

Content of FAMILY PRACTICE

A Statewide Study in Virginia with its Clinical, Educational, and Research Implications

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Content of FAMILY PRACTICE

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Toward the Definition of Family Practice —A Quantum Jump

John P. Geyman, MD

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In the past there has been little research in primary care in North America despite the fact that 90 to 95 percent of all doctor-patient contacts occur at this level.¹ Most of our medical literature has been derived from the study of patients admitted to university hospitals, which represent only one out of 250 patients seen by physicians and one out of 1,000 patients at risk each month.² Biomedical research has traditionally attracted more funding support than health services research. Research in family practice has been limited until recent years by such factors as the absence of academic departments in medical schools, the difficulty of organizing collaborative research involving practicing family physicians, and the lack of effective research tools.

With the advent of academic departments in most of our medical schools during the past seven years and the development of such research tools as the problem-oriented record, ambulatory coding systems, data retrieval methods, and computer analysis, we are now seeing vigorous new research efforts in family practice. The study reported here from the Medical College of Virginia represents the most significant step to date toward the definition of the content of family practice and makes a quantum jump toward new knowledge in this important area.

The Virginia study is particularly impressive in several ways. It reports

the occurrence of over half a million patient care problems presenting over a two-year period in the practices of 118 family physicians and family practice residents throughout Virginia. Urban, suburban, and rural practice settings were studied, and teaching and non-teaching practices were compared. A high validity of recording methodology was achieved. Perhaps most important, an effective linkage was developed and maintained over a prolonged period of time between the university and practicing family physicians in the community to carry out this collaborative state-wide study.

It is to be expected that this monumental study will perhaps raise as many questions as it definitively answers. It is by no means a perfect study, due largely to the current state of the art in primary care research. There are limitations in any of the currently available coding systems which have been developed for ambulatory care problems. Criteria for recognition of diagnoses and problems inevitably vary somewhat among individual physicians. The difficulty of under-reporting in such areas as behavioral problems is doubtless due to a variety of related issues, including confidentiality of patient records. The three reviewers who focus on the clinical, educational, and research implications, respectively, of this study point out other specific limitations of the study.

The Virginia study opens up exciting new directions for research in

family practice. The immediate challenge is to convert such massive data to improved clinical practice and more relevant educational programs. Further study of specific problems within each of the 22 diagnostic categories should vield new understanding of the occurrence and natural history of common illness which can lead to more effective early diagnosis and clinical management. We can now look more critically at the curriculum and clinical experience provided in educational programs at all levels - undergraduate. graduate, and postgraduate. Similar studies should be carried out in other regions in North America and can benefit from the experience in Virginia in carrying out effective collaborative research with family physicians in active practice. The Virginia study serves as a landmark for the continued development of research as an essential element in better defining the academic discipline of family medicine, developing more relevant teaching programs, and improving clinical approaches in family practice. Such research is not only vital to family practice as a developing specialty but to all other disciplines in medicine within a constantly changing health care system.

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Appearing in this supplement is a tabulation of all problems identified by all physicians from both teaching and non-teaching practices during the entire RCGP work sheet recording period.

These diagnoses were classified according to the problem-oriented adaptation of the coded classification of disease of the Royal College of General Practitioners directly related to the H-ICDA. This adapted classification is endorsed by the Department of Family Practice of the Medical College of Virginia, Virginia Commonwealth University in Richmond, Virginia, and is directly correlated with the problemoriented medical record currently employed in its teaching practices.

The major categories of disease classification are as follows:

- 1. Communicable diseases
- 2. Neoplasms, including reticuloses
- 3. Allergic, endocrine, metabolic, and nutritional disorders
- 4. Diseases of blood and blood forming organs
- 5. Mental illness, personality disorders, and psychoneurosis
- 6. Diseases of the nervous system and sense organs
- 7. Diseases of the circulatory system
- 8. Diseases of the respiratory system
- 9. Diseases of the digestive system
- 10. Diseases of the genitourinary system
- 11. Pregnancy, parturition, and puerperium
- 12. Diseases of the skin and cellular tissue
- 13. Diseases of bones and organs of movement
- 14. Congenital malformation
- 15. Certain diseases of early infancy
- 16. Signs, symptoms, and ill-defined conditions
- 17. Accidents, poisonings, and violence
- 18. Prophylactic procedures
- 19. Procedures performed
- 20. Problems other than specific diagnostic/symptomatic
- 21. Family history of selected diseases
- 22. Selective therapeutic index

During the entire RCGP work sheet recording period, all physicians involved identified a total of 526,196 problems, of which 205,938 were males and 320,258 females. These totals can be further separated into age and sex groups as follows:

Age	Male	Female
00 - 04	25,079	22,217
05 - 09	15,181	13,406
10 - 14	13,906	13,036
15 - 24	31,125	57,760
25 - 34	23,818	46,347
35 - 44	20,369	36,374
45 - 54	23,700	41,590
55 - 64	22,665	36,014
65 - +	30,095	53,514

A Data Bank for Patient Care, Curriculum, and Research in Family Practice: 526,196 Patient Problems

David W. Marsland, MD, Maurice Wood, MB, and Fitzhugh Mayo, MD Richmond, Virginia

The health care problems that 88,000 patients presented to 118 family physicians over two years were evaluated. As a result, 526,196 health care problems were noted. Ninety percent of all problems were contained within 169 descriptive problems using the RCGP coding system for primary care. Knowledge of the profile of patient problems as they present to the family physician will allow for the development of a logical curriculum for the family practice resident and of patient care systems in family medicine. An appropriate methodology for the development of curriculum is discussed.

The Millis Report has stated that health care systems need to be developed to meet the general medical needs of the people.¹ Health care should not be confused with medical cure. Hospitals have established very complex medical cure systems during the past 30 years in conjunction with medical schools. However, during the same interval, a comparable growth in primary health care systems has not been noted.²

Family practice is a young medical specialty steeped in the proud traditions of general practice.³ Primary health care delivery is the major responsibility of family medicine. To assume its rightful position among the other specialties in medicine, family practice must be subjected to the rigors of the scientific method.

To date, family practice has been defined as a discipline with great horizontal dimension and small vertical one.⁴ A few studies have looked at this horizontal dimension, but only in relation to a single practice⁵⁻⁷ or a review in a finite period of time.^{8,9} This article will define the horizontal

From the Department of Family Practice (The Blackstone, Fairfax, First Colonial, and Riverside Family Practice Centers), Medical College of Virginia of Virginia Commonwealth University, Richmond, Virginia. dimension of family practice (the numbers and kinds of health care problems that are evaluated by the family physician), show that there is a substantial vertical component (the detailed definition of descriptive diagnosis through a continuum of time) in this horizontal dimension, and suggest a rational methodology for developing curriculum and patient care systems in family practice.

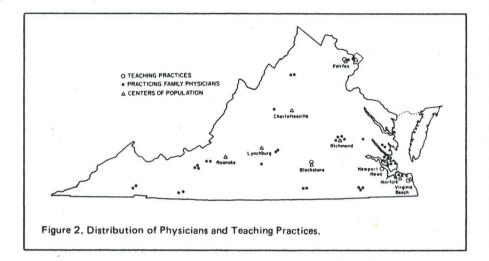
Methodology

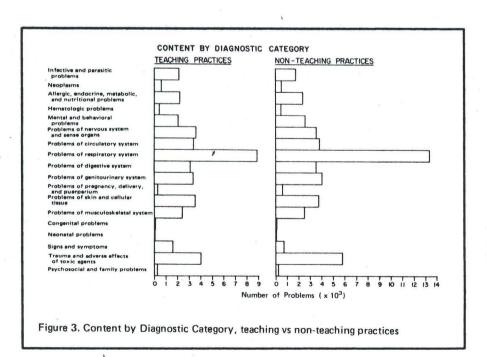
From July 1, 1973, to August 1, 1975, 82 family practice residents and 36 practicing family physicians recorded all patient problems evaluated during each 24-hour period onto a daily work sheet (Figure 1). Table 1 shows the distribution of the physician sample by population of practice community: 31 rural, 39 suburban, and 48 urban. Approximately 88,000 patients or 2.3 percent of the population of Virginia were served by these physicians. Figure 2 shows the distribution of the physicians and the model units within Virginia.

The daily work sheet was basically an appointment list turned into a data input sheet for key-punching, the information then being stored and correlated in a computer.^{10,11} The secretary in the practice would record the patient's name, date of birth, and sex on the work sheet. After evaluating the patient, the physician would record the problem or problems that were addressed. The secretary would then code the problems recorded on the daily work sheet using the USA Modification of the Coded Classification of Disease of the British Royal College of General Practitioners.¹² The classification is composed of 22 diagnostic categories con-

Table 1. Distribution of Physician Sample by Population of Practice Community					
	iral (pop: 99 or less)	Suburban (between 5,000- 99,000)	Urban (more than 100,000)	Total	
Practicing Family Physicians	13	11	12	36	
Family Practice Residents	18	28	36	<u>82</u> 118	

Problem - Oriented Medical Record		Birth – 12, list – Hea		Sex	- Male	
Daily Worksheet	<u>Surname</u> <u>SM</u> ITH	<u>Initials</u> <u>P</u> ETER	Date of Birth 12/06/41	Sex 1	Problem Description HEADACHE DEPRESSIVE NEUROSIS OUT OF WORK - CHRC	
Computer —	LSWI	P Hogben	120641 Code	<u>'</u>	L454 134 RCGP RCG Code Code	P RCGP
e 1. Methodology for F	Becord	ling				v.





taining 607 problem categories. The individual patient was identified using the Hogben Code.¹³ Average physician time per day for recording was about ten minutes, and average secretarial time was about 30 minutes. A validity check on 1,000 random charts to determine the error in recording between the patient's record problem list and information stored in the computer was done. New and old problems and follow-up visits were combined for this study.

Results

Recorded during this 25-month interval were 526,196 primary health care problems for all age groups combined, from one week of age on. The problems were arranged into 22 major diagnostic categories. Teaching and non-teaching practices were compared (Figure 3). The profiles were remarkably similar. The suburban, urban, and rural practices were compared (Figure 4). These profiles were also remarkably similar, except for a greater frequency of trauma and problems of the respiratory system in rural practice. Figure 5 describes the population profile by age and sex comparing the State of Virginia with the teaching practices. The profile of the population in the teaching practices is parallel to the population profile for the State of Virginia.

The data bank is arranged into two formats. The first part is diagnoses ranked by frequency to the 99th percentile. The second part is diagnoses ranked by frequency in each of the 22 major disease categories. Within each major disease category the data is further subdivided into the age groups of 1 week (0) to 4, 5 to 9, 10 to 14, 15 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65+ years. The age groups are further divided into male and female. The 50th percentile of all 526,196 problems was contained in 23 descriptive diagnoses; the 70th percentile was contained in 63 descriptive diagnoses; the 80th percentile was contained in 102 descriptive diagnoses; and the 95th percentile was contained in 234 descriptive diagnoses.

A four percent recording error was noted between the patient's record problem list, the daily work sheet, and information stored in the computer.

Within the confines of this paper it would be impossible to comment on

all of the data contained within the data bank. Four examples are cited:

RCGP Code number 4 is gonorrhea and is contained within diagnostic category 1, communicable diseases. There were 1,249 episodes of diagnosis with a frequency distribution that would be expected for gonorrhea peaking from age 15 to 34. Four of the cases that occurred from age zero to four were in the neonatal period. One case was a three-year-old that was sexually molested. The cases in the five to nine age group all occurred at age nine, all having been sexually molested. Therefore, all of these cases occurring in the younger age groups were real cases presenting an interesting profile. The methodology of resourcing the records for research and curriculum is described in the discussion

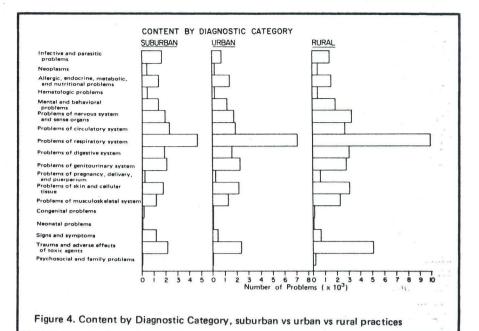
RCGP Code number 218 is benign or unspecified hypertension and is contained within diagnosis category 7, diseases of the circulatory system. There were 30,235 episodes of diagnosis with a frequency distribution which increased with age. The cases that occurred from one week to 14 years totaled 129. Within these practices, blood pressure in children was carefully recorded. This population of children is under study.

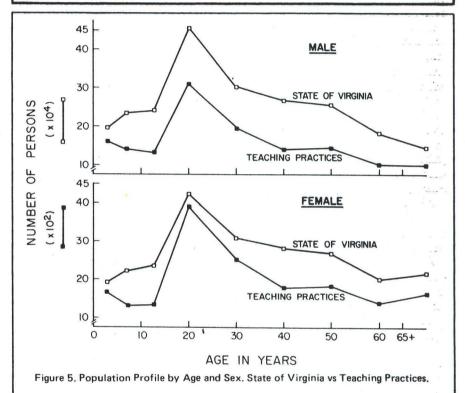
RCGP Code number 9 is meningococcal infections, occurring within diagnosis category 1, communicable diseases. Fifteen episodes of meningococcal infections occurred in two years. From this we estimate that the family physician would evaluate one case of meningococcal infection every two to three years.

RCGP Code number 217 is the general category, other heart disease, contained within diagnosis category 7, diseases of the circulatory system. The content of this category after record review was 96 percent functional heart murmur. Coding revisions should contain the category functional heart murmur.

Discussion

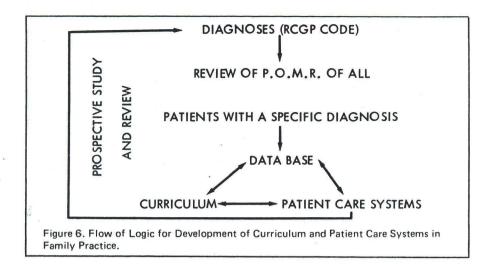
The data presented in this paper represent the gamut of health care problems evaluated by the family physician during the day in the office, the hospital, the nursing home, and in the patient's home. Profiles comparing diagnostic categories were remarkably similar for teaching and non-teaching practices, and the suburban, urban,





and rural practices. The assumption is made that the residents are practicing in a patient population similar to that of the practicing family physician. The assumption is also made that the residents are practicing in patient populations that will also be appropriate for suburban, urban, and rural practice. The age and sex distribution for the teaching practice was comparable to the distribution for the State of Virginia. The profile substantiates the impression that the teaching practice population is a representative sample.

Within the horizontal dimension (all problems combined) of the family physician's workday, 80 percent of all problems were contained within 102 descriptive diagnoses. Many descriptive diagnoses occurred very commonly; in fact, 23 descriptive diagnoses represented the 50th percentile of all primary health care problems! The vertical component of family medicine is to be defined by careful evaluation



of these common descriptive diagnoses (Figure 6).

It is possible to have the computer print out the Hogben Code for each patient within a common descriptive diagnosis (RCGP Code). The physician can then review all the problemoriented medical records within his practice or many practices combined, thus accumulating a data base. This data base can be used to design curriculum and patient care systems. This logic is no different from that classically employed by investigators within a hospital milieu. The only difference is the fact that the investigator is looking in an ordered manner at the natural first-line presentation of disease as it occurs within the family practitioner's office.

A major criticism of any descriptive study is that the description only reflects the individual experience of the recorder. It is also accepted that any system such as this can be criticized as being too restrictive in scope, as being concerned only with that which is recognized and understood and not with the ill-defined and unknown areas of the natural history of patient disease as it exists in community practice. This is the most exciting and potentially productive area of future investigation in family medicine, and the work-sheet methodology used in this study was developed for the express purpose of such investigation. Using the data abstracted from clinical and demographic records of patient problems or problem complexes, hypotheses can be developed and prospective studies of any duration instituted, to confirm or deny these hypotheses. Such studies will at least produce new data which

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can be used to develop further hypotheses in the classical scientific method of:

Data→Hypotheses→Experiment→Observation

Using the RCGP Code as a signpost to the problem-oriented medical record allows the physician to look critically at his practice through longitudinal audit, to design prospective plans to improve patient care, to expand the available medical and behavioral knowledge as it applies to primary care, and to design logical curriculum.

The number of recorded behavioral problems presented in this study is approximately 6.7 percent. Previous studies indicate that behavioral problems comprise 20 to 30 percent of community practice.^{14,15} A careful search of the records for one descriptive problem, low back pain, showed approximately a 30 percent recording of behavioral problems. However, the behavioral problems had not been recorded on the problem list. This light recording also perhaps represents the underemphasis on behavioral science curriculum in medical school, a less than optimal taxonomy for recording behavioral problems, inappropriate methodology for teaching behavioral problems at the residency level, and/or problems with confidentiality. A recording system and curriculum for behavioral problems need to be developed for family medicine.

By recognizing which disease entities are most common in the family practitioner's office, the intent is not to disregard the less common, life-threatening diseases. A major portion of the family medicine curriculum should be directed toward emergency medicine and serious or life-threatening problems. The family practitioner should be adept in the prevention and management of these problems. Management would include appropriate initial therapy for stabilization of serious problems, with prompt referral to the appropriate specialist when indicated. In rural practice, the logistics may be somewhat different.

In conclusion, this methodology for indexing the problem-oriented record allows the physician to know the patients by diagnosis within his practice.^{10,11} This individual practice information could serve as a focal point for longitudinal audit, board recertification, and continuing education within the discipline of family practice. The larger comprehensive profile of family practice contained within the data bank could serve as a reference point for future prospective studies that would lead to the development of curriculum and patient care systems and new understanding of the natural presentation of disease in the community.

Acknowledgment

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Clinical Implications of the Virginia Study

William L. Stewart, MD Springfield, Illinois

I have been given the unique and most pleasant opportunity to discuss the clinical implications of the most massive study of patient problems that I have ever seen in published form. In this study the health care problems that 88,000 patients presented to 118 family physicians over a period of two years were coded and analyzed. A total of 526,196 health care problems were included in this study. This is truly an immense task for which the authors of the study should receive the gratitude of all of us in family practice, whether we be practicing family physicians, faculty members in teaching programs, or researchers.

When one is first confronted with this data, it seems almost overwhelming. It is difficult to decide where to start and what format one should use. It seemed to me that the clinical implications are almost endless. Therefore, I have chosen to analyze the data largely from the standpoint of the more common reasons for visits to the physician. The implications of these frequencies, as I perceive them, will be briefly outlined, and I shall follow the format of disease categories that the authors used in the presentation of their data.

Several general observations concerning the sex distribution of the population are in order. It is of interest that approximately two thirds of all patient visits were made, by females. Approximately the same sex distribution is apparent in every other study that I have ever seen; yet I have never seen an explanation for this. The increased percentage of females over males is even more striking in the older age group. It is tempting to speculate as to whether or not this has anything to do with the greater life expectancy of females in our population. I do believe that it points out a need for a greater emphasis on preventive medicine in our male population. Obviously, this is more difficult to accomplish if we are not seeing males as often as females in our practice. Should we place greater emphasis on obtaining the cooperation of males in the process of the prevention and early detection of disease in our clinical practices? Would this make any difference if we did? These are questions to which we have no answers currently. However, it would seem appropriate to turn more of our attention to this aspect of our practices in the future.

There are several interesting observations to be made in the first category, communicable diseases. There were 67 visits for rubella and 64 visits for rubeola, two completely preventable diseases. National statistics indicate a general lowering of immunity levels against these diseases in the general population. This would seem to indicate the need for even greater immunization efforts on the part of physicians, the public, and local government. It is interesting to note that tuberculosis is still with us, even though in diminished frequency. Could some of these cases have been prevented by early and routine tuberculin testing and the administration of prophylactic drug therapy for recent converters? Syphilis and gonorrhea are still very much with us. Gonorrhea, in particular, is on the rise. This would support the importance of doing routine cultures for gonorrhea on every patient on whom we do a pelvic examination. It also behooves all clinicians to report all cases of venereal disease to the local health department so that contacts can be identified and treated. The relatively small number of cases of venereal disease reported in this study is surprising and may

represent under-reporting. There was a surprising number of visits for viral warts, totalling over 2,000 visits. There is no way of telling how many separate visits this disease category represented. The large number of visits is probably due in part to the fact that at present we have no perfect way of treating this common disease. Certainly, family physicians should become as expert as anyone at treating warts.

Diagnostic category 2 was neoplasms. Almost 400 visits were for carcinoma of the lung and trachea. Since there is a direct effect between smoking and these neoplasms, it would imply that greater emphasis is needed in the area of getting people to stop smoking. Behavior modification has always been extremely difficult at best. Perhaps some of the newer techniques in behavior modification will prove of value in the future. Although certainly rare, three patients between ages 15 and 24 were found to have malignant neoplasms of the breast. This should indicate the necessity for both routine physician and patient examination of the breasts starting at puberty. A most surprising finding in the study was the marked preponderance of carcinoma of the colon in females. This is at variance with most other studies that indicate a 1.1:1 ratio in females compared to males. In this study there were 133 females to 35 males. However, the vast majority of these malignancies occurred after age 45. This might indicate the necessity of concentrating routine sigmoidoscopies in that age group. It is interesting that there were only 12 visits for malignancy of the body of the uterus. There have been some who have advocated routine uterine washings in the older age group. The present study would seem to indicate that this rather time-consuming procedure would be relatively unrewarding.

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Allergic, endocrine, metabolic, and nutritional disorders were included in diagnostic category 3. There were over 12,000 visits for diabetes mellitus, a relatively large number of which were made for juvenile diabetes. The obvious implication of this finding is that the family physician should be rather expert at the treatment of this common disease. Over 10,000 visits were made for obesity, certainly one of our major health problems. The study seems to indicate the imperfections of our current methods of treating this problem. Prevention of the problem is probably going to be more rewarding than the treatment, unless some new therapeutic modalities are developed. It comes as no surprise that asthma and allergies were responsible for thousands of office visits. Obviously, this implies that the family physician should be very good at the management of all diseases of allergic origin. A surprising finding was that almost half as many women as men had a diagnosis of gout. There is, of course, no way of knowing how much of this was iatrogenic, but, perhaps, we should check for this condition more frequently in women. I was also surprised at the small number (167) of patients with serum lipid abnormalities. This may be representative of the fact that this was not checked for very often. In view of the cardiovascular and cerebrovascular implications of this abnormality, it would seem that serum lipids should be determined more frequently, particularly in those with a positive family history of these two diseases.

Diagnostic *category 4* was diseases of the blood and blood forming organs. There were almost 3,500 visits for iron deficiency anemia. The family physician certainly must be expert in the diagnosis and treatment of this common condition. It would also imply that we should perform frequent hematocrit determination on our patients. There were over 600 visits for pernicious anemia. This was a surprising finding and would imply that we should probably suspect this disease more frequently than we do.

Mental illness, personality disorders, and psychoneuroses constituted diagnostic *category* 5. It was amazing to find that the total number of visits in this category constituted only five percent of all visits. This probably represents under-reporting.

However, there were relatively large numbers of patients with the diagnosis of depressive neurosis or anxiety neurosis. The obvious implication here is that the family physician should be expert at the diagnosis and management of these common mental problems. He should know the indications and contraindications for the major and minor tranquillizers as well as their side effects. Family physicians should also be more attuned to suspecting these problems, particularly depression, if we are to be of maximal benefit to our patients. There were almost 4,000 visits for physical disorders of presumably psychogenic origin. This appears to be somewhat of a wastebasket and indicates a need for better diagnostic criteria. Abuse of alcohol was responsible for only 1,300 visits. This must represent underreporting, under-diagnosis, or aversion to treatment of the alcoholic. Certainly, other studies have indicated a much higher incidence of alcoholism. Again, we must find better therapeutic modalities. However, the present study would indicate a need for better diagnostic acumen on the part of the practicing physician with respect to the identification of this common problem. Unusually low frequencies of visits were recorded in the areas of impotence, drug abuse, cigarette smoking, frigidity, marital problems, and socioeconomic problems. Again, this must represent under-reporting or under-identification. Yet, these are problems that affect the response of our patients to treatment if they go unrecognized. We should become much more adept at seeking out and dealing with these problems.

Diagnostic category 6 includes diseases of the nervous system and sense organs. There were over 9,000 visits for acute otitis media. This would certainly indicate the absolute necessity for the family physician to be expert at the management of this most common disease. There were over 1,800 visits for vertigo. We do not know whether this was true vertigo or subjective "dizziness." I believe that this is a symptom that many of us do not have a good handle on. We probably need to develop greater skills in the precise diagnosis and management of this relatively common complaint. The family physician should be well versed in the management of the epileptic patient in view

of the 1,200 visits that this diagnosis occasioned.

Diseases of the circulatory system constituted diagnostic category 7. It is not surprising that this disease category was responsible for a very large number of visits. In fact, hypertension was the second most common cause for visits to the physician, arteriosclerosis (including cardiovascular disease) ranked 16, and congestive heart failure was 19. There was a total of approximately 42,000 visits for these three conditions. Again, this obviously implies that the family physician should be quite expert in the diagnosis and management of these diseases. He should know how to use the latest diagnostic procedures and apply intelligently the various therapeutic modalities. It is interesting to note that rheumatic fever is still with us. There was a total of 203 visits for this disease in patients under 25. This points out the necessity of performing a throat culture for the identification of the beta hemolytic streptococcus on all young people with sore throats. Only by treating all strep throats can we virtually eliminate this disease.

Diagnostic category 8 was diseases of the respiratory system. Pharyngitis and tonsillitis ranked fourth as a cause for visit and were followed by acute bronchitis. The common cold and influenza-like illness ranked eighth and tenth, respectively. There were 4,700 visits for acute sinusitis and 4,000 visits for pneumonia or pneumonitis. The clinician must be extremely skilled in the diagnosis and treatment of these common diseases. In particular, he must know when and when not to use antibiotics. In view of the tremendous number of antibiotics prescribed in the United States every year, one must suspect that some of them are being prescribed for viral illnesses for which there is no indication.

Diseases of the digestive system constituted diagnostic category 9. There were 5,700 visits for abdominal pain other than colic. Here, again, we are dealing with a symptom rather than a disease. This points out the absolute necessity for the clinician to have a diagnostic plan to deal with the many possibilities that such a symptom can represent. He must know when and when not to order radiological studies. He must be aware of the potential hazards of excessive

radiation and at the same time not miss potentially lethal or disabling conditions. This represents one of the more challenging problems that a physician faces, and really tests his diagnostic acumen and clinical skills. There were large numbers of visits for both diarrhea and vomiting. These symptoms also demand considerable skill on the part of the family physician if he is to treat them appropriately and avoid unnecessary hospitalization. The frequency of visits for acute gastritis or duodenitis was somewhat higher than could have been expected (2,864), and the frequency of visits for peptic ulcer was lower (1,085). The practicing physician should be skilled at diagnosis and treatment of these two disease entities.

Diagnostic category 10, diseases of the genitourinary system, not unexpectedly, is responsible for a large number of visits to the physician. Vulvitis, vaginitis, cervicitis, and cystitis as a group were the reasons for over 10,000 patient visits. This would indicate the need for expertise in the treatment of these conditions. It also points to the necessity of being able to perform certain diagnostic tests in the office, such as urine cultures, rough colony counts, gram stains, KOH preparations, saline drops, etc. It is only in this manner that specificity of diagnosis and therapy can be attained. There was also a large number of visits for other infections of the urinary system including prostatitis. Again, the physician must be able to accurately diagnose and treat these conditions. Visits for disorders of menstruation were rather numerous. This demands that the physician develop a rational plan for investigating the cause of these disorders. It is only in this manner that rational therapy can be prescribed. Empirical treatment of this symptom complex is only to be condemned. The relatively small number of visits occasioned by dysmenorrhea and dyspareunia is surprising, and may represent underreporting. Dyspareunia is probably much more common than we suspect, and discovery of the true incidence probably bears some relationship to the frequency with which the question is asked. Only a little over 1,000 visits for menopausal symptoms were recorded. Since there were over 130,000 visits by women over 45 years of age, under-reporting can again be suspected. Nonetheless, the family physician should be skilled in the management of patients presenting with these symptoms.

Pregnancy, parturition, and the puerperium constitute diagnostic *cate*gory 11. There are no real surprises here. However, it should be noted that there were 7,189 visits for prenatal care. This means that many family physicians are involved in prenatal care and, presumably, deliveries. If this is true, then the family physician should be skilled in the management of pregnancy, parturition, and the puerperium.

It comes as no surprise that there were 28,513 visits for problems of skin and cellular tissue, diagnostic category 12. This means that one out of 18 visits was for a problem in this area. The obvious implication is that the family physician should have ready access to diagnostic modalities, such as cultures and biopsies, in order to properly diagnose the many conditions falling under this general heading. He should also be precise and efficient in their management.

Diagnostic category 13 included diseases of bones and organs of motion. There were over 9,000 visits for the various forms of arthritis. This would imply that the physician should know how to distinguish among the various arthritides. In addition, he should be familiar with the drug therapy of these diseases and the limitations and side effects of therapy, and finally, he should know the indications for the various forms of physical therapy and surgery. There were 2,837 patient visits that were listed under the code "back pain alone." This probably represents an inability on our part to arrive at a specific diagnosis for many patients with this symptom. Hopefully, as we grow more knowledgeable. the size of this patient pool should decrease. The present size does indicate the absolute necessity for the clinician to have a working knowledge of the various causes of back pain. He should also have a diagnostic plan for elucidating the cause. He should also be skilled in the use of the various drugs used in the treatment of low back pain as well as the various forms of physical therapy, exercises, braces, surgery, etc. There were almost 2,000 visits for bursitis. This being the case, the clinician should have a good anatomical knowledge with respect to the location of the various bursae. He should also be expert at injecting the bursae with steroids, when indicated. Tenosynovitis and fibrositis were also responsible for relatively large numbers of visits. Again, this would require sufficient skill to properly diagnose and manage these diseases.

The small number (754) visits for congenital malformations, diagnostic category 14 was most surprising. This represents only 1 visit in 697 for this problem. Although there may be some under-reporting at work here, it may well be that more of these problems are managed by specialists in other fields.

Diagnostic category 15 included certain diseases of infancy. Here, again, we are dealing with very small numbers of visits, 308 out of 526,196. Failure to thrive (97 visits) and feeding problems (70 visits) occurred less often than expected, perhaps as a result of under-reporting.

Diagnostic category 16 is an interesting one and includes signs, symptoms, and ill-defined conditions. There were over 4,000 patient visits in this category. This indicates the necessity for the family physician to be able to cope with ambiguity and uncertainty, which may well be one of the major distinguishing factors between the family physician and the subspecialist.

Lacerations, amputations, contusions and abrasions, all of which fall under diagnostic category 17, accounted for 21,137 visits and ranked third in frequency of visits. Sprains and strains ranked sixth and were responsible for 12,830 visits. The implications here are obvious. The family physician should certainly be expert at the diagnosis and management of minor trauma. A large number of fractures were also seen; an indication that the family physician should be able to adequately manage the majority of the more common ones.

Prophylactic procedures constituted diagnostic category 18. It should not be surprising that the number one reason for all office visits was other medical examinations for preventive and presymptomatic purposes. Visits for these reasons numbered almost 44,000. In addition, there were large numbers of visits for cervical smears, contraceptive advice, immunizations, health education counseling, etc. All of this would certainly indicate that

the family physician should be expert in the prevention and early detection of presymptomatic disease. He should also be quite skilled at counseling. It is to be hoped, but unfortunately not proved yet in many cases, that the activities described above will reduce morbidity and mortality in later life.

Diagnostic category 19 includes abnormal diagnostic procedures. The absolute numbers here are relatively small, only 2,130. This small number probably represents a combination of under-reporting and inclusion under other diagnostic categories.

Diagnostic category 20, which includes problems other than specific diagnostic/symptomatic, is an interesting category. Under-reporting is obviously taking place here. For example, only 36 patient visits had economic problems listed. This is inconceivable in a total of 526,196 patient visits. Family relationship problems were only listed 1,203 times. Educational problems were listed only 85 times, and employment problems 34 times. This very likely points out the reluctance on the part of both residents and practicing physicians to list these various psychosocial problems in the problem list. On the other hand, these various factors can have an

enormous impact on the effectiveness of therapy. A conscious consideration of these factors should be the hallmark of the good family physician. It could be argued that these factors are taken into consideration even when they are not listed as problems. This may be true to some extent, but I have never seen any documented evidence to demonstrate that this is generally true. The truism, "out of sight, out of mind," appears to be operative here.

A family history of selected diseases constitutes diagnostic category 21. Again, the total numbers here are unbelieveably small, only 2,138. For example, only 26 patient visits had listed as a problem a family history of tuberculosis. There were more patients than that listed as actually having tuberculosis, so that gross underreporting is likely. As mentioned above, practicing physicians and residents are frequently reluctant to list these as problems. But, is this not what we say family practice is all about? Shouldn't we check the patient with a strong family history of myocardial infarction for a possible elevation of his blood lipids? It seems to me that this is the essence of both preventive medicine and family medicine. Potential health hazards and psychosocial as well as actual physical problems will have to be listed with increasing frequency if we are ever to climb out of the abyss of only treating fully developed disease.

The final diagnostic *category*, 22, is a selective therapeutic index and contains numbers too small to offer any meaningful information.

It is interesting that the top 20 diagnoses contain a number of problems for which we have specific therapy, such as hypertension, arteriosclerotic cardiovascular disease, etc. However, we still have a long way to go in their prevention. Viral illnesses also constitute a large portion of what we see in office practice. It is interesting that trauma is still responsible for a large number of office visits. One could speculate what effect the control of the ninth ranked problem, obesity, would have on the incidence of some of the other top 20 problems, eg, hypertension, diabetes mellitus, and arteriosclerotic cardiovascular, disease.

The authors are to be complimented on this monumental study which not only provides a wide spectrum of new information but also points the way to further research addressing new questions.

Educational Implications of the Virginia Study

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Teaching that is unrelated to the facts of practice tends to be unrealistic and easily deteriorates into dogma. Despite the triteness of this truism, the discipline of family practice suffers from a paucity of good factual studies and from the application of methods that have been developed in secondary, not primary care situations.

There is a need for doctors in family practice to demonstrate factually that the clinical emphasis of their work is different from other medical disciplines. This significant study of 526,196 consecutive problems presenting to 118 family physicians in Virginia by Marsland, Wood, and Mayo has wide educational implications. The study covers the work of family practitioners in urban, rural, and suburban settings and demonstrates clearly the quality, quantity, and range of primary care. The findings can be compared with those from other western countries.

Qualitative Characteristics of Clinical Material

A glance at the 23 diagnostic categories that are responsible for 50 percent of patient contacts reveals that the clinical material bears little resemblance to that encountered in hospitals. A knowledge of probabilities is the basis of accurate early diagnosis. The family physician needs experience with common diseases at all levels of learning.

Brief consideration of some of the common diagnostic categories is revealing. Anxiety neurosis ranked as the 15th most common category. The family physician when handling anxiety neurosis needs to know all the various presentations of this common complaint; he must integrate this knowledge with a wide clinical experience of the many more serious clinical problems which may be confused with anxiety neurosis.

In the category of abdominal pain (18th most common category), for effective early diagnosis the family physician must know all the various presentations of appendicitis and the common causes of acute abdominal pain that are *not* appendicular in origin.

Quantitative Characteristics of Clinical Material

Problems of recognition are caused not by the characteristics of the object to be recognized but by the background against which it is seen. Thus, when searching for a needle in a haystack, it is the nature and size of the haystack, not the needle, that causes the difficulty.

Exactly this principle applies to the early recognition of disease processes in any of the large disease group categories encountered in this study. For example, in cases of febrile, flu-like illness (ranked 10), depressive neurosis (ranked 12), anxiety neurosis (ranked 15), and sprains and strains (ranked 6), there will be a few diagnostic "needles" of life-threatening disease. In such situations, the family physician must learn to be selective in using complex, expensive, and even hazardous investigations.

I suspect that many teachers of family medicine have experienced seminars in which a specialist in infectious diseases suggests that in acute pharyngitis (ranked 4th) all throats should be swabbed to isolate the organism. In such instances, the Virginia figures provide a realistic basis for discussion of what is practicable.

Wide Spectrum of Diagnoses Handled by the Family Practitioner

The study demonstrates that an

average family practitioner uses a working vocabulary of 234 descriptive diagnoses to cover 95 percent of his work. As with a verbal vocabulary, a few exceptional individuals may retain a wider ranging vocabulary, but for most family physicians this is probably nearly the optimal number of diagnostic alternatives. This vocabulary is spread over nearly 20 specialist areas.

As the doctor of first contact, the family physician must become a specialist in recognition and treatment of common diseases (ie, those ranking in the first 23 Virginia categories) and in the early diagnosis of the rarer diseases which may be scattered through the whole range of the first 234 Virginia categories.

Comparison with Other Studies

The Virginia study provides a wealth of much needed factual information about family practice and the age distribution of complaints. This is comparable with a number of similar studies in Britain and elsewhere.¹

Comparisons of similarities and differences between such surveys are illuminating. If we look at the ranking order of the most frequent diagnostic categories in the two countries, we find that there are nine categories in the first 23 whose ranking order is within five:

Problem	Comparative
	Ranks
Benign hypertension	Va 2, UK 7
Acute pharyngitis	Va 4, UK 3
Acute bronchitis	Va 5, UK 2
Coryza and colds	Va 8, UK 5
Febrile illness (flu)	Va 10, UK 10
Otitis media, acute	Va 11, UK 12
Vulvitis, etc	Va 17, UK 21
Congestive heart failure	Va 19, UK 24
Urinary tract infection	
(cystitis)	Va 20, UK 22

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In a further seven categories the ranking orders of frequency differ in the two countries by less than 15:

Problem	Comparative			
	Ranks			
Minor trauma, etc	Va 3, UK 9			
Sprains and strains, etc	Va 6, UK 13			
Obesity	Va 9, UK 23			
Depressive neurosis	Va 12, UK. 4			
Prenatal care	Va 14, UK 1			
Anxiety neurosis	Va 15, UK 8			
Arthritis, etc	Va 23, UK 14			

A consideration of the ways in which the Virginia and UK surveys differ also raises some pertinent questions:

Problem	Comparative				
	Ranks				
Routine physicals	Va 1, UK 28				
Cervical "Pap" smears	Va 13, UK 30				
Diabetes mellitus	Va 7, UK 43				

We who are teaching family medicine must find the answers to questions concerning the relative yields from different medical procedures.

Need for More Information

The Virginia study provides a base from which to look at the family physician's work and gives teachers of family medicine a view of how much more needs to be done. A number of observations can be made in this regard.

Many diagnostic categories must be looked at in greater detail. Thus, in the category of acute pharyngitis we need to know more about the different bacteriological and virological types of early pharyngitis. Each of the larger diagnostic categories raises similar questions.

We need to define and subdefine our diagnostic categories more clearly. In the case of backache in the UK survey, for example, the subdivided rates for prolapsed disc, back pain, sciatica, and lumbago showed large individual variations in different areas; if, however, the four groups were taken together, the totals for different areas were almost identical. This suggests that the diagnostic habits of the doctors in different areas caused the apparently differing incidence rates.

We need to look especially hard at those diagnostic categories that are ill-defined, broad, or used as a diagnostic "rag bag" (eg, category 8 – "other sign, symptom, or incomplete diagnosis"). Many of our most difficult diagnostic problems will lie buried in these categories.

The authors point out that the danger of descriptive studies of this kind is that they tend only to reflect the individual experience of the recorder. For this reason, what is omitted is also significant. The light recording of behavioral problems is mentioned but there are a number of other areas in which omission of material is suggestive.

There is no age breakdown after 65+. Perhaps the age group of 75+ was small, but this itself might be important. This (75+) is the age of degenerative chronic disease – an area of great morbidity when patients need their family physicians most, yet have the least money to pay for them. The 75+ age range is an area requiring much input and development from the entire medical profession, especially family doctors. A further breakdown of figures and morbidity might well be rewarding.

Many interesting categories lie in the 99th percentile. Only 15 housing problems are reported in half a million medical problems. Housing difficulties may be few in Virginia, but in most areas housing and related poverty cause a significant amount of primary morbidity of all kinds. In planning any residency program, such a lack should be taken into account.

There were only two problems reported of mental retardation. As a major cause of family stress, this low incidence seems surprising.

The authors comment that a major portion of the family medicine curriculum should be directed towards emergency medicine and serious, lifethreatening diseases. This statement is true but there is a great tendency for family physicians to be blind to the continuing and ever-increasing medical needs of the chronically ill, the elderly, and the poor. Practical experience of these needs teaches us that the solution of such problems lies in the area of primary medical care, not social work. How do we ensure that residents acquire such practical experience?

There are some interesting examples of apparent omissions in the reported data. Strokes, for example, are not recorded, and may be buried in the large, but ill-defined category of arteriosclerosis (rank: 16). In addition, death is not mentioned. This omission can be noted in other morbidity surveys. It is easy to see how this occurs, but it should be included because it is a significant measure of outcome! It would be interesting perhaps to see those categories of the ICD or RCGP classifications that were empty. These omissions are not a reflection of the survey. which clearly records what 118 family practitioners' work consists of; they do, however, stress that if we are to develop as a discipline we must look critically not only at what we are doing but at what we are not doing.

It is an interesting paradox that a factual study of this kind effectively demonstrates the defects, as well as the main thrust, of our work as family physicians. Any doctor using this material as a basis for an educational curriculum should have enough knowledge of family practice to assess the reason for the low frequency of any problem. Is this due to rareness, defects of classification, or lack of involvement?

Ongoing Use of the Survey

Although not stated in the paper, I suspect that the authors will use their survey mechanism for ongoing teaching and research. Thus, residents can be encouraged to analyze the survey material to provide further details about specific areas. This in turn will enrich teaching and encourage research attitudes in the residents.

Drs. Marsland, Wood, and Mayo have done family practice a great service by gathering and analyzing factual information that forces us to look realistically at our priorities for the teaching of an exciting and developing discipline. They are to be congratulated on a valuable and significant study which will provide a basic reference for all teachers of medicine.

Reference

1. HMSO (1974) (Her Majesty's Stationery Office) Morbidity Statistics from General Practice – Second National Study 1970-71. Studies on Medical and Population Subjects, No. 26

Research Implications of the Virginia Study

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Information is collected in family practice for several reasons: for clinical care; for practice management; for curriculum planning, clinical audit, and continuing education; and to contribute to the general body of knowledge about family medicine. These are four very different objectives. It is possible, of course, for the same data to be useful for all four purposes. To be generally useful in this way, however, the data have to be collected and presented in such a way as to comply with the requirements for each objective. The requirements for the fourth and last objective are particularly rigorous.

It is particularly important that education in family practice be based on good information. In setting up their information system, the faculty of the Department of Family Practice at the Medical College of Virginia have not only provided a factual basis for their education programs, but they have also provided an essential prerequisite for research. Good research depends on good records. The information in our records, however, must not only be good but also accessible. The records of family physicians, are potentially a gold mine of information, but so often this is buried and inaccessible. The authors of the Virginia study have now demonstrated a system which can be a fruitful source of clinical research. If family medicine is to develop as a discipline, every program and, indeed, every practice

will need to have an information system which can at least provide an index of problems and diseases. Given this basic tool, the family physician can identify groups of patients in his practice for intensive observation over a period of time.

Besides providing access to a large body of data for individual studies, the information itself can be generally useful. Without further manipulation it provides an approximate overall picture of the great number and variety of problems dealt with by family physicians in their offices.

To use the data for comparison with other studies we will have to await the presentation of the data in a comparable form. This the authors will be doing for certain selected areas. The question of comparability raises some general issues for research in family medicine.

Family Practice Research

The scientific method has two essential features: the precise and minute observation of facts, and the fomulation of theories and generalizations which can be tested against experience. In the development of an observational science, the stage of generalization is usually preceded by a long period in which observations are collected and classified. I think it would be correct to describe family medicine as still in this first stage.

Until 25 years ago there had been few systematic attempts to study the phenomena of illness in general practice. A small number of outstanding individuals did make important contributions to medicine from general practice. It is, in fact, possible to trace a thread of distinguished individual work from the origins of general practice down to our own day. Only in the last 25 years, however, have we seen the growth of a general body of information collected by large numbers of observers.

To have general value, observations made by one observer must be comparable with the observations of others. Only in this way can separate building blocks from hundreds of observers be put together into a coherent framework. Comparability is ensured by the precise definition of terms and by agreement on a system of classification. When quantitative data are being compared it is necessary to express them as rates over a denominator. Research workers in family medicine have faced many difficulties in achieving this degree of precision. The difficulties can be considered under two headings: the numerator, or basic unit of observation, and the denominator.

1. The numerator. In most studies the numerator has been the problem or problems recorded at a consultation or doctor-patient contact. This has led to several difficulties. A consultation may be for a new problem or the follow-up of an old problem. If these are not distinguished it is impossible to make inferences about the incidence of problems, since the number of times a problem is recorded will depend on the individual physician's habits of practice. For example, if 100 diabetics are each seen ten times, and 1,000 patients with upper respiratory tract infection (URI) are each seen once, the statistics will show diabetes to have been as common a reason for

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consultation as URI. This information may be useful in itself. But, if we wish to compare it with other studies we will not know whether any difference is due to a difference in incidence and prevalence, or to a difference in habits of practice. Comparisons will be meaningful when the data from Virginia have been presented in this way.

Another more intractable problem has confronted research workers in family practice. An illness managed in family practice may evolve during a series of consultations. The problem, at first recorded as "abdominal pain," may later become "gallstones." With our existing methods these will be recorded as two separate problems. Many problems in family practice present both physical and behavioral facets. For example, a patient with sore throat may also have cancerphobia. To record these as two separate problems is misleading, since they are really two facets of the same problem. So far, however, we have evolved no system for simultaneously recording clinical and behavioral phenomena which are interrelated. The authors of the Virginia study have identified this problem. The low recording of behavioral problems may have been due to lack of awareness; I suspect, however, that it was also due to our lack of a classification system for dealing with these problems. Up to the present, we have been studying family practice with tools developed

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for other fields of medicine. These tools allow us to describe an illness in one dimension. To a family physician, however, most illnesses have several dimensions. The development of a method for handling data of this kind is a problem we have yet to solve.

2. The denominator. Ideally, the denominator should consist of the total population at risk for the condition recorded in the numerator. In family practice, this is the population of the practice, or some subgroup of it. Under certain forms of medical care - prepayment programs for example – it is possible to obtain a denominator of this kind. Under average conditions of practice in North America, however, this is not possible. Although individual physicians and groups have registered their practice populations, any project with a large number of observers must use another denominator. In the Virginia study mention is made of a total population at risk, but there is no indication as to how this was arrived at. The most satisfactory alternative to a registered population is the number of patients consulting. This information is available in the data from Virginia, and it will therefore be possible to express the data in the form of rates.

The Future

As the authors have pointed out, one of the most important functions of an information system is to provide

access to groups of patients for more intensive study. There is a dearth of information about the natural history of many common disorders. We know very little about the course and outcome of the many ill-defined illnesses which family physicians encounter. Although we will continue to collect general information for other purposes, it is unlikely that more information of this kind will add much to our general knowledge. Research in family medicine should now proceed in two directions. First, we should move from general to specific studies, designed to test new hypotheses. Second, we must think in new ways about the information we have already. Accurate observation is an essential component of the scientific method. But science is more than the collection of observations. Progress in science occurs when somebody says, "Let's see what happens if we look at this in a different way." Now that we have collected a large body of information, we need a unifying theory around which this information can be organized. So far, we have been using conceptual tools developed for other disciplines. The inadequacy of these tools for dealing with the multidimensional problems of family practice has been demonstrated many times. The existence of family medicine as an independent discipline rests on the assumption that its problems cannot be approached from the standpoint of other disciplines.