Fourthly, we filled the gaps in the weeks between whatever professional help was available. Speech therapy was seldom more than one hour a week, and because of the shortage of speech therapists and the vagaries of transport it was rarely as much. Our visits, and the club, aimed to occupy part of every weekday, and the stimulation of the patient was therefore almost continuous. It became clear that however great the speech disability the resulting depression and apathy were an even greater handicap. Once these were overcome the patient would find a way to communicate. The response to the stimulation of the visits was an increased confidence and alertness which meant, in the words of a senior speech therapist, that "the patients arrive for treatment in a receptive state of mind, cheerful, and eager to work." This enabled the best possible use to be made of the professional help available and also helped to prevent the slipping back into apathy which may happen all too readily between sessions. Finally, the volunteers' regular visits over several months supported the family and helped to dispel the almost superstitious fear of the patient's inability to speak which prevented visits from neighbours and friends.

It cannot be emphasized too emphatically or too often that this volunteer scheme does not claim nor is it an attempt to replace professional speech or occupational therapy or rehabilitation of any kind. The volunteers are not and should not be trained; if they were they would lose their most valuable asset, which is to approach and be welcomed by the patient and the family as a helping neighbour.

I am greatly indebted to the Chest and Heart Association and the Clarkson Foundation. I thank also the consultants, general practitioners, speech therapists, district management team, area health authority, and many others for their support, and above all the supervisors and volunteers. I am glad to acknowledge the help of Mr. W. B. Fletcher, Dr. C. L. Miller, and Dr. T. M. Pollock in the design of the records and the preparation of the report.

Appendix

WAYS USED TO MEASURE PROGRESS

Memory.—(a) Memory quiz—for example, Did it rain yesterday? What did you have for breakfast? (b) Kim's game (written words and numbers as well as objects on the tray; gradually increased in difficulty). (c) Bridge.

Numbers.—(a) Speed and ability at number games such as dice, cards, and bingo. (b) Scoring at darts, etc. (by both written and mental arithmetic). (c) For those who like it, books of sums, done over many months with each page dated.

Money.—(a) Recognition of new currency. (b) Speed and ability at decimal currency games. (c) Shopping and accurate change-giving (practised at home and in the shops).

Time.—(a) Dummy clock-face quiz—for example, put the hands to tea time; move them 1 hour 20 minutes, etc. (b) Whether or not the patient is ready when volunteers call and for other events (done in co-operation with the family).

Calendar.—(a) Calendar quiz—for example, point to your birthday, to last Sunday, first day of June, period of winter, etc. (b) In some cases a diary is kept with signs and words and checked for accuracy.

Shapes.—(a) Jigsaw—for example, from six pieces in half an hour to 100 in two hours. (b) Games involving shapes such as a form of snap or shape bingo.

Colours.—(a) Colour quiz (possibly using crayons and paints)—for example, match yellow to yellow, pick out green, pick grass colour, shade from brown to red. (b) In some cases painting.

Observation.—(a) Car runs or walks; questions asked during run and on return; identification of the route. (b) What the patients notice is checked at the club usually with reference to each other.

Alertness.—There is no problem in recognizing improvement here.

Concentration.—(a) How quickly do volunteers have to change subjects? (b) How long can a game be played? Progression from simple card games to bridge.

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General Practice Observed

Use of Bacteriological Investigations by General Practitioners

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Summary

The numbers of vaginal swabs, faecal specimens, throat swabs, and urine specimens submitted by 104 city general practitioners to the bacteriology laboratory at

Aberdeen differed widely. The doctors who made most use of the laboratory service rarely did so equally for all four investigations but usually for only one or two. Similarly, those who used the service least often made frequent use of one particular investigation. Further studies are needed to identify and evaluate the reasons for the apparently substantial disagreement among general practitioners concerning the value of these different bacteriological investigations in general practice.

Introduction

General practitioners vary considerably in their use of laboratory services.¹⁻⁵ Most large studies have divided them into "high" and "low" users on the basis of use of complete specialty

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services such as haematology, bacteriology, and biochemistry rather than considering the use made of individual tests. Of the definable characteristics of general practitioners and their practices only recent qualification of the doctor has appeared consistently to predispose towards greater use of the laboratory.

We have tested the hypothesis that users of the bacteriology services use some of the investigations often but others rarely. Excessive concentration on the concept that high or low use of investigation is characteristic of individual doctors or groups of doctors may distract attention from the relevance of many of the investigations to general practice.

Methods

Request forms accompanying vaginal swabs, faecal specimens, and throat swabs submitted to this laboratory during 1973 and urine specimens during the first six months of 1974 were traced back to the 101 principals and three assistants practising substantially full-time in the city electoral area. For each test the 104 doctors were placed in a rank order according to the number of requests submitted. Each order was divided into four groups, the top sixth being allocated to group A, the second and third sixths to groups B and C, and the lower half—that is, those below the median value—to group D. This accommodated the frequency distribution curves for all four tests, which were heavily weighted towards zero. By this means a profile was provided by which a doctor's particular pattern of laboratory use—for example, AAAA through DAAA, ADAA, ABCD, etc. to DDDD—could be easily identified.

Results

Table I gives the overall findings for the 104 doctors. Figures for the urine specimens which were obtained over a six-month period, are doubled throughout this paper to give the estimated yearly figures.

TABLE I—Specimens Submitted to the Bacteriology Laboratory during 1973 by 104 City Practitioners

	Vaginal Swabs	Faecal Specimens	Throat Swabs	Urine Specimens (Estimated No./Year)
Total No. of specimens ..	837	982	1168	6478
Mean No. per doctor ..	8.1	9.4	11.2	62.2
Median	2	5	1	40
Range	Nil-55	Nil-65	Nil-220	Nil-390

TABLE II—Effect of All Doctors Adopting High-user Referral Patterns

	Present Total Specimens yearly	Projected Total Specimens yearly	Projected No. of Specimens per Doctor per Week
Vaginal swabs ..	837	5 720	1.0
Faecal specimens ..	982	6 760	1.3
Throat swabs ..	1 168	22 880	4.2
Urine specimens ..	6 478	40 560	7.5
Total	9 465	75 920	14.0

Of the 104 doctors, 82 (79%) submitted less than one vaginal swab per month to the laboratory, 78 (75%) less than one faecal specimen per month, and 90 (87%) less than one throat swab per month; 29 of the doctors (28%) submitted less than one urine specimen a month for culture. The five highest users of each investigation submitted 724 (62%) of the throat swabs, 209 (25%) of the vaginal swabs, 214 (22%) of the faecal specimens, and 722 (22%) of the urine specimens. Thus, particularly in the case of throat swabs, a few doctors were responsible for much of the work load of the service.

To test the main hypothesis that the same doctor might make widely varying use of different tests profiles for each doctor were constructed, as described above. Only five doctors (4.8%) were in group A for all four tests and 18 (17.3%) in group D for all four tests.

Eleven doctors (10.6) combined high (A) use of one or more tests with low (D) use of one or more. This supports the hypothesis that the use of tests may be selective.

Implications for Work Load.—Even the most frequent users of the laboratory submitted only one vaginal swab, one faecal specimen, four throat swabs, and eight urine specimens each per week. Yet if all 104 doctors were to make these apparently modest demands on the laboratory an increase of 700% in the yearly number of specimens submitted would result (table II).

Discussion

Possible influences on Laboratory Use.—The Aberdeen laboratory operates through a prepaid postal service and is equally available to all doctors in the area, but differences in the availability and use of nursing and secretarial staff (for the collection of specimens and completion of request forms) may well account for some of the observed variation in the use of the bacteriology services. Examination of differences between Aberdeen practices in terms of work load, age and sex structure, and distribution of morbidity formed part of a study by Richardson *et al.*⁶ It seems most unlikely that such a large variation as that between, for example, the five doctors who submitted 62% of the total throat swabs and the 40 who submitted none could be wholly or even largely explained by such factors. In so far as list size can be taken to indicate differences in work load, our own calculations showed that the use of results based on rates per 1000 patients per year made little difference to the positions of individual doctors in the rank orders.

High Users.—There appears to have been a tacit assumption that doctors who are high users of the laboratory will make uniformly frequent use of all the common investigations. Our results do not support this view. Differences between high and low users in such factors as age, location of practice and post-graduate qualifications only partly explain the large variation between doctors in their use of the service. Largely neglected in previous studies has been the individual doctor's perception of the relevance of particular investigations to his day-to-day work. Future studies should concentrate more on listing and evaluating those indications for bacteriological investigation that individual general practitioners have formulated from their own experience.

We are grateful to the five former local medical committees for their encouragement, and to staff of the department of general practice, University of Aberdeen, for helpful criticism and advice.

Addendum

Subsequent analysis of the use of the laboratory by doctors in rural areas showed that rural patients were investigated at a rate almost identical with that of city patients. Comparison of the rural and city doctors showed closely similar variations in the use made of each test, the detailed findings for rural doctors being parallel to those summarized in table I. As was the case for the city doctors, the rural doctors making most use of the laboratory were rarely high users for all four tests.

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