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There is a critical need for medical specialists (most appropriately, physicians) who function as coordinators of care, a role ascribed in the past to the general practitioner or family doctor. The term "general practitioner" should be avoided for this new specialist is a team coordinator who is trained in communications and interpersonal relationships and has the administrative acumen necessary to select from a wide array of community services those best suited for his patients. Training the "primary physician" (the term preferred here) must be carefully planned. The primary care curriculum should be undertaken by every medical student as a base for further training and will demand a multidisciplinary approach. In instruction, the emphasis must be on the learner, and the goals and methods of the training program should be supported by the entire medical faculty. The general objectives of the program to teach skills, knowledge and behavior critical to primary care are to give students the opportunity to see, participate in and learn within the structure of a model program in which comprehensive, coordinated health services are available to an identified patient population, and to view a variety of services, properly selected and sequenced, over a period of time. It also aims to provide the undergraduate with knowledge necessary to decide whether to pursue graduate training as a primary physician, maximize further learning opportunities in the field, and relate effectively with primary physicians if another specialty is chosen. (JS)

**A BLUEPRINT FOR A MEDICAL SCHOOL  
UNDERGRADUATE TEACHING  
PROGRAM IN PRIMARY CARE**

**U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
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**Program Evaluation Center  
University of Missouri  
Columbia, Missouri**

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A BLUEPRINT FOR A MEDICAL SCHOOL UNDERGRADUATE TEACHING PROGRAM  
IN PRIMARY CARE

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## I. INTRODUCTION

One of the most easily identifiable characteristics of the contemporary medical care scene is the attention which is being given to need for comprehensive health services and the necessary associated health professionals. With the advent of this interest, it has become apparent that hard scrutiny must be given to the current education and training of medical students and other health science personnel if the promise of comprehensive, coordinated, community-based health services is to be fulfilled.

As planned health care moves to a systems level, there is a critical need for a health care specialist who will function as the coordinator of care. Further, it seems apparent that for large segments of society, it is most desirable to have a physician fulfill this role. Several recent national reports have cited the need for such a practitioner: The Graduate Education of Physicians, the so-called Millis Commission Report;<sup>1</sup> Meeting the Challenge of Family Practice, the report of the Ad Hoc Committee on Education for Family Practice of the AMA,<sup>2</sup> and Health Is A Community Affair, a report of the National Commission on Community Health Services.<sup>3</sup> In each report a common trend is observed, namely, the identification of the need for a medical specialist who will function in the role which has, in the past, been ascribed to the general practitioner or family doctor. The Millis Commission Report uses the term "the primary physician." The Ad Hoc Committee Report uses the term "family physician," and the Report of the National Commission on Community Health Services uses the term "personal physician."

In comparing the description of the characteristics of each of these practitioners, one is aware of the striking similarities in the three reports. One other fact is apparent, and that is the common need to select a new name for this medical specialist and avoid the term "general practitioner." This would seem appropriate, for the primary physician (the term preferred by the writers of this report) is a team coordinator

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<sup>1</sup>Citizens Commission on Graduate Medical Education (John S. Millis, Ph.D., chairman), The Graduate Education of Physicians. Chicago, Ill.: Council on Medical Education, American Medical Association, 1966.

<sup>2</sup>Ad Hoc Committee on Education for Family Practice (William R. Willard, M.D., chairman), Meeting the Challenge of Family Practice. Chicago, Ill.: Council on Medical Education, American Medical Association, 1966.

<sup>3</sup>National Commission on Community Health Services (Marion B. Folsom, LL.D., chairman), Health Is a Community Affair. Cambridge, Mass.: Harvard University Press, 1966.

who is trained in more than medical practice as we now know it. He is, in addition, a specialist in communications and interpersonal relationships. He is experienced and trained in selecting, from the whole array of medical services available in a community or a medical center, those talents and services needed by the patient for his continuing health care. These and additional functions associated with his role, both in this report and the aforementioned national reports, might well be described by the terms "administrative" or "managerial" functions.

This administrative or managerial function of the physician who renders comprehensive care has not been stated sufficiently, but the need for it can be seen in a quotation from the report of the Citizen's Commission:

One of his qualifications must be a thorough knowledge of and access to the whole range of medical services of the community. ...When a patient needs hospitalization, the services of other medical specialists, or other medical or paramedical assistance, the primary physician will see that the necessary arrangements are made, giving such responsibility to others as is appropriate and retaining his own continuing and comprehensive responsibility....Few hospitals and few existing specialists consider comprehensive and continuing medical care to be their responsibility and within their range<sup>4</sup> of competence....A different kind of physician is called for.

If such a physician is to be prepared, and that indeed is one of the assumptions of this blueprint, education and training for this role must be carefully planned and not left to chance alone.

#### A. Assumptions for a Primary Care Curriculum

The curriculum described in this blueprint is related to the following assumptions:

1. This program should be part of the training of every medical student, either as the base upon which will be built a career in this specialty, or as the base on which, as a specialist in another area of medicine, the practitioner will learn the role of the primary physician and the appropriate method of relating to him.
2. The curriculum does not provide the total training for students in areas relevant to primary care but takes all students to some point from which further learning may be undertaken. That is to say, this is not a program to train a specialist at the undergraduate level.

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<sup>4</sup>Citizens Commission on Graduate Medical Education, op. cit., pp. 35-37.

3. Graduate training, e.g., residencies, must ultimately be available for the necessary advanced training in primary care.
4. The longer duration of chronic conditions as compared to acute conditions suggests a longer period of care and care continuing throughout the duration of the condition. This prolonged care requires a long-term orientation and a delayed or reoriented work gratification pattern on the part of the caring person.
5. Primary care requires a broad base of information for the caring persons. Further, it calls for an ecologic framework including psychological, sociological, and biological elements relevant to the care of the individual from the points of view of the patient, his primary group (for example, the family), and the persons in the medical care system.
6. The breadth of information and care necessary in primary care requires a multi-agency and multidisciplinary or team approach to care institutionalized within a health care system and directed or coordinated by a primary physician.

#### B. The Instructional Process

The emphasis, in instruction, must be on the learner rather than on the content. The instructional process sets out to anticipate and overcome probable learning difficulties. The task of the teacher is to bring about changes in the student's behavior by making changes in the environment.

This emphasis on the development of validated instruction, of instruction known to be effective, must be made a basic part of the primary care curriculum. Staff and staff training necessary to develop the instruction must be provided for. While in the instructional process the analysis of behavior (the objectives) is of first importance, each of the steps in the process is critical and each may depend on instructional specialists as well as content specialists.

The nature of instruction has been described as follows:<sup>5</sup>

1. Determination of objectives.
2. Analysis of instructional objectives--i.e., the breaking down into components such as:
  - a. entering behavior or behavior under learner control when instruction starts
  - b. behavior to be controlled by directions or by the requirements of the environment
  - c. behavior to be brought under the learner's control through instruction

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<sup>5</sup> Stephen M. Corey, "The Nature of Instruction," in Programmed Instruction, 66th Yearbook, Part II, National Society for the Study of Education, Chicago, Ill.: Univ. of Chicago Press, 1967, pp. 5-27.

3. Identifying relevant characteristics existing in the population to be instructed.
4. Designating evidence of success of instruction.
5. Constructing the instructional environment.
6. Sequencing the units of instruction.
7. Continuing instruction (review, practice).
8. Recycling through 5,6, and 7 until objectives are met.

Again, the process of developing instruction has been described by Markle and Tiemann in the terms shown in the table below.<sup>6</sup>

TABLE I

## Stages in the Instructional Process

Question	Process	Document
"What do I want the student to be able to do?"	Task or course analysis	Statement of behavioral objectives
"How do I know when he has achieved the objectives?"	Analysis and item construction	Criterion test
"What can these students already do?"	Probe, observe, test representative student	Statement of prerequisites
"How do I get the student from where he is to where I want him to be?"	Analyze behaviors, structure and sequence content, and determine media	First version of instructional sequence
"How can I get it to work and prove that it does?"	Test, revise, and retest until adequate learning is demonstrated	Evidence of validation of the final version of the instruction

Since the education of physicians in general will be undergoing much change over the next few years, at the same time the training of primary physicians is being inaugurated, it is vital that instruction be effective

<sup>6</sup>Susan M. Markle and Philip W. Tiemann, "Ask 'Why' Before You Buy," Analogy. (Allstate Ins. Co.), Winter, 1966/67, pp. 4-9.

and efficient. Competition for instructional time is so great that instruction must be planned; simply placing a student in proximity with a primary physician-teacher-model is not enough. The role of a primary physician and the system in which he will operate is not completely clear today and will change over time. Flexibility in the primary care program is a must, and a spirit of innovation and reevaluation should be encouraged in the primary care faculty. Further, it is important that the entire medical school faculty understand the goals and methods of the program. An orientation toward comprehensive, continuing health care should underlie every physician.

## II. OBJECTIVES OF THE PROGRAM

The general objectives of this program to teach skills, knowledge, and behaviors specific or critical to primary care are as follows:

1. To give the undergraduate medical student an opportunity to see, participate in, and learn within the structure of a program which has been designed as a model of comprehensive, coordinated, community health services to an identified patient population.
2. To give the student an opportunity to gain perception of medical care problems over the dimension of time, as well as space. This is to say that comprehensiveness can be considered at a point of time in terms of the extent to which the whole array of needed services are brought to bear on the patient's behalf at that point of time. This view of comprehensiveness, however, is incomplete, for it is essential that consideration be given also to the necessity of viewing an array of services over a period of time, properly selected and properly sequenced. It is this characteristic that is frequently described by the term "continuing care."
3. To provide the undergraduate medical student with basic knowledge, skills, and behaviors required by a primary physician in a comprehensive health care system to such a level that the student:
  - a. Is able to make a rational choice between graduate training as a primary physician versus other more technically specialized programs;
  - b. Is able to maximize his learning opportunities during subsequent graduate training as a primary physician, if such a specialty is selected;
  - c. Is able to interact effectively with primary physicians in the course of his practice if another graduate specialty is chosen for a career.
4. To have the student engage in a systematic study of the problems of a patient population in a health care system.

### III. FACULTY AND SUPPORTING STAFF

This program will be the full-time responsibility of a department within a school of medicine. The faculty for the program: (a) must be motivated by genuine interest in the delivery of primary care; (b) must have a desire to study problems in, and new techniques for delivery of, health services and medical care; and (c) must have a high level of interest in developing instruction and training in primary care. Since the maintenance and continual development of professional competence will be an activity to be demonstrated in the program, gaps in training, experience, knowledge, and skills of the faculty will be identified, and appropriate educational resources will be provided for them.

The faculty may be thought of as consisting of three primary groups:

1. The physician faculty,
2. Additional care and teaching faculty,
3. The supporting staff for the teaching program and the facility itself.

The physician faculty will be generalists. A "committee" of internists, pediatricians, and psychiatrists (as frequently proposed) cannot supplant the integrative function embodied in the primary physician. These generalists shall have had training and experience and demonstrate ability across the spectrum of primary care, and not merely a narrow portion of it. Knowledge, skill, and experience in administrative techniques and the medical aspects of the social and behavioral sciences are essential in addition to firm grounding in internal medicine, pediatrics, obstetrics, psychiatry, and environmental health.

The existing medical specialists would be available as consultants to the primary care physician in several ways:

1. Through agreements with specific consultants or specialty departments who would be available at the request of the primary care physician.
2. Through specialists employed full-time for the primary care program if the consultation load is sufficient in those few major fields (for example, internal medicine, surgery, psychiatry).
3. Through specialty outpatient clinics.

Since the basic commitment of the program and of the staff is to instruction, professionals in the field of the instructional process and the improvement of instruction must be an integral part of the program. The

technology of improving instruction in the primary care area and the educational evaluation will be provided for through this portion of the staff.

While the instructional process will be carried out by any participant in the program, including the patient, it is important to identify two additional professional areas in which a large, formal, teaching commitment will be required, namely those of nursing and social service. Additional faculty in the social and behavioral sciences must be provided.

The third category of staff consists of those supporting personnel who do not have a primary teaching responsibility but who are essential to the care function of the facility. These include laboratory personnel, secretarial and clerical personnel.

The criteria for selection of the faculty and supporting staff require specific, and in some instances, unique combinations of skills (for example, a high content of medical knowledge and skills, coupled with interest and training in the instructional process). Further, it is recognized that persons meeting these criteria may not be presently available. For these reasons, one of the early activities of the program, prior to the beginning of total student enrollment in it, will be the recruiting of some of the basic faculty, particularly physicians, who can secure additional necessary training during the developmental period for the program.

#### IV. CURRICULUM CONTENT AND ORGANIZATION

##### A. Analytic Model for the Curriculum

Figure 1 indicates a curriculum model from which the program was developed. In this graphic model, one dimension indicates the levels of learning that are going on. The second dimension indicates the areas or disciplines considered particularly significant for primary care, chronic diseases, and family practice. Within each area or discipline we may consider both knowledge and skills learning, which form the third dimension. Underlying the whole structure is a level of attitudes which are necessary before comprehensive care can actually be practiced. The left side of the model has been labeled "Medical Science." It may be presumed that this area is already being taught in existing medical schools, and only brief attention will be paid to objectives for this area. The right side of the model has been labeled "Behavioral Science," and it is here that the educational goals of a program in primary care and family practice must be made more specific.

The five disciplines indicated under "Medical Science," medicine, pediatrics, psychiatry, obstetrics-gynecology, and surgery, are the subject matter areas specified by the Ad Hoc Committee on Education for Family Practice. The Millis Commission Report identifies the areas of medicine, pediatrics, psychiatry, gynecology, and preventive medicine. The five behavioral science areas are rather arbitrary but may serve to define significant areas of learning. These areas are covered in the report of the Ad Hoc Committee on Education for Family Practice under community medicine and social and behavioral sciences. The Committee on Requirements for Certification in General Practice considered, in addition to the clinical aspects, six core content areas: sociologic, ethical-legal, administrative-economic, continuing education, research and practice evaluation.<sup>7</sup>

Communication arts and ecology could be considered as at the individual or interpersonal interaction level. Communication arts suggests interviewing, getting the patient to reveal himself, and learning how to listen. It is concerned with the interaction between doctor and patient. Ecology could be considered as the individual in the environment, such as the effect of a patient's home life on continuing care problems. Ecology may be the wrong word here. Evaluation includes self-understanding, which refers to the doctor's understanding of his own abilities and limits, and could include such things as: understanding his emotions and being able to live with them, self-evaluation of his professional competence, and perhaps development of continuing education

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<sup>7</sup>Committee on Requirements for Certification, "The Core Content of Family Medicine," GP. 34:225-246, 1966.

# PRIMARY CARE CURRICULUM MODEL

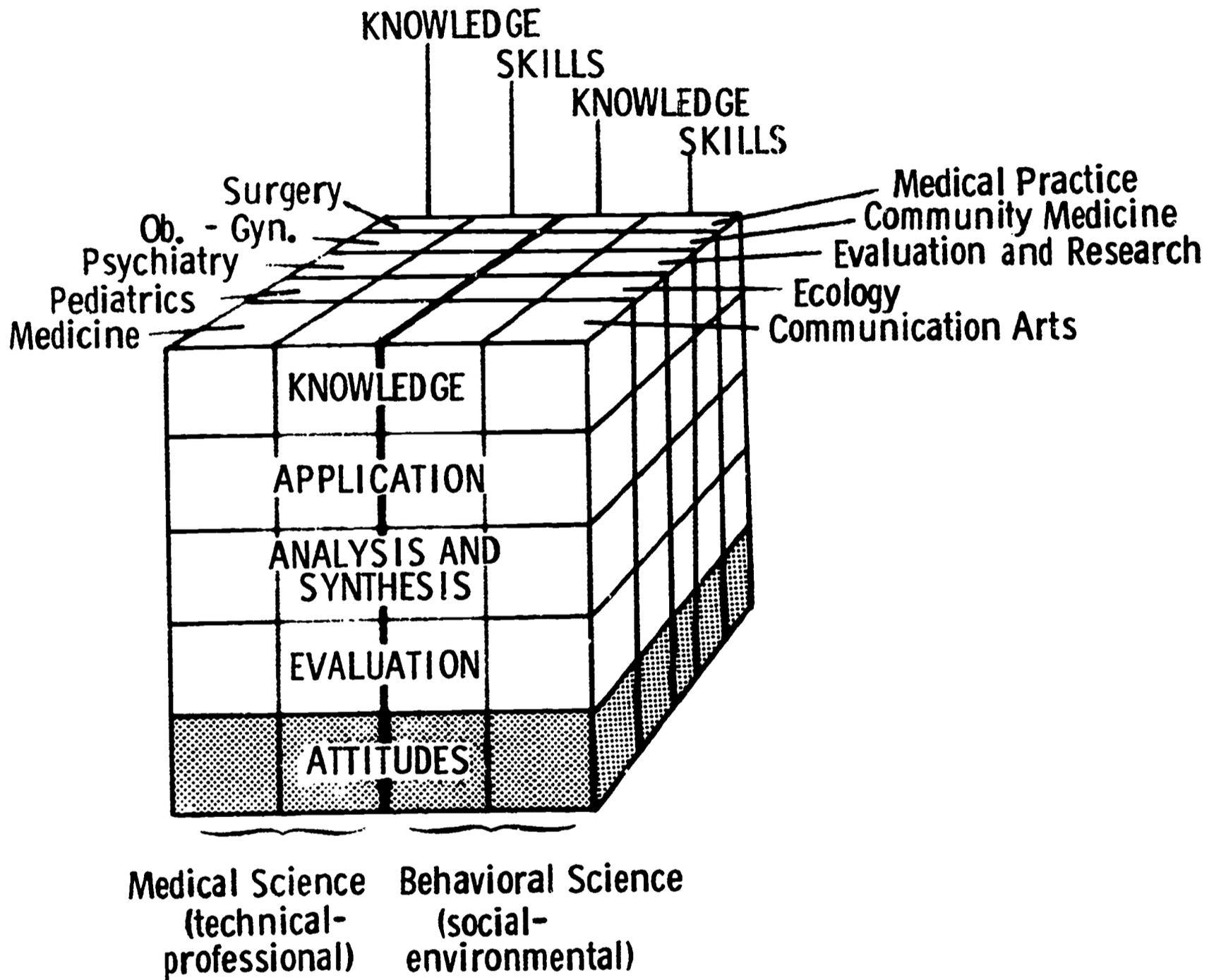


FIGURE 1

habits. Community medicine and medical practice can be considered at the group or social system level. Community medicine refers to the environment of the community and the social structure within the community, such as government, as it relates to medical care. Medical practice could include such things as preventive and rehabilitation medicine, group dynamics, state organizations, record developments to facilitate continuing care, and encouragement of practice innovations. At any rate, these areas suggest skills and knowledge necessary for a doctor practicing comprehensive care and not necessarily found in current specialty training.

The levels of learning are simply labels to suggest differences in learning or levels of thinking. They are based upon Bloom's work.<sup>8</sup> Knowledge may be considered as the recall level, where one learns to associate some response with a stimulus, given usually by the instructor. It is generally the ability to give back as an answer, verbally, information previously taken in. Application can be considered as a slightly higher level in which one learns to classify or to sequence information previously learned. For example, a series of steps learned individually at the knowledge level may be put together in a chain in applying this knowledge, or may be applied to a condition in order to categorize the condition. Analysis and synthesis suggests the derivation of principles or the development and application of rules. It suggests the ability to abstract and to generalize from knowledges and applications previously learned. Evaluation suggests the ability to look at applications and analyses previously made in terms of some criteria which one has developed. Attitudes are included as a category of objectives in order to suggest that certain views toward persons and practices are a necessary goal for the primary care program. Attitude objectives are difficult to specify in behavioral terms.

Appendix A presents a series of objectives for the primary care curriculum model indicating, more specifically, the behaviors aimed for in the teaching program.

#### B. Program for the Curriculum

This program will begin in the first year and continue throughout the four years of undergraduate medical education. It shall be a required part of every student's training, but the amount and conditions of participation will vary with the individual. This is to say that just as all students are now required to have training in internal medicine, surgery, or obstetrics and gynecology, whether or not they plan to practice in those specialty areas, so must every student have training in the specialty of primary medicine. If the student subsequently chooses primary medicine as a professional career, this training will serve as the base for his graduate training. If the student chooses another specialty, his practice of that specialty will, in part, be dependent upon his understanding of the role and contributions of the other specialists, including the primary

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<sup>8</sup> Benjamin S. Bloom (Ed.), Taxonomy of Educational Objectives: Handbook I: Cognitive Domain. New York: David McKay, 1956.

care physician. There will be, therefore, the opportunity for the student, during his third and fourth years of undergraduate medical education, to use elective time for additional training and experience in the primary care program.

The program will center upon a patient population divided into twenty to twenty-five subgroups. The determination of the desirable and precise number of families to be maintained in the program must necessarily be left to the developmental phase of the program. However, it can be estimated that this number might be in the range of 1500 to 2000 families, initially. As experience with the program provides information regarding demands upon it, both from the professional side and the consumer side, adjustment of this figure can be made.

Members of the four medical school classes will be related to the patient population groups through a structure that is both horizontal and vertical. Thus, there will be, for each subgroup of consumers, a student group consisting of four members of each of the four classes. The advantages of this structure are several: 1) It will provide continuity for the patient population, since during any given year, at least one-half the students will have been related to this patient population during the previous year; 2) Each of the students will have a specific function to perform, in relation to the group, depending upon his position in the four-year curriculum. These specific functions are described in subsequent paragraphs; 3) At the present time students relate to each other well, horizontally (that is to say, within the same class) but relate to each other vertically only on an informal basis. This proposal is based on the belief that since each student has a specific function to perform within the group, effective teaching can occur in both directions, with a resulting reinforcement of the knowledge and skill for the student on both ends of the teaching-learning relationship.

#### 1. The First-Year Student

During the first year, the student will function in the following ways:

- a. His primary activity will be the study of the medical care problems (both individual and group) of an identified patient population as it seeks access to, and benefits from the health care service (or "system"). He will do this in conjunction with courses in the behavioral sciences and through such techniques as direct observation of the patient and the care process, interviewing health personnel involved in the care of his patients, and the study of records.
- b. He will serve as a "patient advocate" within the continuing care program, rather than in a role for which he is not yet prepared, that of the "surrogate physician". In the role of patient advocate he can begin the process of professionalization by building upon his strength as a layman. Through this, he will study medical care problems from a consumer, non-institutional point of view.

- c. He will demonstrate skills and knowledge in subjects in the traditional medical sciences, but also in the behavioral sciences, and will be expected to be able to identify and state the relationships between both subject areas and the problems of the patient population which he serves.
- d. He will begin the study of basic interviewing and communication techniques. This will facilitate the study of the medical care problems previously mentioned, and will also serve as the basis for the more specific interviewing and communication activities related to history-taking in the second year.

## 2. The Second-Year Student

During the second year, the student will function in the following ways:

- a. He will use this patient population as his primary reference point for the learning and application of principles of medical interviewing and history taking, and principles of physical examination and diagnosis.
- b. As a member of the student "group practice" he will serve as arbiter or liaison between his first-year colleagues and those in the clinical years.
- c. He will serve as the "moderator" of his consumer group (the structure to be described in the following section) as group problems are identified and presented for consideration and solution by the third and fourth-year students. The implication is that in the first year the student's frame of reference is primarily that of a layman, and he applies his skills to the study of problems from this point of view. In the third and fourth years the student has partially acquired, and seeks to adopt, the professional frame of reference. The second-year student is in an appropriate position, between these roles, to learn the mediating or coordinating function desired of the primary care physician.
- d. He will demonstrate skill and knowledge in additional basic sciences and will be expected to be able to identify and state the relationships between these subjects and the problems of the patients he serves.

## 3. The Third-Year and Fourth-Year Student

During the third and fourth years, the student will function in the following ways:

- a. He will, under supervision, demonstrate his ability to assume

a practitioner's type of responsibility for the continuing total care needs of this patient population. This will include history taking, diagnosis, mobilization of diagnostic facilities, developing and implementing a therapeutic plan, maintaining surveillance of the patient of the medical care system, and evaluating his own performance.

- b. He will establish and maintain associations with the faculty and his fellow students from each of the other classes for the full-time coverage of the patient subgroup to which he is relate . With the grouping of eight or more students in the clinical years to relate to a particular patient subgroup, it will be possible to provide this full-time coverage without interfering with the responsibilities the students have on the other services.
- c. He will receive specific training in those subject areas related to the administrative process. This will be accomplished either through material presented within the school of medicine (for example, lectures, seminars, programed and computer-aided instruction), or by arrangement with other schools on the university campus, such as that of business and public administration. It is important to emphasize that the administrative function, and the associated course material described here, is not related solely, or even primarily, to the question of "practice management" of the individual practitioner, but rather to the administrative aspects of patient management which are implied in the broad scope of functions which are involved in the primary care physician's coordinating role.

## V. PATIENT POPULATION REQUIREMENTS

A patient population will be identified from persons living within a fifteen to twenty-mile radius of the medical center. This geographical designation is necessary because of the anticipated need to make visits in the patients' homes and local communities. The persons and families comprising this group will be representative of the range of socio-economic levels of the community, and not just the medically indigent.

The individuals and families comprising this population will be of all ages and will be those who have an identifiable interest and enthusiasm for this type of medical care service. This is contrasted with an arrangement which might "assign" families to the program on the basis of such factors as medical indigency, student status, or employment status. The precise numbers of individuals or families which will have the opportunity to participate in this program cannot be identified at this time. It is likely that at the beginning of the program the number will be somewhat smaller than when the program is in full operation. At this latter time, it might be anticipated that between 1500 and 2000 families might be involved.

There will be provision for a consumer group organization in this program, with participation encouraged of all beneficiaries. The consumer participation may be direct, through an open forum type of arrangement, or through representatives, depending primarily upon the size of the patient population. The purposes of this organization would be:

1. To provide for effective and meaningful two-way communication between the patient population and the medical care system.
2. To provide a formal structure which can assist the student in studying problems of medical care from a non-institutional vantage point -- that of the patient.
3. To provide the consumer, or patient, with a formal structure which can assist him in understanding the problems of medical care from an institutional or system point of view.

Financing of a primary care program is an unresolved question. The instructional and research programs will, of course, most likely be paid from normal university funds for teaching and research. The costs of care can be met in various ways. The method of financing is unrelated to the instructional curriculum. The study of costs and financing, and even manipulation of financing as a variable, is a proper research area in the program. Ultimately, the method of financing must be a political decision

based on local circumstances and funds available. Some significant share of care costs will undoubtedly be borne by the patient population.

## VI. TEACHING ENVIRONMENT REQUIREMENTS

The program will require an identifiable department within the school of medicine and associated office space for the administrative functions of this teaching program. In addition, there will be required an easily identifiable, highly visible clinical facility for the program, distinct from other components of the university medical teaching-care facility. For this patient population, the facility will be the point at which access to medical care is focused, and will also be the location where a large portion of medical care services are received. It is recognized that this approach tends to obscure the very significant problems which are faced by the practicing physician in the community when he attempts to coordinate the care being given at many different locations which are not always highly visible. It might be desirable, therefore, at some future date, to acquire additional families who would look to this same facility for their access to care, and for the coordination of care, but who would continue to receive the greater portion of their medical care services at locations dispersed throughout the community. Because of the difficult problem which this represents, it would be unwise to initiate the program with such a function.

Because of the desirability and necessity of the primary care physician maintaining patient care continuity, there will be required an adequate number of hospital beds for patients in this program. These beds, however, should not be located in such a way as to constitute a "primary care ward" or "primary care inpatient service" because of the tendency of such services to be looked upon as second-rate internal medicine services. Furthermore, because one of the responsibilities of the primary care physician will be to direct the patient to the appropriate resources, it will be possible for that physician to make a decision as to the appropriate specialty service for any given patient. An essential point, however, is the locus of the decision-making authority as to the need for admission as an inpatient. The decision must remain with the primary care physician, consistent with the availability of a bed and the requirements of the other departments. This is to say that the decision for admission must be based upon the patient's need (as determined by the primary care physician and those with whom he consults), and not on the basis of a specialty's assessment of the degree to which it represents an "interesting teaching case".

The program, in addition, will need specialty outpatient facilities which will be available to these patients through referral and consultation between the primary care physician and the appropriate specialists. Since specialists in other areas of medicine frequently use specific diagnostic and therapeutic equipment in their work, it would not be appropriate to assume that all outpatient care could be given within the primary care facility.

Both the faculty and the student are expected to find many occasions requiring additional instruction or information for particular problems. These occasions call for individualized instruction or learning opportunities, such as audio-visual teaching displays, information storage and retrieval, and computer-aided instruction. In addition, one of the purposes of the program will be to clarify the area of continuing education and to instruct the student in the processes of seeking information. These facilities will be for use by both faculty and students. Space and equipment for such facilities must be provided.

Additional requirements outside the medical center will be the official community health agency, representative voluntary health agencies, professional nursing homes and/or extended care facilities, and social agencies within the community.

## VII. IMPLEMENTING BUDGET

The implementing budget assumes an 18-month development period, during which the following activities would take place:

Activities during the development period would include:

1. Direction and integration within the medical school;
2. Preparation of the physical facility;
3. Hiring and developing staff;
4. Training of the physician faculty in areas of primary care identified as needing additional improvement (e.g., course work in behavioral, social, or administrative sciences);
5. Training all staff in instructional development and educational technology;
6. Refinement and enlargement of the identified objectives of the teaching program;
7. Development of curriculum evaluation methodology;
8. Acquisition or preparation of teaching materials and initiation of a program to continually re-evaluate and resupply instructional material needs.

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APPENDIX

OBJECTIVES FOR THE PRIMARY CARE CURRICULUM MODEL

## APPENDIX

### OBJECTIVES FOR THE PRIMARY CARE CURRICULUM MODEL

On the following pages are listed some relatively specific objectives of the primary care curriculum. They are based on an analysis of what the primary physician is described to be, the skills and behaviors necessary to fill the role of a primary physician and an evaluation of which of these skills are appropriately learned at the undergraduate medical education level.

Based on the curriculum model as illustrated in Figure 1 in Section IV, the objectives have been divided into two areas--medical science and behavioral science.

The medical science objectives are restricted, based on the assumption that the present medical school curriculum adequately instructs in the science of medicine. These objectives focus upon chronic diseases as a significant problem in the provision for primary health care and an area not now well defined in the medical curriculum. The medical science objectives are somewhat general and encompassing and attempt to indicate desired learned behavior at different levels of learning.

The behavioral science objectives are less inclusive, more specific, and attempt to get at the behaviors characteristic of the primary physician as described in the literature. They should be considered as a first attempt to specify the behaviors to be evaluated in judging the success of the teaching program. Many more specific behavioral objectives are needed to describe that which is intended to be produced by the primary care curriculum. A clearer picture of what a primary physician is must be developed over time in order that more specific training can be provided.

The following conditions are representative of the set of chronic illnesses for which the student will be held responsible. They will be referred to as "The Chronic Diseases List".

1. Addiction, drug and alcoholic.
2. Amputations, deformities, or neurological conditions of foot, leg, arm or spine interfering with mobility and/or hand functioning (congenital, accidental or surgical).
3. Anemia.
4. Angina.
5. Arteriosclerotic heart disease, arteriosclerosis of coronary artery without symptoms.

6. Arthritis or rheumatism.
7. Asthma.
8. Bronchiectasis.
9. Bronchitis, chronic.
10. Cancer of all kinds.
11. Cardiovascular disease due to hypertension and hypertensive cardiovascular disease.
12. Cerebral vascular accident.
13. Coronary occlusion with myocardial infarction.
14. Degenerative heart disease.
15. Dermatitis and eczema.
16. Diabetes.
17. Emphysema.
18. Epilepsy.
19. Gastric and duodenal ulcers and other chronic stomach disorders.
20. Hypertension.
21. Liver or gall bladder disease, chronic.
22. Nephritis or nephrosis.
23. Parkinson's disease and other palsies and degenerative neurological disorders.
24. Peptic ulcer.
25. Peripheral vascular disease (Buerger's, Raynaud's).
26. Psychoneuroses.
27. Pulmonary fibrosis.
28. Rheumatic fever (active).
29. Severe sensory loss -- visual or auditory.
30. Tuberculosis.

31. Uncorrected or partially corrected congenital malformation of any of these systems: cardiovascular, genito-urinary, gastro-intestinal, respiratory and neurological.

Curriculum Objectives in the Medical (Technical-Professional) Area

1. For each of the conditions on the chronic diseases list, the student will be able to state:
  - a. At least 3/4 of the identifying or diagnostic characteristics;
  - b. The incidence (rare or common);
  - c. The age distribution (decades in which most common);
  - d. The causative agents (if known);
  - e. The pathology (gross and microscopic);
  - f. The method of spread, if any.
2. For each of the identifying or diagnostic characteristics given for objective one, the student will be able to:
  - a. Specify one or more clinical procedures or laboratory tests that may be used to establish or measure the characteristics;
  - b. Describe briefly the essential elements of the procedure or test.
3. For each of the conditions on the chronic diseases list, the student will be able to describe in general terms one or more common therapies or treatment plans indicating:
  - a. Objectives of such therapy;
  - b. Indications calling for each alternative therapy;
  - c. Qualifications that may be necessary due to age or health condition of the patient;
  - d. Potential hazards of such therapy.
4. The student will be able to:
  - a. Write an appropriate request for any laboratory aid specified in objective two;
  - b. Interpret (translate) results of each such test or aid;
  - c. Perform any of the following clinical lab procedures using actual patients and laboratory facilities: (1)...; (2)...; (3)....

5. Given case histories with verbal descriptions, the student will be able to:

- a. Suggest an appropriate tentative diagnosis and/or differential diagnosis;
- b. Outline steps necessary to reach a definitive diagnosis;
- c. Outline therapy suitable to the conditions within the limits of the data given.

6. When presented with actual patients from the primary care clinic, the student, using clinical procedures and tests as necessary, will make an appropriate diagnosis and order treatment plans appropriate for the medical condition of each patient.

7. The student will be able to describe in writing:

- a. What information would be necessary and/or useful for the evaluation of the success of any of the treatment plans indicated in objective five;
- b. The most common misdiagnoses and potential sources of diagnostic errors for the case histories diagnoses in objective five;
- c. The reliability and validity of any of the clinical procedures or laboratory tests specified in objective two. The reliability and validity descriptions should be in terms of:
  - (1) The consistency of test results;
  - (2) The likelihood that the test truly is measuring that which is claimed for it (or the likelihood of false indicators on the test).

8. Given an actual patient from the chronic disease or primary care clinic, the student, when asked to evaluate:

- a. His medical knowledge relating to the case;
- b. The correctness and definitiveness of his diagnosis;
- c. The appropriateness of his treatment or therapy plan;

will provide self-assessment similar to assessments of the student by his instructors and by his peers.

Curriculum Objectives in the Behavioral (Social-Environmental) Area

## COMMUNICATION ARTS

1. Given a medical case history and a personality description, the student will select the appropriate interviewing model from a list of three descriptions of interviewing approaches as taught in the course.
2. When presented with an actual patient from the primary care program the student will be able to conduct an interview and obtain the information necessary for recommending a treatment plan.
3. Given episodes of doctor-patient interactions, the student will be able to describe behaviors observed in the episodes that indicate interactions favorable or unfavorable for comprehensive and continuing health care, and will be able to justify his selections.
4. The student will instruct each adult member of the families under his care in the primary care clinic on how to obtain care when needed (i.e., how to gain access to the primary care clinic and to his doctor).
5. The student will be able to communicate effectively, as judged by instructors and the family members, with family members of psychoneurotic or psychotic patients in terms of: 1) explaining the condition, 2) describing likely future behavior of the patient, and 3) suggesting how the family might cope with the behavior at home or on the job.

## ECOLOGY

6. The student will be able to list at least three home conditions that should be considered in prescribing any of the treatment plans indicated in objective five of the medical science objectives.
7. When presented with an actual case history, medical diagnosis and treatment plan, the student will select from the case history the appropriate background information necessary for evaluating the treatment plan or will indicate the absence of such information.
8. Following establishment of responsibility for care of a particular patient or family, the student's perceptions of his patient's circumstances will be such that he can specify points of interest to be reported from home visits made by others (e.g., social workers) at his request.

Implication: Whenever additional histories or visits are requested, the request should include data to be confirmed or some areas to be covered specifically. Presumed relationships between behavior, environment and care, learned from classroom examples, for instance, must precede this behavior.

9. Following home care of a patient/family by a student and a house officer or social worker, the student will provide for the family records a description of home conditions relevant for continuing comprehensive care that will be judged adequate by the house officer and/or social worker.

#### EVALUATION AND RESEARCH

10. Following an actual interview with an actual patient in the Primary Care Program the student's assessment on an evaluation form of how the patient reacted to the student will be reasonably similar to the patient's evaluation of his reaction to the student.

11. Before the fourth year the student will be able: 1) to analyze primary care team or group case studies (written or recorded examples) from a basis of research results in small group studies in terms of personality differences, leadership, delegation of duties, shifting of roles, generation of ideas, motivation; and 2) to offer suggestions for the resolution of difficulties identified in the case studies.

Implication: Course work in small group processes needed, including practice in analysis.

12. When presented with a written report on the development and evaluation of a new test, drug, or treatment, the student will be able to evaluate: 1) whether the evaluation procedure reported is methodologically sound; 2) whether the report describes the evaluation method and results adequately for a reader to make a sound judgement; 3) whether any claims made in the report are supported by results presented in the report; and 4) whether omissions of controls, previously established facts or other circumstances would allow other conclusions or qualifications to be made.

Implication: Classroom instruction in research methods, design requirements, and practice in evaluating research.

## COMMUNITY MEDICINE

13. For any assigned family the student will prepare a report for inclusion in the clinic records covering: 1) health facilities in the community, 2) health facilities available to the family (including distance or relative location and limiting or excluding factors), 3) procedures by which the patient can be referred and delivered to facilities in and out of the area, and 4) community plans and prospects for changes in facilities.

14. For a given community the student will: 1) make a written analysis of the existing social organization of governmental, private, and voluntary organizations as related to the health care system, and 2) recommend practical health system improvements including how recommendations might be implemented within the community situation.

Implication: The preceptorship community might be the community to study, or a nearby community with a family for which the student is responsible. The community should be assigned the first year and a sequence of study assignments made.

15. The student will be able to list and to justify his selection of the medical, health, and social services desirable in the community to be applied to continuing health care for any of the conditions from the chronic diseases list.

16. When presented with an actual patient from the Primary Care Program the student will determine the home and community services available and will lay out a treatment plan appropriate to the conditions that is judged satisfactory by the teaching staff.

17. The student will be able to describe in writing the 1) training, 2) roles commonly played and 3) generally accepted professional limits of other (paramedical) professionals in the health care system, including: registered nurses, practical nurses, trained midwives, social workers, physical therapists, occupational therapists, dieticians, nutritionists, public health nurses, office receptionists, laboratory technicians, pharmacists, health educators, dentists, dental technicians, optometrists, opticians, chiropractors, osteopaths, hospital administrators, medical technologists, sanitation engineers, or any such list of relevant team members.

Implication: All workers who might be considered on continuing-comprehensive care team should be included. Emphasis should be put on ability of others to perform many functions rather than the M.D. doing them.

## MEDICAL PRACTICE

18. Based on case studies and experience the student will describe at least three different models of practices of comprehensive, continuing, primary care: 1) discussing personnel necessary, division of labor, on-the-job training needed, billing-costs-salaries rationale, and procedures followed to help insure continuity of care (records kept, follow-ups, etc.); and 2) evaluating weakness in the model as seen by the student.

Implication: Clinic experience or observation, preceptorship, study of systems in other countries, and written case studies necessary before requiring reports. If dimensions or factors of primary care practice can be agreed upon, perhaps a description of an ideal model could be called for.

19. The student will establish and carry out schedules, judged as effective by the staff, necessary to provide comprehensive care concurrently for primary care clinic patients under his charge whether in the hospital, the clinic, or under home care.

Implication: Freedom for the student "group practice" team to "fail" on continuity of care may be necessary, as well as emphatic feedback on their efforts. How to do this while staff (house officers) insure continuing care for the family is a problem.

20. The student consistently will insure that proper coverage of his families in the primary care clinic is provided when he is not on duty.

Implication: "Proper" coverage (24 hour?) will have to be discussed before clinic duty begins. Group organization of students or something similar may be one method of providing coverage. What information each member of group may need on all families, how to obtain information, etc., should be worked out by students. Staff doctors and nurses or receptionists with check-off forms should observe samples of actual encounters when "primary" student not present to evaluate coverage. Simulated or contrived patient calls also could be used for evaluation of continuity of care.

21. The student will demonstrate, in the primary care clinic, to the satisfaction of his teachers, his ability to delegate health care activities to other professionals in the health care system and to fully utilize their results while still maintaining comprehensive care continuity.

Implication: Such tasks as history taking, elementary examination procedures (blood pressure, e.g.) social histories, etc., once learned by the student, can be delegated. Practice in training others and/or evaluating results of others is needed by student. Experience in how to work with others and still satisfy continuity of care and acceptance by patient is needed.

22. The student will demonstrate an ability, as judged by teachers and peers, to work on a primary care "team" and to handle team or group practice problems as evidenced by: 1) written analysis of identification and potential resolution of actual group problems, and 2) day-to-day success and value as a member of an actual primary care group (team functioning value, not medical skill).

Implication: Student team practice in primary care clinic with periodic (every 3-6 months) assessment of self, peers, and team, including paramedical personnel. Such things as actual use or misuse of paramedical personnel should be kept track of. Self, peer, and staff evaluation must be kept helpful and non-ego-threatening.

23. The student will be able to specify measures and describe methods of determining functioning level and changes in functioning level of his patients. The measure should serve to evaluate adequacy of care and to flag developing health problems, and should be suitable (simple, possibly delegated to nurse, not too time consuming, etc.) to practice conditions.

Implication: Models for continuing evaluation of patients should be taught (lectures?) including technical measures (tests) and informal measures (daily living patterns, change in activity) of functioning. Also needed would be lab experience with tests, or with training nurses to give tests, plus clinical experience in actually recording and using measures over time.

24. For chronic disease and primary care patients under his care, the student will be able to specify rehabilitative programs possible and resources needed (whether in or out of home) for these programs to alter the functioning level of the patients. The programs are to be evaluated: 1) by staff before the fact, and 2) by actual changes in functioning level of patient. Whether or not the program is actually carried out is a part of the evaluation.

Implication: One or more models should be taught for establishing functioning level, and clinic groups should work out workable practices. The objective is somewhat unclear and is related to prediction of patient potential. Evaluation by student of initial predictions and rehabilitation programs should be made 6 months to 3 years later.

25. The student will be able to discuss, in writing, current published research and recommendations on drug/chemical treatment of tension, anxiety, and depression.

26. Within the primary care clinic the student: 1) will correctly identify and note in the records all patients with substantial, and three-fourths of patients with significant psychological problems, as identified by house officers and/or psychiatric department and/or social workers; and 2) will deal with each case, in terms of treatment, medication, referral, consultation, and communication, adequately as judged by his instructors.

27. The student will be able to discuss and give examples in writing of at least six psychoneurotic conditions/behaviors a family physician may reasonably expect to encounter in practice, and suggest possible approaches or methods of handling each.

28. When presented with recorded patient interviews (film or videotape, e.g.) the student will correctly identify those cases that may involve significant psychoneurotic behavior and will write a report clinically describing the case, suggesting additional information necessary to clarify the case, and indicating recommendations for managing the case. The report must be judged as adequate by the instructors.

Implication: Steno services and tape recorders for students would save a lot of time.