 20. He does indeed have multiple hemorrhoids but no bleeding site can be seen. Rectal exam is normal – no hematochezia, no melena is noted but the stool guaiac is moderately positive. A complete blood count done a day before this visit shows hematocrit 34 percent, hemoglobin 11.5mg/100ml, mean corpuscular volume 78 cu, mean corpuscular hemoglobin 27 pg, and mean corpuscular hemoglobin concentration 34 percent.*

- 1. Draw up a POMR problem list.*
- 2. Discuss a formulation for each problem. Be sure to include the differential diagnosis and any tests or plans needed to help make a diagnosis.*
- 3. Consider the following:*
  - a. Does he need hospitalization?*
  - b. Does he need a consultant?*
  - c. What will you tell him now about his problem?*
  - d. How do you think he will react?*
- 4. Suppose a bleeding hemorrhoid had been seen, would this change your work-up? If so, how – why?*

Other typical case vignettes include a mother with a febrile child, a cosmetic saleswoman with transient ischemic attacks, and a housewife with vaginal bleeding.

Two students worked together on a problem. During the course, each student team was given their case one week in advance of presentation and asked to identify the problems in the situation. Then, in the seminar, the problems were listed and the students

gave a differential diagnosis for each problem, initiating a work-up to help reach a tentative diagnosis and work plan. The faculty leader drew upon his clinical experience to help the students keep a clinical perspective; second-year medical students are apt to order an intravenous pyelogram before a urinalysis in someone with a urinary tract infection.

To add realistic aspects of family medicine, cases were written to include social and psychological problems in addition to the physical signs and symptoms of altered physiologic states traditionally taught in pathology and clinical medicine courses. The interactions among the patient and family, community agencies, and the physician were emphasized. Instructors stressed that the student should view the patient as a whole person and consider all of his problems when preparing presentations for discussion in the seminar groups. Students were encouraged to use varied techniques in their presentations. A particularly effective variation was to have the pair of students "role-play" the interview sessions between physician and patient.

#### *Practice Tutorial "Selectives"*

The term "selectives" describes the group of preceptorial studies from which each student must choose one option per term. The options encourage the student to study further within an area of his interest, yet all the options contain material that is central to the program's educational objectives.

The five selectives offered to second-year students can be summarized as follows:

**1. Illness in the Family.** This experience focuses on the careful study of a specific family where one member is receiving medical care for a specific illness. The family physician who is caring for the patient serves as the student's preceptor. The student is expected to interact with the patient and other members of the family in both the office and home settings. The student is considered a junior member of the health-care team that is providing medical services for the specific individual and his or her family.

**2. Role of the Family Physician.** This experience focuses on the full range of clinical activities that con-



stitute the weekly schedule of a family physician. The preceptors include Family and Community Medicine faculty, Family and Community Medicine residents, and several family physicians in private practice near the Medical Center. Students are invited to participate in a number of activities, such as taking call, making hospital rounds, observing patient care in the office, making house calls, and discussing medicine with family physicians during off-duty hours.

### 3. Community Medicine Programs.

This experience focuses on one of several specific health programs where the major objective is to prevent injury. Physicians working in schools, industrial plants, business firms, unions, coal mines, voluntary health agencies, and governmental agencies serve as preceptors. Persons with specialized knowledge about health planning, health-care delivery, construction of facilities, and the financing of medical care may also serve as preceptors.

4. Individual Study Projects. This experience allows the student to pursue a specific topic or field of interest in association with one or two faculty members who serve as tutors, advisors, or consultants. Student projects can range from guided reading, to consultations with experts in a variety of fields, to participation in ongoing Family and Community Medicine research projects, with development of an empirical study. Individual study projects may be viewed as the pilot phase for developing the problem-solving project required of each student for graduation.

5. Practical Skills. This study program gives the student supervised experience with various procedures typically performed by family physicians in their offices. Opportunities are included to: examine the retina, culture bacterial specimens, do gram stains, examine urinary sediments, perform rectal and vaginal examinations on mannequins with interchangeable pathologic entities, perform electrocardiograms, and do suturing.

### Evaluations

Evaluation procedure is the key to improvement. It monitors how successfully the teaching methods fulfill the educational objectives and provides the feedback required to modify

them when necessary.

At Hershey, the evaluation involves a two-way system: the faculty tells the students how well they are meeting the educational objectives; the students tell the faculty how well their teaching is meeting student expectations and objectives.

Several methods are used to evaluate students. At the end of the first two terms, oral final examinations were given. Each student had ten minutes to discuss a written question selected at random from a choice of ten questions. Examination questions were very brief. For example:

*A patient comes into your office in her early pregnancy telling you that she does not want to have this baby. Assume that you are the physician handling this case and outline the questions that you would ask to help elucidate this problem in a logical order, ie, most important questions first. Remember, rapport is important.*

Each faculty member conducting the examination was provided with a set of expected student responses and educational objectives. In addition to cognitive knowledge, which is evaluated on a five-point scale, the student's poise and comfort in the situation was also assessed. Each examiner was encouraged to make detailed written comments on the student's performance. The evaluation sheets were prepared immediately upon conclusion of the oral examination and were used for a summary statement that was sent to the Office of Student Affairs for inclusion in the student's permanent record.

During the spring term, the students were individually evaluated on the basis of their preparation and presentation of problem cases. No final examination was given.

Separate grades of pass, fail, or honors were given at the conclusion of each term. These were based on the oral examinations at the end of the first two terms, verbal presentations following the third term, participation in seminar discussions, and evaluations by the faculty supervising the "selective" preceptorial experiences. In addition to the grades, a summary of performance throughout the year was prepared by the faculty member who acted as the student's seminar leader.

The students gave evaluations of the core course in two ways. At

11-week intervals, the students were given class time to fill out an anonymous evaluation form. Questions included: What is your general reaction to the course? Which topics did you find most interesting and meaningful? Why? Which topics did you find least interesting? Why? What suggestions would you have for improving the course?

The evaluations were collected and tabulated. Each student's evaluation was assigned a number and his answers to each question were compared with the rest of the class. Since the evaluations were anonymous and were filled in during class time, students tended to be quite candid. The second means of student evaluation took place on a weekly basis. A representative of the second-year class was invited to participate in the weekly "Review and Preview" session held by the teaching faculty. Round table observation about strengths and weaknesses came easily for both student and faculty in these informal luncheon sessions.

### Discussion

A compilation and study of student evaluation forms reveals the following:

1. Overall responses were predominantly favorable in the past academic year.
2. On the negative side, students expressed boredom with repeated use of the same teaching modality week after week.
3. Oral examinations were much preferred over written ones, especially for the two terms of "wave" presentation.

Faculty members, both seasoned practitioners who served as seminar leaders and residents who volunteered to prepare individual presentations, were pleased with the format of the seminars. Certainly it proved to be a much happier teaching experience for faculty than that of previous years.

The "selectives" portion of the course did take cognizance of the individual student's preferences and style of learning and will be retained in next year's course. The practical skills selective was so widely accepted that it is planned as a required part of next year's course for all students.

In order to respond to student complaints about the repeated use of the same teaching format over 11 weeks' time, next year our "waves" of topical presentations will be broken up

by combining them with case presentations by individual students. These cases will be tied to the preceding week's topic. An intricate schedule will permit the practical skills course to be interwoven during the first two terms so that every student will have rotated through it by the end of the second 11-week term.

Another student complaint has been that some topics, such as coronary artery disease and diabetes, are covered in multiple ways by several other departmental courses. It has been decided that such topics will be dropped from our significant problem series next year, and instead more time will be devoted to studying the ways in which patients present to the family physician — such as with “tiredness,” “low back pain,” or “sore throat.” The emphasis will be on recognizing presenting signs and symptoms of diabetes rather than the disease itself.

A particularly effective elective course offered by the department had been one on clinical interviewing. It has been limited thus far to very small groups of students. However, in recognition of the importance that the skill of communicating with patients plays in all kinds of medical practice and

especially in family medicine, we plan to make this the major subject of next year's spring term, second-year curriculum. We will use role-playing and video-taping with small groups of students as the major educational methods.

A major drawback of the use of pairs of seasoned practitioners plus family medicine residents in the seminar sessions has been the drain on faculty time, especially during periods of the year when the demands for patient service are high. Economies of faculty time will be required next year with one faculty member being assigned to each seminar instead of two. Several faculty members will be used as backup, in case of unexpected absence.

A further reduction in demand on faculty time will be brought about by the use of physician extenders as teachers in the practical skills portion of the course. Some saving of faculty time will be accomplished by shortening the weekly review-preview conferences described in a previous paper in this series.<sup>2</sup> In addition, since many of the same faculty are involved in teaching both medical students and residents, the residency teaching con-

ference will be combined with review-preview conferences. The concept of one person developing teaching materials which will be used in multiple small group seminars will be retained.

No one feels that the ultimate curriculum has been reached in our program, and the material presented here will be constantly revised and critiqued. The overriding goal is to present the educational objectives of family medicine to medical students.

#### Acknowledgement

Portions of the curriculum development described in this paper were supported by an NIH Grant #DO8 00402 (7/1/72-6/30/75).

#### References

1. Leaman TL: A predoctoral curriculum in family medicine. *J Fam Pract* 2:107-109, 1975
2. Wiest HL, Kennedy DA: A core course in family medicine for first-year medical students. *J Fam Pract* 2:433-437, 1975
3. Hodgkin K: Towards earlier diagnosis, a guide to general practice, ed 3. Edinburgh and London, Churchill Livingstone, 1973, pp XII-XIII
4. Canadian Family Medicine Educational Objectives for Certification in Family Medicine. Don Mills, College of Family Physicians of Canada, 1973, pp 57-60

