

# Clinical Implications of the Virginia Study

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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 tranquilizers 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 under-reporting, 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 under-reporting. 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 sus-

pected. Nonetheless, the family physician should be skilled in the management of patients presenting with these symptoms.

Pregnancy, parturition, and the puerperium constitute diagnostic *category 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 unbelievably 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 under-reporting 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 psycho-

social 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.