

Toward the Measurement of Primary Care

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OVER THE PAST DECADE, both federal and private funding sources have promoted interest in training physicians to practice primary care. The creation of the American Board of Family Practice in 1969 formalized the new specialty, whose members are said to offer a new type of primary health care distinct from that offered by the old style general practitioner. By 1976, over 11,000 family practitioners had been certified and 321 residency programs in family practice approved; 4675 residents are currently in training (Lewy, 1977).

However, the claims made by family practice in particular, and primary care in general, are being challenged (Kane, 1977). No data have yet been presented that assess the extent to which family-centered primary care is actually being performed in a manner consistent with the four characteristics usually used to define it—*continuous, coordinated, comprehensive, and family-centered* (American Medical Association, 1966; Association of American Medical Colleges, 1968; American Academy of Family Physicians, 1975). Another question is equally important for evaluating training in family practice: Does a 3-year formal residency program increase the extent to which this style of care is delivered? Or does, for example, the experiential learning that comes with the maturation of a physician's clinical skills in private practice result in the same level of performance as that found in a formally trained graduate?

Answers to these questions require behavioral measures of family-centered primary care, measures that must specify what a physician actually does in performing such care. Although many authors have expanded upon the content, purpose, and functions of these four characteristics, they have generally restricted their descriptions to the scope of services provided, patient populations cared for, and range of health problems managed (Alpert and Charney, 1973; Parker, Walsh, and Coon, 1976; Silver and McAtee, 1975; White, 1967; Reynolds, 1975; DHEW, 1970; Fry, 1973; Institute for Health Team Development, 1976). Missing from these descriptions are the specifications of what behaviors should be considered typical of adequate primary care performance.

Starfield and associates (1976) attempted to define and measure one characteristic of primary care—continuity of care—in behavioral terms, using as the criterion the ability of the practitioner to recognize new health problems. Brennan and Stewart (1977) also used some performance-based criteria to compare the self-reported practice of graduates of a formal residency program to that of a control group of physicians who had completed only an internship before entering practice.

Health-care tracers, which are discrete health conditions whose natural course, diagnosis, and management are generally agreed upon, have also been used to assess how well primary care is provided (Kessner, Kalk, and Singer, 1973; Mead, 1976; Hulka, Kupper, and Cassell, 1976). A principal advantage of the tracer approach is that it solves the case-mix dilemma. Shorr and Nutting (1977) used seven health-care tracers to study the continuity of ambulatory care. Using the frequency of patient visits to a variety of health providers as the measurement criterion—they called this *the transition rate*—they found that higher transition rates were associated with less continuity of care. Unfortunately, the advantage of standardization gained with tracers is offset by many methodological problems, the principal one being the difficulty of generating behavioral criteria for all of the four characteristics of family practice for any single tracer condition.

Our study attempts to provide an operational definition of family-centered primary care by first generating performance-based criteria and then applying these criteria to measure the degree to which family physicians actually perform this type of care, half of whom had completed formal residency training in family practice.

Methods

Selection of Test and Control Groups

The University of Utah family practice program has been fully operational for 5 years. As of July, 1976, this program had produced 27 graduates, 14 of whom are currently in private family practice in the intermountain West (seven in Utah, the remainder in the surrounding states). The other 13 graduates either practice outside the intermountain West (seven), are faculty members in the University of Utah College of Medicine (four), or are not in active family practice (two). The 14 graduates of the family practice program in the intermountain West made up the test group and are referred to as the "residency-trained group (RT)."

A suitable control group would have to be similar to these residency-trained physicians in all respects except the very mode of training. When the American Board of Family Practice was established in 1969, it defined two routes by which a practitioner could become Board eligible: either by completion of a formal residency program in family practice, or by, as a minimum, an internship plus 6 years' experience as a general physician. Both routes require passage of the certifying examination. The latter route to Board eligibility, the so-called "grandfather" route, has now been closed, but 36 physicians currently practicing in Utah became Board eligible by this route and then successfully passed the required examination to become Board certified.

We selected a matched control group from this practice-experienced population by stratifying the residency-trained physicians and the potential control group members into five subgroups based upon whether their practice setting was rural (less than 10,000 service population) or urban (greater than 10,000 service population) and whether their practice organization was solo, small group (three members or less), or large group (four members or more). The resulting five subgroups were: 1) rural-solo; 2) rural-small group; 3) urban-solo; 4) urban-small group; and 5) urban-large group. For each of the physicians in these subgroups, we identified the number of years of practice experience since attaining Board eligibility or Board certification. (Two of the residency-trained physicians had not as yet been examined for Board certification.) For each residency-trained physician in each subgroup, we matched

a control group physician who was most similar in years of practice since Board certification. If more than one control group physician was eligible for matching with a comparable residency-trained physician, the final selection of the control group physician was made randomly. The control group physicians are referred to as the "practice-experienced group (PE)."

The characteristics of the RT and PE group members are displayed in Table 1; all were male. It is apparent that the practice-experienced physicians are older, with correspondingly more years of practice experience since graduation from medical school. The effects of these differences on primary care performance are examined in this study.

TABLE 1
Characteristics of the Residency-Trained and Practice-Experienced Groups

Sub-groups	Residency-Trained Group (RT)				Practice-Experienced Group (PE)				
	Age (Yrs)	Year Grad Med Sch	Total Yrs Practice	Yrs Practice Since Bd Cert (C)/Bd Elig (E)	Age (Yrs)	Year Grad Med Sch	Total Yrs Practice	Yrs Practice Since Bd Cert	
Rural-Solo	32	1972	2	2 (C)	34	1969	7	1	
	32	1973	1	1 (C)	45	1960	17	7	
Rural-Small Group	31	1972	3	3 (C)	48	1956	19	3	
	30	1972	2	2 (C)	39	1964	13	5	
	31	1972	2	2 (C)	52	1950	25	7	
Urban-Solo	32	1972	2	2 (C)	45	1966	10	2	
	45	1957	4	4 (E)	54	1951	23	5	
Urban-Small Group	31	1972	2	2 (C)	47	1959	18	5	
	32	1973	1	1 (C)	54	1949	27	7	
Urban-Large Group	38	1972	2	2 (C)	47	1962	15	3	
	38	1971	3	3 (C)	58	1945	31	1	
	31	1973	1	1 (C)	51	1955	20	2	
	36	1973	1	1 (E)	51	1958	19	2	
	30	1973	1	1 (C)	44	1961	16	2	

Generating the Measurement Criteria

The measurement criteria had to exhibit the following essential characteristics:

1. The criteria had to be stated in behavioral terms.
2. The data must be recorded in patient records and must be accessible to the data collector and not require substantial interpretation of the record.
3. The criteria must be generalizable across the provider's total practice performance.
4. The criteria must be easily applicable to other primary care specialties and providers.
5. The data must be appropriate for analysis, using simple statistical procedures for comparison between the study and control groups.

By using this list of requirements, empirical examples of measurement criteria were generated for each of the four characteristics of family-centered primary care. These examples were submitted to seven faculty members from our residency program, and they were asked to comment on them, add additional criteria, and indicate the priorities they would assign to the items. Through this modification of the Delphi Technique (Milholland, Wheeler, and Heieck, 1973), after three rounds of iteration, the following seven measurement criteria were generated:

Continuity of Care

1. *Patient visit rate to the primary physician*—the percentage of all patient visits made to the practice of an identified primary care physician during a defined time period. (We anticipated that this rate would only be calculated for practitioners in group practice; to calculate it for solo practitioners would require a survey of their patients to determine how many visits were made by them to other physicians during the study period, a measurement beyond the scope of this project.)

2. *Kept appointment rate*—the percentage of patients who made a return visit in response to a specific request by the physician for such a return visit.

Coordinated Care

Closed-loop referral rate—the percentage of physician-initiated referrals that resulted in a return of information about the referral.

Comprehensive Care

1. *Comprehensive information rate*—the percentage of patient visits made for specific complaints that yielded any health status information about health problems other than the specific complaint.
2. *Comprehensive data base score*—the average number of specified items from the patient's history and physical examination that were recorded in a sample of health records of adults and children.

Family Care

1. *Family history score*—the average number of specified items of family history that were recorded in the health records of a sample of patients 18 years or older.
2. *Family care rate*—the percentage of all family members of a given number of probands who also visited the primary care physician at least once during the specified time period.

Application of the Measurement Criteria

During the summer of 1977, the office records of each participating physician were reviewed in his office. For each practice, the health records of 50 patients were systematically sampled from the first 250 names in the physician's appointment book for the period July 1, 1976, through September 30, 1976. Only those patients who had visited the practice during this period were used in the study, to ensure at least 9 months of observation before the data were collected for the measurement criteria (an optional period, chosen because

some of the RT physicians had only recently opened their practices in July, 1976). This group of 50 records was the basic sample from which most of the data were collected; for several of the measurement criteria, we supplemented these records to obtain more information.

The data were collected by two persons: one who had a bachelor's degree in nursing, a master's in health education, graduate courses in medical care auditing, and 7 years' experience auditing charts for research projects; and the other, a sophomore medical student who had no experience in research of this type. Some training in data collection techniques was given to him. The data collection procedures were pretested in two PE physicians' offices. Both data collectors independently obtained a complete set of data for each physician. No major difficulties were found in using the collection instruments, and there was excellent agreement between the data sets obtained by both collectors. The data collectors were not blind to the status of the physicians whose records they reviewed: they usually met the study physicians, and the striking age differences between the RT and PE group members (an average difference of 14.3 years) made blinding practically impossible.

Specific measurements of the seven criteria were performed as follows:

Patient Visit Rate to the Primary Physician. The total number of visits made to the practice by the 50 patients during the 9-month period preceding data collection was tabulated, and the proportion of these visits to the designated primary physician was calculated. If it was not clear that the study physician was the patient's personal physician, another record was substituted using the sampling procedure described above.

For physicians in solo practice, this rate was always 100%. However, if a solo practice employed a Medex, nurse practitioner, or physician's assistant, patient visits to these providers were considered the same as visits to the solo physician, because only he could supervise their performance. For group practices, in which it was impossible to determine which physician was actually supervising these health workers for any particular patient, patient visits to these other health providers were counted as visits to an additional member of the practice.

Kept Appointment Rate. All visits made by the 50 patients during the 9-month study period were reviewed for evidence that a return visit had been requested by the physician. Where one had been requested, the record was searched to see if such a return visit had been made during the time frame specified by the physician. The kept appointment rate is expressed as the percentage of requested return visits that occurred during the specified time frame. Intervening visits were counted as kept appointments only if there was information in the record indicating that the physician had also gathered data on the problem for which the return appointment had been requested.

In group practices, it was not necessary that the patient visit his personal physician in order for the conditions of the kept appointment rate to be met: it was necessary only that there was evidence in the record that the patient returned to the clinic for a visit during the specified time period for the problem under study. If such a requested visit occurred near the end of the study period when not enough time had elapsed for the patient to return, the requested return was not counted in either the numerator or the denominator of this rate; this situation applied to approximately 10% of all patient visits.

Closed-Loop Referral Rate. The health records of the core sample, plus an additional 50 records selected in a similar manner, were searched for evidence of physician-initiated referrals to other health-care providers during the 9 months preceding data collection. Referrals must have been initiated at least 6 months prior to the time of data collection to be included in the study (to allow time to close the feedback loop). If several referrals were made for a patient, the most recent one was used.

Health records with identified physician-initiated referrals were reviewed for evidence of any return of information about the referral (such as a letter, note about a direct observation, note about a phone consultation, hospital discharge summary, or operative note). The closed-loop referral rate is expressed as the percentage of physician-initiated referrals for which there was evidence of a return of any information from the referral.

Comprehensive Information Rate. Using the most recent visit for a specific complaint, we analyzed each record of the core sample to determine whether information about the patient's health status, other than that related to the specific complaint, was recorded at that visit. The definition of "other health status" information was deliberately broad. For example, if the patient's problem was an upper-respiratory tract infection but an inquiry had been recorded about the effect of the illness on the patient's job, this would qualify. However, because weight, blood pressure, and temperature measurements were often recorded routinely by the support staff, these did not qualify unless a comment was recorded by the physician himself.

The comprehensive information rate is expressed as the percentage of the 50 patients who made a visit for a specific complaint and for whom health status information about other problems was also gathered at that visit.

Comprehensive Data Base Score. Health records for 25 adults 18 years of age or older and 25 children under 12 years were selected (where necessary, additional records were added to the core sample by a similar selection process so as to have 50 records). For the adults, 18 items of history and physical examination were identified; for the children, 22 items were identified. Each record was scored from 0 to 18 or 0 to 22 depending on the number of these items with any information recorded within 9 months of the time of the patient's first visit to the practitioner. The items of history and physical examinations are listed in the Appendix.

Family History Score. A sample of 50 health records of patients 18 years of age or older was searched for information about family history (additional records were selected in a manner similar to the core sample to obtain these 50 records). Each record was assigned a score based on the amount and type of family history information present. The following scoring system was used:

Score

0 = No information at all about family history;

1 = Information noted about the presence or absence of familial or genetic diseases;

- 2 = Information noted as for score 1, but information also recorded about the presence or absence in the family of at least two of the following problems: tuberculosis, rheumatic heart disease, coronary heart disease, cancer, hypertension, allergic diseases, hyperlipid problems, diabetes mellitus, mental or emotional problems;
- 3 = Information noted as for scores 1 and 2, but information also recorded about the presence or absence in the family of at least four of the health problems mentioned for score 2 above;
- 4 = Information noted as for scores 1, 2, and 3, but information also recorded about the presence or absence in the family of five or more of the family problems listed under score 2 above;
- 5 = A pedigree is drawn in the chart with a medical history recorded for each family member.

The family history score is expressed as the mean score for the records reviewed.

Family Care Rate. Using the core sample, we determined the names of all other family members for each patient from the health records or other office records. We then reviewed each family member's health record, and tabulated for each propositus the number of other family members who had visited the physician during the study period. The family care rate is expressed as the percentage of family members eligible to be seen (an eligible family member is defined as a family member living in the same household as the propositus) who actually visited the physician at least once during the study period.

Results

Continuity of Care

Table 2 shows the average patient visit rate for 9 months for the sample of 50 patients for each practitioner. The volume of patient visits is very similar for both the RT and PE groups of physicians; no

TABLE 2
Continuity of Care Measures for Residency-Trained and Practice-Experienced Physicians

Visit Rate	RT Group	PE Group
Visit rate to the primary physician:		
Mean (no.) visits per physician	182	191
Mean total visits to primary physician (%)	83	83
Kept appointment rate:		
Mean rate of requested return visits (%)	27	16
Mean rate of kept appointments (%)	84	83

Abbreviations: RT = residency-trained, PE = practice-experienced.

differences of statistical significance were found. When extrapolated to a 12-month period, the average annual patient visit rate is 4.8 per patient for the RT group and 5.1 for the PE group. The percentage of patient visits to the designated primary physician for the sample of 50 patients is generally very high for both the RT and PE physicians, although no standards are available against which to compare these percentages. No significant differences were found between the two groups for this rate. As explained earlier, this rate could not be appropriately calculated for solo practitioners.

Table 2 also presents the percentage of return visits requested by the practitioners and the frequency with which these requests were honored. There was no significant difference between the RT and PE physicians for the requested return visit rate or for the mean rate of kept appointments.

Coordinated Care

Table 3 presents the results for the physician-initiated referrals. The referral rate was low for both groups (between 5% and 6%), but there was a return of information from most of the referrals. No significant differences between the RT and PE physicians were found. The majority of the physician-initiated referrals for both the RT (95%) and PE (96%) groups were to other physicians.

TABLE 3
Coordinated Care Measures for Residency-Trained
and Practice-Experienced Physicians

Referral Rate	RT Group (%)	PE Group (%)
Mean referral rate	6	5
Mean closed-loop referral rate	84	81

Abbreviations: RT = residency-trained. PE = practice-experienced.

Comprehensive Care

There was a very low rate of collection of health status information about conditions other than the patient's presenting complaint. In less than 5% of the visits was any information recorded other than data directly pertinent to the chief complaint (4% for the RT physicians and 3% for the PE physicians).

Figure 1 gives the overall mean scores for the adult comprehensive data base. The multi-modal distribution of the number of items recorded is generally similar for both the RT and PE groups. No significant difference was found between the two groups in the proportion of charts with identified items of history and physical exam completed (Mantel-Haenszel chi-square = 2.63). On the average, both groups recorded slightly less than 12 of the 18 items

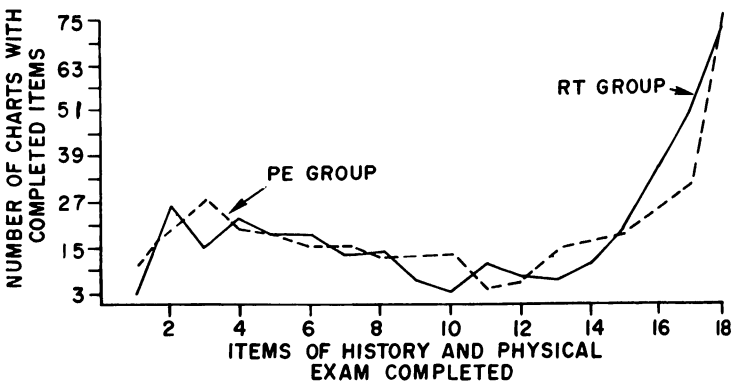


FIG. 1. Overall comprehensive data base score for adults treated by residency-trained (RT) and practice-experienced (PE) family practice physicians.

per chart; the median number of items recorded per chart was 15 for the RT group and 13 for the PE group.

Figure 2 presents the comprehensive data base scores for the 22 items of history and physical examination for the children. The multi-modal distributions were again apparent for both the RT and PE physicians. Unlike the adult comprehensive data base scores, however, the rates for data recording were slightly higher for the RT physicians (Mantel-Haenszel chi-square = 94.69); they completed an average of 11 items per chart, compared with seven for the PE physicians. The median number of items completed per chart was 11 for the RT and six for the PE physicians.

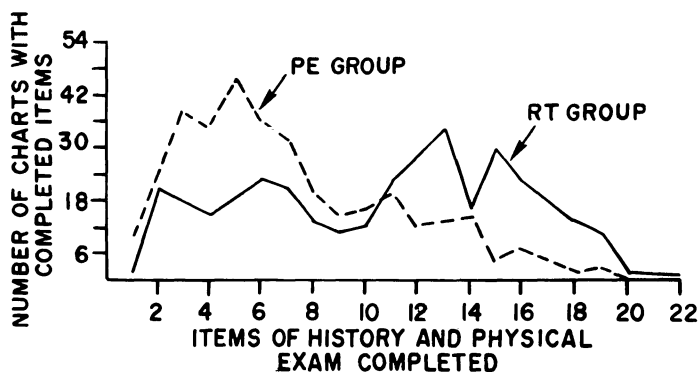


FIG. 2. Overall comprehensive data base score for children treated by residency-trained (RT) and practice-experienced (PE) family practice physicians.

In summary, both the RT and PE physicians did relatively poorly in recording information for the comprehensive data base, although both groups did better for the sample of adults than for children. For children, the RT physicians performed better than did the PE physicians.

The data collectors noted that those physicians who used preprinted forms to record their history and physical examination data tended to have information on more of the items for both adults and children than did those physicians who did not use such forms.

Family Care

The family history scores are shown in Fig. 3. A significantly larger proportion of the RT physicians recorded more items (Mantel-

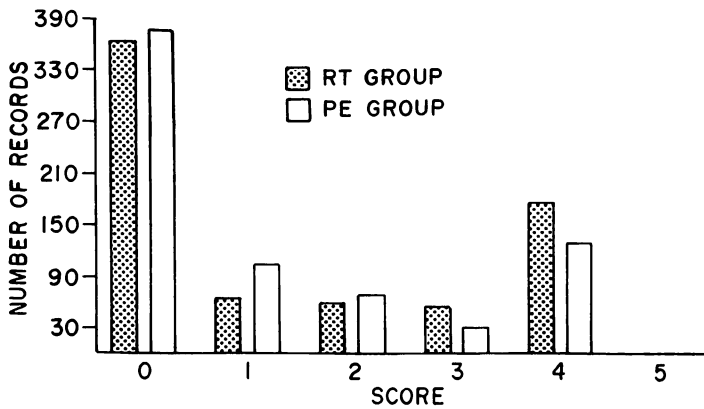


FIG. 3. Overall family history score for adult patients treated by residency-trained (RT) and practice-experienced (PE) family practice physicians.

TABLE 4
Family Care Measures for Residency-Trained and Practice-Experienced Physicians

Subgroups	Practices Where Family Size Determinable		Mean No. of Family Members Eligible to be Seen		Mean Family Care Rate for Each Practitioner	
	RT Group (No.)	PE Group (No.)	RT Group (No.)	PE Group (No.)	RT Group (%)	PE Group (%)
Rural-Solo	2	2	181	175	54	51
Rural-Small Group	2	3	183	206	61	45†
Urban-Solo	2	2	123	186	64	51†
Urban-Small Group	0	2	n.d.	200	n.d.	52
Urban-Large Group	3	5	170	196	50	57
Overall	9	14	165	195*	56	52†

Abbreviations: RT = residency-trained; PE = practice-experienced; n.d. = no data.

*Denotes difference significant for paired data at 0.05 level by paired t-test.

†Denotes difference significant for paired data at 0.05 level by chi-square test.

Haenszel chi-square = 8.09). However, the average family history scores per chart were very low for both groups, 1.4 for the RT group and 1.2 for the PE group; 52% of the RT and 54% of the PE group records had scores of zero. Again, preprinted history forms contributed to better scores being achieved, but no record of the 1400 reviewed contained a pedigree.

Table 4 gives the data on the family care rate. Because the number of family members who were eligible to be seen (the average family size) forms the denominator for this rate, the data collectors made extensive efforts to determine the family membership in each practice. Despite diligent searching through a variety of medical and accounting records, there was no way to determine patient family size in records of five of the 14 RT physicians. Such a determination was possible for all the PE physicians. Where such a determination could be made in the RT practices, the mean number of family members eligible to be seen for the 50 propositi is given, and for the nine pairs of physicians where a comparison is possible, the mean family size is significantly higher for the PE group. This difference in family size may be attributed to the PE group members having been in practice almost a generation longer and, therefore, having cared for an additional generation within a family.

For the nine pairs where the family care rate could be computed, a significant difference was found that favored the RT group; however, this difference was weakened appreciably by the lack of family data from five of the 14 RT group practices.

Discussion

This study was undertaken to answer two questions about family-centered primary care:

1. To what extent is this type of care performed in a manner consistent with the four characteristics that are frequently used to define it?
2. Does formal residency training in family practice make a difference in the level of performance of this type of care compared with the experiential learning that comes from years of practice?

Results for the 14 matched pairs of physicians studied in this project suggest that some aspects of family-centered primary care are performed at a high level, although others are not. Furthermore, with some notable exceptions, the results suggest that there is generally very little difference in the level of this performance between the physicians who have been formally trained in family practice, but lack practice experience, and the physicians who have had an internship and substantial practice experience, but lack completion of 3 years of formal training in family practice.

The high percentage of patient visits to the designated primary physician and the high percentage of requested return visits that were actually made for both groups suggest that family physicians do perform continuity of care. The requested return visit rates of 16% to 27% seem reasonable for primary care providers, although the absence of standards for comparison makes it difficult to draw strong inferences about this.

When the referral rates from our study of 5% to 6% per 100 patients are calculated for 100 office visits, rates of 4/100 for the RT and 3/100 for the PE physicians are obtained. These rates are comparable to those reported by Brock (1977) of 5.4/100 office visits. However, Brock used the self-reported performance of family physicians rather than chart audits to obtain results, a procedure that might increase the reported performance over that which we documented. Because our study used only one referral per patient, the rates calculated were minimum rates; it is likely, therefore, that the physicians we studied made referrals at least as frequently as those studied by Brock.

Brock also reported that 23% of the referrals made by physicians were to community health resources, a rate much higher than the 5% and 6% for these types of referrals from our study. In Brock's study, RT physicians referred patients more often to community health resources than did the "traditionally trained" physicians (an internship plus some additional training); also, the more practice experience physicians had had, the more likely they were to refer to these types of resources.

Brock's study suggests that the skills needed to use community health resources to their fullest can be acquired from practice experience, as well as from formal training. Our study failed to detect either of these effects. However, although referral may be necessary

for coordinated care, unless some information about the patient is returned to the referring physician, little benefit will accrue to patient management. The closed-loop referral rate was used in our study to evaluate this return of information. Both groups performed well in this area.

Both groups performed at a very low level (3% to 4%) for the comprehensive information rate. These results suggest that family physicians, whether residency-trained or not, tend to focus almost exclusively on a patient's specific complaints, even though the Virginia study (Marsland, Wood, and Mayo, 1976) suggested that patients presenting with specific complaints are likely to have other health problems.

Both groups collected relatively little information for the comprehensive data base. On the average, the physicians recorded information for less than two-thirds of the history and physical examination items for the adults, and for less than half of these items for the children, although the RT physicians recorded significantly more items for the sample of children than did the PE physicians. This better performance as data collectors by the RT physicians was also seen in the results for the family history score, although both groups of physicians recorded no family history information on over half the cases studied. Even though both groups performed at a relatively low level for the comprehensive data base and the family history scores, those physicians who used preprinted forms achieved higher scores than did those who did not use such forms. The higher scores by the RT group might be due to the skills acquired during residency in the use of data collection techniques.

To provide family-centered care, physicians need to have some concept of the family as the patient. The failure of five of the 14 RT physicians to identify family members in their records suggests that residency training does not consistently impart to its graduates a method for translating this concept into performance. However, this failure to identify eligible family members could be more a problem of chart organization than of conceptualization; those physicians who used family folders provided clear evidence that they cared for families. Finally, for the nine matched pairs of physicians where the family care rate could be calculated, the RT physicians performed significantly better, although the PE physicians cared for significantly larger families, which might have placed them at a disadvantage in comparing this rate between the two groups.

The results of our study may not be applicable to family physicians in other parts of the country, because half the physicians studied were graduates of only one training program. However, certification by the American Board of Family Practice does provide a standard for comparison of family physicians; 26 of the 28 physicians we studied were Board certified in this specialty, and the remaining two were Board eligible.

Additional studies of family practice performance in other locations would be useful to confirm or deny our results. Studies measuring the performance of other primary care specialists, such as pediatricians and internists, and mid-level practitioners such as Medex, nurse practitioners, and physician's assistants, would yield information about how these various types of providers actually perform primary care.

All the data in our study were collected from health records. It is not possible to know or calculate how often a physician performed, but did not record, a primary care activity, particularly concerning patient referrals. When we could minimize this potential discrepancy between what a physician does and what he records, by using criteria that are regularly recorded by family physicians, such as patient visits and kept appointments, the level of performance for both groups was high.

Why do the RT physicians not show a consistently higher level of performance for primary care? There may be concern about the sensitivity of the criteria used in our study and the validity of the measures of the performance of family-centered primary care. Although the measures were designed to indicate only gross aspects of practice performance, at least some differences were detected in the level of performance between the two groups. Moreover, it should be remembered that the criteria were all generated by family practice educators who felt they were valid outcome measures of their training program. As previously discussed, our inability to blind the data collectors to the status of the physicians whose records they reviewed may have introduced some experimental bias.

There are several possible explanations for the failure of the RT group to demonstrate a consistently higher level of performance. The PE physicians we studied are a select group; they were sufficiently motivated to prepare for and pass the examination for Board certification. Although none of these physicians completed a 3-year residency program in family practice, five of them did have one ad-

ditional year of formal training beyond internship, which may have improved their performance on the certifying examination. Since our control group represents a selection of the most accomplished practice-experienced family physicians, rather than a sample from the majority of them, this selection process may be reflected in the performance differences between the two groups of physicians.

Additionally, since residency programs in family practice were experimental in nature in their first few years of operation, and some of the RT physicians we studied received their training during these formative years, conclusions about the effects of contemporary training programs must be guarded.

If the results from our study are confirmed by additional studies using more homogeneous cohorts of graduates of seasoned programs to better reflect the present operation of family practice residency programs, then the overall effect of residency training has been principally to foreshorten the latency period between graduation from medical school and the time when clinical skills are adequately developed. It might be argued that practice experience after formal training has a greater effect on primary care performance than does practice experience alone. A repeat study of our two groups 5 years hence could test this assumption.

If the results of future studies confirm that clinical maturation in family practice can be achieved in actual practice as readily as through formal training, then alternatives to the present approach to training family physicians should be considered. One such alternative might be some form of limited licensure, whereby recent medical school graduates could serve as family physicians under supervision until able to pass the certifying examination. This proposal is very similar to one presented to the National Board of Medical Examiners (1973) by a special committee.

In conclusion, we have attempted to evaluate the practice performance of family physicians, half of whom had completed a formal residency-training program. Although our study has limitations, its results suggest that a closer look should be taken at primary care training and performance in general, and family medicine in particular. We feel we have raised some important issues about family practice training that suggest the need for further studies to examine these issues. The results of such research might yield important results for primary care training programs and health manpower policy.

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Appendix: Items of History and Physical Examination for Adults and Children

History

Present illness, problem or reason for patient's visit
 Past medical history
 Social history
 Family history
 Review of systems

Physical Examination

Height and weight	Breasts
Blood pressure	Skin
Neurological	Head
Genitalia/rectal	Eyes
Extremities	ENT
Heart	Chest
Abdomen	

For the sample of children, some notation about the following *additional* information was searched for in the health records:

Birth weight
 Problems of pregnancy or the neonatal period
 Immunization history
 Developmental history
 Growth chart.

For the sample of children, blood pressure measurements were not included; thus the total number of history and physical examination items for the sample of children numbered twenty-two.

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