A Competency-based Curriculum as an Organizing Framework in Family Practice Residencies

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The development of appropriate curricula for family practice residency programs is a critical process made difficult by a lack of literature on the subject, the rapid proliferation of new programs, regional differences in patterns of practice and variations in individual residents' needs. As the content of family practice evolves in the future with biomedical advances and changing patterns of medical practice, we can expect curriculum design to remain a challenging task. A logical approach to this problem is required based upon a limited number of important parameters. Such an approach is outlined here which should facilitate the development of residency programs based on the curriculum as an organizing focus for allowing competency attainment.

The future of family practice rests, in largest measure, on the establishment of quality educational programs at both undergraduate and graduate levels. In the long run, curricula for family practice residency training will have a direct and specific bearing on several critical outcomes — recruitment of medical students for careers in family practice, adequacy of preparation of resident graduates for varied practice settings, identity and profile of the evolving specialty of family practice and the capability of this field to meet growing deficits in primary care.

It is recognized at the onset that there can be no single blueprint for graduate training in family practice which will meet varied needs in different parts of the country and varied practice settings within any given region. It is further recognized that curricula for family practice residencies will necessarily evolve as health care needs and patterns of medical practice change in future years. It is therefore important to establish a logical approach to curriculum development which can be utilized by program directors at any time and place. It is my purpose here to present such an approach to curriculum design which can serve as an organizing framework for program development.

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Some Initial Premises

Before addressing the matter of curriculum content, it is fruitful to start with some premises which are helpful to consider in designing the curriculum for any family practice residency program.

1. *Core Content for Family Practice Training.* It is my conviction that a core content of knowledge, skills, and attitudes can be defined for the family physician regardless of his future practice setting. I further believe that the commonalities of training for diverse practice settings will be far greater than the differences. The core content of a residency program should account for regional needs and the area to be served by the program. It should comprise an appropriate range of clinical disciplines as well as a balanced emphasis upon the several stages of patient care — prevention, early diagnosis of asymptomatic disease, care of symptomatic disease, rehabilitation and care of terminal illness. The definition of core content not only insures adequate breadth and depth of training for each resident, but also serves as an organizing framework for the program itself.

2. *Competency-based Curriculum.* The assumption is commonly made in graduate medical education that intended educational outcomes for residents can be derived from standard clinical experiences over arbitrary periods of time. Unfortunately, this is often a false assumption, and frequently too little attention has been directed to measuring resident performance and assuring that competency profiles are met. We should strive for competency-based curricula in family practice residencies which are based on carefully constructed educational experiences and methods to monitor resident performance, growth and deficits.

3. *Varied Capability Levels.* A family practice residency program should be directed toward three distinct capability levels:

a) *Definitive capability* (including, for example, the management of most common clinical and behavioral problems of families and life-threatening emergencies).

b) *Partial capability* (including the initiation of appropriate diagnostic and/or therapeutic measures for more complex clinical problems requiring consultation and/or referral).

c) *Limited capability* (including the recognition or suspicion of rare or complex problems for referral).

This concept can form a rational foundation for a residency's curriculum which gives maximal emphasis to those knowledge and skills required for definitive capability. Lesser emphasis should be given to the other two functional categories; in these areas, residents should learn their particular limitations as well as how to best utilize consultation and referral to other specialists and community resources.

4. *Variable Resident Competencies.* Specific competencies will vary for each resident, and will depend upon his particular skills and interests, as well as the needs of his anticipated future practice setting. Mechanisms should be built into the residency program to effectively respond to each resident's individual needs. Periodic assessment of each resident's progress and deficits will allow his further residency training to be adapted to his needs by several approaches, such as modified clinical rotations, individualized learning and carefully designed electives.

5. *Variable Resident Proficiency and Growth.* Individual residents often enter a residency program at varied proficiency levels and may grow in clinical competency at different rates. The trend in recent years among many medical schools towards shortened core undergraduate curricula with increasing elective time has resulted in considerable variation in both the breadth and depth of clinical skills of graduating medical students. Entering first year family practice residents from different medical schools may therefore be a mixed group in terms of knowledge and skills. It is also clear that individual residents often progress at different rates. The residency program must therefore be designed so that these differences can be accomodated.

6. *Source of Resident Learning.* Residents have frequently felt that much, if not most, of their learning has occurred from contact with other residents at a more advanced level within their residency program. It is commonly stated that house officers feel they have learned most from residents just one or two years ahead of them in training. It therefore seems important to design the residency program so that maximal cross-year teaching and learning within the resident staff is facilitated.

7. *Variable Needs of Reinforcement.* Some areas of knowledge and skill will require greater degrees of reinforcement than others to develop and maintain proficiency. This premise has a direct bearing on when particular clinical experiences should be provided during a three-year family practice residency. For example, certain procedural skills which require frequent reinforcement and which will be required in a resident's future practice setting may best be incorporated into the third residency year.

8. *Training in Group Process.* It is becoming well accepted among family practice educators and many practicing family physicians that the solo practice model is not a viable model in most instances. Accordingly, an important parameter within a residency program is to prepare residents to practice in a group setting. This will require that residents learn to work closely with their peers and to share responsibility comfortably with others. This point has obvious implications for the way in which a program is designed.

9. *Distinction Between Educational and Service Needs.* Although the resident will acquire his educational competencies primarily through the care of patients, it is important that the residency program be organized around his educational needs instead of responding primarily to service needs of the hospital or community, which may not be consistent with appropriate breadth or quality of resident training. A director of a developing program soon finds himself besieged with a myriad of requests for family practice residents to become involved in a variety of patient care needs in the hospital and community. These requests are usually reflective of a desire for residents to provide a service function without regard to availability of supervision or their educational needs, and should be rejected unless they contribute to the training program.

TABLE I

FIRST YEAR		SECOND YEAR		THIRD YEAR	
Medicine	4 mos.	Medicine	4 mos.	Preceptorship/Locum Tenens	2 mos.
Pediatrics	2 mos.	Pediatrics	2 mos.	Family Practice	2 mos.
Obstetrics-Gynecology	2 mos.	Obstetrics-Gynecology	2 mos.	Emergency room	2 mos.
Surgery	2 mos.	Psychiatry	2 mos.	Rehabilitation	1 mo.
Emergency room	2 mos.	Surgery selectives	2 mos.	Electives	5 mos.
		← Behavioral Science Training (monitored counseling, seminars) →			
← Model Family Practice Unit →					
One 1/2 day/wk.		Two 1/2 days/wk.		Three 1/2 days/wk.	

10. *Need for a Long-term Plan.* The beginning family practice residency program frequently starts with residents in only one or two residency years. Most programs take two or three years to build up to a full complement of residents in all three years. The program director may be forced to improvise some aspects of the curricular structure during these initial years. It is important, however, that the optimal three-year curriculum be outlined and followed as closely as possible if compromises are to be avoided based upon incomplete filling of resident years during initial stages of program development.

Organizing a Program Around Curriculum Needs

Having outlined various parameters relating to curriculum content of family practice residencies, the next problem is how to organize a program around curriculum needs. A program must not only include sufficient breadth and depth of educational experiences, but also be integrated in such a way as to facilitate the resident's synthesis of knowledge and skills as he gains proficiency in the care of common health problems of families. Again, though there is no single best way to organize a program, one can describe a relatively limited number of considerations which must be taken into account in organizing any program.

I would propose ten major steps which will aid in the formulation of the curriculum of a developing family practice residency.

1. *Define the Core Content for Residency Program.* Definition of the core content of the program will reflect a basic range of competencies which are needed for graduates in any future practice setting. For example, the core content currently being used in the University of California Davis Family Practice Residency Program is graphically illustrated in Table I.

It should be stressed that this is but one example of a core content plan. There is considerable variation in curricula among approved residency programs across the country; rotations in Internal Medicine, for example, range from a minimum of six months to a maximum of fourteen months.

It should also be stressed that this kind of representation of core content does not in itself clearly characterize a program. A more accurate overview of a residency program depends upon a number of additional factors, such as specific competency statements for each component of the training program, opportunities for meeting selected competencies within clinical rotations, characteristics of learning settings, clinical volume and levels of resident responsibility for each component of core content. At the same time, however, the definition of core content does provide a logical framework around which to organize and integrate the family practice residency program.

2. *Develop Competency Statements.* The preparation of competency statements which are sufficiently specific to be meaningful and yet cover the broad spectrum of family practice is a large and challenging task. A standing committee of the Society of Teachers of Family Medicine has worked toward the development of such objectives for over two years and is just now starting to make significant progress. Although all of us at this stage of the development of family practice may fall short of competency statements of sufficient breadth and detail, we should direct major attention to this important area so that our programs can measure resident progress and best utilize the educational opportunities available within the three-year residency experience.

Our overall goal at the University of California, Davis is to produce well-trained family physicians with several attributes.

1. Excellence as clinicians capable of providing definitive care of over 90% of health problems of individuals and their families.

2. Skill in each of the five stages of comprehensive health care:

a) Prevention
b) Early diagnosis of asymptomatic disease
c) Emergency care; management of acute and chronic illness
d) Rehabilitation
e) Management of incurable and terminal disease

3. Understanding of own limitations, with ability to relate appropriately to consultants and other community resources.

4. Knowledge and sensitivity to behavioral aspects of health and illness for families, with capacity to recognize, and often manage, common behavioral disorders.

5. Attitudes which facilitate constructive relationships with patients, peers, consultants and other members of the heath care team and which also allow for sharing of responsibility of patient care in a group setting.

Specific competency statements should be developed for all components of the residency program in three areas — knowledge, skills and attitudes.

3. *Assess Available Educational Resources.* There are a number of factors to consider in assessing available educational resources in the community. Early attention should be given to potential locations for the model family practice unit. This essential teaching setting should be relatively close to its related hospital(s) and easily accessible to consultants. The potential patient population for the program should be assessed; this should represent a socio-economic cross-section, a balance among age groups and an appropriate mix of adults and chronic illness.

The availability and commitment of potential teaching physicians should be assessed. Hospitals and other clinical facilities in the community should be reviewed with particular reference to clinical volume, services provided, economic stability, interest and support of hospital administration and medical staff. Sources of funding are another important factor, which includes a projection of income from the model family practice unit. Finally, administrative and political support within the community should be appraised, including the general attitudes of the medical community and individual hospitals toward the proposed program.

Once available educational resources within the community have been appraised, it is then possible to outline the optimal sites for the various portions of the residency program. Specific competency statements should be related to the setting where they can best be met. Many competencies will be met in the model family practice unit; others will be met on clinical rotations in one or more hospitals to which the program relates. Some competencies may require the development of other learning settings, such as selected clinical rotations outside the community, other ambulatory care settings (for example, other specialty clinics), preceptorships and Visiting Professor programs.

4. *Adapt Teaching Methods to Curricular Components.* Curriculum content in family practice residencies can be approached in three basic ways — through longitudinal learning experiences, block rotations or modified block rotations. Longitudinal learning experiences are presented on an intermittent basis over an extended period of time, such as training in counseling techniques. Block rotations are segments of time devoted primarily to one major clinical discipline, such as a clinical rotation on the Pediatrics service of two months' duration. Modified block rotations are block rotations which include other concurrent learning experiences, such as supplemental training in other specialty clinics or preceptorships.

Certain components of the curriculum will clearly be more effectively presented by one approach rather than another. Particular attention should also be given to developing other supplemental educational experiences through conferences, seminars and self-instructional teaching materials which are keyed to specific levels and periods of residency training.

5. *Establish the Optimal Number of Residents for the Program.* In order to make this decision the program director must evaluate a number of parameters — availability of educational resources, sources of funding, potential for modular organization of program, continuity of program commitments, critical mass for the residency program in terms of teaching and patient care.

If the residency program is to adopt a modular organizational structure with teams as models of group practice, the number of residents in the program should be such as to accomodate this approach. It is frequently desirable to have continuity of resident coverage throughout the year for major clinical rotations on other services. There should be sufficient critical mass in the residency program to allow active cross-year teaching within the resident staff, well attended conferences and seminars, maintenance of other program commitments as well as coverage of night and weekend call for family practice patients.

In view of these considerations, it is my feeling that the minimal number of residents in any fully developed family practice residency should generally be 12, four in each year.

6. *Develop a Curriculum Plan.* A plan should be developed whereby the desired core content can be adapted to such parameters as available educational resources, number of residents in each year, requirements for resident coverage in the model family practice unit and the need for continuity during the year of resident assignments to specific clinical services. The program director must meet curriculum needs for the current year as well as those for each resident over a three year period. Sufficient elective time should be provided to allow each resident to tailor his training to the needs of his anticipated future practice setting. A locum tenens experience early in the third residency year in such a setting is highly recommended as a means of identifying deficits in each resident's training in relation to future practice needs. Elective time is usually most valuable if concentrated in the last residency year after this experience.

While it is essential to develop a curriculum plan from the beginning in a developing residency program, we should be prepared to revise this plan based on continued evaluation and changing needs. It is all too easy to become "locked in" prematurely to a given curriculum, especially if the program is running smoothly. We must avoid this rigidity and complacency if we are to have dynamic and effective programs.

7. *Design the Model Family Practice Unit.* It will not always be possible to design the model family practice unit entirely to one's needs because of constraints of funding or available facilities. However, to the extent that this is possible, careful planning should be carried out to insure that the model unit is maximally adapted to such factors as size, layout, desired traffic flow, projected patient population, range of services to be provided, staffing and faculty coverage. The model unit must be designed to effectively accomodate both patient care and teaching. The model unit provides the key foundation for the entire residency program and is the site where a substantial portion of the resident's educational objectives will be met. It should incorporate applicable advances in patient care, practice management and clinical research, but remain a functional model of family practice which is replicable in each resident's future practice.

8. *Negotiate Interdepartmental Agreements.* The program director should carefully explain the goals and requisites of the family practice residency program to other departmental chairmen. Interdepartmental agreements should be developed to cover any involvement of family practice residents on other specialty services. These agreements should clearly define these areas:

a) Competency statements for family practice residents
b) Coverage plan (including night call)
c) Relation to other specialty residents
d) Responsible faculty
e) Special needs of family practice residents (such as model family practice unit requirements)

9. *Establish Evaluation Methods.* Evaluation of resident progress must be frequent and competency-based. Other parameters must also be regularly evaluated, such as performance of teaching physicians and group dynamics among residents, health team members and faculty.

Evaluation of the individual resident's performance and growth should be based on specific competency statements derived from a profile of varied capability levels. A vigorous approach to resident evaluation should integrate the resident's training by identifying deficits and revising his training to meet his needs. Some of the components of an evaluation system might include the following:

a) Problem-oriented record
b) Audit program
c) Feedback methods
d) Advisor system
e) Counseling by director

10. *Carry Out Orientation of Involved Faculty.* Teaching physicians in family practice and other disciplines involved in the program should be oriented to the goals and objectives of the residency program, the use of the problem-oriented record as a teaching and audit tool and to methods of resident evaluation. We frequently make the false assumption that capable clinicians will naturally be effective teachers. Periodic teacher development workshops should be conducted which focus on such matters as principles of learning, teaching methodology and the expected role of the teaching physician in relation to specific levels of residents' training.

Discussion

Since the family practice residency comprises a diverse set of learning experiences in different settings reflecting the breadth of family practice, there must be mechanisms which tie the program together. Each resident must retain his identity as a family practice resident and his progressive growth and synthesis of portions of multiple disciplines must be facilitated. There are several major factors which serve to integrate the program:

1. Continuity of patient care in the model family practice unit.
2. Continuity of teaching by family practice faculty allowing progressively increased resident responsibility for patient care.
3. Evaluation of resident progress based on competency statements.
4. Selection of electives based on individual resident's needs.
5. Family practice conferences, medical record audit conferences and regular program critique.
6. Behavioral science teaching.

It is desirable to present behavioral aspects of family practice as a longitudinal thread throughout the program. Behavioral science teaching should be related to the understanding and management of clinical problems of individuals, the impact of illness on the family and the dimension of the family as the physician's "patient" during critical events (such as birth, divorce, disability or death). Behavioral science should therefore be interpreted more broadly than "psychiatry," should emphasize ambulatory care problems and should foster the acquisition of adequate self-knowledge on the part of the resident.

It is suggested that the development of competency-based curricula in family practice residencies will greatly enhance the learning experiences for all residents, will allow increased responsiveness by programs to individual resident needs and will facilitate more meaningful evaluation of the educational process. Once specific competency objectives are defined, we can utilize varied learning approaches, including self-instructional methods, which are directly related to these objectives and available educational resources. Although these principles will remain applicable to residency training in future years, we must periodically reassess the competency-based curriculum and revise, add or delete specific competency objectives as the role of the family physician necessarily evolves within changing patterns of medical practice.