PRACTICE OBSERVED

Practice Research

Laboratory and radiological investigations in general practice

II—Expectation and outcome

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Results

Reason for investigations—Three main reasons for requesting investigations were given by general practitioners—confirmation of diagnosis, exclusion of possible diagnosis (specific or non-specific), and monitoring of treatment (fig 1). Most general practitioners (22) requested less than 10% of investigations to monitor treatment, but 25 of the 30 general practitioners requested between 15% and 40% of investigations to confirm a diagnosis, and 28 general practitioners requested between 55% and 84% of investigations (with a peak of 10 at 65-69%) to exclude a possible diagnosis.

Test usage ratios—To show to what extent each general practitioner used investigations to exclude rather than confirm abnormality we expressed the number of investigations used to exclude and the number used to confirm diagnosis as a ratio for each general practitioner. We did the same for specific versus non-specific exclusion to see if use to exclude diagnosis was being aimed mainly at the exclusion of specific conditions or used more as a screening procedure (fig 2).

Outcome of investigations—When a general practitioner hopes to confirm a diagnosis he expects an abnormal result, and he may be correct—the result is abnormal as expected—or incorrect—the result may be normal but unexpected. When he hopes to exclude a diagnosis he expects a normal result. Therefore, for these two possible expectations—normal or abnormal—there are two possible outcomes—one expected, the other unexpected. No general practitioner is likely to be correct 100% of the time, so in fig 3 we show the percentage of each general practitioner's investigations that fell into each of the four possible combinations of expectation and outcome—that is, abnormal as expected, normal as expected, abnormal but unexpected, and normal but unexpected—to see with what frequency each occurs among the general practitioners in the study. Investigations used to monitor treatment will also be distributed between these four categories.

Expected to unexpected ratio—Figures 1 and 3 show 10 general practitioners in the 65% to 69% range for use to exclude diagnosis and in the normal as expected outcome. These will not, however, be the same 10 general practitioners in each group. Of the 10 hoping to exclude diagnosis with 65% to 69% of their investigations, a few will get most results coming back normal as expected and stay in this group in fig 3. Many, however, will slip down to the 60% to 64% range or below. Similarly, those hoping to exclude diagnosis with more than 69% of their investigations will not be correct all the time and may slip down

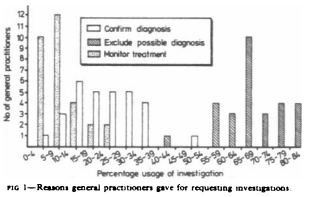

FIG 1—Reasons general practitioners gave for requesting investigations

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into the 65% to 69% range in fig 3. Because we could not tell what proportion of each general practitioner's investigations gave the expected result we looked at the ratio of expected to unexpected results for each doctor. All the general practitioners showed more expected than unexpected results: over two thirds of them (23) had three (10 GPs), four (6 GPs) or five (7 GPs) times as many expected

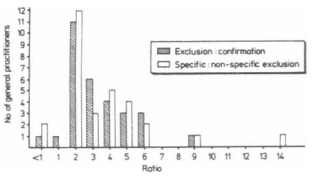

FIG 2—Test usage ratios

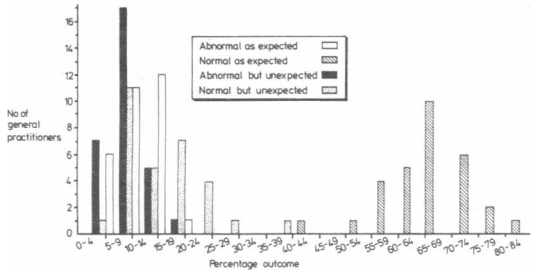

FIG 3—Outcome of investigations

results. We then looked at the ratio of abnormal as expected to normal but unexpected results and at the ratio of normal as expected to abnormal but unexpected results—that is, "success" versus "failure" for confirmation and exclusion of abnormality respectively. The results show that when the numbers of abnormal as expected results are compared with the numbers of normal but unexpected results for each general practitioner 14 had more normal but unexpected results, 10 were equal, and only six actually had more abnormal as expected results. On the other hand, no general practitioner had more abnormal but unexpected results than normal as expected results, and the ratios ranged from 4 to 1.

Discussion

REASON FOR INVESTIGATIONS

We had intended to classify the general practitioners' reasons for requesting investigations into (*a*) to confirm diagnosis, (*b*) to exclude possible diagnosis, and (*c*) to monitor treatment. During the pilot study, however, it became necessary to subdivide (*b*) into use to exclude specific conditions and use to exclude non-specific conditions. Many doctors thought that it was often impossible to be specific when ordering investigations to exclude definite disease in a patient who looked generally unwell but had no symptoms suggesting a particular disease. General practitioners were asked to be specific when filling in the test request forms, but comments such as "exclude any pathology" were classified as non-specific. Furthermore, during our regular meetings with the general practitioners, it came to light that certain "covert aims" existed. As well as being a strategy to reassure both patient and doctor, requesting investigations to exclude disease was also a means of ending a consultation.

To compare the use of investigations to confirm with their use to exclude disease we recombined specific and non-specific exclusion. Figure 1 shows that most general practitioners intend far more of their investigations to exclude rather than to confirm diagnosis. Only one general practitioner used more than 39% of his investigations to confirm diagnosis, and only one general practitioner used less than 55% of his investigations to exclude a possible diagnosis. Thus as a group the general practitioners in the study fit the hypothesised method of general practitioner test usage. But did all general practitioners use investigations to exclude more than to confirm diagnosis? And if so, to what extent? To look at this and the relative roles of specific and non-specific exclusion we drew up test usage ratios as described in the above.

TEST USAGE RATIOS

Figure 2 shows that the two ratios, exclusion confirmation and specific non-specific exclusion, are closely similar. About a third of the general practitioners use twice as many investigations with the intention of excluding rather than confirming a diagnosis. Of the investigations used to exclude a diagnosis, over a third of the general practitioners used twice as many to exclude specific disease as opposed to non-specific disease. Only one general practitioner, a trainee, intended more of his investigations to confirm a diagnosis and one part time general practitioner had equal usage. Thus 28 of the 30 general practitioners supported the initial hypothesis that general practitioners use

tests to exclude rather than confirm disease (including all the full time general practitioners).

Two general practitioners used investigations to exclude non-specific disease to a greater extent than specific disease; one full time and one part time—both from practice C. While the trainees in practice C and D are spread between ratios of 2:1 and 5:1, specific:non-specific, the full time and part time general practitioners in practice C (and A and B) showed a much lower specific:non-specific ratio (ranging from 1:1 to 4:1, with most at 2:1) than the full time and part time general practitioners in practice D (ranging from 3:1 to 14:1, with most at 3:1, 4:1, and 5:1). Excluding the trainees, the general practitioners in practices A, B, and C seemed to use tests to exclude disease in more of a screening capacity than those in practice D.

We must, however, interpret the results carefully as whether a general practitioner's request was classified as specific or non-specific exclusion depended on how meticulously he filled in the request form. For example, a request for a full blood picture, urea and electrolyte concentrations, and thyroid function tests to "exclude anaemia, hypokalaemia, and underactive thyroid" is specific while a request for the same three tests listed as "exclude any significant pathology" is non-specific. Although the motivation behind both requests may well be identical it is quicker in a busy surgery to write the latter!

OUTCOME OF INVESTIGATIONS

Considering first the investigations that came back abnormal as expected, 23 of the general practitioners had only between 10% and 19% of their investigations in this category (fig 3). Compared with fig 1 there are general practitioners who hoped to achieve abnormal results in over 20% of their investigations. These general practitioners obviously did not achieve a higher percentage of abnormal as expected results than their colleagues who expected abnormal results from less than 20% of their investigations, because only one general practitioner had over 20% of test results abnormal as expected. This suggests that there was a fairly constant level of abnormality among the patients coming to see their general practitioners which the doctor detected by laboratory or radiological investigations.

The range for normal but unexpected results was from 0-4% to 35-39%, and most general practitioners (24) had less than 20% of investigations in this category. When a general practitioner hopes to confirm a diagnosis with over 20% of his investigations he usually has a high level of normal but unexpected results, as only about 20% (as a maximum) of the investigations he expects to be abnormal will be so. Two trainee general practitioners had about 25% of investigation results in the normal but unexpected category, but they may still be applying methods learnt in hospital to general practice—hoping to confirm diagnosis rather than exclude it.

Figure 3 shows that the peak for normal as expected results occurs around 65-69%, while most general practitioners (23) had less than 10% of their results in the abnormal but unexpected category. This indicates that general practitioners are adept at detecting abnormality in their patients before investigation. It also reflects the amount and spread of morbidity in the patients in the four practices detectable by the use of investigations. The level of such morbidity seems to be low and no one general practitioner or practice saw vastly more patients with disease. Some general practitioners may think that a higher proportion of their patients have disease, but this is not supported by the results of investigation.

EXPECTED TO UNEXPECTED RATIOS

We found no general practitioner with more unexpected than expected results, and it is even more reassuring that over two thirds of the general practitioners had three, four, or five times as many expected as unexpected results. There is no noticeable trend with trainees having lower ratios—that is, less expected to unexpected—and the more experienced general practitioners higher ratios. There is a comparable spread of ratios in all three groups—full time, part time, and trainees. The ability to predict the outcome of investigations seems to be a highly personal characteristic which, if not well developed initially, does not seem to improve with time.

Comparing the ratio of abnormal as expected with normal but unexpected and the ratio of normal as expected with abnormal but unexpected, it seems that it is easier to predict accurately a normal result than an abnormal one. No general practitioner had more abnormal but unexpected results than normal as expected results, but only six general practitioners had more abnormal as expected results than normal but unexpected results—that is, were correct in expecting an abnormal result more often than they were incorrect. This may reflect the relatively high incidence in general practice of patients presenting who seem to be clinically ill but have no abnormality detectable by the use of laboratory or radiological investigations.

This is the second part of a four part paper.

Clinical curio: vaccinia non medica

It is good to know that genital herpes—the "in" disease—has been treated with deserved respect and seriousness by the medical and lay media. *Private Eye*, to its shame, at one time regarded it with jocularity. Latterly, however, its campaign has been dropped, and no mention has been made of the disease in recent issues of the magazine. Has one of its editorial staff become infected?

Which brings me to my story. In my early practising days—over 50 years ago—most women, certainly in country districts, were confined at home, and it was customary for the baby to be vaccinated within a week or two of birth. In this particular case I was just finishing the routine vaccination when the mother, from her bed (the newly delivered were at that time kept there longer than was good for them) asked me to have a look at the baby's foreskin, as she thought it was too tight. I did the necessary stretching and continued on my round.

A few days later I received a request for an urgent visit, and when I arrived at the house I was horrified. The baby's penis was grossly inflamed and, to me, looked ready to burst. Thoughts of gangrene, impotence, and a possible lawsuit petrified me. What I obviously had done was to have transferred some of the vaccine lymph from the baby's arm to his foreskin. I should have washed my hands between the vaccination and the stretching. I had the baby transferred as an emergency to hospital, and an eventual circumcision restored the entire man. The relief was tremendous on both sides.

To complete my story: I went back to that same village a few months ago to a lunch party, and after an excellent meal I went out to the kitchen to congratulate the cook—a local woman. A few reminiscences and recollections produced the fact that she was a sister of my vaccinated baby, and the routine inquiry as to her brother's health and progress told me that he was a father of two sons and grandfather of three.

I returned to the dining room to my hosts where the offer of a second glass of cognac was not refused. I regarded the offer as a truly serendipitous thanksgiving.—CLIFFORD W THOMAS, retired general practitioner, Upper Basildon, Berks.

A Difficult Case

Contributions to this series are welcome for consideration

Lesley

DAVID FARROW

Lesley is a fascinating (and exhausting) middle aged lady who seems to have produced a variety of conditions notorious for their psychosomatic connections—ulcerative colitis, psoriasis, and asthma, not to mention hypertension and thyrotoxicosis. She also has a classic history of a lack of demonstrative affection throughout her life, initially from her parents, then her husband, and now her daughter in law. She claims to be a woman who needs demonstrative affection who is affectionate herself. Perhaps the failure of reality to meet her needs is the reason for her psychosomatic conditions, her overreaction to ill health, and her very thick medical folder, despite extended support from the general practitioner, hospital consultants (medical, surgical, and psychiatric), practice and district nurses, and the psychiatric social worker (who deserves an OBE).

I just wonder whether all this attention may well have engendered more anxiety than good for dear Lesley with her symptoms of ulcers round her mouth (never seen), "acid around her bottom," "tightness around her thyroid," "her diarrhoea and indigestion." As luck would have it, one of the newer anti-inflammatory drugs, prescribed in desperation for her "dreadfully inflammatory joints," caused a light photosensitivity complication.

I am stuck with the problem, with Lesley, and with the frustration of being unable to help, diagnose, sort out, or alleviate symptoms in such a patient, who, on each return to the surgery, throws at me my failure. Is it a failure to accept that nothing can be done? Has my training been so badly constructed that I cannot deal with the problem or direct it towards a happier conclusion? Do I care too much and inflict more pain and suffering, or am I being lazy in accepting the "fait accompli"? I have listened long and very patiently to Lesley's complaints, examined her thoroughly, and probably prescribed unnecessarily for her with no improvement. Help from consultants has been sought with good introductory letters, but still Lesley is no better and is utterly miserable. Lesley's misery is making everyone unhappy and I am the focus because I have not produced an answer: can I do so to a possible non-medical problem? Is there an answer to Lesley's complaints or is it a cross to bear? Do I opt out with a "flip syndrome"—an off the cuff syndrome for every occasion?

No, I am saddled with Lesley, her problems are mine, and it is my fault, so it would seem. Lack of improvement shows in Lesley's face as failure on each successive surgery consultation. What in hell do I do? Lesley does not accept, even if I do, that I have to learn to cope *even* with psychological problems. To suggest to Lesley a fresh approach from another practice could be saddling another general practitioner with another insoluble problem. All physical examinations and tests produce nothing seriously organically wrong and in no way will Lesley accept that worry or marital, family or financial stress might have the faintest bearing on her misery. Nobody understands her. The surgery staff wonder why Lesley lives at the surgery and the hospitals are perplexed and frustrated that they cannot diagnose and treat her. Is the patient ill or just plain unhappy with her lot? It is the general practitioner's lot to cope with this problem because everyone else has compartmentalised and excluded her from their sphere: Lesley feels rejected. The lot falleth on general practitioner Mathias and it is no one else's problem.

Should a general practitioner accept this role or is that setting her or his sights too high or low? Social workers, marriage guidance—Lesley will not see the vicar—are all dismissed by Lesley, so yet further investigations are carried out grudgingly and with little grace by hospital staff. She has follow up appointments at outpatients. A suggestion that she should see a psychiatrist falls on very stony ground and is resented. Lesley is iller, sees different partners with naturally conflicting (and desperate) advice. Treatment is instigated as "something to do" rather than for any real therapeutic purpose. Lesley is always allergic to any form of drug and therefore liable to suffer iatrogenic disease—but there is some satisfaction in actually knowing how to label something at last. General practitioners dealing with their Lesleys every day must have their gambits, ways of coping, and, it is hoped, causing less pain and misery than more suffering.

Lessons learnt

Time is our only weapon. It is an extremely hard slog, but time gives Lesley the opportunity to adjust and accept. Great patience is needed. No short cuts can be taken, no psychological therapy offered unless Lesley is in tune to accept this possibility. At the end of the day you realise that being the family doctor in such a position is the difference between the locum, the trainee, and hospital medical staff. Surprisingly, Lesley thinks you are absolutely marvellous! Lesley one day does get something that will cause her to "shuffle off this mortal coil" and the family doctor really misses Lesley. But, fortunately, not for long, as her place is readily and (quickly) taken by another Lesley.

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