

Family Practice in Massachusetts: A Comparison of Residency Trained Family Physicians with the General Practitioner Experience of 1967-1968

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An analysis of data collected from a one-year survey of the activities of seven residency trained family physicians practicing in Massachusetts was carried out. These data were compared to a study of activities of Massachusetts general practitioners done in 1967-1968, and to the Virginia Study of 1976. Both hospital and health center encounters were analyzed.

The age distribution of the practices paralleled that of the general practitioners, particularly the younger general practitioners. The sex distribution was also comparable. However, over one third of all health problems recorded during the study were for preventive or non-illness visits. This represented a significant percentage increase over the general practitioners as well as the family physicians in the Virginia Study. The site of activity was also different in showing a ten percent increase in office visits over 1967-1968. Women's health issues, which include maternity and family planning care, represented a larger percentage of the practices of the residency graduates than was the case in the Virginia Study. Educational and health manpower implications of the study are discussed.

In 1971, Brown et al¹ reported on a study of general practice in Massachusetts based on a collaborative data collection effort of 15 general practitioners. The study was carried out in 1967-1968 at a time when the first programs to be approved for residency training in family practice were still under consideration. Their study was

one of the early descriptive studies of general practice which included some elaboration of the types of problems and patients seen in community practice.

We are now at a point in the emergence of family practice when we should begin to look at the outcomes of training programs and learn more about the types of practices in which graduates are engaged, and how, if at all, they differ from the non-residency trained general practitioner. This report will focus on results of the analysis of the practices of seven family practice residency graduates, and its purpose is twofold. First, the

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data gathered from their practices will be compared with results of the Brown et al study conducted ten years earlier. Secondly, a more in-depth analysis of the practices of these seven family physicians will be presented, including a description of the health problems and types of patients encountered by these physicians over a year's time. In this regard, comparisons will be made with data from another study of family physicians, published by the Medical College of Virginia in 1976,² which included data from family practice residents and practicing physicians.

Comparisons of the medical experiences of these three groups of physicians (hereafter referred to as "residency graduates," "general practitioners," and "Virginia family physicians") aid in the overall objective of this report: to identify, as clearly as possible, the experiences of today's family practice residency-trained physician.

Methods

In April 1977, the Department of Family and Community Medicine of the University of Massachusetts Medical School began monitoring the clinical experiences of family physicians and family practice residents in four affiliated community based centers. Three of these four health centers have one or more residency trained family physicians on their staff. Of these physicians, three practice at an urban neighborhood health center, one physician at a rural health center, which serves an eight-town area in north central Massachusetts, and three are members of a group practice in a town of 75,000. Data for this report were accumulated over a year's time from July 1977 through June 1978, from the practices of these seven residency trained family physicians. By the end of the study year, the physicians involved had averaged 2.7 years in practice, ranging from one to six years. Of the seven physicians, five had been doing obstetrics.

The monitoring program included an on-line computerized data collection system that recorded encounter form data at a variety of sites, including health center, home, hospital Emergency Room, and extended care facilities. The following data items were to be recorded for each patient encountered: chart number, birth data, sex, data

and site of visit, International Classification of Health Problems in Primary Care (ICHPPC) problem codes, problem type, referrals, and provider number. Overall, 98 percent of all encounters taking place at the health centers had encounter forms appropriately completed and entered into the computer. A more extensive evaluation of the data's reliability and validity has been reported elsewhere.³

Completeness of the recording of patient information at encounter sites other than the health center could not be readily determined except for hospital inpatient visits. Physicians at two of the health centers routinely recorded all necessary information for each patient in the hospital. The physician at the third health center did not record any information pertaining to his in-hospital patients; therefore, analyses regarding site of visit other than health center exclude this physician's data.

Results

During the period from July 1977 through June 1978, the seven residency graduates recorded 24,370 encounters. These encounters involved a total of 11,518 patients and the physicians identified nearly 33,000 health problems for these patients during the year.

Of the encounters recorded, nearly 38 percent were recorded for male patients, and 61 percent for females. This is comparable to the distribution of contacts among the sexes in the study conducted by the Massachusetts general practitioners, with males and females accounting for 42 percent and 58 percent of the contacts, respectively.

A comparison of the ages of patients who visited residency graduates and patients who visited general practitioners ten years ago (Figure 1) shows no significant differences in the percentage of patients in each age group up to age 24. However, residency trained family physicians had in their practices a higher proportion of patients aged 24-35 years (19 percent vs 10 percent) and slightly fewer patients in each age group over 35 years ($P < .0001$).

These differences in patient age distribution are greatly diminished when one controls for age of physician. Brown et al found a direct association

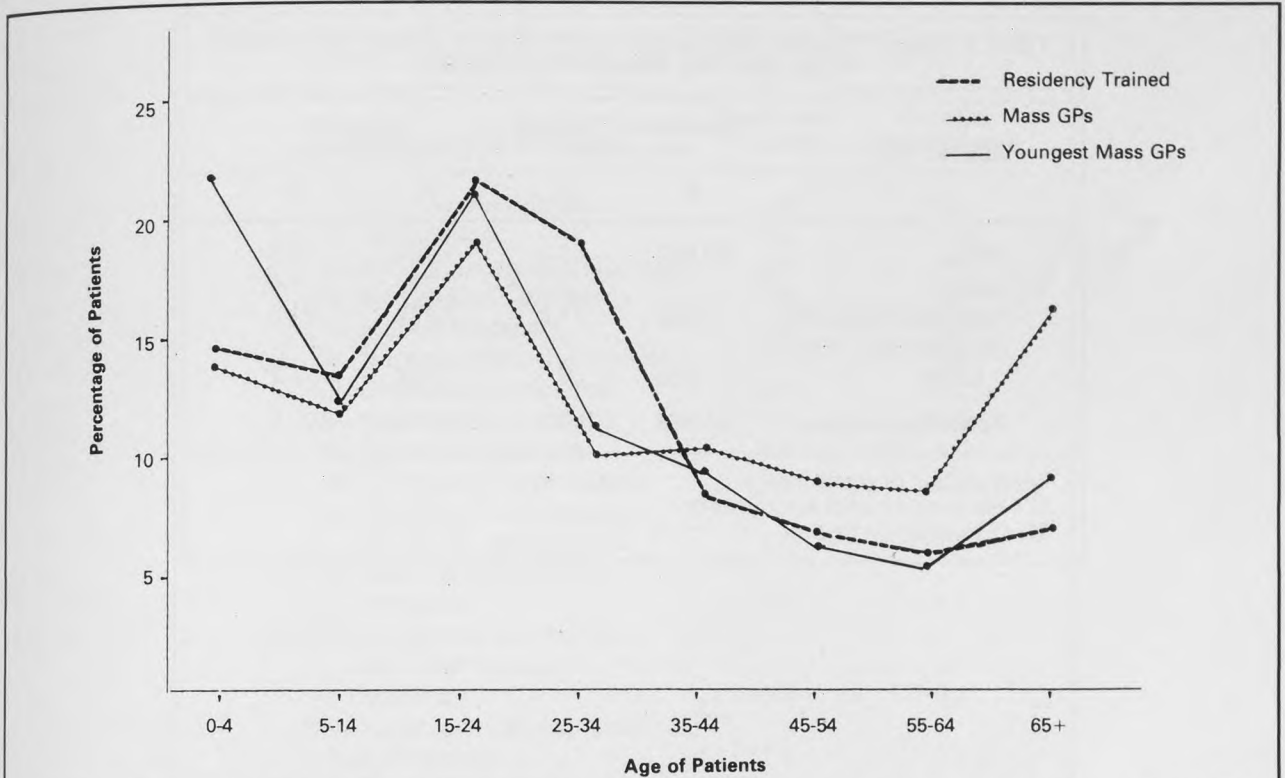


Figure 1. Age distribution of patients in practices of residency trained physicians and Massachusetts general practitioners

between age of physician and the ages of his or her patients. Family practice residency graduates were all between the ages of 30 and 35. There is a greater similarity in the age distribution of patients of residency graduates and patients of five similarly aged general practitioners (mean age 38.6 years), than between the ages of patients of residency graduates and patients of the Massachusetts general practitioners as a whole (Figure 1).

Table 1 shows the number of encounters that occurred at each site, including office (health center), home, hospital inpatient, and extended care facility/emergency room/other. A comparison of the distribution of the sites of visit for residency graduates and the 15 Massachusetts general practitioners shows that encounters with residency graduates were more often office based (82 percent, vs 72 percent for general practitioners,

$P < .0001$) (Table 1). These seven family physicians also had significantly fewer contacts with hospital inpatients and patients in their homes ($P < .0001$) than did the general practitioners.

Another important question about the family practice residency graduate is whether he/she will be able to deal with the volume issues inherent in doing family practice. Brown reported an average of 21.1 patients seen per day by the practitioners in their study. In the present study, with calculations based on a full patient care day for those who were also spending time teaching in a family practice residency program, the residency graduates saw an average of 20.4 patients per day.

Table 2 shows the number of health problems that were reported in each disease category by residency graduates and general practitioners. The majority of problems encountered were contained

Table 1. Sites of Patient Encounters in Practices of Residency Trained Physicians and General Practitioners

Site of Visit	Residency Trained Physicians		General Practitioners	
	N	%	N	%
Office	19,867	81.5	9,190	71.6
Home	41	0.2	719	5.6
Hospital (inpatient)	4,332	17.8	2,772	21.6
ER/Extended Care/ Other	126	0.5	154	1.2
Total Encounters	24,366	100.0	12,835	100.0

N=Number of encounters
%=Percent of total encounters
ER=Emergency Room

in the "non-sickness" category, which includes such items as routine examinations, maternal and infant care, immunizations, pap smears, and social and family problems. Residency graduates and general practitioners each had the greatest amount of problems falling within this category, accounting for one third and one quarter, respectively, of all "problems" that they encountered. The frequency of problem occurrences in most other disease categories was relatively similar between the two physician groups, the next largest groups of problems presented being circulatory and respiratory illnesses (each accounting for approximately ten percent of all diagnoses identified). Residency graduates had fewer patients presenting digestive problems and accidental occurrences and more patients with signs, symptoms, and ill-defined conditions than did the general practitioners. Categories which contained the lowest proportion of health problems were roughly the same for the two groups, and included hematologic disorders, diseases of pregnancy, childbirth and puerperium, and congenital anomalies.

Analyses were also completed for the purpose of illustrating a practice of today's residency trained family physician in comparison with other practicing family physicians, more specifically, those physicians involved in the Virginia Study.

There is a significant difference ($P < .0001$) between the age distribution of health problems encountered by family practice residency graduates and by Virginia family physicians (Figure 2). Problems presented to residency graduates more frequently occurred in children less than five years of age and in persons aged 15 to 34 years, and less often in persons 65 years of age and over, than was the experience of Virginia physicians. The higher percentage of problems presented to residency graduates by persons in the 15-to 34-year age group may be accounted for by a significantly higher occurrence of encounters and problem identification in women of childbearing age. Of all problems presented by females, 46 percent occurred between the ages of 15 and 34 years, whereas in Virginia 32 percent of females' problems were associated with women in this age group.

The distribution of health problems by sex was similar for the two groups of physicians, and females consistently presented the majority of problems (63 percent for residency graduates, and 61 percent for Virginia family physicians).

A more detailed examination of the specific diagnoses encountered by residency trained physicians in this study shows that over half of the problems were contained within 16 descriptive diag-

Table 2. Percent of Total Diagnoses in Each Illness Category for Residency Trained Physicians and General Practitioners		
ICHPPC Disease Category	Residency Trained	General Practitioners
I. Infective and parasitic	3.6	2.4
II. Neoplasms	1.0	2.8
III. Endocrine system disorders	5.0	5.7
IV. Hematologic problems	0.5	1.4
V. Mental disorders	3.6	4.0
VI. Nervous system disorders	5.4	5.2
VII. Circulatory problems	10.9	10.1
VIII. Respiratory problems	10.0	10.6
IX. Digestive problems	2.2	6.0
X. Genitourinary problems	3.2	3.8
XI. Diseases of pregnancy, childbirth, puerperium	0.9	1.3
XII,XIII. Skin, musculoskeletal problems	8.3	7.6
XIV,XV. Congenital anomalies, perinatal morbidity, mortality	0.8	0.3
XVI. Signs, symptoms, ill-defined conditions	7.6	3.3
*XVII. Accidents, poisonings, violence	5.1	10.2
*XVII. Nonsickness	31.4	25.0
Total	100.0%	100.1%
Total Problems	32,949	12,771

*These two problem groups are actually combined into one category (XVII) according to ICHPPC, but are examined separately in this analysis

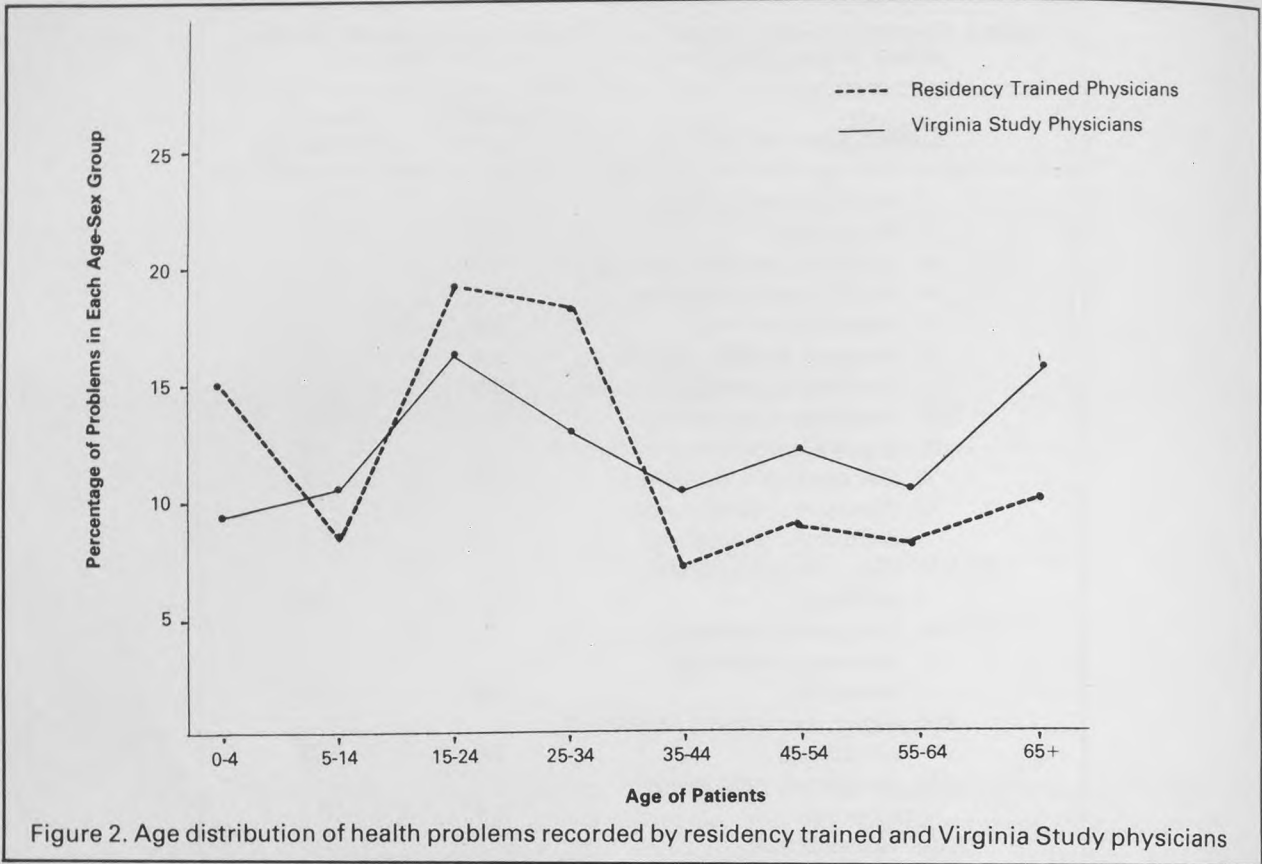
noses. These diagnoses are listed in Table 3 along with their rates of occurrence in the Virginia practice. The majority of these diagnoses also ranked in the top 50th percentile of health problems identified by Virginia physicians.

All of the diagnoses listed in Table 3 (except hypertension) occurred in significantly different proportions when comparing the experiences of residency trained physicians and Virginia family physicians ($P < .0001$).

Five out of the top seven ranking diagnoses encountered by residency graduates related to

preventive medicine in some manner, and each accounted for a higher proportion of the total problems than was the experience of the Virginia family physicians. Routine medical examination (adult and child) was the most commonly recorded occurrence for these residency graduates, accounting for 12 percent of all problems identified (vs 8 percent in the Virginia Study, $P < .0001$); and 16 percent of all patient encounters included such an examination.

Prenatal care was the second most common occurrence, comprising nearly 7 percent of all



problems (vs 1.4 percent in Virginia, $P < .0001$), and prenatal services were provided in over 9 percent of all patient visits during this time period.

Other preventive services which ranked highest for residency trained physicians included pap smears and prophylactic immunizations, both of which occurred in significantly higher proportions than was the Virginia experience ($P < .0001$). Contraceptive guidance also was recorded more often in the practices of residency graduates than among the Virginia physicians, comprising 2.6 percent and 0.6 percent of all diagnoses, respectively. Virginia physicians encountered acute upper respiratory tract infection (URI) nearly twice as often, and lacerations four times as often as residency graduates.

Relative to their practice of obstetrics, five out

of the seven residency graduates are providing such services. During this study period there were 153 deliveries comprising 3.5 percent of all hospital contacts and 0.5 percent of problems recorded at all sites combined. A total of 180 deliveries was reported by the physicians in the Virginia Study, accounting for .03 percent of all problems recorded (compared with the delivery rate of .57 percent for family practice residency graduates).

Discussion

The study by Brown et al pointed out that there was a direct relationship between the age of the physician and the age distribution of his patients.

Table 3. Health Problems Which Ranked in the Top 50th Percentile of All Problems Recorded by Residency Trained Physicians, July 1977-June 1978, with Rank and Percent of All Problems, and Comparable Statistics for Virginia Physicians

Health Problem	Residency Graduates		Virginia Family Physicians	
	Rank	%	Rank	%
Routine examination, adult and child	1	11.9	1	8.4
Prenatal care	2	6.7	13	1.4
Hypertension	3	6.0	3	5.7
Pap smear	4	3.4	12	1.5
Acute URI	5	3.0	2	5.9
Contraceptive guidance	6	2.6	32	0.6
Prophylactic immunization	7	2.4	17	1.1
Obesity	8	2.2	8	2.0
Diabetes mellitus	9	2.0	7	2.4
Acute otitis media	10	1.9	10	1.7
Throat culture	11	1.5	cannot determine*	
Sprains/strains	12	1.5	6	2.4
Bronchitis, acute	13	1.5	5	2.6
Abdominal pain	14	1.4	18	1.1
Postpartum care	15	1.3	cannot determine*	
Boil, carbuncle, cellulitis	16	1.1	22	0.8
Total Health Problems		32,949		526,196
Total Patient Encounters		24,370		cannot determine*

*These particular diagnoses either were not recorded or are classified under another disease category along with other illnesses in the Virginia Study, and the frequency of these specific problems could not be determined

The age distribution of the patients in this study correlates with the age distribution of the five youngest physicians involved in the 1967-1968 study. Longitudinal studies of physicians over time are needed to assess if in fact their practices "age" along with the physicians themselves. What may be more true is that a ready source of new patients to a new practice are young families recently moving into an area, who do not have an established pattern of medical care. New prac-

tices, therefore, would be comprised of a higher percentage of younger patients since older persons generally have already developed and are maintaining relationships with a physician.

Educators in family practice have challenged organized medicine to develop alternatives to solo practice⁴ to respond to the needs expressed by graduating residents. The American Academy of Family Physicians statistics on residency graduates show that only 13.6 percent of residency

graduates are going into solo practice.⁵ All of the individuals in the 1967-1968 study were in solo private practice. The members of the residency graduate group in the current study are all in group practices and four are salaried in community health centers. The age and sex distributions of the practices of the two groups of practitioners are remarkably similar, despite the differences in style of practice organization.

One of the implications of a descriptive study of what family physicians do is that it should influence health manpower planning. In use for some time now are general formulae for calculating needs for physician manpower,⁶ as well as new work being done through academic and governmental efforts. However, what a family physician does regarding hospitalization, types of problems seen, types of referrals made and to whom, are important data in the planning of services needed in a given community and who might be best suited to meet those needs. The reason to emphasize the residency graduate is obvious, at least in Massachusetts, where in a 1975 survey of physicians who categorized themselves as general practitioners, 77 percent were older than 55 years of age.⁷ While this may be an unusually high percentage, indications are that this trend is not restricted to Massachusetts family physicians. Thus, future manpower planning by state and federal agencies should look to residency graduates as the future providers of primary medical care and make predictions about needs based upon these physicians' actual experiences, such as are reported in this paper.

The decrease in the percentage of house calls and hospital visits and the corresponding increase by ten percent of office visits between the 1967-1968 General Practice Study and the residency graduates parallels the change in medical care in the past ten years. Length of hospital stay has been decreasing nationwide for some time. While a knowledge of hospital medicine is critical to the functioning of a family physician, one wonders whether the overwhelmingly inpatient oriented composition of most residency training programs in family practice is justifiable in light of the small percentage of actual hospital based care that residency graduates are doing.

In the comparison between the residency graduates in this study and the Virginia physicians, the difference in the age distribution of the

practices is prominent, with residency graduates having much higher percentages of young children and young women. This, along with the significantly higher percentage of encounters for such things as pap smears, routine immunizations, all types of contraception, and preventive measures as a general category, all seem to point out the impact of the practice of obstetrics on the composition of and the problems seen in practice. Limited studies such as that of Mehl et al⁸ seem to support this contention. Unless there are markedly different populations being served and a different distribution of specialists in Virginia, the fact that the residency graduates in this study are doing deliveries at a rate nearly 20 times that of the Virginia physicians seems to be the single most important variable which would contribute to the presence of such a high percentage of "non-sickness," preventive encounters in the residency graduate group. The whole area of obstetrics and family practice has been discussed by Candib.⁹ Until there are more extensive comparative studies of many types of family practices which include a mix of obstetrical and non-obstetrical practices, the true effect of doing or not doing obstetrics in one's practice will not be known. What may be said from this study is that the entire area of preventive health care for women and children seems to be linked to the practice of obstetrics.

In the 1967 study by Brown et al, 25.9 percent of all diagnoses were in Category XVIII of the ICDA code (non-sickness). In both the current study and the Virginia Study, the single most common problem identified was routine medical care. Nearly one third of total patient problems in this study were for non-illness visits. One might interpret this as did Stewart,¹⁰ as having significance for planning educational curriculum insofar as it indicates a need to have an understanding of preventive health issues. It implies that a large amount of the work that family physicians do involves what might broadly be called preventive. Preventive medicine has emphasized prophylaxis and screening, and much time has been spent reviewing justification for such matters.¹¹⁻¹³ What much of the non-illness visit time might well represent is an opportunity to solidify the physician-patient relationship and to begin to use this relationship as a therapeutic and diagnostic tool. Whether the encounter is initiated by the patient

or physician, there is a need to look at the nature of the interaction between physician and patient vis-à-vis expectations, during these "non-illness" visits. For it is the quality of the physician-patient relationship that often determines outcome, and that relationship can be affected by what takes place during the time when physicians and patients are not under the pressure of an acute illness.

The devotion of much of the curriculum in family practice programs to non-illness visits emphasizes the need for patient education and patient counseling during the routine health maintenance visit. These issues could fall into subspecialty disciplines such as preventive medicine, health education, and family counseling. However, it would seem more reasonable to lump these activities under the category of "what a family physician does" and, in defining for residents and medical students the work of the family physician, to use the "non-illness" visit as an example of where an integrative individual such as a family physician can be in a unique position to do a unique type of work. Studies have shown that allied health personnel often do a better job than physicians in the areas of counseling, health education, or physical examinations,¹⁴ and there are cost efficiency reasons for integrating them into the structure of a family practice. Assignment of the "routine" or "non-illness" visit to nurse practitioners or physician's associates is part of the shared responsibility that can increase the availability or providers in a practice. But to think of the routine visit as a waste of valuable physician time may be to misunderstand what is potentially the most useful and productive work of a family physician.

The problems with the present study are those inherent in any non-randomized study which is dependent on the good will and cooperation of the participants to complete. Error rates in the data recorded by the residency graduates are within the range of error reported for similar data sets by other investigators.^{3,15,16} A larger study involving family physicians in prepaid groups, solo practice, traditional, and non-traditional practice settings is needed before any detailed comparisons can be made. As the number of residency graduates increases nationwide, some national and interregional studies should be forthcoming.

In 1967, a group of general practitioners in Massachusetts set out to look at their practices and find reasons why patients sought help from

their physicians. Ten years later, the present authors have found that, in many areas, what they did and what graduates of a training system (which did not even exist at the time they did their work) do, are not that dissimilar. Both groups deliver preventive, acute, and chronic health care to individuals of all ages and both sexes over a broad range of medical problems. Both studies were descriptive in nature and say nothing about the quality of the care that was given and little about the manner in which it was delivered. Family practice, after ten years of the residency training experience and with a continually growing number of young residency trained family physicians to do the work, can now begin to address those issues.

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