OCCASIONAL PAPER 41

Practice Activity Analysis

D.L. CROMBIE, OBE, MD, FRCGP
D.M. FLEMING, FRCGP

Published by
The Royal College of General Practitioners

Journal of
The Royal College of General Practitioners

The British Journal of General Practice

The *Journal of the Royal College of General Practitioners* was one of the first academic journals of general practice in the world. It is published monthly and contains editorials, original articles, a news section, book reviews, and correspondence covering all aspects of modern general practice. Its policy is to describe and comment on all new developments in general practice and it publishes exclusively many of the important policy decisions and reports of the Royal College of General Practitioners.

The *Journal* is sent to all Fellows, Honorary Fellows, Members, Associates and Corresponding Associates of the Royal College of General Practitioners, and also to a growing number of private subscribers including university postgraduate medical centres, libraries, institutions, and individuals in over 40 different countries of the world.

All subscribers receive *Policy Statements* and *Reports from General Practice* free of charge with the *Journal* when these are published. The *Occasional Papers* are not distributed free but are available whilst in print from the College's Central Sales Office at prices shown regularly in the *Journal* and other College publications. The *Policy Statements, Reports from General Practice,* and *Occasional Papers* cover in depth aspects of special importance to general practice and form some of the most authoritative data and source documents available. Details of current publications are given on the inside back cover.

The subscription to the *Journal* is adjusted annually. In 1989 it is £70.00 (or £75.00, £85.00 airmail) post free. Single copies are also available, prices on application. Orders and payments should be sent to Bailey Bros & Swinfen Ltd, Warner House, Folkestone, Kent CT19 6PH.

Vocational trainees can apply to the Membership Secretary of the College to become Associates at a quarter of the current membership rate, which includes receipt of the *Journal, Policy Statements,* and *Reports from General Practice* when published.

OCCASIONAL PAPER 41

Practice Activity Analysis

D.L. CROMBIE, OBE, MD, FRCGP
Director

D.M. FLEMING, FRCGP
Deputy Director

Birmingham Research Unit
Royal College of General Practitioners

Published by
The Royal College of General Practitioners
London

December 1988

The Royal College of General Practitioners

Charter

The Royal College of General Practitioners was founded in 1952, with this object:

"To encourage, foster, and maintain the highest possible standards in general medical practice and for that purpose to take or join with others in taking steps consistent with the charitable nature of that object which may assist towards the same."

Among its responsibilities under its Royal Charter the College is entitled to:

"Encourage the publication by general medical practitioners of research into medical or scientific subjects with a view to the improvement of general medical practice in any field and to undertake or assist others in undertaking such research.

Diffuse information on all matters affecting general medical practice and establish, print, publish, issue and circulate such papers, journals, magazines, books, periodicals, and publications and hold such meetings, conferences, seminars, and instructional courses as may assist the object of the College."

College Headquarters

The headquarters of the Royal College is at 14 Princes Gate, Hyde Park, London SW7 1 PU (Telephone: 01-581 3232). Enquiries should be addressed to the General Administrator.

Exeter Publications Office

The Publications Office publishes on behalf of the College the series of *Policy Statements, Reports from General Practice, Occasional Papers,* and books and booklets. It also co-ordinates material for the *RCGP Members' Reference Book.* Enquiries are welcomed and should be addressed to the Honorary Editor, 9 Marlborough Road, Exeter, Devon, EX2 4TJ (Telephone: 0392 57938).

Occasional Papers

The Occasional Paper Series was established in 1976 to offer authors the opportunity to publish manuscripts too long for publication as articles and too short for books. They are assessed for academic acceptability by members of the Editorial Board and other professionals with special interests. Readers should note that they express the views of the authors, and not the College, unless otherwise stated.

Contents

Foreword

"QUALITY assurance; what now and where next?" This report ends with these questions first posed by Duncan in 1980.

As Crombie and Fleming marshal their arguments, together with a considerable dossier of measured performance, there is a sense in which this report is lighting the path to quality of care. Practice activity analysis — a practical approach to audit — is one way forward, but as the authors emphasize, audit by self-evaluation is dependent upon self-motivation and here it is incumbent on all who teach and learn to examine themselves. They also raise questions about institutional support for audit programmes which will not go away if the profession is to grasp the nettle of evaluating care.

I welcome this contribution and in particular am pleased to see it made available to a wide readership. The problems of the quality of health care delivered by doctors and the equality of opportunity for all patients to receive it will remain high on the agenda for the rest of this century. Crombie and Fleming, in this *Occasional Paper,* make a major contribution to the discipline of general practice and, if their messages are heeded, the care of patients should be considerably improved.

V.M.M. DRURY
President
Royal College of General Practitioners 1985-1988

Acknowledgements

THE earliest ventures with practice activity analysis (PAA) were made in the mid and late 1970s. At that time financial support was received from the Department of Health and Social Security and we were grateful for the help and advice provided by Professor K.B. Haley, Department of Operational Research, University of Birmingham and to various members of his staff, notably to J.B. Peacock. From 1980–1984, practice activity analysis was supported by the Scientific Foundation Board of the Royal College of General Practitioners, during which time we received continuing help from the staff and students of the Operational Research Department at Birmingham.

In developing the practice activity analysis programme we have been grateful to several course organizers but we would like to single out a few of these for special mention. Dr J.W. Baker made a very large contribution in organizing the groups in the South-East Thames area. This is the single most valuable recording contribution and without it there would not be the large data base reported here. Drs M.S.T.A. Lawrence and C.P. Elliott Binns have been strong allies in the Oxford Region. Courses such as that at New College, Oxford and also the trainers' course at Warwick run by Dr David Clegg have been particularly useful in testing new analyses.

In the background we have been able to call on many friends for advice. In the early days the late Dr R.J.F.H. Pinsent was a constant stimulus. We especially appreciated the help given by Dr K.W. Cross, Statistician, Department of Social Medicine, University of Birmingham.

Finally we place on record our gratitude to the many doctors who have been willing to examine their performance in a way that has permitted us to accumulate this data bank.

CHAPTER 1

Self-evaluation and self-audit in general practice

Background

THE need for information systems both for individual general practitioners and for practices was highlighted by the material reported in the Second National Morbidity Study in General Practice 1971–2 (RCGP et al., 1974). In the first year reported, the consultation rate in individual practices varied from 1.9–5.8 and in the second year from 1.7–6.3 (Table 1.1). The range varied little different between singlehanded and partnership practices. A similar situation is seen in the referral rates to hospital specialists (Table 1.2). Although there was a wide range of performance between practices, individual practice performance was highly consistent as shown by the value of the correlation coefficients for the practices in both the first and second years of study, namely .94 for the consultation rates and .88 for referral rates. Factors such as the age/sex composition of the practices, social composition, and location contributed to the differences but taken together they accounted for only a small part of the total variation (Crombie, 1984). The doctor himself was seen to be the greatest variable and when doctors were grouped together in practices, a new individuality was achieved in as much as the range of variability among partnerships was found to be almost as great as that seen in singlehanded practice. During the 1970s, increasing interest was shown in medical audit both in North America and in the UK (McWhinney, 1972; *BMJ*, 1974; Mourin, 1976; *JRCGP*, 1979a). In the early years this was thought to be a favourable development in the same way as the introduction of appointment systems, although no serious thought was given to benefit, cost or of practicalities (Stevens, 1977).

The first need was for simple practice-based information in a form that could be easily processed. In North America some of the earliest audits were based on chart review (record review) by independent reviewers seeking evidence of non-compliance with agreed standards. These were directed mainly towards budgetary control. However, chart review has proved a time-consuming and costly way of obtaining any worthwhile quantity of information and has focused attention on the performance of physicians in individual cases rather than taking an overall view. An alternative approach, also developed in North America and known under the name professional activities study (PAS), involved the use of standardized hospital discharge forms, which were processed to provide an overall view of individual physician or hospital performance. Practice activity analysis (PAA) follows this latter philosophy, and accords with the American Medical Association's definition of peer review as "the evaluation by practising physicians of the quality and efficiency of services ordered by other practising physicians" (Sanzaro, 1974).

Table 1.2 Referrals per 100 patients registered.

Singlehanded and partnership practice rates are presented separately. Minimum and maximum rates and centile rates dividing the range into five approximately equal groups of recorders.

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
Single-handed practices							
1970–71	12	6	8	10	14	17	26
1971–72	10	6	8	9	10	15	26
Partnership practices							
1970–71	10	5	7	9	11	13	16
1971–72	10	6	8	10	11	12	15

Source: National Morbidity Survey 1970–71 and 1971–72.

Table 1.1 Consultations per patient registered.

Singlehanded and partnership practice rates are presented separately.
Minimum and maximum rates and centile rates dividing the range into five approximately equal groups of recorders.

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
Singlehanded practices							
1970–71	3.3	1.9	2.8	3.1	3.4	3.6	5.8
1971–72	3.3	1.7	2.7	3.2	3.4	4.0	6.3
Partnership practices							
1970–71	3.0	1.9	2.3	2.6	3.0	3.5	4.6
1971–72	3.1	1.9	2.5	2.9	3.3	3.5	3.8

Source: National Morbidity Survey 1970–71 and 1971–72.

There are reservations about the place of self-evaluation as a means of improving the quality of general practitioner care. However, we have no doubt about its effectiveness when conducted in a true small peer group setting. Problems about self-evaluation are attributable largely to the reluctance of individual practitioners to submit their performance to the potential criticism of colleagues and to reluctance on the part of general practice organizations to develop an appropriate administrative framework for it.

The assessment of quality

Practice activity analysis is primarily a tool for self-evaluation by general practitioners. It is also a source of information for health care planning and teaching. Self-evaluation (or self-audit) is only one of the possible methods for maintaining and improving 'quality' of care in general practice. Its importance has been emphasized by the Alment Committee (1976), which was concerned with competence to practise: "The essence of continuing education is a critical approach to day-to-day clinical work; the value of this is enhanced by the free discussion among colleagues of experience thus gained."

Never has it been so necessary or so difficult to measure the quality of medical care: necessary because of the enormous and ever escalating cost of achieving and maintaining the present level of care; difficult paradoxically because of the general effectiveness of much current medical care when measured against any objective measurement of outcome (RCGP, 1977a). This paradox is illustrated schematically in Figure 1.1, which shows how costs rise exponentially the closer they come to an ultimate goal. In the commercial world, the art of managing a business is to achieve an economic balance between costs and the quality of the product. Such an ideal is represented by point B on the curve. If the manufacturer cuts costs too drastically, for example to point A on the curve, his product will be markedly and soon obviously inferior to that of the manufacturer operating at point B. Any manufacturer operating between B and C on the curve is achieving marginal increases in quality (i.e. performance or goal achievement) for disproportionate increases in costs. Commercially this may be acceptable for a few minority producers, such as Rolls Royce motor cars, where status matters as much as quality, but it is unrealistic for the majority.

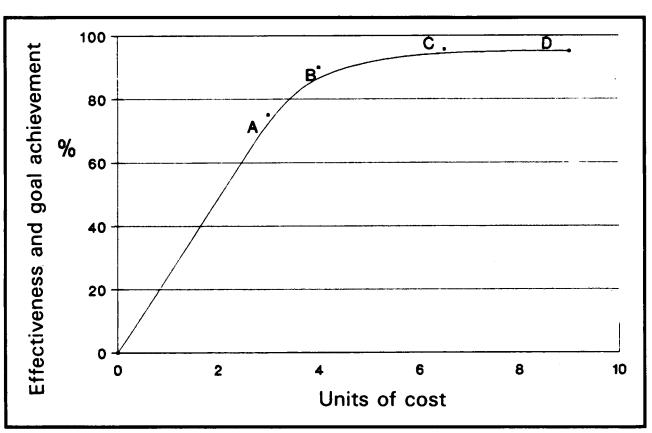


Figure 1.1 Schematic smoothed histogram showing cost rises in relation to quality.

Medical care is not subject to the same naked forces of supply and demand. The limits have been set more by the resources available at any given time rather than by any theoretical total supply of money available to individuals who pay for it. The driving force is the demand (often only implied by the patient) for every possible intervention on his behalf however slight the possible benefit.

In medicine, the concept of 'outcome' is difficult to define. The 100 per cent level illustrated in Figure 1.1 could arbitrarily be defined as the maximal level of outcome quality available now in any given clinical problem area. The fact that measures of outcome rarely discriminate statistically between alternative measures of process creates the paradox that all processes are acceptable if considerations of costs are ignored. This implies that the delivery of medical care is operating somewhere betweeen C and D on the curve, as it is only here that differences in quality of outcome are too small to measure. Where outcome differences are numerically small, the differences in process certainly matter and here the costs of process are especially relevant. The operator at point C may be much more cost effective, and the product represent a 'better buy', than the operator at point D. There are comparatively few outcomes of medical care where there is substantial evidence that major differences exist and, with these exceptions, concentration on measurements of outcome as a means of assessing quality of care is doomed to failure.

The Royal College of General Practitioners (1985) has emphasized quality of care, particularly in its *Policy Statement 2,* but has seldom defined quality in terms of outcome; rather, effort has been concentrated on the service elements — have patients adequate access to medical care? Are there sufficient beds available? Are the waiting lists for surgery too long? Are the finances available and being used sensibly? Donabedian (1966) divided medical care into three components: structure, process and outcome, and these questions are concerned chiefly with structure or process. Good structures in the form of adequate buildings and facilities are desirable; common courtesy and a caring attitude are attributes which should go with all consultations, but the quality of care as measured by outcome may not be dependent on these. It is also essential that doctors provide good access for their patients and are sensitive to their needs (whether expressed or not) but access and sensitivity are not synonymous with quality as measured by outcome. High quality of outcome of medical care involves correct diagnosis, appropriate investigation and referral, and a sound basis for action, be that therapeutic or preventive.

It follows from these arguments that quality of outcome cannot be measured by patients. A doctor may be popular because he always accedes to requests for hypnotics, readily refers patients to hospital, or is particularly willing to make home visits but none of these represent quality, except insofar as a satisfied patient is one element of a good service. Providers and consumers of care have different objectives (Buck et al., 1974). Quality, insofar as it is seen in access, continuity, the comfort of buildings, caring attitudes of staff, and a positive approach to patients and their problems, can well be assessed by patients as consumers. Where it involves clinical judgement as, for example, in the appropriate use of investigation techniques,

prescribing and referrals can be judged only by peers - general practitioners working in a similar environment and doing the same job. Assessment by peers is the basis for the evaluation of medical care suggested by the Alment Committee (1976).

In the assessment of quality, input (problems presented), intervention (doctor activity), and outcome (health improvement or otherwise) must all be considered (Figure 1.2). Quality is based on favourable outcome at minimal cost and with acceptable service.

Input

There are many difficulties for audit in general practice which stem from the varied nature of the input. First of all, some of the problems encountered are brought to general practice inappropriately and therefore the outcome of such problems is not a function of general practitioner performance. Social problems such as debt, unemployment, and marital difficulties, which so often impinge on the perceived health of patients, are outside the doctor's remit. For some problems, the doctor's action as a signpost and referrer to an appropriate agency or specialist without undue delay is the only criterion by which he can be judged. Subsequent delays which may influence outcome cannot be considered inadequacies of general practice care. Decisions in general practice are often made on an *ad hoc* basis depending on the circumstances and personality of individual patients. These subtle influences cannot be accommodated easily in the measurement of input.

Outcome

Outcome also presents difficulties. Many of the problems presented are concerned with degenerative, irreversible illnesses and the best that can be hoped for is to minimize distress or handicap and to slow down the rate of degeneration. At the other extreme, the outcome of the majority of problems presented to a general practitioner is recovery regardless of doctor intervention. Two thirds of all consultations are concerned with self-limiting illness (RCGP, 1973) and such illnesses cannot be used to evaluate quality (Ginzberg, 1975), except insofar as they do not give rise to unnecessary investigation and therapeutic action. Perhaps the most important measure of quality concerns the undetected morbidity in registered patients whether they consult or not (Last, 1963).

These and other difficulties in the measurement of input and outcome have led to concentration on the measurement of intervention which can be defined and quantified easily. Nevertheless, it is important not to let ease of measurement take precedence over what is measured (Buck et al., 1974).

Intervention

Differences in doctor activity (intervention) rates cannot be fully interpreted without due recognition of input and outcome, but for many purposes it is reasonable to assume that the differences in these areas are comparatively small. Some do exist; for example, the access of general practitioners to diagnostic services has not been uniformly available; large differences in specialist waiting lists may influence referral activity; prescribing may be influenced by prescription charges and hence doctors working in areas at opposite ends of the social spectrum may have differing prescribing patterns. These differences, however, are likely to make a smaller contribution to explaining variability among doctors than do attributes of the doctors themselves.

A particular advantage of using intervention rates is the ability to bring sufficient cases together to provide an adequate sample. Although there will be circumstances which influence decisions in particular cases, when information from several cases is brought together, a mixture of cases can be assumed which will be reasonably homogeneous for all practitioners (Kelman, 1980). Sometimes this is obviously not so, as for example for the woman doctor or an elderly doctor practising with much younger partners, and this point must be remembered when interpreting individual data.

Quality of outcome is not automatically linked to quality of structure nor to quality of process. The purpose of practice activity analysis in describing process or intervention is not so much to define quality as to provide the most important ingredient whereby it can be considered.

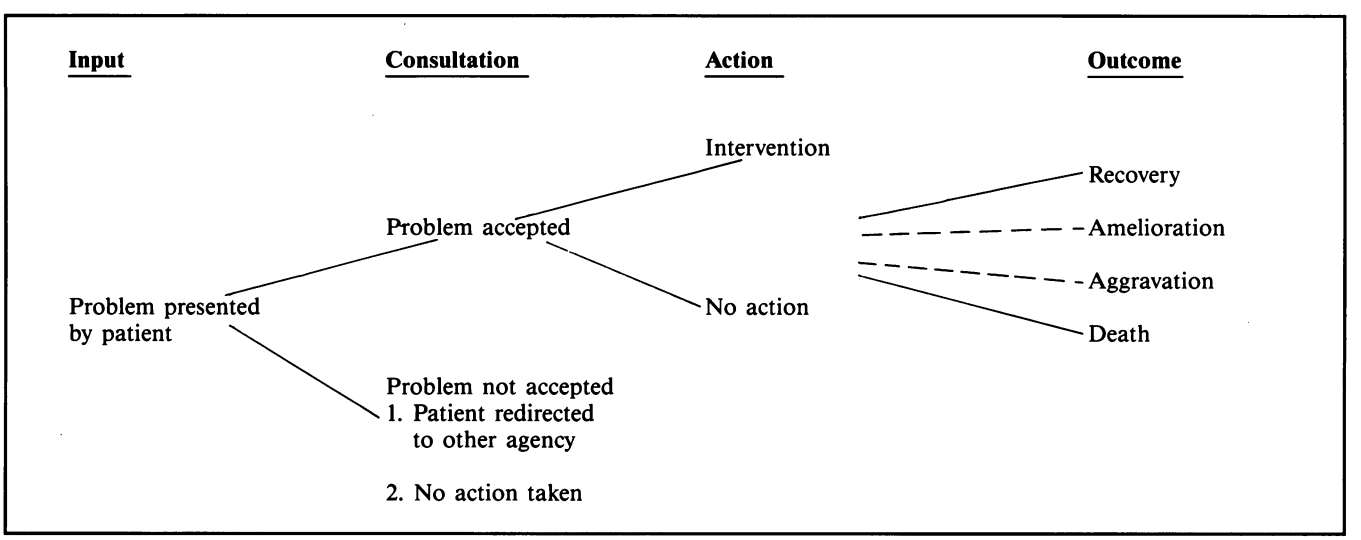


Figure 1.2 The pathway between input and outcome in general practice.

Practice activity analysis provides proxies for quality which can be measured reliably and consistently in everyday practice. A proxy retains its usefulness until it is outdated by an improved alternative. For further consideration of this subject, readers are referred particularly to relevant publications in the *Journal of the Royal College of General Practitioners* (Buck et al., 1974; Stevens, 1977; Watkins, 1981; Pendleton et al., 1986).

Defects of absolute measurements of quality

In relatively primitive systems of medical care, the general mortality rates, as well as neonatal, perinatal, maternal mortality, and stillbirth rates, can be used as efficient objective measures of outcome, but in the western world in recent years their usefulness has diminished as the general quality of medical care has risen.

All other rates, such as total and reported morbidity, absence from work and school, drug consumption, use of other therapeutic and diagnostic services, are all possible, but at the same time are indirect and blunt proxies for true measures of quality of care. These difficulties have led to a search for other possible objective measures of quality of care. These include the use of ideal protocols for critical areas of clinical and operational management as standards against which individual performance can be measured by comparison, that is 'process audit'. Consistently and generally agreed protocols for some forms of work may eventually be established, but at present this 'process auditing' has limited use in general practice. For example, the 'overuse' of antibiotics in the treatment of pharyngitis and the 'underuse' of throat swabs have been taken as a basis for a quantitative measure of quality of care (McFarlane and O'Connell, 1970). The assumptions and premises on which the measures of quality are based are debatable and an alternative set of measurements could be devised using the same basic data but where the implications about quality are almost the antithesis of those suggested.

Spitzer and colleagues (1974) have shown that such ideal protocols for some indicator diseases may be used to infer a more general measure of the quality of clinical performance. However, the general use of this method is restricted not only by the limitations mentioned above but by the need to keep secret the actual indicator conditions. The secrecy is dictated by the small number of suitable protocols.

There is one other much more fundamental reason why this direct approach is often inappropriate and premature; that is the enormous variation that exists between doctors performing the same clinical or administrative activities. Many examples will be given later which illustrate this variation but this above anything else is the *raison d'être* for practice activity analysis.

Inter-doctor variation has considerable financial implications which are important for planning. For example, in Great Britain in 1981 the 'average' general practitioner list size was approximately 2000 and a nationally representative population of this size consumed approximately £300 000 worth of hospital resources. The entrée into the hospital service is controlled primarily by the general practitioner in the act of referral. Given the range of variability between doctors (as from practice activity analysis data) and assuming for this purpose that hospital costs are related directly to numbers referred, then the equivalent cost for a doctor with the highest compared with the lowest referral rates were approximately £480 000 and £40 000 per annum. The equivalent rates for the 80th and 20th centiles (embracing the middle 60 per cent of the referring doctors) are £400 000 and £200 000 (Crombie and Fleming, 1987). Variations in referral rates have to be attributed to the idiosyncratic way in which general practitioners perceive illness and the need for referral. The financial implications are such that referral should retain a high priority for general practice research and audit.

It is also apparent that doctors in general are unaware of their particular position in a spectrum of activity. However, it is known that they tend to be consistent over time as illustrated by the high degree of association of one year's results with the next (Table 1.3). There is also strong evidence that there are no consistent patterns of association or dissociation between activities (Table 1.4). In other words, behavioural patterns are unique yet con-

Table 1.3 Comparison and correlation of individual practice activity rates.

		1970–71		*1971–72*		
	Number	*Mean*	*SD*	*Mean*	*SD*	*r*
Consultations per patient at risk	25	3.46	.75	3.31	.80	.93
Specialist referral inpatient and outpatient per 1000 patients at risk	22	122	56	119	48	.91
Patients investigated per 1000 patients at risk	22	150	92	154	86	.89
Home visits per 1000 patients at risk	25	562	305	520	321	.97

Source: National Morbidity Survey 1970–71 compared with 1971–72. Rates derived from singlehanded recorders.

Table 1.4 Inter-rate correlation coefficients (Spearman) of practice activity from the first year of the Second National Morbidity Survey.

	1.	*2.*	*3.*	*4.*	*5.*	*6.*
1. Patients consulting per 1000 population	—	.71	.48	.38	.22	.35
2. Average consultations per person at risk		—	.94	.42	.31	.63
3. Consultations per person consulting			—	.38	.38	.60
4. Referrals in + outpatient per person consulting				—	.20	.22
5. Investigations per person consulting					—	.09
6. Average visits per person at risk						—

Significance levels 5% = .26
1% = .34

sistent over time. The example of the variability in referral rates to hospital speaks for itself yet there is no evidence that the high referrer provides better quality of care for his patients than the low referrer. Until such time that logically determined protocols have been worked out and preferred alternatives specified by acceptable methods, there is no alternative but to accept the empirical standards implied by measurement representing the consensus view. These are the essential starting point but only the starting point for discussion and development of ideal standards.

The case conference and peer group discussion

The early practice activity analysis programme was established chiefly to provide doctors with analyses of their own activities and to encourage them to use them as a basis for peer group discussion. Measurements of actual performance rather than discussions in the abstract are essential. As Hull (1978) observed, "What doctors think they do often differs from what they actually do," and we would add that these differences can only be appreciated by measurement. "One needs to know what one does before one can analyse performance" (Dudley, 1974). There is always a danger that so-called 'standards' might be derived on the basis of prior judgement by people detached from the front line of medical care — judgements which fail to recognize the reality of the working situation of general practitioners and often the reality of their own working situation. Hence the difference between the expectations of audit and clinical practice (Brook and Appel, 1973).

When it is not known which choice amongst the enormous range of variability for any one activity, such as referrals, is better or worse in terms of quality of outcome, it is obviously difficult to set up *a priori* standards of excellence. The first step must surely be to explore as objectively as possible each doctor's rationale for his own pattern of activity. The reasons proposed by each individual also need to be exposed to the rigour of a small informed peer group of colleagues sharing the same working environment and problems, among whom criticism can be both made and received. Without this feedback change is seldom achieved. Such small peer groups are the basis for all true Socratic creative discussions. Only from this very basic beginning can tentative ideas or hypotheses be generated about which part of the range of variability may in fact be best for the patient and the Health Service as a whole. This, as Figure 1.3 demonstrates, is usually a piecemeal process proceeding via a succession of eliminations of errors or unsatisfactory elements until a solution (hypothesis) is evolved which is consistent with available facts. This is the long trail which must be followed before there is any basis for a controlled trial or other formal method for utilizing the null hypothesis as a basis for problem solving which most research uses as its starting point.

The figure also illustrates the important point that the objectives of research cannot be reached until the more intuitive elements have been worked through. The peer group or case conference model is used as a mechanism for step-wise improvement in practical knowledge (Figure 1.4). In this environment the results of research are

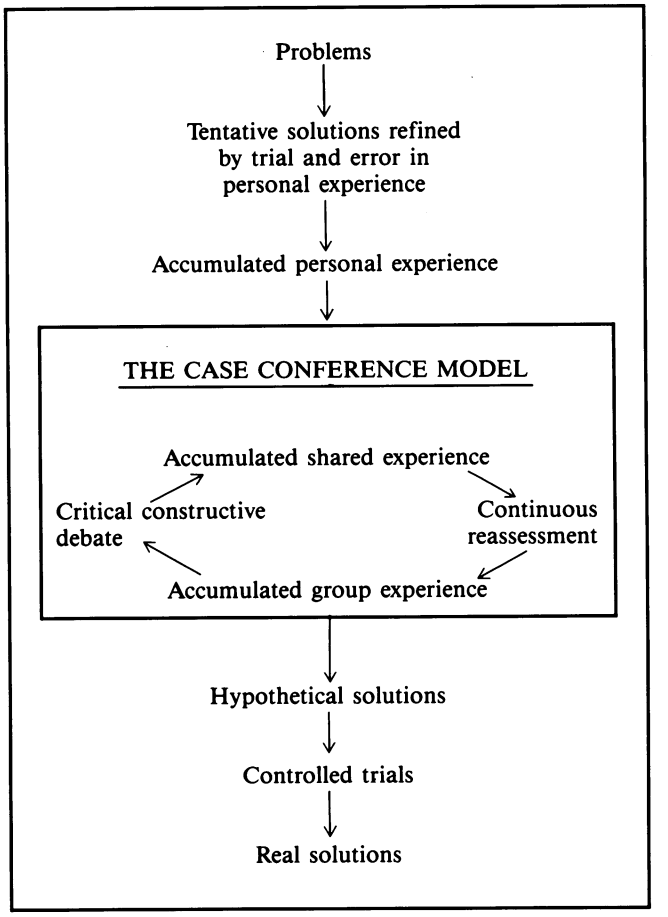


Figure 1.3 From problems to solutions.

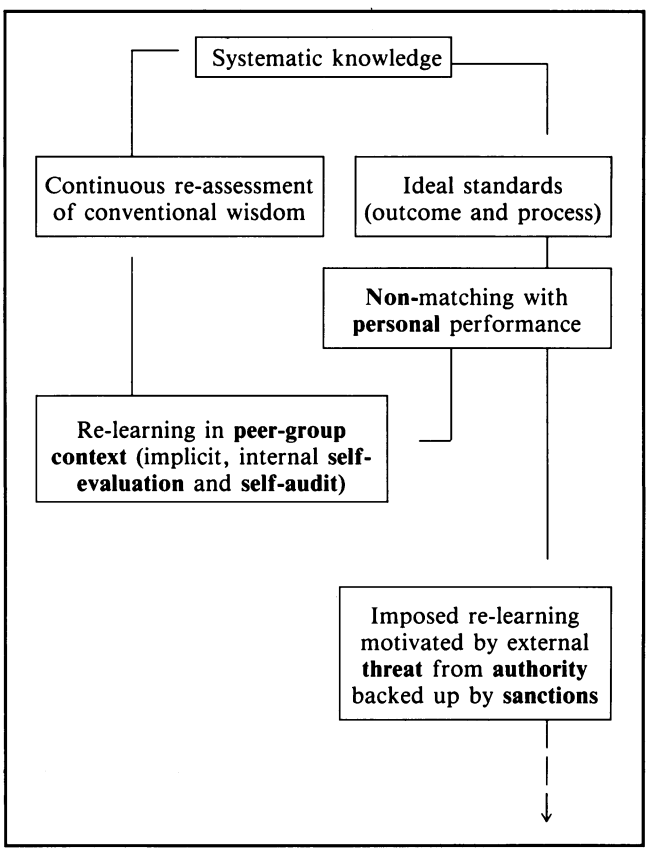


Figure 1.4 Knowledge and learning in experience.

disseminated and mingled with individual experience and published work. The existence of the group also acts as a deterrent to the ever present threat of practice audit imposed from outside. Knowledge is acquired by tuition, from personal experience, and from watching others. These parallel processes are illustrated in Figure 1.5, which is a summary of the other two figures using the language of education rather than that of research or audit.

In medical research, and also by inference in the creation of ideal standards, there is a danger of making the unwarranted assumption that the only acceptable research method involves the controlled trial. There is a tendency to discount those preliminary stages in which the basis for a controlled trial or ideal standard has been empirically or even intuitively discerned. In particular, there is a tendency to discount the powerful creative properties of informed critical discussion among peers. These are essential to the inception of the controlled trial and to the derivation of standards.

In the hospital setting, experience has traditionally been shared in the clinical case conference. Here, the activities of the carers are picked over bone by bone with a view to refining methods and as a means of teaching. Errors are identified and ideas shared in an atmosphere of creative thinking in which criticism of one's equals is an accepted part of the process. Success depends on acceptance of the opinion of colleagues given in a friendly manner and not received as a threat. Success needs a nurturing process (Dudley, 1974; Irving and Temple, 1976) where groups can develop and mature in such a way that no member is isolated. The group meeting becomes the forum both for the creation and for the sharing of new ideas which are refined by intelligent debate and from which standards will emerge. There are two essential ingredients — the group itself and 'real' material. They go together. Good prescribing information (for example, the report of the Prescription Pricing Authority) is available but there is no good discussion forum for it, hence much of its value is lost.

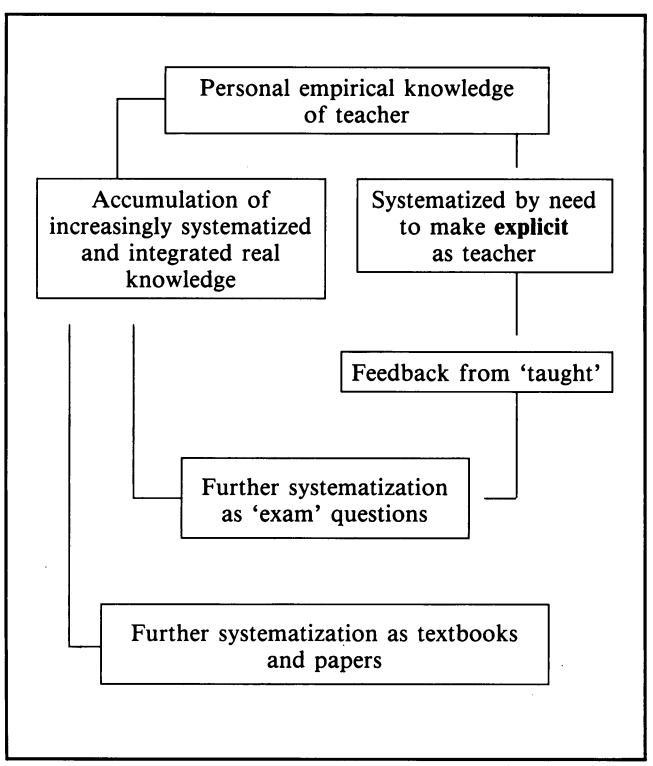


Figure 1.5 The 'teaching-examining' cycle.

The peer group

Some aspects of desirable group behaviour have already been discussed but experience drawn from case conferences can emphasize others. Group members need to know each other to gain mutual confidence and to do that they have to meet regularly and spend time together (Crombie, 1970). They must operate in an atmosphere of friendship even to the extent that the meeting contains a social element. Hostility and threat are damaging to the group concept. Leadership should be shared and no individual authoritarian figure exert himself disproportionately. Where authority is exerted it must be purely on the basis of acceptable scientifically presented evidence. It is often helpful to have contributions from related professionals so long as these are presented and accepted on the basis of professional equality. It is only under such circumstances that doctors will be willing to discuss their personal performance. Finally the group must not only try to eliminate error but also to provide opportunities to receive the "approbation of one's peers" (Darwin, 1874).

When it comes to general practice, the postgraduate centre is the obvious place to develop group work. Whilst in large group practices some of the ingredients of a successful group can be mustered, it is not possible to embrace a sufficiently wide spectrum of opinion if discussions are confined to partners. A partnership may be operating at just one end of a spectrum and if discussions are confined to partners no contrary opinion may be available.

Management techniques

Both self-evaluation and in evaluation of the performance of colleagues, there is a constant search for advance in management techniques. Without suitable techniques for evaluation it is impossible to make progress: and without them "no physician can continue to provide the best medical care, however well he may have been trained initially" (Hodgkin, 1973).

We suggest, therefore, that there is at least one mechanism by which clinicians can avoid the traps of static unchanging inertia, blind acceptance of authority, or change for change's sake. This is by the development of a method of continuous clinical and administrative self-audit or self-evaluation by analysis of practice activities: a process which differs from conventional medical auditing in that the data used are not measured against any absolute (and therefore arbitrary) scales of quality, but solely to develop value judgements in the context of creative peer group discussions.

The importance of real data

The second ingredient for successful group work is information. In the case conference this takes the form of a

real patient and his unfolding problems. Case analysis is an excellent source of material for constructive discussion and if cases are selected at random there is a better chance of reaching the ultimate purposes of medical audit. The difficulty here lies in achieving a sufficient sample which will reflect accurately the performance of any individual. "Results from one case never mean anything" is often quoted when anecdote is substituted for the results of the controlled clinical trial.

In particular, for the evaluation of its own performance a peer group requires information, not in the form of an implicit or explicit directive, but ideally in a form which identifies and highlights differences. These may be differences in the way in which the group achieves or performs compared with other peer groups in the care system, or differences between the members of the group. The information must identify these differences objectively and scientifically but make no value judgements about which is right or best. Only occasionally can such value judgements be justified scientifically, but where they can, their use is not only justified but mandatory as ideal 'process' protocols as suggested by McFarlane and O'Connell (1970). Sometimes, as for example in the attainment of high rates of immunization uptake, a measure of performance or achievement can immediately be accepted by the whole group as evidence of quality of care (Fleming and Lawrence, 1981). More often, obvious and accurate criticisms form the objective data for creative discussion. If general practitioners were to insist that only those data which fulfil the first criterion should be used, then they would cut themselves off from the most powerful mechanism for the evolution of improved performance. All advances have their origins in such creative procedures.

Teaching and learning

Teaching and research ought to go hand in hand, and comparisons between colleagues are a basic example of this symbiosis. Research, or "organized curiosity", is basically a process of self-education. There is also a need to find some basis from which general practitioners can teach one another. There is a need to break down the inhibitions which prevent general practitioners from teaching, which arise partly from the professional isolation of general practitioners compared with their specialist colleagues (Crombie, 1963). The PAA programmes discussed here provide a stimulus to teaching by giving general practitioners objective information about their activities, and the evolution of peer group discussion will enhance their confidence and ability to present their own work. We are pleased to notice that new recruits to general practice have often been conditioned to this educational approach.

CHAPTER 2

Information

Introduction

INFORMATION requirements for general practice includes those of individual general practitioners and their practices, those of the planners and providers of health care, and those concerned with teaching about general practice and about health care provision (Figure 2.1). Information sources include those agencies gathering data routinely and specific research projects.

Information needs, whether medically related or not, are dependent on the nature of the problems. In general practice the problems of providing care fall into two groups: on the one hand, those related to the activities and personal performance of the doctors and practices, and on the other, those related to the health care needs and demands of the patients. Both groups of problems may well be considered in common statistics expressed as consultation, referral or prescribing rates. Where the doctor is the centre of interest, activity rates are expressed for the patients of his personal practice, and where the patient is the centre of interest in appropriate age/sex groupings. Individual doctor rates must be based on a sufficient sample of activities and patient-based rates embrace a sufficient sample of doctors to limit the effect of inter-doctor variability. Both doctor-based and patient-based information is usually needed for self-evaluation but the major emphasis is on doctor characteristics. Health planning on the other hand usually places the emphasis on patient characteristics.

Information in the broadest sense is required as much to identify problems as to provide the basis for constructing a logical plan for their resolution. Information is also needed to assess the effectiveness of the remedies adopted. Sometimes a problem can be described as the result of simple observation, but the planning and testing of tentative solutions will often require detailed reliable quantitative information. Problem solving by trial and error without evaluation by measurement is wasteful of time and money. Some basic numeric data are prerequisites even to determine which among possible solutions is at least worthy of test.

Sources of information

A summary of some important sources of information about general practice follows.

Morbidity Studies in General Practice

The study by Logan and Cushion (1958) is usually referred to as the first national morbidity study. It is based on systematic recording from all consultations by 171

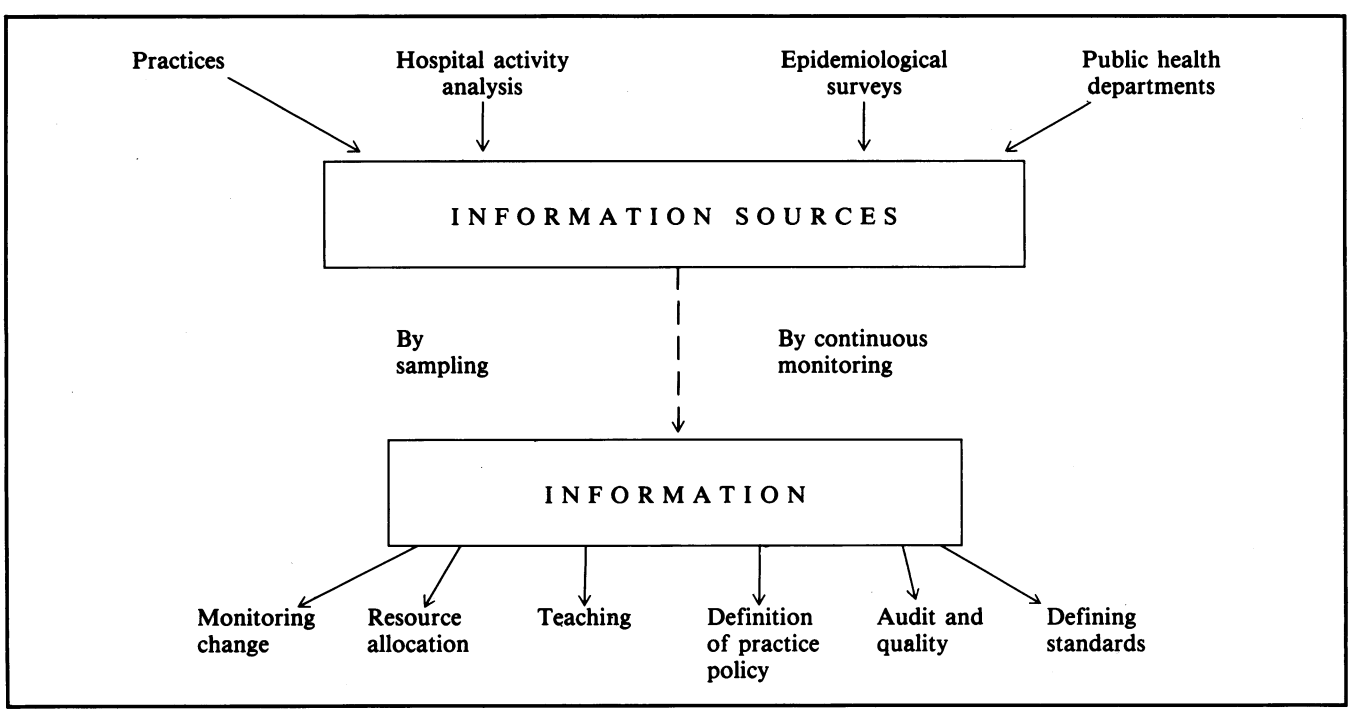


Figure 2.1 Sources of and requirements for information in and about general practice.

general practitioner principals during a one-year period in 1955/56. The registered population was 363 000.

The second major morbidity study ran for six years from 1970 to 1976. There have been three main publications from this study. The material for 1970–71 (RCGP et al., 1974) and for 1971–72 (RCGP et al., 1979) have been published separately and a study of socio-economic factors in morbidity, derived by linking the data set for the first year with the national population census, has also been published (RCGP et al., 1982). This study involved 115 general practitioner principals in the first year and 101 in the second. The populations surveyed were 292 000 and 257 000 respectively. As in the earlier study, information was obtained from every consultation. Information for the subsequent four years' recording was restricted to new episodes of illness.

A third study involving 143 principals in general practice and 300 000 population was conducted in 1981–82 (RCGP et al., 1986). The method of recording involved the maintenance of diagnostic indexes (RCGP, 1971) within the practices. Data collected were analysed by the Office of Population Censuses and Surveys (OPCS) and processed to provide epidemiological information related to the specified age/sex composition of the practices. Published data from the most recent third study include rates for persons consulting, episodes, consultations, home visits, and hospital specialist referrals all presented by age and sex and region. Separate data are given for each rubric of the diagnostic classification.

The data from morbidity surveys provide the essential base and logical point of comparison for doctors wishing to study morbidity and other general activity rates in their own practices.

General Household Surveys

The General Household Surveys is a continuous survey based on a sample of the general population resident in private households in Great Britain and has been running since 1971. It aims to provide a means of examining relationships between the most significant variables with which social policy is concerned and to monitor change. Since 1971 the General Household Survey has covered five main subject areas - population, housing, employment, education and health. Many of the tables in recent years have incorporated trend data from previous studies. Readers wishing to familiarize themselves with these reports should refer first to the Introductory Report (OPCS, 1973).

As its name implies, the study is based on the members of selected households chosen by a stratified sampling procedure ensuring a population sample that is nationally representative. The adults of the sample households are interviewed by specially appointed interviewers and a questionnaire covering a wide variety of social information is completed for each of them. Interviews are conducted systematically throughout the year. The study involves approximately 14 000 households per year. The subjects recruited belong to medical practices which are in effect chosen randomly and it is reasonable to assume that they are also nationally representative. The method, however, has two important limitations: first it is based on retrospective memory recall, and secondly it is concerned only with a two-week period for each individual respondent, which provides data for about approximately 30 000 consultations. The consultation data derived in the General Household Survey and Morbidity Surveys are very similar (Crombie and Fleming, 1986).

These data are totally patient based and are not concerned with individual practice performance.

Hospital Inpatient Enquiry

Until recently the Hospital Inpatient Enquiry, reported annually by the DHSS Welsh Office (Series MB4 No. 12) was based on a 10 per cent sample of inpatient records of patients discharged from, or dying in hospital. (All patients have been included since October 1986.) The enquiry includes psychiatric and maternity admissions though the results from these are published separately. It includes diagnostic information, and information about waiting times, duration of stay and bed occupancy. It also provides an analysis of surgical procedures. Data for recent years are prepared on microfiche. Data for 1978 were the last to be published in conventional form.

Social Trends

Social Trends is produced annually by the Department of Health and Social Security and published by HMSO. It provides much useful information about doctors such as hospital utilization rates and immunization uptake rates.

Social Services Statistics

Social Services Statistics, also published annually by HMSO for the Department of Health, provides information about the current rates of sickness, pension and disability allowances. In addition it provides a comprehensive analysis of recipients of such benefits.

Compendium of Health Statisics

The *Compendium of Health Statistics,* published annually by the Office of Health Economics and now in its sixth edition, provides a summary of many health-related statistics covered by the two previous surveys. It is of particular value for comparing the economics of health provision in different European countries.

CHAPTER 3

The practice activity analysis method

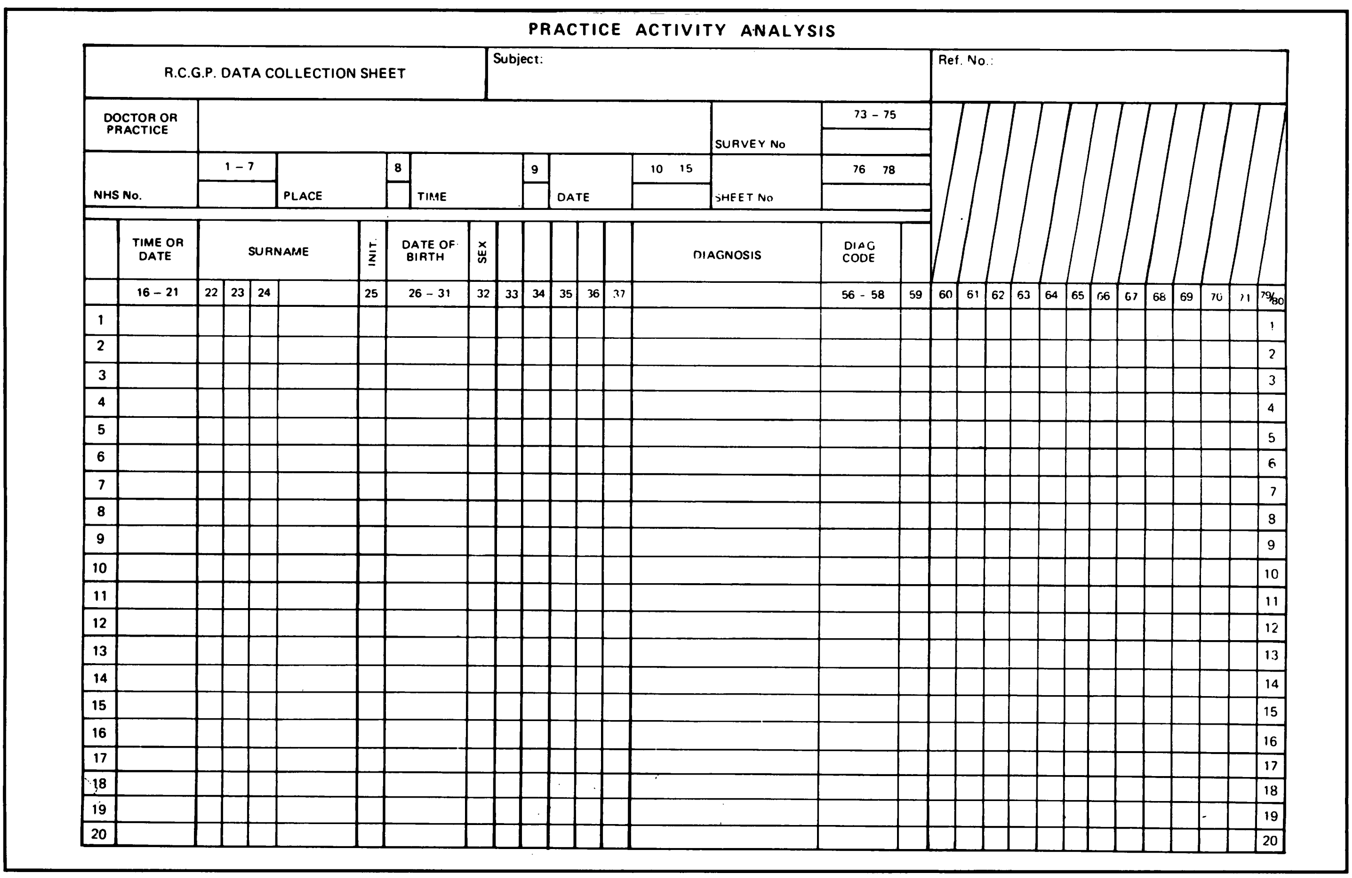
Data collection

THE data collection system initially introduced as part of the practice activity analysis (PAA) programme was developed from the 'L' sheet (RCGP, 1967). Characteristics of the patient, including his identification and those relative to the problems encountered, were summarized in a structured manner. This sheet (Figures 3.1 and 3.2) had the potential to collect data for many purposes simultaneously but only sufficient columns required completion to fulfil the specific information need for given purposes. The sheet has been used by many doctors for their own purposes but it has proved too complicated for large scale use for audit in general practice.

A second type of data collection sheet was used for the series of activity analyses reported between 1977 and 1978 (RCGP, 1977a-b, 1978a-d). All these data sheets were directed at specific areas of practice activity.

The collection method involved a simple score grid like that in a cricket score book in which the next available number is scored as the relevant event occurs. Participants calculated their own rates using the total numbers of consultations as the denominator and summarized the results to send on for consolidation in Birmingham. Unlike the initial approach, which used the modified 'L' sheet, the data sheets were tailor-made and specific to individual activities.

Three further developments have taken place in the evolution of the PAA data sheets. First, they are more detailed now. For example, in the psychotropic drugs analysis, as well as summarizing drugs prescribed (Figure 3.3), they incorporate a section describing the patients receiving them (Figure 3.4). Secondly, information about the practice is more comprehensive and includes the status of the doctor (principal, assistant or trainee) and for principals an estimate of the list size appropriate to the study period. This is derived by asking the doctor to specify that proportion of the total practice population for which he considers himself responsible during the study period. It has the benefit of accommodating situations in which the registered list size of an individual doctor does not reflect the time involved in the practice and situations in which


PRACTICE ACTIVITY ANALYSIS

R.C.G.P. DATA COLLECTION SHEET | Subject: | Ref. No.:

DOCTOR OR PRACTICE | SURVEY No 73 – 75

NHS No. 1 – 7 | PLACE 8 | TIME 9 | DATE 10 15 | SHEET No 76 78

	TIME OR DATE	SURNAME				INIT.	DATE OF BIRTH	SEX						DIAGNOSIS	DIAG CODE														
	16 – 21	22	23	24		25	26 – 31	32	33	34	35	36	37		56 – 58	59	60	61	62	63	64	65	66	67	68	69	70	71	79/80
1																													1
2																													2
3																													3
4																													4
5																													5
6																													6
7																													7
8																													8
9																													9
10																													10
11																													11
12																													12
13																													13
14																													14
15																													15
16																													16
17																													17
18																													18
19																													19
20																													20

Figure 3.1 Face of initial data collection sheet.

R.C.G.P. SUMMARY SHEET

PRACTICE – STUDY DESCRIPTION – (enter on Final Summary only)

DOCTOR OR PRACTICE

Practice List size _____

Practice Type (tick)

RURAL	
RURAL/URBAN	
URBAN RESIDENTIAL	
URBAN INDUSTRIAL	

Doctors in practice Principals _____ Others _____

Doctors in study Principals _____ Others _____

STUDY

Start _____ Finish _____

Total No. of Weeks _____

Total consultations during study _____

GRIDS for completion where appropriate for individual studies

Age/Sex Distribution

	0–11m B	1–4 I	5–14 C	15–24 Y	25–44 A	45–64 M	65+ E	TOTAL
MALE								
FEMALE								
TOTAL								

Use not specified

ANALYSIS

						TOTAL	Total as Rate/1,000 * consultations
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70							
71							
TOTAL							
Total as * Rate/1,000 consultations							

* Values for the total rate/1000 consultations should only be calculated for the consolidated information at the end of the survey when the FINAL SUMMARY is made.

Figure 3.2 Reverse face of initial data collection sheet.

the practice is not at full strength during the study. Finally, analysis was centralized at Birmingham and individual recorders were sent a report of their performance set in the context of the material consolidated from several recorders.

Data sheets received at the Birmingham Research Unit have generally arrived in batches from recording groups such as those based on local postgraduate centres or, on other occasions, from doctors co-operating in an audit project. Each sheet was checked for completeness. Where incomplete data were received, a restricted analysis was made available to the recorder whenever possible. Completed data sheets were entered onto a computerized data file using a code for the doctor's name. Results for the group were totalled to provide an overall result for comparison with consolidated results received previously. Average practice results for the main statistics were obtained, and the range for each of the topics surveyed were

INSTRUCTIONS PSYCHOTROPIC DRUGS SCORE GRID

A score is made in the grid below on each occasion a psychotropic drug is prescribed, including those occasions on which no face to face consultation takes place at the time. (Drugs used exclusively as anticonvulsant therapy are not included) Combination drugs (e.g. Limbritol) are scored in both appropriate cells of the Grid.

An additional score is made in the Patients Studied table opposite – for each patient receiving a prescription for one or more psychotropic drugs.

	New Prescriptions N.P.	Continuing Prescription at Consultation C.P.	Prescription without seeing the Patient R.P.
Phenothiazines	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Mild Tranquillisers			
Diazepam	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14
Chlordiazepoxide	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14
Others	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14
Anti-Depressants			
Tricyclics	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14
M. A. O. Drugs	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Others	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Hypnotics			
Barbiturates	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Non-Barbiturates	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14	1 2 3 4 5 6 7 / 8 9 10 11 12 13 14
Others	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Figure 3.3 PAA recording sheet for psychotropic drugs.

PATIENTS STUDIED

A score is made for each patient included in the study for whom an entry has also been made in the table opposite (Page. 2)

MALES	AGE	FEMALES
1 2 3 4 5 6 7 8 9 10 11 12 13	0-4	1 2 3 4 5 6 7 8 9 10 11 12 13
1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26	5-14	1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26
1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26 / 27 28 29 30 31 32 33 34 35 36 37 38 39	15-44	1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26 / 27 28 29 30 31 32 33 34 35 36 37 38 39
1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26	45-64	1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26
1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26	65+	1 2 3 4 5 6 7 8 9 10 11 12 13 / 14 15 16 17 18 19 20 21 22 23 24 25 26

Summarise the above results

	MALES	FEMALES
0-4		
5-14		
15-44		
45-64		
65+		
TOTALS		

Scoring Examples: ~~1 2 3 4 5 6 7 8 8~~ 10 11 12 13 (=9)

~~1 2 3 4 5 6 7 8 8 10 11 12 13~~ (=17)

Figure 3.4 PAA recording sheet for patients receiving psychotropic drugs.

detailed as the minimum and maximum rates with the four intervening 20 percentile rates. Presenting the range in this way enables individual doctors to see exactly where they belong in the overall range of performance.

A sample report for one doctor undertaking the psychotropic drugs survey is given in Figure 3.5. The report, which is confidential to individual participants, summarizes personal data about consultations and visiting and is presented with averages for the group. The events and patients involved are distinguished; the events in this case are the prescriptions of psychotropic drugs and the patients involved are those who receive drugs. Both these statistics are presented using consultations and list size as denominators. Further information is provided for the main statistic presented in each analysis (here, the overall prescribing rate per 1000 consultations) in the form of a code letter A-E identifying the quintile to which the result is assigned compared with others in the group. Analyses were also provided using the registered list size as denominator rather than consultations.

'A' indicates performance in the lowest quintile (20 per cent of recorders and 'E' in the highest. Next, there follows analyses by age/sex of patients receiving drugs and a breakdown of the drugs prescribed; all the results are set within the context of average group performance. Drugs are detailed by mode of prescription (new, continuing or repeat), and by broad drug group categories.

Average group performance is not a hallmark of excellence but merely a starting point for discussion and consideration of the data. There are several precedents for its use both within and without medicine. It is the basis for comparison in hospital activity analysis statistics and it provides the reference point for consideration of individual prescribing reports prepared for doctors by the Prescription Pricing Authority. It is also the reference frame for aspects of the commercial world, as for example, for rating assessments for householders.

As an illustration, the report presented here for Dr H044B provided him with the following information. The basic statistics, incorporating list size, consultations, visits and overall prescribing rates, were similar to average group performance. The male/female distribution of patients receiving drugs was also about average but there was a slight bias towards higher prescribing to females aged 15–44. Half the prescriptions were issued in the repeat mode, which is average; he issued more antidepressants than his colleagues, and fewer tranquillizers, but his use of hypnotics was similar. This illustration has been taken from a doctor whose overall performance was about average and it is presented to show the degree of insight available in data even where the result is 'just average'.

Doctor code: H044B Status: Partner

Statistic	*Individual*	*Group average*
List size	2800	2466
Number of consultations	331	322
Consultations per 1000 list	118	131
Number of visits	56	51
Visits per 1000 consultations	169	160
Event rate (per 1000 list)	17	19
Patients involved (per 1000 list)	16	16
Event rate (per 1000 consultations	145	149
Patients involved (per 1000 consultations)	136	126

Rank order in quintile groups A-E (low to high) based on drugs per 1000 consultations C

Distribution % of all patients

	Individual		*Group*	
Age	*Male*	*Female*	*Male*	*Female*
0-4	0	0	0	0
5-14	0	2	0	1
15-44	2	33	7	20
45-64	13	16	10	25
65+	9	24	9	27
TOTAL	24	76	27	73

Psychotropic prescribing rates per 1000 consultations

	Individual	*Group*
Phenothiazines	3	8
Tranquillizers	36	57
Diazepam	33	29
Chlordiazepoxide	3	8
Others	0	20
Antidepressants	60	35
Tricyclics	39	29
MAOI drugs	0	1
Others	21	6
Hypnotics	42	48
Barbiturates	3	6
Non-barbiturates	39	43
Others	3	1
Total	145	149
Mode		
New	36	22
Continuing	24	53
Repeat	85	75

Figure 3.5 An individual practice activity analysis report for the psychotropic drugs analysis.

Validity

Accuracy is a product of reliability and validity (Alderson and Dowie, 1979). Reliability reflects the extent to which the measuring instrument produces consistently reproducible results and validity reflects the exactness of the measure. Reliability carries the implication of a sufficient quantity of data to meet the intended purpose. Precise information about the number of home visits on one particular Monday is not sufficient to plan visiting arrangements for all other Mondays, let alone for the rest of the week. Useful information about any event or subject must be derived from a representative sample. In this context the event may be home visits or prescriptions of psychotropic drugs and the subjects may be patients or doctors. The purpose for which the information is required determines the provisions of the sample. In a morbidity study in which nationally based patient information is required, 5200 doctors each recording for one week is probably a better investment than 100 doctors recording for one year. If, however, doctor behaviour is an important consideration, the situation is reversed. In most information systems a compromise is accepted; a balance

of individual and corporate needs is made reflecting practicability. The reliance placed on the results of a study depends to a large extent on the sample procedure.

In order to make comparisons, numerical data must be presented as rates based on a denominator which is itself valid. A study may produce reliable numerical data about the frequency of an event, but without a valid denominator it is of limited use. In this section accuracy, the denominator and adequacy are considered under separate headings.

Accuracy

Rules: The rules must be understood. In practice activity analysis the rules and definitions which are incorporated in each PAA instrument have been reduced to a minimum and have generally been easily understood. In a few isolated instances, recorders have been uncertain whether patients seen independently of their function as a general practitioner (for example, patients seen whilst acting as a hospital-based clinical assistant) should be included or not and there have been a few instances in which a recorder has had difficulty in estimating the proportion of the registered list for which he was responsible during the study.

Classification of morbidity and drugs: An essential requirement is that the classification into categories is clearly expressed and generally accepted. Experience has shown that doctors do find some difficulties with the disease classification into 18 chapters. For example, the distinction between acute infectious disease and acute respiratory disease (much of which is infectious) is not always appreciated but these appear in separate chapters of the disease classification. The classification of drugs has a similar potential for error. As new drugs are introduced, it is not always clear to which category they should be assigned in an established classification system. For example, some recent antidepressant drugs belong to a pharmacological tetracyclic group which was not included in the original PAA classification of psychotropic drugs. Most doctors have entered them along with the tricyclics but others more precisely as "other antidepressants". It is important always to keep in mind this potential for error in studies based on general practice data. The development of menu programming for computer-based practice information systems (RCGP, 1986) is a welcome advance.

Discipline: Independent of minor difficulties with classification systems, a further requirement for accurate data is that the rules are consistently obeyed and that relevant events are recorded without omission. The discipline of this type of recording is unacceptable to some doctors. In any recording system where a task is to be undertaken which is additional to routine activities, there is always the danger of a shortfall. A uniform and consistent shortfall by all recorders does not present a serious problem where there are independent means of quantifying it. In contrast, evidence of haphazard or highly variable shortfall would cause considerable anxiety. In the final analysis the only way in which accuracy can be checked calls for a comparison between independent measurements of the same events. For this comparison to be useful, the accuracy of one of the data sets must be beyond question. Such critical appraisal is rarely practicable and hence inferences must be drawn from whatever information is available.

Consultation and referral rates: Information derived from 32 singlehanded practitioners involved in the first year of the Second National Morbidity Study and 27 in the second year is compared with information obtained from practice activity analysis. For comparison purposes the practice activity analysis data have been multiplied by 25 to provide an annual estimate making a small allowance for bank holidays and so on (although generally it is not advisable to extrapolate in this way). Consultations per 1000 list are compared in Table 3.1, referrals per 1000 list in Table 3.2, and home visits per 100 consultations in Table 3.3. These comparisons point to a similarity of both mean and range of performance as measured in both data sets.

Prescription rates: Further comparison is available in material from the Prescription Pricing Authority. In each of the last few years there have been approximately 43 million prescriptions for psychotropic drugs issued yearly to the 46 million people in England. A two-weekly rate derived from this figure is 38 per 1000 population, which is roughly twice that obtained in PAA data. Of the 43 million prescriptions, 8 million (19 per cent) were for antidepressants, 14 million (33 per cent) for hypnotics and the remaining 21 million (49 per cent) chiefly tranquillizers. Comparative proportions from PAA material are similar: 23 per cent for antidepressants, 33 per cent for hypnotics, and 44 per cent for tranquillizers, but the total volume of prescribing is substantially less in PAA material.

Table 3.1 Consultations per person per year.

National Morbidity Survey 2, year 1 (32 single-handed doctors)
National Morbidity Survey 2, year 2 (27 single-handed doctors)
Practice activity analysis (principals, 2 week rate multiplied by 25) rates shown in centiles.

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
National Morbidity Survey 2, year 1	3.3	1.9	2.9	3.2	3.4	3.7	5.8
National Morbidity Survey 2, year 2	3.3	1.7	2.7	3.3	3.4	3.9	6.3
Practice activity analysis 1980 (n = 68)	3.1	1.9	2.5	3.0	3.3	3.6	5.0
Practice activity analysis 1981 (n = 180)	3.1	1.7	2.6	2.9	3.3	3.8	6.7
Practice activity analysis 1982 (n = 77)	3.0	1.8	2.4	2.8	3.1	3.8	5.7

Table 3.2 Referrals per 100 persons registered per year.

National Morbidity Survey 2, year 1 (32 single-handed doctors)
National Morbidity Survey 2, year 2 (27 single-handed doctors)
Practice activity analysis (principals, 4 week rate multiplied by 12.5) rates shown in centiles.

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
National Morbidity Survey 2, year 1	12	6	8	10	14	17	26
National Morbidity Survey 2, year 2	10	6	8	9	10	15	26
Practice activity analysis 1980 (n = 74)	13	4	10	11	14	19	48
Practice activity analysis 1981 (n = 67)	13	3	10	12	15	19	35
Practice activity analysis 1982 (n = 59)	13	5	10	12	15	18	31

Table 3.3 Home visits per 100 consultations.

National Morbidity Study 2, year 1 (32 single-handed doctors)
National Morbidity Study 2, year 2 (27 single-handed doctors)
Practice activity analysis (principals, 2 week rate multiplied by 25) rates shown in centiles.

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
National Morbidity Survey 2, year 1	16.1	4.9	10.0	14.5	16.2	19.7	32.8
National Morbidity Survey 2, year 2	14.8	3.8	9.2	15.7	15.9	17.3	32.9
Practice activity analysis 1980 (n = 68)	16.6	3.9	12.2	14.4	17.8	22.3	29.4
Practice activity analysis 1981 (n = 180)	15.2	1.7	9.1	12.6	15.6	20.4	40.9
Practice activity analysis 1982 (n = 77)	17.6	4.2	11.8	15.1	18.5	22.4	41.0

From PAA surveys (Fleming and Cross, 1984), we do know that approximately half the prescribing takes place in the repeat mode and that this is maximal for hypnotics and minimal for antidepressants. If there were a true shortfall in prescribing attributable to the method of recording in PAA studies, then a differential effect would be expected with maximum shortfall amongst repeat prescriptions, in particular, therefore, amongst the hypnotics. The fact that the relative proportion of hypnotics is equal in both sets of data suggests that PAA participants have recorded faithfully. This conclusion is supported by the study of prescribing amongst the practitioners recruited to the Third National Morbidity Study (Fleming, 1984) in which highly significant reductions in the prescribing of psychotropic drugs occurred in these practices compared with matched averages identified by family practitioner committees (FPC). A similar analysis involving antibiotic prescribing shows that both the PAA returns and prescribing in the morbidity study practices were substantially below those seen in FPC average prescribing statistics. The inference from both these findings is that doctors sufficiently motivated to be involved in research in the third morbidity study on the one hand, and in using practice activity analysis on the other, are not necessarily representative of doctors generally.

Denominator

For most medical purposes, the denominator for deriving rates is the population at risk. Sometimes this has to be considered with regard to age and sex groups separately and sometimes adjustment needs to be made to cover a period of risk. For example, in the large general practice morbidity surveys the denominator is the number of population days divided by 365, and this permits the inclusion of people who are registered within the practice for only part of the year. For many purposes, especially those concerned with general practitioner activities, a more logical denominator is the number of persons consulting, which was used in the third study as denominator for the expression of specialist referral rates (RCGP, 1986). In some primary health care systems there is no patient registration and hence the choice of denominator is limited.

In practice activity analysis, the number of consultations is the main denominator. Consultation rates are much more variable than the proportions of people who consult. Most of the analyses involve recording over a two-week period and the distinction between the total number of patients consulting and the total number of consultations is less apparent than in morbidity studies lasting one year. The subject has been explored in an analysis of consultation frequency among 49 doctors during a two-week period (Fleming, 1985). For short periods it is acceptable to use consultations as a denominator but caution should be observed if the recorder is known to have an extreme consultation rate. All PAA reports contain a figure for the number of consultations per 1000 list. In two weeks' data, the mean rate for consultations per 1000 list is 130 and the standard deviation (SD) approximately 37. Where the rate for consultations per 1000 list is more than two standard deviations away from the mean, recorders should be particularly cautious in the interpretation of PAA data. (The consultation rate is normally distributed.)

In the Second National Morbidity Study the proportion of patients in a practice who consulted was remarkably consistent. Even without standardization for age, the mean patient consulting rate for the practices involved were, for males, 668.1 mean (SD 54.7) and for females 748.6 mean (SD 44.2) (RCGP et al., 1974). Because the variation between practices for this statistic

is so small compared with that seen for most other general practitioner activities, it is immaterial whether list size or number of patients consulting is used as denominator.

Adequacy

Adequacy can be expressed only within the context of the information required. Sample sizes are determined after due consideration has been given to the confidence required of a particular survey result. In this respect, we have worked with a notion of accuracy that requires a result within 25 per cent of the truth. For some purposes this is insufficient and for others it is generous. The level of accuracy has to be determined by the person requiring the information after due consideration of the economics of the exercise.

The degree of variation among the doctor-based samples is an additional determinant of total sample size. Consideration must be given both to the number of doctors to provide an adequate sample to encompass doctor variation and the length of time each doctor is required to collect relevant data to provide a satisfactory sample of patients and of his own performance. In Table 3.4, consultation rates by diagnostic category are presented for the 25 singlehanded practitioners contributing information to the first and second years of the Second National Morbidity Study. The table includes the mean practice rate, the standard deviation, which is commonly 40 to 50 per cent of the mean reflecting the variability between doctors, and the correlation coefficient commonly around 0.9 reflecting the consistency of individual doctors from one year to the next. The result for infectious diseases provides a notable exception and this is expected because of the epidemic nature of many of the illnesses concerned. These observations apply similarly to general practice activities as was seen earlier (Table 1.3).

In Table 3.5 the mean and standard deviation of events and activity rates reported in a number of PAA studies are presented. Again the standard deviations are commonly around 50 per cent of the mean. Given a parameter which is normally distributed, the standard deviation, sample size (n) and standard error (SE) are related according to the formula

$$SE = \frac{SD}{\sqrt{n}}$$

If for any activity where the standard deviation is half the mean, then the standard error for a sample population of 100 will be

$$\tfrac{1}{2} \text{ mean} \div \sqrt{100} = 5\% \text{ mean.}$$

Confidence in the result of a study can be specified by expressing the confidence interval which is within two standard errors of the mean. In this example, therefore, we can be 95 per cent confident that the true mean for a statistic based on the 100 doctors surveyed is within 10 per cent of the mean obtained in the study. By similar calculations, the confidence interval from a sample of 25 doctors is within 20 per cent of the mean and from 50 doctors within 14 per cent. In general we would conclude that any statistic which is district based needs to be obtained in a minimum population of 20 general practitioners.

Table 3.4 Consultation rates per 1000 persons registered for singlehanded practitioners included in Second National Morbidity Study 1970–71 and 1971–72: mean rates, standard deviation and correlation (r).

	1970–71		*1971–72*		
Chapter	*Mean*	*SD*	*Mean*	*SD*	*r*
1. Infective and parasitic disease	127	61	135	51	.48
5. Mental disorder	367	180	360	189	.96
6. Diseases of nervous system	230	59	226	61	.84
7. Cardiovascular disease	294	101	288	115	.89
8. Respiratory disease	642	195	613	192	.93
9. Genito-urinary disorders	173	57	168	48	.90
All consultations	3458	741	3320	792	.94

Table 3.5 Mean and standard deviations for events and activity rates in PAA studies.

	1980		*1981*		*1982/3*	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
Chemotherapy						
Drugs	33	15	38	18	32	19
Prescribing rate	116	48	152	67	119	51
Investigations						
Specimens	35	14	32	15	27	12
Investigation rate	126	69	124	64	115	59
Psychotropic drugs						
Drugs	48	28	53	30	47	29
Prescribing rate	154	87	163	80	166	97
Referrals						
Events	28	13	25	13	24	10
Referral rate	45	16	41	25	47	21
Visits						
Events	53	24	42	24	48	22
Visiting rate	166	58	150	66	176	67

Recording period

Next we must consider how long a doctor must record to obtain adequate information about a given event. In Table 3.6 events are considered as a proportion of consultations ranging from 50 per cent down to 3 per cent; referrals occur in about 5 per cent of all consultations, investigations in 10 per cent; psychotropic drugs are prescribed in around 20 per cent; male patients are seen in about 40 per cent of all consultations. The number of consultations undertaken in each week by the average general practitioner is about 150, which is equivalent to 600 a month or 7500 in one year. The table gives the observed events and 95 per cent confidence intervals for a range of event consultation proportions using the formula

$$SE = \sqrt{\frac{pq}{n}}.$$

(p = the percentage occurrence and q the percentage non-occurrence).

If we arbitrarily accept a value for the two standard errors which is within 25 per cent of the mean proportion, then this criterion is met with 100 consultations for proportions of 40 per cent and 50 per cent. In 300 consultations, this criterion is met at the 20 per cent proportion.

Table 3.6 Observed events and 95 per cent confidence intervals in given event frequency: consultation proportions.

	Consultations						
	100	150	200	300	600	1000	2000
Event frequency							
50%: mean	50	75	100	150	300	500	1000
Confidence interval	40–60	73–87	86–114	133–167	276–324	468–532	956–1044
40%: mean	40	60	80	120	240	400	800
Confidence interval	30–50	48–72	66–94	103–137	216–264	369–431	756–844
30%: mean	30	45	60	90	180	300	600
Confidence interval	21–39	34–56	49–71	74–106	155–205	271–329	560–640
20%: mean	20	30	40	60	120	200	400
Confidence interval	12–28	20–40	28–52	46–74	100–140	175–225	364–436
10%: mean	10	15	20	30	60	100	200
Confidence interval	4–16	5–25	12–28	20–40	46–74	81–119	174–226
5%: mean	5	7.5	10	15	30	50	100
Confidence interval	1–9	2–13	4–16	7–23	19–41	36–64	80–120
3%: mean	3	4.5	6	9	18	30	60
Confidence interval	0–6	0–9	1–11	3–15	10–26	19–41	45–75

Values above this line include those where the value for two standard errors is within 25 per cent of the mean.

It is only just achieved for a 3 per cent proportion in 2000 consultations. In Figure 3.6 the problem is considered graphically. Events occurring in 150 300 600 and 1000 consultations are plotted against the ratio (per cent) of two standard errors to the mean (given that the number of events specified represents the true mean). It is evident that where 60 events have been included whether in 150 or 1000 consultations, the estimate obtained will fall within 25 per cent of the mean proportion on 95 per cent of occasions.

Having discussed the theory of sample size and confidence intervals, it is now possible to consider confidence intervals in relation to PAA results received. In Table 3.7 the confidence intervals are presented for some sample PAA results. For each survey it is presented for recorders

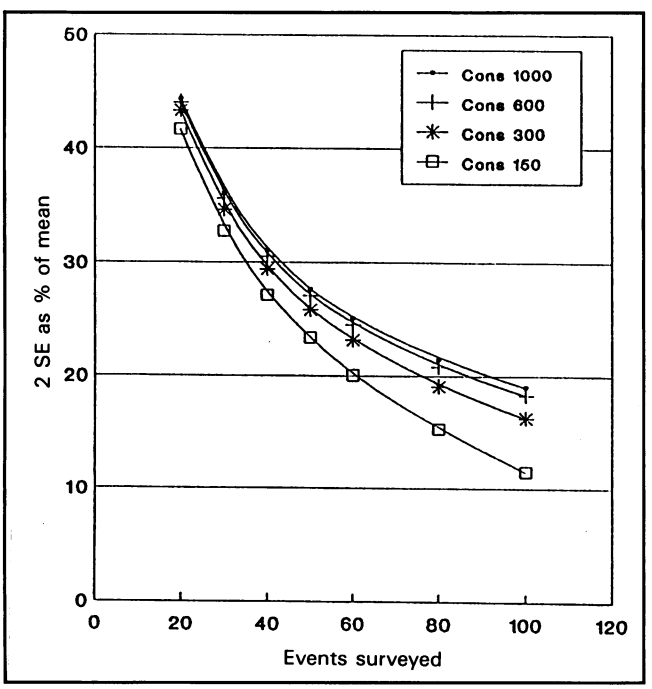


Figure 3.6 Two standard errors as percentage of mean plotted against events surveyed in specified numbers of consultations.

Table 3.7 95 per cent confidence intervals surrounding typical PAA results for 20th, 50th and 80th centiles.

Results based on 300 consultations in 2 weeks (except referrals: 600 consultations in 4 weeks). All rates per 1000 consultations (confidence interval).

	20th	*50th*	*80th*
Chemotherapy	80 (50–112)	130 (92–168)	160 (118–202)
Investigations	75 (53–108)	120 (82–158)	160 (118–202)
Psychotropic drugs	85 (53–117)	160 (118–202)	220 (172–268)
Home visits	100 (66–134)	160 (118–202)	220 (172–268)
Referrals	30 (16– 44)	45 (21– 69)	60 (32– 92)

at the 20th, 50th and 80th centiles. For all the surveys except referrals the recorder at the 80th centile is distinct from the recorder at the 20th centile. In the referral study this is not so. The survey needs to be continued over 1000 consultations to achieve this distinction.

In the early development of practice activity analysis we were provided with a set of practice data by a Leicester doctor which provides a practical insight into the sampling problem. The data covered 69 two-week periods and 26 four-week periods which could be analysed. The mean visiting rate was 162 (SD 32), the investigation rate 56 (SD 16) and the referral rate 59 (SD 10): all per 1000 consultations. The number of individual analysis results which fell within the quintiles of the first recorded group of surveys (RCGP, 1978a, 1978c, 1978d) are given in Table 3.8. If these data had been submitted in PAA surveys of two or four weeks' duration, none of the results would be grossly confusing. The visiting rate was almost average and 57 of the 69 analyses placed him between the 40th and 80th centiles: the investigation rate was low and 66 of the 69 analyses placed him below the 40th centile: the referral rate was high and 23 out of 26 analyses placed him above the 60th centile.

In summarizing this information about sample size, it is important to remember the theoretical basis for obtaining samples, namely that they must be random or at the least representative. Thus, when discussing practice ac-

Table 3.8 Distribution of 'Jarvis' individual data for home visits, investigations and referrals (per 1000 consultations) compared with practice activity analysis.

	Home visits							
Jarvis data, ±1SD			−1SD 130		Mean 162		+1SD 194	
Practice activity analysis results (20th centiles)	28(min.)	100		138		164		205	353 (max.)
Distribution of Jarvis results n = 69			7		32		25	5	
	Investigations							
Jarvis data, ±1SD		−1SD 40	Mean 56	+1SD 72				
Practice activity analysis results (20th centiles)	10 (min.)		62		88	117		168	366 (max.)
Distribution of Jarvis results n = 69		40		26	3				
	Referrals							
Jarvis data, ±1SD						−1SD 49	Mean 59	+1SD 69	
Practice activity analysis results (20th centiles)	17 (min.)	31		38		46	57		98 (max.)
Distribution of Jarvis results n = 26					3	7	16		

tivities a random set of consultations should be considered and when considering groups of practices, random selection is again desirable.

Because of the consistency observed in so many doctor activities, it may be that consecutive consultations should not be considered in the same way as a random number of consultations. Using consecutive consultations may enhance confidence. Obtaining reliable data from practices selected at random is not feasible unless it is paid for at commercial rates. Hence the non-randomness of selected practices must be remembered when interpreting data.

CHAPTER 4

Experience and lessons from practice activity analysis

IN this chapter we summarize some practical experiences of practice activity analysis and conclude with an overview of lessons learned. Some of the material has been presented elsewhere and in these cases the detail presented has been kept to a minimum and source references provided. The South East Thames experiment concerned with the evaluation of practice activity analysis has not previously been published and is presented as a complete paper under the authorship of JW Baker, K Dawes and DM Fleming. The experience of practice activity analysis as used in the Third Morbidity Study in general practice is also presented as a complete report which has not been published elsewhere.

Practice psychotropic drugs study

This study provides a practical example of practice activity analysis operating in a four-partner practice (RCGP, 1977). It comes from the early days of the development of practice activity analysis but illustrates some important points.

Prescriptions for psychotropic drugs were monitored during one week. Those issued at consultation were counted separately from those issued as repeats (no simultaneous consultation). Counts were made of antidepressants, hypnotics (barbiturates and non-barbiturates) and all other psychotropic drugs. Rates were derived for each of the partners and for the entire practice using the registered list as denominator (Table 4.1). These were discussed by the partners and the first point of comparison related practice data to the larger survey of psychotropic drugs published by Parish et al. (1973). There was increased use of antidepressants in the practice and decreased use of hypnotics. There was considerable variation among the partners.

Prescriptions issued as repeats as opposed to issue at consultation are considered in Table 4.2. Repeat prescriptions accounted for approximately half of all prescriptions but this analysis revealed a number of features deemed unsatisfactory by the partners. In particular the relatively high rate for barbiturates in the repeat mode was unexpected.

The interpretation of data was made difficult because the most recent partner had a nominal list which did not reflect his responsibilities and workload in the partnership. The exercise illustrated the need for comparable data from outside the practice and for a satisfactory denominator for making inter-partner comparisons. It also produced a surprising element in the results for repeat prescriptions, which was an enlightenment to partners and an illustration of the difference between what we actually do and what we think we do.

Table 4.1 Prescribed items of psychotropic drugs per 1000 population per year by doctor.

		Hypnotics		*Other psycho-*	
Doctor	*Antidep-ressants*	*Barb-iturates*	*Others*	*tropic drugs*	*All*
A	478	13	70	297	858
B	289	77	153	527	1046
C	278	113	251	468	1110
D	189	94	163	417	863
All practice	324	71	158	407	960
Parish data	142	158	291	382	973

Table 4.2 Proportion % of prescribed items issued in repeat mode.

		Hypnotics		*Other psycho-*	
Doctor	*Antidep-ressants*	*Barb-iturates*	*Others*	*tropic drugs*	*All*
A	44	100	100	83	63
B	53	100	78	68	67
C	41	64	56	50	50
D	54	64	90	59	64
All practice	46	70	73	63	59

An international comparison

From time to time during recent years, PAA material has been presented and discussed in the European General Practice Research Workshop (Fleming and Maes, 1980). This material has included contributions from several European countries. In particular a group of Belgian doctors contributed to a comparable study of performance.

The means and range of results obtained from these doctors are compared with those obtained from 100 doctors in the UK who provided material for the initial publications of PAA material (Table 4.3).

The comparison drew attention to several points:

1. The mean performance differs little in spite of considerable differences in the organization of primary care in Belgium and the United Kingdom.
2. The range of individual doctor performance is remarkably similar in the two countries.
3. The PAA method was followed readily in another country and another language. The method had a potential for international studies.

Table 4.3 Comparison of practice activity analysis in UK and Belgium.

Mean and quintile rates (per 1000 consultations).

	Mean rate	*Minimum rate*	*20th rate*	*40th rate*	*60th rate*	*80th rate*	*Maximum rate*
Choice of chemotherapy							
UK (112 recorders)	99	5	66	83	108	137	275
Belgium (37 recorders)	123	3	69	100	117	143	280
Investigation specimens							
UK (100 recorders)	112	10	62	88	117	168	366
Belgium (44 recorders)	149	27	83	131	150	185	359
Psychotropic drugs							
UK (100 recorders)	189	40	110	160	213	267	415
Belgium (44 recorders)	146	39	97	120	144	196	358
Referrals to specialists							
UK (100 recorders)	42	17	31	38	46	57	98
Belgium (37 recorders)	39	14	25	30	38	52	126

The South East Thames experiment

Introduction

In its belief that continuing education for general practitioners lay in the development of small discussion groups and the first requirement was the need to establish "what we do", the South East Thames Faculty co-operated in an experiment to evaluate the practice activity analysis method and to test its effectiveness in modifying behaviour following discussion about performance. This paper describes our experience in recruiting doctors for small audit groups and an experiment carried out to test the effect.

Method

General practitioners agreeable to act as tutors were identified in various parts of the South East Thames Region and they recruited general practitioners willing to take part.

There were 10 groups in all varying from 6–15 members. Five PAA studies were used in the order:

- Choice of chemotherapy
- Investigations
- Psychotropic drugs
- Referrals to specialists
- Visiting profile

Investigations, psychotropic drugs and referrals provided the main basis for the experiment and each regional group was allocated to one programme where participants were involved in: recording only (participation category A); recording and data return (category B), or recording, data return and discussion of the results (category C). The planned programme is summarized in Table 4.4. In the course of analysis, a fourth category (D) emerged in which an invitation to attend a discussion group was given but for various reasons the doctor did not attend. Participants in categories C and D often belonged to the same practices and it was not possible to isolate the influence of discussion within the partnership from discussion in a formal pre-arranged group.

Group leaders were provided with a report and transparencies outlining consolidated results for the local group and for the region, and with individual reports for members of the group. Information was provided about the number of specific events or activities recorded in the study, the relevant rates, the rate expressed as a percentage of the mean and the rank order (low to high) of an individual's activity rate, and finally basic data about the list size, total consultations and doctor's code number. Participants were asked to repeat the recording 12 months later and the two sets of results were compared. Change was sought by:

Table 4.4 Programme of recording in SE Thames experiment by participation category.

	Recording	*Recording and data return*	*Recording, data return and discussion*
Chemotherapy	—	—	All groups
Investigations	A	B	C
Psychotropic drugs	B	C	A
Referrals to specialists	C	A	B
Visiting profiles	—	—	All groups

1. Comparing the means in each recording group for each year.
2. Analysing movement amongst those with extreme results.
3. Carrying out "new treatment analysis" concerned with the number of recorders using a particular drug or investigation procedure on at least one occasion in the study period. Treatments with a very low recording rate were excluded from this analysis which sought to identify particular activities taken up or discarded following participation.
4. Analysing the correlation between paired sets of data from the two recording periods. High correlation indicates little change whereas low correlation suggests that the original behaviour pattern has been disturbed.

This range of analyses were designed to overcome the problem of identifying change in situations in which the variation among individual results is considerable. Both consultations and list size were used as denominators in the analyses though this report is confined to material based on consultations as denominator. Results using the list as denominator are not materially different.

Results

In all, 837 data sheets were received, 472 in the first year and 365 in the second; of these, 63 were submitted by trainees (Table 4.5). These sheets concerned 248 000 consultations by principals and 11 000 by trainees with a two-weekly average of 320 and 180 consultations respectively. The average 320 consultations is equivalent to a rate of 130 consultations per 1000 list in two weeks.

For the purpose of this experiment, data from trainees and data from recorders undertaking fewer than 149 consultations in two weeks were excluded and this left 746 data sheets for analysis. There were 197 paired data sheets (i.e. data sheets for both recording periods provided by a participating doctor) and these constitute the 'dual data' in which the main comparisons are made. The remaining 352 data sheets constitute the 'extra data' (data sheets for only one of the recording periods), which serve as subsidiary controls. Altogether the experiment included data provided by 238 recorders, eight of whom provided dual data for every one of the studies. The study design permitted involvement on an optional basis in any or all of the recording exercises according to practice and personal convenience, and hence the difference between the 837 total data sheets and the 394 experimental group.

Choice of chemotherapy: This was the introductory study in which all participants were invited to attend local group meetings and hence there are no participation categories A and B. Forty doctors provided dual data and their mean total prescribing rates were similar in both years (Table 4.6). The high values of the standard deviation in relation to the mean indicate considerable variation of individual performance. The results in dual data did not differ significantly from those in extra data in either year.

Data relevant to individual drug usage have been systematically examined for evidence of change. Mean prescribing rates for natural penicillins (almost exclusively penicillin V) and erythromycin are given in Table 4.7. In dual data the prescribing rate for penicillin was similar in both years whereas in extra data the rate in the second year had fallen. For erythromycin the rates were similar in the two years in extra data but the rate in dual data for 1981 was greater than that for 1980. In an analysis of variance comparing the 1981 results in dual and extra data for both penicillin and erythromycin, the differences just failed to reach statistical significance at the 5 per cent level when using consultations as denominator, though both were statistically significant ($p < .05$) when using the list size as a denominator. Additionally, we observed that among the 40 doctors returning dual data, there were 12 in the first year and only six in the second year who did not use erythromycin at all, whereas amongst those submitting extra data, 14 out of 46 in the first year, and 13 out of 49 in the second year, did not use any.

Investigations: The mean investigation rates were similar in both years (Table 4.8) and there were no differences which can be related to the level of participation in this experiment.

Psychotropic drugs: The material is presented (Table 4.9) with dual data consolidated into two categories - recording only (A) and combined feedback groups (B, C

Table 4.5 Data sheets returned by study and status of recorder: totals and average numbers of consultations.

	Principals		*Trainees*	
	Year 1	*Year 2*	*Year 1*	*Year 2*
Choice of chemotherapy	90	91	8	11
Investigations	117	86	12	6
Psychotropic drugs	89	69	7	3
Referrals	73	42	4	4
Visiting profile	68	49	4	4
Total	437	337	35	28
Total consultations*	145 365	102 420	6657	4688
Average consultations per 2 weeks	333	304	190	167
Average consultations per 2 weeks (year 1 and year 2)	320		180	

*Adjustment made for overlap of recording for referrals and visiting profile.

Table 4.6 Choice of chemotherapy.

Prescribing rates by participation category (mean and SD per 1000 consultations).

	1980			*1981*		
Participation category	n	Mean	SD	n	Mean	SD
Dual data						
C	17	112	48	17	116	34
D	23	94	35	23	117	50
All	40	102	42	40	116	43
Extra data	46	113	36	49	109	48
Combined data	86	107	50	89	113	46

Table 4.7 Rates of prescribing (per 1000 consultations) natural penicillins and erythromycin by year in dual and extra data.

	Penicillins		*Erythromycin*	
	1980	*1981*	*1980*	*1981*
Dual data				
C	23.6	22.7	8.1	10.0
D	20.8	23.0	11.5	15.5
All	22.0	22.9	10.0	13.2
Extra data	22.9	17.2	8.2	8.3

Table 4.8 Investigations.

Activity rates by participation category (mean and SD per 1000 consultations).

	1980			*1981*		
Participation category	*n*	*Mean*	*SD*	*n*	*Mean*	*SD*
Dual data						
A	21	117	51	21	128	82
B	11	152	98	11	129	83
C	12	123	43	12	122	34
D	17	115	39	17	122	46
All	61	124	58	61	125	65
Extra data	52	123	48	33	113	60
Combined data	113	123	53	94	121	63

and D) since the numbers involved were small. Compared with doctors supplying extra data, those supplying dual data were high prescribers. A slight reduction in prescribing was observed in the second year by those receiving feedback information, though this does not reach statistical significance at the 5 per cent level. Detailed analysis of the individual drug groups suggests that any reduction in psychotropic prescribing among the feedback groups was localized to the prescription of minor tranquillizers (Table 4.10). Prescribing rates in the repeat mode which accounted for half of all the prescriptions did not differ significantly between years.

Referrals and home visiting: The results of the analysis in these two studies are not presented in detail as they showed no evidence of change.

Discussion

This experiment has shown that it was not difficult to recruit interested doctors into groups for self-evaluation. Acceptance of audit of any sort requires careful nurturing (Irving and Temple, 1976). The willingness of several doctors to involve themselves is a success. There were misgivings about involvement in a research project, which for some doctors provided a threat rather than a stimulus. For others there was a feeling that the profession might have something to hide and it was undesirable to "reveal all". Response varied from groups that were keen to continue even after the end of the project to others which collapsed after only three recording periods. Some of the groups were very small and probably below a size necessary to sustain critical discussion and encourage the emergence of a consensus. Freeling and Burton (1982) observed the recording was more likely to take place if it followed discussion but for us the reverse applied.

Table 4.9 Psychotropic drugs.

Prescribing rates by participation category (mean and SD per 1000 consultations).

	1980			*1981*		
Participation category	*n*	*Mean*	*SD*	*n*	*Mean*	*SD*
Dual data						
A	19	170	60	19	176	87
B,C,D	18	159	63	18	149	67
All	37	165	61	37	163	78
Extra data	50	154	93	24	150	74
Combined data	87	159	80	61	158	76

Table 4.10 Prescribing rates in the repeat mode and for totalled minor tranquillizers (per 1000 consultations).

	Repeat prescriptions		*Minor tranquillizers*	
	1980	*1981*	*1980*	*1981*
Dual data				
A	83.7	90.2	65.4	64.3
B,C,D	82.6	79.3	61.0	51.5
All	83.2	84.9	63.3	58.1
Extra data	84.5	78.8	56.1	53.6

Participation in this programme has proved a valuable opportunity to observe group interaction. Lessons have been learned which relate to the organization of such educational activities and prompt the following recommendations:

1. Peer review as a means of postgraduate education must be led by a leader committed to the concept.
2. Peer review programmes should not involve doctors in more than two or three recording exercises per year.
3. Personal analyses must be kept simple and made available to the participants before discussion meetings.
4. The time intervals between data collection, analysis, receipt of results, and discussion must be short.
5. Discussion in groups must come from those who have participated, and who have measured their own performance, rather than those present as observers.
6. Participants must be willing to receive criticism and to justify their performance.

These recommendations are in general similar to those of Rowe and Brewer (1972) who were concerned with hospital activity analysis.

The main object of the study was to evaluate the potential for change, and participation has not shown conclusive evidence of any major effect on subsequent performance. Some small differences in the use of erythromycin and natural penicillins are shown to be related to participation, particularly so, since discussion of this topic was focused on antibiotic use in children. The absence of more convincing evidence of change partly reflects the difficulty of recognizing individual change in data in which the overall range of results is so great. Group change is the net sum of all changes; this experiment does not measure the individual changes which arise out of a realization of personal performance.

The negative results from this experiment provide a challenge to the philosophy of practice activity analysis and raise broader questions about the basis for change and the means of achieving it. Change stems from the conviction that an alternative approach is better. Small changes do occur where small errors of omission or commission are corrected and these are fundamental to practice activity analysis. It is only by measurement that such errors are even identified and without measurement there is a tendency to believe that they do not exist. These small changes, however, are not readily demonstrated in studies of short duration because they invariably relate to infrequent events.

Given that recorders in this study were provided with measurements, attention should focus on the appropriateness of the measurement and feedback information (McColl, 1979). Initially, the feedback information was found to be excessive and the manipulation of the data at times misleading. As a result, feedback was simplified during the course of the experiment. The mathematical skills of doctors are widely variable and feedback requirements differ.

A second focus for attention concerns educational input. Continuing education is accepted as desirable and necessary but there is little evidence of benefit arising from it. The impact of didactic teaching on the habits or behaviour of general practitioners is rarely demonstrated quantitatively. Change of behaviour can only follow a conviction that there is a need for change and this im-

plies a need for the individual to be presented with evidence that convinces him. Small group discussions are central to the appropriate interpretation of data from our practices. The educational skills required to lead effective discussion groups should not be under-estimated nor should the task be delegated simply to the most willing participant. A discussion group is the forum in which standards can evolve and goals be set; practice-based information is the resource.

A third focus concerns the nature of standards. Standards and not norms are the determinants of good care (Shaw, 1980). In the final analysis standards must be related to outcome but these will only ever be determined by a rigorous process of continuous monitoring both of process and structure by means which are reproducible. In a study of the impact of audit on preventive measures (Fleming and Lawrence, 1983), improvement was demonstrated in, for example, the achievement of increased rates of blood pressure recording. In that study standards were available, whereas no such generally accepted standards exist in relation to such matters as referral or prescribing rates. Additionally it must be recognized that standards are temporal and subject to continuous refinement. In the development of standards consensus views must be valued, although the results of properly conducted research work cannot be ignored. In the present study we avoided making prior judgements about desirable standards, nor did we suggest that groups should set their own. Each group was allowed to select its own topics for discussion. In any future experiment we would suggest that standard setting be made an integral part of the discussion.

Summary

We have reported the results of an experiment designed to assess whether it is possible to form effective small groups within a large faculty and the effectiveness of practice activity analysis as a learning method. Practice activity analysis involves the measurement of individual performance and consideration of results with colleagues who have made the same measurements.

The experiment took place in the South East Thames Faculty of the Royal College of General Practitioners and involved 10 small groups in a randomized programme of activity analysis during the winter of 1980 followed by a repeat 12 months later. Three main levels of involvement were defined: recording only; recording plus feedback; recording, feedback and discussion. The experiment was concerned with PAA studies of chemotherapy, investigations, psychotropic drugs, referrals to specialists, and home visiting. The data for most of the studies involved two weeks' recording; 746 data sheets were analysed. The main comparisons concerned the results in 1980 and 1981 but both were examined in relation to other data received about the same time.

The data were examined in considerable detail and there was no substantial evidence of change between the two years. One or two small changes occurred but these could not be localized at any particular level of involvement in the experiment. In general, the results in the experimental groups were similar to those received from other sources in each of the years and the overall conclusion is that involvement in practice activity analysis had no demonstrable group effect. This does not mean that individuals within groups did not alter their behaviour. The experiment was not designed in such a way that individual change could be revealed.

The wide variations that exist among general practitioners for most activities are likely to continue unless a clearly 'better' outcome can be demonstrated. Further studies are needed to demonstrate the ability to agree a standard, and change to achieve it.

Acknowledgements

We would like to thank the College tutors who convened the small groups and Mrs Jennifer Smith, Mrs Olive Drawbridge, Mrs Eileen Kelly and Mrs Joan Dainty for secretarial assistance. Financial support was provided by the Research Committee of the South East Thames Regional Health Authority.

New College, Oxford

For a number of years the postgraduate courses held at New College, Oxford have used PAA methods for learning. The audits of preventive care and the influence on performance have been described elsewhere (Fleming and Lawrence, 1983). In addition to these, PAA prescribing studies and the visiting profile have been used. The record review of disability (Fleming and Elliott Binns, 1985) was undertaken by course members and provided the material for discussing this subject.

The New College course has produced the most effective educational groups. Though the doctors did not know each other previously, they were all committed to a one-week residential course and had worked together for two or three days before considering the PAA material. The importance of the group structure is discussed elsewhere (Pendleton et al., 1986) in a comparison of the results from the South East Thames experiment and the New College experience.

Morbidity statistics from general practice

The Third Morbidity Study from General Practice was based on similar requirements and used a similar design to that of its predecessor, the Second Morbidity Study. In a comparison of results obtained in the second study with those in the General Household Survey, we noted a small reduction in overall consultation rates especially those involving home visits (Crombie and Fleming, 1986). The two studies employed differing methods and were designed for different purposes but the differences identified prompted us to seek additional methods for validating the Third Study. The methods adopted for the purpose allowed us to look simultaneously at certain additional items of information.

This report summarizes the purpose, method, and conclusions drawn (where not self-evident) from each of the analyses undertaken under each appropriate topic. The timing of the analyses based on specific recording weeks is summarized in Table 4.11. Practices were divided in groups of approximately equal size in order to obtain an even spread throughout the year.

Consultations per patient

Purpose: To compare consultation rates obtained in PAA sample data with results from the entire study.

Mean consultation rates per 1000 population were provided by four practice activity analyses: investigations, visiting profile, referral to paramedicals, and proxy consultations (Table 4.12). Taken together these studies report a mean consultation rate equivalent to 3.48 consultations per patient per year.

Further information about consultation rates was obtained in the study of index entries per consultations, which is discussed later.

Distribution of consultations

Purpose:

1. To examine the distribution of consultations by place and time of day
2. To facilitate a comparison of visiting rates with data from other sources.

The distribution of consultations is provided in analyses of investigations, referrals to paramedicals and proxy consultations (Table 4.13). The distributions shown in all of these studies are similar and also similar to those reported in the consolidated material from practice activity analyses involving other doctors (Fleming, 1986).

Additional information about home visits has been derived from the two specific analyses of home visits conducted in May and November and is reported in Table 4.14. By consolidating all these results, the proportion of consultations undertaken as home visits amounted to 14.7 per cent.

The distribution of home visits (per cent) by age/sex categories (Table 4.15) and the proportion of home visits in relation to all consultations (Table 4.16) derived from these latter two studies show, as expected, the heavy impact of visiting in the age group 65+. Fewer than half the visits among elderly people (65+) are new visits (Table 4.17) and the remainder are initiated by the doctor as follow-up visits.

Proxy consultations, indirect contacts and repeat prescriptions

Purpose:

1. To measure proxy consultations (i.e. consultations with a third party)
2. To measure the extent to which doctors are involved in providing indirect contacts (chiefly over the telephone)
3. To measure repeat prescriptions.

The results from these surveys are presented in Table 4.18. For every 1000 direct consultations there were a further 24 proxy consultations, 44 indirect contacts, and 372 repeat prescriptions. Indirect contacts are predominantly telephone contacts and this value of 4.4 per cent is less than the GHS value for 1981 of 7 per cent. We have to stress that this estimate is based on contacts specifically with the doctor. The value for repeat prescriptions is very similar to that obtained from other PAA surveys (Fleming, 1983).

Table 4.11 Timetable of PAA studies.

	Practices		
	Group A	*Group B*	*Group C*
Investigations	February	June	March
Referrals to paramedicals	March/April	February	June/July
Proxy consultations	June	March	February
Visiting profile	May and November	May and November	May and November

Table 4.12 Mean consultations per patient.

	Practices	*Consultations per 1000 list*	*Estimated annual consultations per patient*
Investigations (2 weeks)	29	137.3	3.57
Visiting profile (2 weeks)			
May	26	135.5	3.53
November	21	127.8	3.32
Referrals to paramedicals (4 weeks)	30	257.3	3.35
Proxy consultations (2 weeks)	34	133.9	3.48

Mean estimated annual consultation rate = 3.48.

Table 4.13 Distribution of consultations in consolidated material from PAA surveys.

	Distribution per cent				
	Total consultations	*In surgery sessions a.m.*	*p.m.*	*Home visits*	*In special clinics*
Investigations	25207	47.0	32.9	14.0	6.1
Referrals to paramedicals	45261	45.7	33.3	15.5	5.5
Proxy consultations	28443	45.1	35.2	13.9	5.8
Total	98911	45.9	33.8	14.7	5.8

Table 4.14 Proportion of consultations made as home visits during visiting profile surveys in May and November.

	Practices	*Total consultations*	*Home visits as % of total*
May	26	16711	14.2
November	21	13361	15.5

Table 4.15 Home visits: distribution (per cent) by age and sex.

	Number	*0–4*	*5–14*	*15–44*	*45–64*	*65+*	*Total*
Males	1862	11.8	9.2	13.0	11.7	54.3	100
Females	3349	5.5	4.7	19.5	11.0	59.2	100
Total	5211	7.7	6.4	17.2	11.3	57.5	100

Table 4.16 Home visits: proportion (per cent) of all consultations in age/sex groups.

	0–4	*5–14*	*15–44*	*45–64*	*65+*	*Total*
Males	12.0	8.4	5.7	8.1	38.9	13.9
Females	11.8	8.0	6.4	9.7	45.4	15.3
Total	11.9	8.2	6.2	9.1	43.0	14.8

Table 4.17 Proportion (per cent) of all visits* made as new visits by age/sex groups.

	0–4	*5–14*	*15–44*	*45–64*	*65+*	*Total*
Males	84.4	89.0	66.1	57.3	45.7	58.3
Females	86.9	84.9	65.7	56.4	47.4	55.9
Total	85.6	87.0	65.8	56.7	44.8	56.7*

*Data from PAA visiting profile in May (overall mean = 56.8) and November (overall mean = 56.6)

Table 4.18 Proxy consultations, indirect consultations and repeat prescriptions by age group.

	Rate per 1000 consultations	*Males as per cent total*	*Rate per 1000 list in 2 weeks*	*Estimated annual rate per 1000 list*
	Male and female	*Male and female*	*Male and female*	*Male and female*
Proxy consultations				
0–4	3	45	0.3	9
5–14	4	52	0.5	14
15–44	6	39	0.8	20
45–64	4	49	0.5	13
65+	7	37	0.8	22
Total	24	43	3.0	78
Indirect contacts				
0–4	6	52	0.8	21
5–14	7	45	0.8	27
15–44	15	31	1.7	44
45–64	7	41	0.9	23
65+	9	38	1.1	30
Total	44	39	5.5	143
Repeat prescriptions				
0–4	5	55	0.7	17
5–14	14	57	1.7	45
15–44	79	38	9.8	255
45–64	113	41	14.0	365
65+	162	40	20.1	524
Total	372	41	46.4	1206

Investigations

Purpose: To measure the extent to which patients are investigated.

The investigation rates (Table 4.19) are similar to those found in other PAA surveys (Fleming, 1986). Of the patients investigated, 70 per cent are female and 51 per cent are in the age group 15-44.

Referrals to other primary care professionals

Purpose: To measure new referrals from practices to medical ancillary workers. The number of referrals to district nurses vastly exceeded those to any other primary care professional worker (Table 4.20). Referral to psychologists is comparatively infrequent.

Analysis of temporary residents

Purpose: To measure the extent to which practices provided NHS care for non-registered patients.

This analysis was made from material provided by the practices and extracted from the quarterly returns of the family practitioner committees. This survey does not provide the actual number of patients in study practices who sought treatment elsewhere during the study year: it is a summary of claims agreed by the family practitioner committees concerning patients treated as temporary residents in the study practices during the year. For practical purposes, the difference between these two measurements does not matter unless it is wished to examine it in individual practices. Temporary residents are considered in two categories, short-term temporary residents (less than 14 days), and long-term temporary residents (a period exceeding 15 days but less than three months). Altogether 36 practices submitted a complete set of data, three practices did not submit any and the remaining nine provided material for two or three quarters only.

The total number of temporary residents in each of the four quarters and the relevant practice population denominators are given in Table 4.21. The annual rate per 1000 population is included in the table, as also is the proportion of temporary residents of less than 14 days. About 30 persons per year in every 1000 registered as temporary residents with other family doctors whilst away from home. Fifty-seven per cent of temporary residents are classified as registered for less than 14 days.

It is reasonable to assume that the populations studied in the Third National Study would exhibit similar consulting behaviour when away from home. If every patient consulted, say, only once during the period, the effect shown here would be to increase the estimate of the annual consultation rate by .03 consultations per person at risk. If the consultation rate per patient is estimated at 1.5 per short-term temporary resident, and 2.5 per long-term temporary resident, the increase is estimated at approximately 0.06 consultations per person per year.

Index entries per consultation

Purpose: To establish the difference between problems encountered and consultations.

Since more than one entry in the diagnostic index is often appropriate to an individual contact between patient and doctor, it is necessary to know the frequency with which this occurs. Twin studies were mounted, the first in March and the second in May 1982, both involving one week's recording by the practice secretaries.

Forty-seven of the 48 practices returned at least one data sheet and 44 of the practices returned both. The distribution of entries per consultation is detailed in Table 4.22 for each review and for the consolidated material. The proportion of consultations in which four or more entries are generated is approximately 0.5 per cent and suf-

Table 4.19 Investigations.

Distribution (%) of patients investigated by age and sex.

	0–4	*5–14*	*15–44*	*45–64*	*65+*	*Total*
Males	1	4	9	9	6	30
Females	1	4	42	13	9	70

Rates per 1000 consultations, per 1000 list and estimated annual rate by specimen and by mode of collection.

	Rate per 1000 consultations	*Rate per 1000 list (2 weeks)*	*Estimated annual rate per 1000 list*
Specimen			
Blood	36	5.1	132
Urine (pregnancy test)	4	0.6	16
Urine (other)	40	5.6	146
Faeces/swab	12	1.6	42
Cytology	7	1.0	26
Chest x-ray	7	0.9	24
Other x-ray	8	1.2	30
ECG	4	0.6	15
Collection and analysis in practice	31	4.4	114
Collection in practice analysis elsewhere	61	8.5	220
Collection and analysis elsewhere	26	3.7	96
Total investigations	118	16.5	430
Total patients investigated	104	14.6	379

Table 4.20 Referrals to paramedics.

	Rate per 1000 population in 4 weeks	*Estimated annual rate per 1000 population*
Chiropodist	0.3	3.7
Health visitor	1.5	20.0
Marriage guidance	.05	0.6
Midwife	1.3	16.6
Nurse	7.8	101.2
Optician/oculist	0.3	3.3
Osteopath, etc.	0.1	0.7
Physiotherapist	0.7	9.0
Psychologist	0.2	2.4
Speech therapist	.02	0.3
Social worker	0.5	7.5
Others	0.6	7.3
Total	13.2	172.1

Table 4.21 Temporary residents in Third National Morbidity Study practices.

	July-September Quarter 1	*October-December Quarter 2*	*January-March Quarter 3*	*April-June Quarter 4*	*Year*
Population	271 496	264 059	252 599	248 840	259 249
Total temporary residents	2315	2394	1557	1710	7976
Temporary residents per 1000 population per year	34.1	36.3	24.7	27.5	30.8
Per cent temporary residents <14 days	60.5	58.8	53.3	54.2	57.2

Table 4.22 The distribution of entries per consultation by number of entries.

	March	*May*	*March and May*
Recording practices	46	45	91
Registered population	304 880	288 970	—
Total entries	20 896	20 498	41 394
Total consultations	17 587	17 303	34 890
Consultations per 1000 list	57.7	59.9	58.8
Per cent of consultations			
1 entry	84.2	84.8	84.6
2 entries	13.2	12.5	12.8
3 entries	2.0	2.1	2.1
4+ entries	0.5	0.62	0.6
Mean entries per consultation	1.188	1.185	1.186

ficiently small to disregard the much smaller number in which five or more entries would have been generated. Taken together these results indicate that material in the Third National Study which relates to entries in the index reflect an 18.6 per cent inflation of consultations. The figure was similar in both studies and it is reasonable to suppose that these rates applied throughout most of the study year.

The consistency of recording in the individual practices is considered in Table 4.23 for the 44 practices that provided dual sets of data. Two indices are considered — the mean rate of entries per consultation and the proportion of consultations from which only one entry was generated. The mean number of entries per consultation was highly consistent from March to May ($r = 0.89$) and the rate for the proportion of consultations in which one entry was generated slightly less so ($r = 0.81$).

The practice rates in the two study periods for both these indices were examined individually. Among the 44 practices there were 13 in which the number of entries per consultation differed by more than 0.05 between surveys and in two of these the difference exceeded 0.1. The proportions of consultations generating only one entry in the index differed between the surveys by more than 5 per cent in 13 practices and in two of these it exceeded 10 per cent. Not surprisingly 11 practices were common to both sets of 13. The numbers of consultations recorded in the study

periods averaged 382 and 385 respectively and in general the numbers in the two periods were similar in each practice. The 11 practices where there was inconsistency also showed greater variability in the numbers of consultations. In six of them there were differences exceeding 10 per cent, a figure obtained in only two other practices.

The consultation rate obtained in these surveys was approximately 59 per 1000 list per week and equivalent to 3.07 consultations per patient per year. The rate derived from these two studies is approximately 10 per cent less than in all other PAA studies. The total problems encountered were approximately 3.62 per patient per annum.

The distributions of the practice results for both statistics — entries per consultation and the proportion of consultations generating only one entry — are presented in Table 4.24. These distributions apply to the entire set of data and are based on the mean result where two sets of data have been supplied.

Comparisons of practice and individual results

Individual and practice results are compared (Table 4.25) in a variety of PAA surveys in order to gain further insight into the problems of sampling. The first point to recognize is the similarity of means and median values. For practical purposes, the similarity holds good between the 20th and 80th centiles. There are occasional differences between individual and practice values only at extreme ends of the range. In fact the range of performance measured as a factor of the 80th and 20th centiles is remarkably consistent.

Table 4.23 Mean practice rates in 44 practices providing dual sets of data. Entries per consultation and proportion of consultations generating only one entry.

	Mean number of entries per consultation		*Proportion % of consultations generating only one entry*	
	March	*May*	*March*	*May*
Mean practice rate	1.194	1.174	83.5	85.2
Standard deviation	.143	.143	9.2	8.9
Correlation coefficient	.894		.813	

Table 4.24 Distributions by practice for the mean number of entries per consultation and the proportion of consultations generating only one index entry.

Mean number of entries per consultation			*Proportion of consultations generating only one entry*		
		Practices			*Practices*
< 1.05	:	2	< 60	:	2
– 1.1	:	9	– 65	:	0
– 1.15	:	15	– 70	:	0
– 1.2	:	6	– 75	:	4
– 1.25	:	5	– 80	:	6
– 1.3	:	4	– 85	:	7
– 1.35	:	3	– 90	:	16
– 1.40	:	1	– 95	:	10
> 1.40	:	2	– 100	:	2

Comments

The mean practice rate for problems encountered in the Third National Study is 3.41 (2.71 males and 4.02 females). The rate derived in the study of index entries per consultations is 3.62. There is an inevitable loss of data when entries in the morbidity index are matched with the age/sex registers. In 1970-71, this amounted to 3.5 per cent of all entries. The difference between these estimates (3.62 and 3.41) is approximately 6 per cent. The consultation rate is less than the problem encounter rate because more than one problem is considered at some consultations. In the relevant PAA study of index entries per consultation undertaken by the practice secretaries, the consultations undertaken were estimated at 3.07 (18 per cent less than the problems encountered). In the remaining PAA studies, consultation rates (that is, not problems encountered) were estimated at 3.48 consultations per patient per year. This estimate was derived by multiplying data collected in two weeks by 26. It may be more appropriate to multiply by 25 allowing for bank holidays and the fact that none of the practice activity analyses was undertaken in the holiday months of July and August. The estimate thus made is 3.35.

Consultation rates in PAA data were between 3.3 and 3.6. Rates for home visits (visits as a percentage of all consultations) were 14.7 per cent (mean of surveys). The home visiting rate in the annual data of the Third Study was 12.0 per cent. We have suspected that information from home visits might be under scored in the diagnostic index. These data suggest that this may indeed be the case but only by a small amount.

Rates derived from the Third National Study and PAA data are based on practice populations as defined in age/sex registers. We have estimated that the inflation of practice registers results in a 5 per cent under-estimate of practice-based rates. Temporary residents receiving care in the NHS are not included in the Third Study, which therefore results in an under-estimate of 0.06 consultations per patient per year. Taking all these factors into consideration we estimate the true practice consultation rate to be approximately 3.5 consultations per year and to lie between 3.40 and 3.55.

Comparison with General Household Survey

The consultation rates reported in the General Household Survey 1981 were 3.2 for males and 4.4 for females per person per year. These estimates include 7 per cent telephone contacts and are thus reduced to 3.0 males and 4.1 females or approximately 3.5 consultations per year overall. The ratio of surgery to home consultations in GHS data is 5.6, in the Third Study, 7.3 and in PAA data 5.8. The differences between the Third Study data and the other two probably reflects a small recording deficiency. The Third Study and General Household Survey both estimate the relative proportion of male consultations as 40.3 per cent. Although this statistic was not obtained in these PAA surveys the ratio of 40–60 is consistent in most PAA data.

Overview

The experiences described in this chapter bring together practice activity analysis as a tool for self-evaluation and

Table 4.25 Comparison of rates recorded by practices with rates recorded by individuals.

			Centile values							Ratio
	n	*Mean*	*Minimum*	*20*	*40*	*Median*	*60*	*80*	*Maximum*	*80:20*
Investigations										
Practices	30	121	53	68	102	122	125	162	222	2.4
Individual	120	118	13	66	100	116	130	165	341	2.5
Patients investigated										
Practices	29	104	13	66	96	99	107	140	180	2.1
Individual	120	103	13	63	84	97	112	140	341	2.2
Visiting profile May										
Practices	26	151	43	80	117	134	156	181	404	2.3
Individual	110	139	0	79	117	130	144	188	519	2.4
Visiting profile November										
Practices	21	150	58	85	110	125	146	187	368	2.2
Individual	99	146	19	93	122	142	158	204	368	2.2
Referral paramedical										
Practices	30	49	0	17	26	36	52	84	167	4.9
Individual	101	63	0	20	35	41	66	99	335	5.0
Proxy consultation										
Practices	34	455	127	285	416	478	498	620	852	2.2
Individual	91	440	0	190	354	416	476	622	1349	3.3

for providing information for other purposes. For self-evaluation, the needs for comparative data, the importance of group work with good leadership and the need for practice-based data are all illustrated. The international comparison demonstrates how material for self-evaluation can also be used as the basis for serious comparative research.

Measurement of change

The measurement of change and the mechanisms of change in general practice are considered in the South East Thames experiment. In our initial appraisal of this experiment, we were disappointed not to have found further evidence of change. Indeed the lack of change in the experiment has been held as a criticism of practice activity analysis. However, the PAA philosophy does not start from the point that change is necessary, nor does it propose any direction of change. Rather, it emphasizes the need for information to be available in a form that doctors can use to consider their own performance. Change is not necessary; what is needed is that individuals consider facts about their own performance.

Where the direction of desired change clearly indicates better performance, there is a totally different situation. This applies in the field of preventive care. Higher levels of recorded blood pressure, or cytology uptake, for example, clearly indicate better care. Where there are clear indicators of good performance then there is a powerful argument for mandatory audit. It may be that an absolute standard cannot be used to judge the performance of a practice because of the varied circumstances (for example, social environment, ethnic composition) of individual practices but a combination of a certain minimum standard with evidence of continuing improvement might be seen as an indicator of high quality care. Many initiatives for audit have involved preventive medicine and we welcome them. However, we would emphasize the points made in chapter 1 concerning the need for creative thinking about so many general practice activities for which the establishment of standards is a long way off.

Flexibility

The PAA exercises used to complement the Third General Practice Morbidity Study illustrate the flexibility of the system. Internationally the techniques have been used in many countries and adapt easily in the working pattern of general practitioners. They do not intrude on normal working arrangements. At the same time the format can be adapted to many different information requirements. Each data sheet is tailormade to a specific requirement. The range of questions which can be addressed and the economy with which information can be derived are difficult to match by other means.

Research

The international comparison is an example of the research potential of material used initially for self-evaluation. The PAA surveys included in the Third National Morbidity Study provided economical ways of validating the main data recording method. However, they also provided comparable data for describing workload. The potential for practice activity analysis in workload surveys is particularly illustrated by this comparison. The representativeness of doctors contributing to the Third Study (and also to the weekly returns service) compared with other doctors undertaking practice activity analysis is illustrated in these comparisons.

Costs

The majority of practice activity sheets received at the Birmingham Unit have been computerized. Data sheets (cor-

rectly filled in) can be processed automatically by a clerk. The results for individuals are presented in a digestible form (for example, Figure 3.5) and set against comparable data from other surveys. The data bank accumulates as new material is entered. Given receipt of data sheets in minimum quantities of 20, the clerical task can be completely managed for approximately £1.50 per data sheet.

Standardized system

All the experiments described here involve the use of a standardized recording system. Because the same method of data collection has been used and because we have an agreed denominator we can summate the results and produce the large data base reported here. In chapter 1, we discussed the importance of 'real data' and it is essential that this should be placed in its context with comparable data from other surveys. For data to be comparable, the same (or at any rate compatible) collection methods and classification systems must be used. The PAA programme has gone a long way towards achieving these objectives.

In any systematic programme of practice audit we might visualize an integrated series of PAA surveys to describe many features of practice activity. Data consolidated from the entire series provides a detailed description of workload, whilst each individual package addresses specific activities in turn. Individual and practice specific interests might be pursued using the 'L' sheet (Figures 3.1 and 3.2) which is a standardized data collection method appropriate to a wide variety of research questions.

Organizational infrastructure

Although we are constantly encouraged by the willingness of doctors to look at their own activity, we are at the same time discouraged to see the myriad ways in which they do it, leading in the end to a lack of comparability between practices. For any large scale use of self-audit to succeed, an administrative framework is essential. It is essential for the initial research and development of individual analyses and to facilitate a co-ordinated programme amongst doctors in postgraduate centres. No single group of general practitioners could mobilize the resources and energy for formulating individually suitable items in a self-audit programme. Success requires a large baseline of comparable results from other peer groups. Most important of all, there must be a communal will to engage continuously in self-evaluation and support for the leadership of the individual and otherwise isolated peer groups.

CHAPTER 5

Results

Introduction

THE results of the most frequently requested practice activity analyses are presented in this chapter in a uniform way with a minimum of comment. Data sheets were checked for quality before inclusion and incomplete data sheets, those containing errors or inconsistencies, those based on less than two recording weeks, and those in which the name of the doctor was not entered, were excluded. In each set of results, data from principals and trainees are presented separately by year of survey. There are no duplicate entries from principals in any individual year though some doctors have returned data in more than one year.

Choice of chemotherapy

The results for chemotherapy are summarized in Tables 5.C1-5.C5.

The mean number of antibiotic prescriptions issued by principals varies between 32 and 38 (Table 5.C1). Approximately 40 per cent of all consultations were with male patients (Table 5.C2). The distribution by age group shows a slight bias among trainees towards children age 0–4 years and against the elderly. The pattern of consultations shown here is very similar to that seen in most major general practitioner health service utilization studies. The mean rate of antibiotics prescribed varied from 116 to 152 among principals and was 186 among trainees (Table 5.C3). Variation in total prescribing rates is summarized in the 80th/20th centile ratio, which is approximately two in all surveys. The mean rate is in general a little less than the median rate, which suggests a skewed distribution of results. This skew arises in many PAA surveys because of the effect of a few extremely high rates. In all these surveys, two standard deviations above the mean is considerably less than the maximum result.

Antibiotic prescribing varies according to the time of year and this must be borne in mind in individual surveys. Antibiotic prescribing among trainees has been consistently higher than among principals, partly because trainees are more readily available to patients who "must be seen today" than are principals. This group of patients are more likely to be suffering acute infectious conditions.

Consolidated prescribing rates detailed in Table 5.C4 are based on total populations surveyed and are not age specific. "Other penicillins" (largely ampicillin) was the most frequently prescribed group of antibiotics followed by "natural penicillins" (mainly penicillin V). In the original survey (RCGP, 1977b) the rates for both penicillin drug groups were similar.

Prescribing rates for erythromycin, tetracycline and

Table 5.C1 Choice of chemotherapy.
Recorders, list, consultations and number of antibiotics prescribed by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982/83*	*1980–83*
Recorders		129	39	93	87
List	Mean	2509	2139	2275	NA
	SD	617	582	694	NA
Consultations	Mean	286	255	270	171
	SD	76	75	92	72
Antibiotics	Mean	33	38	32	32
prescribed	SD	15	18	17	23

Table 5.C2 Choice of chemotherapy.
Age/sex distribution (%) of consultations.

	Principals						*Trainees*	
	1980		*1981*		*1982/3*		*1980–3*	
Consultations								
Male	14 284		3829		9822		6005	
Female	22 508		6119		15 024		8866	
Distribution								
%	M	F	M	F	M	F	M	F
Age								
0–4	4	4	5	4	6	5	6	6
5–14	5	5	6	6	5	5	7	7
15–44	13	28	13	30	13	28	14	28
45–64	9	11	9	12	9	11	7	10
65+	8	13	6	10	7	12	5	9
Total	39	61	38	62	40	60	40	60

Table 5.C3 Choice of chemotherapy.
Range of prescribing rates (per 1000 consultations).

Mean, median, and quintile values from the range.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980–83*
Minimum	37	60	28	40
20	78	87	80	119
40	94	125	106	147
Median	107	138	112	166
60	115	157	124	185
80	152	188	155	225
Maximum	352	394	276	812
Ratio 80.20	1.9	2.2	1.9	1.9
Mean	116	152	121	186
Standard deviation	48	67	51	102

Table 5.C4 Choice of chemotherapy.
Consolidated prescribing rate (per 1000 total consultations) by antibiotic and age group.

Antibiotic/ age group	*0–4 years*	*5–14 years*	*15–64 years*	*65+ years*	*All ages*
Natural penicillins	5.3	8.5	10.6	.9	25.4
Other penicillins	12.4	10.8	21.6	6.4	51.2
Erythromycin	4.9	3.6	4.9	.8	14.2
Tetracycline	0	.4	13.4	3.6	17.5
Sulphonamides	0	.1	.9	.3	1.3
Co-trimoxazole	2.1	2.3	8.7	2.9	15.9
Others	1.1	.9	3.9	1.1	7.0
Total	25.9	26.5	64.0	15.9	132.4

Table 5.C5 Choice of chemotherapy.
Total and age specific prescribing rates by antibiotic prescribed.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980–83*
Natural penicillins	23	28	21	39
Other penicillins	42	68	44	74
Erythromycin	12	10	16	21
Tetracyclines	18	19	18	14
Sulphonamides	1	1	1	1
Co-trimoxazole	13	17	13	28
Others	5	7	8	9
Age				
0–4	253	344	251	310
5–14	233	268	223	273
15–64	92	110	94	152
65+	73	102	78	133
Total	115	149	120	185

cotrimoxazole were similar. Virtually no tetracycline was prescribed to children under five, and for patients aged 65 or over, very little penicillin V. Table 5.C5 includes age specific prescribing rates: approximately a quarter of all consultations with children resulted in a prescription for an antibiotic.

Investigations

Table 5.I1 shows the mean and standard deviation for list size, consultations, visits undertaken, patients investigated, and investigation specimens examined; all by principals in each year of the survey and by trainees. Seventy per cent of patients investigated were females (Table 5.I2). The majority of these belonged to the age group 15–44 years. The ratio of the 80th-20th centile was approximately 2.2 (Table 5.I3) and the patterns of investigation (Table 5.I4) were similar in the various groups of principals and trainees surveyed.

Psychotropic drugs

Table 5.P1 shows the mean and standard deviation for list size, consultations, visits undertaken, patients receiving drugs, and drugs prescribed by principals in each year of survey and by trainees.

More than 70 per cent of patients receiving psychotropic drugs were female (Table 5.P2). The distribution of psychotropic prescribing rates per 1000 consultations in quintiles is shown in Table 5.P3. Prescriptions for females exceeded males in all age groups. The range as indicated by the ratio of the 80th-20th centile is approximately 2.5. (Table 5.P4). The consolidated prescribing rate was 149

Table 5.I1 Investigations.
Recorders, list, consultations, visits patients investigated and investigation procedures by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982/83*	*1980–83*
Recorders		112	171	56	99
List	Mean	2461	2375	2319	NA
	SD	526	609	678	NA
Consultations	Mean	333	308	292	197
	SD	87	84	102	64
Visits	Mean	59	50	40	34
	SD	36	25	21	17
Patients investigated	Mean	35	32	27	21
	SD	14	15	12	10
Investigation procedures	Mean	40	38	31	24
	SD	19	20	15	13

Table 5.I2 Investigations.
Age/sex distribution (%) of patients investigated.

	Principals						*Trainees*	
	1980		*1981*		*1982/83*		*1980-83*	
Patients investigated								
Male	1075		1541		425		665	
Female	2819		3937		1067		1451	
Distribution %	M	F	M	F	M	F	M	F
Age								
0–4	1	1	1	1	1	1	2	3
5–14	3	3	3	4	3	3	3	4
15–44	10	48	9	45	10	48	13	40
45–64	8	12	9	13	9	11	8	13
65+	6	8	6	9	5	9	5	9
Total	28	72	28	72	28	72	31	69

Table 5.I3 Investigations.
Range of investigation rates (per 1000 consultations).

Mean, median and quintile values from the range.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980-83*
Minimum	11	22	15	27
20	78	75	64	78
40	103	102	90	105
Median	111	111	101	113
60	121	126	120	127
80	172	160	152	172
Maximum	543	443	265	309
Ratio 80.20	2.2	2.1	2.4	2.2
Mean	126	124	115	126
Standard deviation	69	64	59	61

Table 5.I4 Investigations.
Consolidated rates per 1000 consultations by procedure and mode of specimen collection.

Specimen examined/ collection mode	*Collected and analysed in practice*	*Collected in practice and analysed elsewhere*	*Collected and analysed elsewhere*	*Total*
Blood	1.2	26.6	7.4	35.2
Urine for pregnancy test	1.1	2.8	1.5	5.4
Urine all other tests	23.8	11.7	4.3	39.8
Faeces/swab	0.4	7.6	1.0	8.9
Cytology	0.1	8.5	0.5	9.1
Chest x-ray	0.3	1.0	5.8	7.1
Other x-ray	0.6	1.6	8.8	11.0
ECG	2.6	0.3	0.5	3.4
Total	30.0	60.0	29.9	119.9

Table 5.I5 Investigations.
Investigation rates by year of survey.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980-83*
Blood	35	37	31	35
Urine for pregnancy test	5	5	5	6
Urine all other tests	43	40	33	41
Faeces/swab	7	8	10	13
Cytology	8	11	9	5
Chest x-ray	7	7	8	6
Other x-ray	11	11	9	13
ECG	4	4	2	4
Collected and analysed in practice	31	31	28	27
Collected in practice and analysed elsewhere	58	63	47	68
Collected and analysed elsewhere	31	28	31	30
Total	120	122	107	124

Table 5.P1 Psychotropic drugs.
Recorders, list, consultations, visits, patients receiving drugs and drugs prescribed by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982/83*	*1980-83*
Recorders		192	163	61	81
List	Mean	2466	2450	2170	NA
	SD	809	650	491	NA
Consultations	Mean	322	331	285	201
	SD	92	105	84	70
Visits	Mean	51	54	43	32
	SD	27	29	24	15
Patients receiving drugs	Mean	41	45	40	17
	SD	22	25	24	12
Drugs prescribed	Mean	48	53	47	18
	SD	28	30	29	13

Table 5.P2 Psychotropic drugs.
Age/sex distribution (%) of patients receiving psychotropic drugs.

	Principals						*Trainees*	
	1980		*1981*		*1982/83*		*1980-83*	
Patients receiving drugs								
Male	2127		2048		644		377	
Female	5677		5326		1769		977	
Distribution %	M	F	M	F	M	F	M	F
Age								
0–14	1	1	1	1	0	0	0	1
15–44	7	20	7	19	6	15	10	23
45–64	10	25	10	25	10	25	10	25
65+	9	27	10	27	11	33	8	23
Total	27	73	28	72	27	73	28	72

Table 5.P3 Psychotropic drugs.
Range of prescribing rates (per 1000 consultations):

Mean, median, and quintile values from the range.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980-83*
Minimum	13	20	26	7
20	85	93	85	39
40	122	135	123	52
Median	140	155	149	68
60	154	174	164	87
80	210	223	231	144
Maximum	505	410	445	409
Ratio 80.20	2.5	2.4	2.7	3.7
Mean	154	163	166	97
Standard deviation	87	80	97	78

Table 5.P4 Psychotropic drugs.
Consolidated prescribing rates by drug and prescribing mode.

Drug/prescribing mode	*New prescriptions*	*Continuing prescriptions*	*Repeat prescriptions*	*Total*
Phenothiazines	1.2	2.5	3.6	7.3
Mild tranquillizers				
Diazepam	4.1	9.1	14.2	27.5
Chlordiazepoxide	1.1	2.2	3.9	7.1
Others	4.0	7.2	10.6	21.8
Antidepressants				
Tricyclics	5.1	11.7	11.2	27.9
MAOI drugs	0.1	0.4	0.5	0.9
Others	1.1	2.2	1.9	5.3
Hypnotics				
Barbiturates	0.2	1.6	4.0	5.8
Non-barbiturates	4.8	11.7	27.5	43.9
Others	0.2	0.4	0.5	1.1
Total	22.0	48.9	77.9	148.8

per 1000 consultations (Table 5.P5) of which about half (78) were in the repeat mode. For hypnotics the proportion of repeats was higher. Prescribing by trainees was substantially less than that by principals especially in the repeat mode (Fleming, 1986).

Table 5.P5 Psychotropic drugs.
Prescribing rates by year of survey for major drug groups and prescribing mode.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980-83*
Phenothiazines	8	8	8	3
Tranquillizers	57	61	57	41
Antidepressants	35	37	37	18
Hypnotics	48	55	61	27
Others	1	1	2	1
New prescriptions	22	25	16	19
Continuing prescriptions	53	51	49	28
Repeat prescriptions	75	85	99	43
Total	149	161	164	91

Referrals

Table 5.R1 shows the mean and standard deviation for list size, consultations and visits undertaken, and referrals by principals in each year of survey and by trainees. Table 5.R2 shows the distribution of referral rates per 1000 consultations in quintiles.

The mean specialist referral rate in all surveys was approximately 45 per 1000 consultations. Doctors provide about 7000 consultations for an average of 2100 patients per year, which means that the average doctor makes about 315 referrals a year. One in seven of all referrals involves direct hospital admission (Table 5.R3). Domiciliary consultations are still an important part of the referral process in geriatrics, psychiatry and medicine. In order to consider aggregate statistics, referrals in various specialties have been summated to provide totals for miscellaneous medical referrals (dermatology, geriatrics, medicine, paediatrics), and miscellaneous surgical referrals (ENT, gynaecology, ophthalmology, orthopaedics and surgery). Trainees referred less than principals in the surgical specialties (Table 5.R4).

Table 5.R1 Referrals to specialists.
Recorders, list size, consultations, visits and referrals by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982/83*	*1980-83*
Recorders		74	67	59	47
List size	Mean	2443	2144	2156	NA
	SD	650	635	732	NA
Consultations	Mean	614	563	534	384
	SD	164	182	180	113
Visits	Mean	94	91	74	51
	SD	42	50	35	24
Referrals to specialists	Mean	28	25	24	13
	SD	13	13	10	8

Table 5.R2 Referrals to specialists.
Range of referral rates (per 1000 consultations).

Mean, median, and quintile values from the range.

	Principals			*Trainees*
	1980	*1981*	*1982/83*	*1980-83*
Minimum	15	9	20	10
20	30	29	29	17
40	39	35	37	24
Median	44	40	42	26
60	47	44	46	29
80	56	57	60	49
Maximum	109	107	145	119
Ratio 80.20	1.9	2.0	2.1	2.9
Mean	45	44	47	34
Standard deviation	16	20	21	22

Table 5.R3 Referrals to specialists.
Consolidated rates by specialty and mode of referral.

	Outpatients clinic	*Domiciliary consultations*	*Hospital admission*	*Total*
Dermatology (M)	2.5	0.1	0.0	2.6
ENT (S)	3.7	0.0	0.0	3.8
Geriatrics (M)	0.4	0.6	0.4	1.3
Gynaecology (S)	3.2	0.1	0.5	3.8
Medicine (M)	3.0	0.6	2.0	5.5
Obstetrics	3.4	0.0	0.2	3.6
Ophthalmology (S)	2.5	0.0	0.0	2.5
Orthopaedics (S)	4.2	0.1	0.3	4.7
Paediatrics (M)	0.9	0.1	0.6	1.6
Psychiatry	1.4	0.5	0.3	2.2
Surgery (S)	6.0	0.2	1.6	7.8
Other	3.0	0.1	0.1	3.2
Miscellaneous (M)	6.8	1.3	3.0	11.1
Miscellaneous (S)	19.7	0.4	2.5	22.5
Total	34.2	2.3	6.1	42.7

M = Medical. S = Surgical.

Table 5.R4 Referrals to specialists.
Rates of referral by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982/83*	*1980-83*
Dermatology	(M)	3	3	2	2
ENT	(S)	3	4	4	4
Geriatrics	(M)	1	1	2	1
Gynaecology	(S)	4	4	4	2
Medicine	(M)	6	6	5	5
Obstetrics		4	3	4	2
Ophthalmology	(S)	3	2	3	2
Orthopaedics	(S)	5	5	4	3
Paediatrics	(M)	2	1	2	2
Psychiatry		2	3	2	1
Surgery	(S)	8	8	8	6
Other		3	4	3	2
Miscellaneous	(M)	12	11	11	10
Miscellaneous	(S)	23	24	23	18
Total		45	44	44	33

M = Medical. S = Surgical.

Home visits

Table 5.V1 gives the mean and standard deviation for list size, consultations, and visits undertaken. The age and sex distribution of patients visited compared with the distribution for all consultations is given in Table 5.V2. The relative proportions of males and females visited were similar to those for all consultations. The mean visiting rate was 165 per 1000 consultations and the variation between the 80th and 20th centile approximately two-fold (Table 5.V3). The visits per 1000 consultations by age group, sex and survey are given in Table 5.V4. In Table 5.V5, the significance of new as opposed to repeat visits is shown. Approximately 60 per cent of all visits made in both sexes were in response to new requests. Fifty per cent of visits in age groups 65+ were new visits. The consolidated visiting pattern of trainees was similar to that of principals.

Table 5.V1 Visits.
Recorders, list size, consultations and visits by year of survey.

		Principals			*Trainees*
		1980	*1981*	*1982*	*1980-82*
Recorders		68	180	77	30
List size	Mean	2567	2218	2266	NA
	SD	555	673	549	NA
Consultations	Mean	322	277	273	176
	SD	77	87	75	61
Visits	Mean	53	42	48	32
	SD	24	24	22	14

Table 5.V2 Visits.
Age/sex distribution (%) of patients visited and of all consultations by year of survey.

	Principals						*Trainees*	
	1980		*1981*		*1982*		*1980-82*	
Patients visited								
Male	1316		2835		1404		391	
Female	2321		4755		2312		579	
Distribution %	M	F	M	F	M	F	M	F
Age								
0–4	4	3	5	5	4	4	5	5
5–14	3	4	3	3	4	3	3	4
15–44	5	11	5	12	4	11	6	10
45–64	6	8	6	8	6	7	6	8
65+	18	38	18	36	20	37	20	33
Total	36	64	37	63	38	62	40	60
All consultations								
Male	7044		19 271		7852		2161	
Female	11 196		30 581		13 202		3115	
Distribution %	M	F	M	F	M	F	M	F
Age								
0–4	4	3	5	5	5	4	6	6
5–14	5	5	5	5	5	5	7	8
15–44	13	27	13	28	11	28	14	26
45–64	9	12	8	11	9	12	7	9
65+	8	15	8	12	8	13	7	10
Total	38	62	39	61	37	63	41	59

Table 5.V3 Visits.
Range of visiting rates (per 1000 consultations).

Mean, median, and quintile values from the range.

	Principals			*Trainees*
	1980	*1981*	*1982*	*1980-82*
Minimum	24	17	42	61
20	123	91	118	115
40	144	126	151	151
Median	153	141	173	205
60	177	156	185	215
80	223	204	224	264
Maximum	294	409	410	433
Ratio 80.20	1.8	2.2	1.9	2.3
Mean	166	150	176	197
Standard deviation	58	66	67	86

Table 5.V4 Visits.
Visiting rates (per 1000 consultations) by age group and sex and year of survey.

	Principals			*Trainees*
	1980	*1981*	*1982*	*1980-82*
Age				
0–4	165	158	163	156
5–14	115	89	110	84
15–44	67	62	72	72
45–64	113	103	110	158
65+	411	412	477	583
All male	157	147	179	181
All female	172	155	175	186
Total	166	152	176	184

Table 5.V5 Visits.
Proportion of visits made as new visits.

	Principals			*Trainees*
	1980	*1981*	*1982*	*1980-82*
Male	62	59	62	61
Female	60	57	58	59
Age				
0–64	73	70	75	73
65+	50	47	48	48
Total	60	58	59	60

Repeat prescriptions

Table 5.RP1 shows the mean and standard deviation for list size, consultations, and patients receiving repeat prescriptions. Sixty per cent of patients receiving repeat prescriptions were female (Table 5.RP2). For every 1000 consultations undertaken, approximately 330 repeat prescription forms were issued (Table 5.RP3). Twenty per cent of patients receiving repeat prescriptions had not been seen in the six months preceding issue (Table 5.RP4).

Table 5.RP1 Repeat prescriptions.
Recorders, list size, consultations and repeat prescriptions issued by year of survey.

		1980	*1981*
Recorders		31	68
List size	Mean	2493	2497
	SD	602	688
Consultations	Mean	324	303
	SD	68	76
Repeat prescriptions	Mean	115	97
	SD	74	51

Table 5.RP2 Repeat prescriptions.
Age/sex distribution (%) of patients receiving repeat prescriptions.

	1980		*1981*	
Patients receiving repeat prescriptions				
Male	1454		2600	
Female	2467		3981	
Distribution %	M	F	M	F
Age				
0–4	1	1	1	1
5–14	2	2	2	2
15–44	7	15	9	14
45–64	12	19	13	18
65+	15	26	14	26
Total	37	63	40	60

Table 5.RP3 Repeat prescriptions.
Range of rates of issuing repeat prescriptions (per 1000 consultations).

Mean, median and quintile values from the range by year of survey.

	1980	*1981*
Minimum	106	41
20	168	182
40	300	263
Median	341	297
60	374	370
80	501	444
Maximum	864	890
Ratio 80.20	3.0	2.4
Mean	359	326
Standard deviation	196	168

Table 5.RP4 Repeat prescriptions.
Interval since last consultation: percentage distribution among patients receiving repeat prescriptions by year of survey.

	1980	*1981*
<1 month	28	27
1-3 months	35	34
3-6 months	19	19
6-12 months	11	13
12+ months	7	7

Workload review

Table 5.WR1 shows workload data for general practitioners returning this analysis, including list size, number of consultations, visits and service units per 1000 consultations. A service unit concerns those activities related to the consultation which are not part of the consultation itself. It is estimated from the following values:

- one letter is equivalent to 0.75 service unit
- one report is equivalent to 0.75 service unit
- one repeat prescription issued is equivalent to 0.25 service unit
- one interview with patient's relatives etc. is equivalent to 1.0 service unit
- travel necessary to visit patient at home is equivalent to 1.0 service unit.

Table 5.WR2 shows miscellaneous items of service expressed as rates per 1000 consultations and Table 5.WR3 the distribution of service units provided expressed as a rate per 1000 consultations in quintiles.

The mean number of consultations undertaken by general practitioners during two weeks was approximately 300. Given that there are approximately 25 two-week periods in the year, an annual estimate of consultation rates derived from this figure is 3.3 consultations per person per year. This value has been obtained in numerous practice activity analysis studies and provides a useful basis for organizing work within general practice.

Many tasks are undertaken by doctors directly for patients and the analysis of service units is an attempt to quantify these. The estimate of services equivalent to a consultation were derived after consultation with several general practitioner colleagues. The service unit rate of 370 per 1000 consultations implies that the work involved in providing care over and above the consultation was equivalent to one additional consultation in every three undertaken. This did not include work involved directly with practice administration which was not recorded in the survey.

The educational and medico-political activity of a general practitioner involved an average of seven hours per fortnight with a further one hour spent in travelling (Table 5.WR4). The educational activity was concentrated largely on trainers.

Table 5.WR1 Workload review.
List size, consultations, visits and service units by survey year.

		Principals		*Trainees*
		1981	*1982*	*1981-82*
Recorders		106	59	32
List size	Mean	2265	2385	NA
	SD	567	594	NA
Consultations	Mean	297	308	173
	SD	80	80	47
Visits	Mean	43	48	27
	SD	20	24	16
Service units	Mean	365	388	321
	SD	111	113	112

Table 5.WR2 Workload review.
Services provided per 1000 consultations by survey group.

	Principals		*Trainees*
	1981	*1982*	*1981-82*
Letters to:			
Specialists	55	49	41
Social workers, housing departments	4	6	3
Others	10	8	5
Total	70	62	48
Reports to:			
DHSS	4	6	2
Others	22	15	9
Total	27	22	11
Repeat prescriptions	315	363	261
Interviews with relatives	8	7	7
Telephone calls with			
Patients	64	76	64
Hospital doctors	15	17	16
Hospital others	11	12	8
Other doctors	9	7	7
Health visitors, social workers	7	7	4
Others	12	17	9
Total	118	135	108

Table 5.WR3 Workload review.
Distribution of service units provided in quintiles.

	Principals		*Trainees*
	1981	*1982*	*1981-82*
Minimum	136	163	93
20	281	278	206
40	328	344	265
Median	348	380	353
60	372	417	370
80	441	483	420
Maximum	796	609	504
Ratio 80.20	1.6	1.7	2.0
Mean	365	388	321
Standard deviation	111	113	112

Table 5.WR4 Workload review.
Average time spent (hours) in educational and medico-political activity.

	Principals		*Trainees*
	1981	*1982*	*1981-82*
Undergraduate education	.24	.01	0.00
Postgraduate (Section 63)	1.75	1.41	9.00
Postgraduate (non-Section 63)	1.33	.64	3.30
Tutorial	.82	1.05	1.94
Local medical committee, etc.	.69	.67	0.00
Practice meetings	1.16	2.26	.84
Visiting patients in hospital	.58	.28	.28
Other	1.86	1.14	.73
Total	8.43	7.45	17.72
Activity	7.30	6.61	14.32
Travel	1.13	.84	3.40

Record review - risk factors

Practice activity analysis surveys are concerned chiefly with information obtained from the consulting room. Record reviews are based on a random sample of 200 records drawn from the practice files and analysed for content of information. The record review of risk factors is concerned with recorded cervical cytology, blood pressure and smoking habits. The analysis of this information is not presented separately for trainees.

Approximately 11 500 records of women aged between 20 and 59 registered in 112 practices were examined (Table 5.RF1). After excluding women with amputation of the cervix or with hysterectomy, 59 per cent of records contained a cytology result within the previous five years. In 27 per cent of records there was no report available from the last 10 years (Table 5.RF2). Among women aged between 50 and 59 the values were 45 per cent and 34 per cent respectively.

Among 11 000 records of men aged between 20 and 59, 36 per cent had a blood pressure recorded from the last five years and 56 per cent, no record within 10 years (Table RF3). Forty-seven per cent of men aged between 40 and 49 and 40 per cent aged between 50 and 59 had no blood pressure record within the last 10 years. Approximately 22 per cent of records examined contained a reference to smoking habit (Table 5.RF4).

Table 5.RF5 gives the mean practice rates for "cervical cytology in the last five years" and "no cytology report"

Table 5.RF1 Risk factors.
Records examined by study and age group.

	1980	*1982*	*1983*
Number of practices	27	37	48
Records examined by study			
Cytology (females)			
20–29	683	989	1270
30–39	867	1218	1480
40–49	676	880	1198
50–59	523	747	986
Total	2749	3834	4934
Blood pressure (males)			
20–29	669	875	1226
30–39	829	1052	1389
40–49	671	821	1141
50–59	560	675	918
Total	2729	3423	4674
Smoking information			
Males and females			
20–29	1344	1816	2500
30–39	1703	2243	2862
40–49	1333	1676	2318
50–59	1063	1406	1895
Total	5443	7141	9575

available; "blood pressure recorded in the last five years" and "no report available" for the preceding 10 years; and smoking information available in the last 10 years. Table 5.RF6 gives the range of practice results for major statistics in quintiles.

Table 5.RF2 Cytology.
Proportion (%) of records examined by age group and cytology status (1980 + 1982 + 1983 consolidated).

Age group	*In last 5 years*	*In last 5–10 years*	*None*
20–29	59.7	6.6	33.6
30–39	66.9	13.3	19.8
40–49	58.5	18.0	23.5
50–59	44.6	21.5	33.9
Total	59.0	14.1	26.9

Table 5.RF3 Blood pressure.
Proportion (%) of records examined by age group and BP status (1980 + 1982 + 1983 consolidated).

Age group	*In last 5 years*	*In last 5–10 years*	*Not in last 10 years*
20–29	22.2	6.0	71.8
30–39	31.4	8.7	59.9
40–49	43.2	9.7	47.1
50–59	51.1	8.9	40.1
Total	36.0	8.3	55.8

Table 5.RF4 Smoking information.
Proportion (%) of records examined by smoking status (1980 + 1982 + 1983 consolidated).

Age group	*Male*	*Female*	*Male and female*
20–29	17.7	23.5	20.7
30–39	21.6	21.9	21.7
40–49	22.9	20.8	21.9
50–59	27.0	17.5	22.3
Total	22.0	21.2	21.6

Table 5.RF5 Risk factors.
Mean practice results by year of study.

	1980	*1982*	*1983*
Cytology			
In last 5 years	57	56	62
None	28	29	24
Blood pressure			
In last 5 years	38	32	38
None	54	61	52
Smoking information			
Male	24	18	24
Female	19	17	26

Table 5.RF6 Risk factors.
Range of practice results for major statistics in quintiles.

	Cytology in last 5 years	*Blood pressure within 5 years*	*Smoking information*
Minimum	1	11	0
20	51	24	8
40	57	31	14
Median	59	33	18
60	61	37	22
80	67	46	33
Maximum	85	68	82
Ratio 80.20	1.3	1.9	4.1
Mean	58.8	36.0	21.4

Other surveys

A number of other surveys have been completed in the practice activity analysis series.

Punctuality of appointments

This was the first of the series published in the College *Journal* (RCGP, 1977a). It had limited value because it was concerned exclusively with the punctuality of appointment systems rather than with delays in obtaining appointments or opportunities for patients to exercise choice within partnerships. Because of the individuality of practice appointment systems, we found it impracticable to introduce a simple audit questionnaire in the practice activity analysis style.

Record review immunization

A small number of doctors have completed a record review of immunization procedures. The pilot work for this record review was undertaken by doctors attending the New College course at Oxford. The exercise is concerned with measuring the proportion of children who are appropriately and adequately immunized.

The "Twenty" series

Some preliminary work has been done on the "Twenty" series. The analysis of disability (Fleming and Elliott Binns, 1985) included an analysis in this style. The method involves the identification of the first 20 patients that meet some audit criterion. Examples include: the first 20 patients receiving an oral contraceptive; the first 20 patients encountered for whom a hypnotic prescription is issued; the first 20 babies seen; the first 20 out-of-hours visits. For each of the 20 patients, there are 10 questions all of which must be answered by yes or no. The data collection document is illustrated in Figure 5.1 The content is summarized on a summary slip for transmission to a central unit. Because the format is common, one system of analysis can be used for any topic. Analysis using combinations of questions provides great scope. The reverse face of the recording document for oral contraception is shown in Figure 5.2. The consultation diary gives an indication of how long it takes to recruit the 20 patients.

CONSULTATION DIARY

To be completed unless otherwise stated in the instructions overleaf.
Recording is discontinued on recruitment of 20 patients, unless otherwise stated.
Enter number of patients seen in each consulting session. 'Clinics' apply to practice clinics (e.g. ante-natal) and not hospital based appointments.

	WEEKS 1 and 2					WEEKS 3 and 4			
	Sgy a.m.	Sgy p.m.	Visit	Clinic		Sgy a.m.	Sgy p.m.	Visit	Clinic
M					M				
T					T				
W					W				
Th					Th				
F					F				
S/S					S/S				
M					M				
T					T				
W					W				
Th					Th				
F					F				
S/S					S/S				
GRAND TOTAL OF ALL CONS.									

PRACTICE ACTIVITY ANALYSIS "The Twenty Series"

This series provides a standardised format in which to gather information for audit. Each sheet is concerned with 20 patients and the topic for analysis is defined precisely at the top of the sheet overleaf.

Information about the patient is recorded in columns A to T overleaf. There are ten questions to be considered for each patient and all must be answered "Yes" (Y) or "No"(N). The study is complete once 20 patients are recruited. Most studies in this series require consultation data to facilitate the analysis, and this is assembled in the CONSULTATION DIARY on the left. This is maintained continuously until the 20th patient has been recruited when it is stopped and consultations are not recorded beyond this point.

Recorders may wish to recall records when considering the results of this study and for this purpose the RECORD RECALL INDEX (right) may be kept though it is not essential for the study.

There are two elements of summary. Firstly, your own PERSONAL SUMMARY; which is completed by counting the number of "Yes" and "No" answers to each question and summarising in the appropriate columns. Secondly, the P.A.A. UNIT SUMMARY which is made by entering the numbers of questions to which a "Yes" answer has been recorded in the columns at the bottom of the page as illustrated by the example (Ex.).

On completion of the study summarise as above, complete the questionnaire below, detach and return it to the P.A.A. Unit. Retain the main part of the data sheet for your own consideration later.

Some studies involve the recruitment of more than 20 patients and thus more than one sheet is used. For these studies a specific recruitment instruction is provided overleaf. Occasionally a study may be terminated at the end of 4 weeks regardless of the number of patients recruited but such instructions are also specified in the recruitment details overleaf.

RECORD RECALL INDEX

Record the names (and abbreviated addresses) of patients entered in the study overleaf.

This index is not essential to the analysis and may be kept at the recorder's discretion.

Ex A. N. Example 172 L.B.Rd.

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T

Final Consultations Number ☐

AT THE END OF THE STUDY

1. Make sure all the patient information overleaf has been summarised.
2. Enter the number of consultations at which the study terminated in the box on the left, together with the date of termination.
3. Enter your name, address and recording group in the space on the right.
4. Is this the first P.A.A. return you have submitted YES NO
5. Detach the bottom of this sheet where indicated and send to your tutor or to: P.A.A. Birmingham Res. Unit R.C.G.P., 54 Lordswood Road, Birmingham B17 9DB
6. If more than one sheet is to be returned, it would be helpful if you would staple them together.

Dr. Name .....
Address .....
.....
.....
.....
Recording Group .....

Figure 5.1 'Twenty series' data sheet - face.

P.A.A. TOPIC:– "Twenty Series"

CONTRACEPTION 2

Recruitment

The first 20 women who consult you or receive a 'Repeat Prescription' for an oral contraceptive.

Consultation Diary:- Maintain during study

Record Recall Index:- Recommended but not essential

Drug Classification:- B. N. F. Section 7. 3

TOPIC No. 101

PERSONAL SUMMARY ENTER NUMBER OF ANSWERS

	Ex	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	YES	NO
PATIENT																							
1. Aged 35+ years?	N																						
2. Ever been pregnant?	Y																						
3. Had a successful pregnancy, (delivered of a living child without significant malformation)?	Y																						
4. Known to smoke cigarettes?	Y																						
5. Known to be immune to Rubella, (recorded immunisation or presence of antibodies)?	N																						
6. Had her BP checked and recorded in the last 12 months, (include today's consultation if any)?	N																						
7. Had a specimen taken for cervical cytology in the last 3 years, (include today's consultation if any)?	Y																						
PRESCRIPTION																							
8. A 'Repeat', (without concurrent consultation)?	Y																						
9. A combined pill, (BNF 7.3.1)?	Y																						
10. A low-dose pill, (Estrogen content 30 mcg or less)?	Y																						

P.A.A. UNIT SUMMARY

ENTER AFFIRMATIVE ANSWERS BY QUESTION NUMBERS AS ILLUSTRATED IN THE EXAMPLE Ex.

Ex	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
2																				
3																				
4																				
7																				
8																				
9																				
10																				

TOPIC No 101

Figure 5.2 'Twenty series' data sheet - reverse face.

The record recall index permits identification of patient records for subsequent discussion.

Morbidity for which patients consult

In this analysis, recorders classified problems encountered by the appropriate chapter in the International Classification of Disease. The analysis has been undertaken by 69 principals and 67 trainees. The results are not published here for two reasons. Firstly, some patients had more than one problem and this caused confusion in the recording method. Secondly, the disease classification caused problems for some general practitioners.

Prescribing — number of items

This analysis has been completed by 74 doctors with contracts to the Royal Air Force. The key statistics concerned the proportion of consultations in which no prescription was issued, the proportion of consultations involving polytherapy and estimates of prescribing without concurrent consultation. This occurs in two forms, the more common repeat prescription and the prescription given with advice by telephone. The results are not presented because the doctors concerned provided medical services for young adults and their families and cannot be extrapolated to the 'average doctor'.

Duration of consultations

Seventeen principals completed a pilot of this survey. After each consultation, recorders scored interrupted consultations (e.g. by telephone), and for the remaining consultations, duration in 5-minute intervals. Approximately 5 per cent of consultations were interrupted, approximately 50 per cent of all consultations lasted less than 5 minutes, and a further 34 per cent less than 10 minutes. The durations of new and follow-up consultations were similar.

As with all PAA surveys, the range of results was particularly interesting. At one extreme, one recorder reported 85 per cent of his consultations as 'new' and 15 per cent as follow-up whereas at the other extreme, the distribution was 42 per cent 'new' and 58 per cent follow-up. At one end of the spectrum 17 per cent of consultations were interrupted, and at the other only 1 per cent; at one end of the range of individual results, 84 per cent of consultations lasted less than 5 minutes and at the other 18 per cent. The proportion of consultations lasting less than 5 minutes was examined in relation to list size and found to be associated ($R = 0.58$, $n = 17$, $p < .05$). Thus, large list practices conducted relatively more short consultations than small list practices.

The most important conclusion from this analysis is the challenge it provides to the common research method for examining duration of consultation. Booking interval or rates derived from dividing the number of consultations into the total consulting hours provide the basis for estimating the duration of consultation in many studies. The duration of consultation cannot be measured from the booking interval. In addition the distinction between new and follow-up consultations and the time spent between consultations must be recognized.

CHAPTER 6

Discussion topics for practice audit

Introduction

AN alternative use of the initials PAA is "A Practical Approach to Audit". 'A' is making the point that it is only one of several methods of audit; 'Practical' reflects the ease of participation, which is not dependent on the co-operation of partners nor on difficult or costly recording systems; and 'Approach to Audit' because it does not depend on the acceptance of a particular standard. The data recording method can be employed to measure performance against an arbitrary standard set by a participating group, but in general, as has already been suggested, the empirical standard determined by the consensus view of the participants provides the reference point for analysis of individual performance. To complete the picture it is necessary to add 'audit by self-evaluation and peers', and the arguments in favour of this philosophy have already been fully rehearsed.

In using the results from practice activity analysis as an aid to discussion, it is desirable that contributions to discussion are made from a declared position with regard to any activity. The contribution may include a word of explanation indicating why a certain level is achieved. For example, a female doctor may see an excess of female patients, or one member of the partnership may be taking a special interest in patients with psychiatric problems. The important element in the discussion is that words and deeds accord.

Due reference must also be given to the sample. The importance of sample size has been discussed earlier. Whilst practice activity analysis may provide a valuable guide to overall performances in any given area, there are limitations when examining a small section of the results. As a rule of thumb, an activity rate estimated from a practice activity analysis survey places a doctor in a position in a range of results which is unlikely to be more than one quintile (plus or minus) from the true rate as measured over an indefinite period. Rates at the extreme ends of the spectrum are clearly distinguishable.

The initial assessment of an individual PAA result should be concerned with the overall result, followed by the details which may indicate unusual performance. The identification of unconventional or outdated practices is an essential part of the self-evaluation mechanism.

Discussion of the material should not be treated as a threat. Rather, we should look for opportunities to share experiences, so that success can breed success and difficulties shared in ways which truly identify those amongst our colleagues who can help. They will have already demonstrated their ability to achieve a desirable result.

Discussion can relate to any topic about which there are available data. In this chapter we list some suggestions for discussion together with relevant background material.

Choice of chemotherapy

1. Discuss the total rate of antibiotic prescribing and consider the implications of the wide range.
2. Consider antibiotic prescriptions issued to children using the age-standardized data.
3. Discuss the choice of antibiotics in children, specifying the circumstances in which penicillin V is not the first choice.
4. Discuss the place of tetracycline, erythromycin and sulphonomides in the antibiotic armoury of the general practitioner.
5. Discuss the use of trimethoprin, co-trimoxazole and related drugs. When is it appropriate to use these as a first choice antibiotic?
6. Discuss the side effects of antibiotics.
7. Formulate a prescribing policy for the management of respiratory infections in adults.
8. Formulate a management policy for the investigation and treatment of urinary infections.

References

Bain D.J.G. (1983)
Blueston C.D. (1982)
Carney T.A. (1983)
Dickinson J.A. (1979)
Fleming D.M. (1986)
Howie J.G.R. (1975a)
Howie J.G.R. (1976)
Howie J.G.R. and Hutchinson K.R. (1978)
Journal of the Royal College of General Practitioners (1982a)
Keele G. and Freeman J. (1983)
Marćovitch H., Howie J.G.R. and Josse S.E. (1981)
Marsh G.N. (1977)
Pennington C.R. and Crooks J. (1983)
Royal College of General Practitioners Birmingham Research Unit (1977b)
Wise R. (1987)

Investigations

1. Discuss the overall rate of initiation of investigation procedures and the implications of the wide range of performance amongst doctors.
2. Discuss the extent to which investigations can be undertaken in the practice.
3. Consider the availability of transport facilities in taking pathological specimens to the hospital-based laboratories.
4. Discuss the arrangements for handling specimens in the practice including the cover provided by the practice insurance policy.
5. What is the value of having an ECG in the practice?

6. What is the place for the urine pregnancy test and should it be available on practice premises?
7. What is the place of the urine dip stick investigation for identifying urinary infections?
8. What steps do we take to ensure that bacteriology specimens are in good condition by the time they arrive at the laboratory?
9. What are we doing and what should we be doing to ensure that people working amongst food stuffs and in public places are properly recovered after gastroenteric infections?
10. Discuss the investigation of vaginal discharge as it is done and as it should be done.
11. Is sputum culure of any value?

References

Burney P., Marson W.S., Evans M. et al. (1983)
Dobbs F.L. and Fleming D.M. (1987)
Fleming D.M. (1986)
Fleming D.M. and Maes R.M.J. (1980)
Guyer P.B. and Chalmers A.G. (1983)
Hartley R.M., Charlton J.R., Harris C.M. et al. (1984)
Lloyd G. (1973)
Mills K.A. and Reilly T.M. (1983)
Public Health Laboratory Service, Middlesex Hospital School (1983)
Robson J., Lurie N. and Tudor Hart J. (1979)
Royal College of General Practitioners Birmingham Research Unit (1978a)
Taylor R.J., Howie J.G., Brodie J. et al. (1975)

Psychotropic drugs

1. Discuss the total level of psychotropic drug usage and the range of practice results.
2. Why do females require so many more drugs than males?
3. Consider the criteria appropriate for the treatment of anxiety states with drugs as opposed to general advice and counselling.
4. Provide a model for the treatment of depression including the arrangements for discontinuing therapy.
5. Is there any place for long-term treatment with tranquillizers?
6. Detail the role of hypnotics in medicine. Is there a place for barbiturates?
7. Formulate a policy for controlling the repeat prescribing of psychotropic drugs.

References

Bain D.J.G. and Sales C.M. (1981)
Ballinger B.R. and Feely J. (1983)
Binnie G.A. (1983)
Burton R.H. and Freeling P. (1982)
Fleming D.M. (1986)
Fleming D.M. and Cross K.W. (1984)
Harris C. (1976)
Howie J.G.R. (1975b)
Howie J.G.R. and Biggs A.R. (1980)
Keele G. and Freeman J. (1983)
Loudon J.B. (1987)
Parish P.A., Williams W.M. and Elmes P.C. (1973)
Royal College of General Practitioners Birmingham Research Unit (1978b)
Varnam M.A. (1981)
Wheatley D. (1976)
Wilkes J.M. (1980)

Referrals to specialists

1. Discuss the total number of referrals and the cost implications of the range of results.
2. Has the domiciliary consultation any further purpose?
3. In some areas of medicine, demand outstrips supply, e.g. orthopaedics. Discuss ways of ensuring that hospital-based orthopaedic resources are not inappropriately used, for example by people whose problems are not likely to be benefited.
4. What minor surgery can be undertaken in practices?
5. Is there a place for specialization within partnerships — special interest practice?

References

Benton E.C. and Hunter J.A. (1984)
Brown J.M. (1979)
Davies T. (1986)
Dowie R. (1983)
Fleming D.M. (1986)
Fleming D.M. and Maes R.M.J. (1980)
Fraser R.C., Patterson H.R. and Peacock E. (1974)
Fry J. (1978)
Gillam D.M. (1985)
Hart J.T. (1985)
Hunter D. and McCance C. (1983)
Jenner G.H. (1985)
Jones R., Monkhouse C., Edmonds R. et al. (1984)
Knowles J.E.A., Savory J.N., Royle R.A. et al. (1979)
Nichols S. and Waters W.E. (1984)
Ross A.K., Davis W.A., Horn G. et al. (1983)
Royal College of General Practitioners Birmingham Research Unit (1978c)

Visiting profiles

1. Should patients requiring medical attention for infectious diseases such as chicken-pox or measles be visited to minimize the risk of spreading these conditions?
2. Is a high temperature a reason not to attend the surgery?
3. Most doctors have a 'chronic visiting list' of patients who are never likely to be able to attend surgery but who still require medication for various illnesses. Discuss the criteria which are appropriate to the inclusion of a patient on such a list.
4. Visits are made at the general practitioner's discretion but there is a heavy responsibility for refusing a request for a visit. Which requests should not be accepted?
5. Visiting by general practitioners varies considerably from country to country with approximately 15 per cent of all consultations involving a home visit in the UK, about 5 per cent in America and Scandinavia and 30 per cent in some European countries. Is change desirable?

References

Bailey A.J. (1979)
Balint M., Hunt J., Joyce D. et al. (1970)
Buxton M.J., Klein R.E. and Sayers J. (1977)
Cubitt T. and Tobias G. (1983)
Fleming D.M. (1986)
Gilbert J.R. (1978)
Gray D.J.P. (1978)
Humphreys R.C. (1981)
Royal College of General Practitioners Birmingham Research Unit (1978d)
Royal College of General Practitioners, Office of Population Censuses and Surveys, Department of Health and Social Security (1986)
Sawyer L. and Arber S. (1982)
Ten Cate R.S. (1980)
Whewell J., Marsh G.N. and McNay R.A. (1983)

Repeat prescriptions

1. Discuss the variability amongst doctors for the rate of issuing repeat prescriptions.
2. Make recommendations for appropriate periods for common prescriptions in stable non-psychiatric problems.
3. What is the upper time limit beyond which patients should not be issued repeat prescriptions without further direct consultation?
4. Discuss the pros and cons of repeat prescription cards.
5. Are computerized systems for repeat prescribing a desirable development?
6. What should the medical notes contain when repeat prescriptions have been issued?

References

Bain D.J.G. (1979)
Cruickshank C.I.T. and Moir D.C. (1979)
Drury V.W.M. (1973)
Fleming D.M. (1983)
Fleming D.M. and Cross K.W. (1984)
Frampton R. (1971)
Ho-Yen R. (1979)
Madeley J. (1974)
Manasse A.P. (1974)
Melville A. (1980)
Pickworth K.H. and Melrose W.M. (1972)
Tulloch A.J. (1981)
Walker K. (1971)

Workload review

1. Are the variations in rates for consultations per 1000 list a product of the doctor or of the patient?
2. What can we do about telephone calls which interrupt consultations?
3. Are we personally happy about the balance of time spent between face-to-face contact with our patients on the one hand and our other patient-related activities on the other?
4. Discuss guidelines for effective partnership meetings; effective both in content and resultant action.
5. Some doctors manage to visit patients in hospital — perhaps they would like to argue the case for this being a profitable use of their time.

References

Ball J.G. (1978)
Bevan J. and Baker C. (1977)
Bevan J., Cunningham D. and Floyd C. (1979)
Butler J.R. (1979)
Buxton M.J. and Klein R.E. (1979)
Carney T.A. (1980)
Cartwright A. and Anderson R. (1979)
Field J. (1980)
Fleming D.M. (1986)
Howie J.G.R. (1977)
Knight R. (1987)
McCormick J.S. and Allwright S.P.A. (1977)
Office of Health Economics (1987)
Office of Population Censuses and Surveys (1973)
Royal College of General Practitioners, Office of Population Censuses and Surveys, Department of Health and Social Security (1974)
Royal College of General Practitioners, Office of Population Censuses and Surveys, Department of Health and Social Security (1982)
Royal College of General Practitioners, Office of Population Censuses and Surveys, Department of Health and Social Security (1986)
Russell M.A.H., Wilson C., Taylor C. et al. (1979)

Record review - risk factors

1. In some practices this review was undertaken entirely by the practice ancillary staff. Where this has been the case, would doctors like to explain how they achieved such a high quality of record keeping?
2. Are poor results the product of poor records with unrecorded information and does this matter?
3. Would practices with high cervical cytology uptake rates, especially amongst women aged 40+, discuss the mechanism whereby these are achieved?
4. Would practices with poor cervical cytology rates discuss the difficulties they are encountering?
5. What is the experience of doctors involved in setting up screening clinics for the recognition of raised blood pressure? Do they have improved rates?
6. How important is it to gather information such as smoking habit?
7. The three measures included in this survey provide a spectrum of the emphasis on prevention. Would practices in which all three rates were above average explain the steps they took within their partnerships to achieve this?

References

Fleming D.M. and Lawrence M.S.T.A. (1981)
Royal College of General Practitioners (1981)
Spriggs A.I. and Hussain O.A.N. (1977)

CHAPTER 7

Conclusions

A source of information

PRACTICE activity analysis as described in this document has proved itself an effective instrument for obtaining information from practices for research purposes both for enquiries within the practice and for consolidating information from several practices. Its strength lies in its simplicity and economy; its standardized method and ease of recording; its flexibility with the capacity to move from one subject area to another; and its common definitions permitting the aggregation of data from several practices.

These qualities led to the use of this method both for the comparative study with Belgian doctors reported earlier (Fleming and Maes, 1980) and for the extensive use made in the Third National Morbidity Study. It is also precisely for these reasons that the PAA referral study is planned to provide a model for the backbone of a major study of referrals to be undertaken in Europe during the next two years under the auspices of the European General Practice Research Workshop (1982).

If the potential of practice activity analysis as an information system is to be fully realized, a central agency for processing data and continuous updating of the data bank is needed. A data bank of this type is essential if we are ever to obtain the evidence referred to by Howie (1987) whereby our system of medical care can be evaluated. The present data base from practice activity analysis is a useful start.

Self-evaluation

A considerable number of doctors (more than 2000) have used the PAA method to identify their own performance. The method is not for everybody, as some doctors cannot face the discipline of routine recording. Some doctors are likely to respond better to the alternative authoritarian approach, especially where the material under consideration is dependent upon a particular expertise which they do not have. Other doctors learn more effectively from reading scientific papers and these are all to be encouraged. No learning system is complete, however, without satisfactory examination of individual behaviour.

"Most people assume that education changes behaviour, but it is not easy to find convincing evidence that vocational or continuing training changes the behaviour of future general practitioners or those in post" (Horder et al., 1986). These authors did find a number of examples of improvement consequent upon educational methods including one taken from practice activity analysis. They emphasize the point previously made by Ashbaugh and KcKean (1976) that: "Deficiencies are far more likely to be in performance than in knowledge." They also emphasize the importance of reinforcement of new learning by active involvement. They suggested self-instruction or seminar teaching though we would feel that the contribution of observed performance in some measurable form is an essential ingredient.

These authors did conclude that teamwork was effective in changing patterns of activity but felt that unsolicited feedback without peer group contact was of little value.

The notion of self-assessment is not universally acceptable. In our own experiment in South East Thames, many doctors participated because they wanted to support local initiative but it did not follow that they saw self-assessment as a means for improving performance. Heath (1986) in a recent report gained the co-operation of his consultant colleagues in self-assessment in hospital activity analysis but failed to gain their enthusiasm for it. In the early pioneering work in hospitals by McColl (1979) and others (Dudley, 1974; Irving and Temple, 1976) the importance of nurturing the group was stressed.

In recent years, the Royal College of General Practitioners has encouraged doctors in the need for self-evaluation. In particular, consultation analysis using televised interviews with patients has been promoted as a means of improving interview technique. Though costly, this method is appropriate for its purpose but it cannot be used as a true measure of practitioner performance because the method of enquiry impinges on the consultation itself and because scientific enquiry demands a sufficient and representative sample, both of which are virtually unobtainable by these means. In practice activity analysis, consecutive consultations are monitored during a defined period and information is thereby obtained about a sizeable cohort of patients upon which to base conclusions. Whilst it is true that an ultimate analysis of practice activity would involve an independent auditor examining the records and other documents in order to obtain a true and completely unbiased picture, we feel the approach of practice activity analysis comes nearer to this in a practical way than most of the alternatives. The report of the Prescription Pricing Authority is an independent model on which practice activity analysis is based but it lacks an adequate denominator for interpreting individual doctor performance. Fraser and Gosling (1985) have developed methods whereby this difficulty can be overcome.

If self-evaluation is to be fostered, it requires an organizational framework whereby it can be facilitated and encouraged. In these concluding remarks we are not so much looking at the future of practice activity analysis in self-evaluation but rather the future of self-evaluation

as a medical educational method. Small piecemeal efforts may evolve here and there but unless some distinct academic and political effort is put into it, there is no future for it.

The College and audit

The thrust of this report has been the promotion of practice activity analysis as a means of facilitating audit by self-evaluation. The previous section argued the case for self-evaluation but perhaps even more important is the role the College can play in supporting self-evaluation and other forms of audit. The College is committed to improving standards and reaching towards indefinable 'quality'. Support has been given to practice activity analysis and to other ventures in this area but there is no institutional establishment which can be regarded as the nutrient medium or 'nurturing process'.

In formulating a policy towards audit, concern is often expressed about the dangers from external imposed audit. Though there may be a few instances in which imposed audit is desirable, we do not feel that it would contribute significantly towards improving standards. In isolated instances, poor quality care may be identified and even rectified as a result of imposed audit. However it is our view that imposed audit with the threat of sanctions can only influence the bottom end of the spectrum of general practitioner performance and has no place in the search for quality. In an editorial on audit in general practice, *The Lancet* (1980) considered external audit impracticable because of the inevitable non co-operation of doctors who are threatened. The editorial concluded:

> "There is also much to be said for external help in planning and encouraging internal audit which, in partnerships for instance, should be a joint activity of the partners. In the end, however, the responsibility for effective internal audit rests squarely on the shoulders of the universities, the medical schools, and perhaps above all on those responsible for postgraduate training in general practice. Without a willing spirit of enquiry, audit is worthless."

In December 1979, the *Journal of the Royal College of General Practitioners* was devoted entirely to audit. The first editorial began with a quotation from Matthews (1979):

> "Medical self-assessment programmes, and medical audit also, flourish more, so far, under the aegis of the Royal College of General Practitioners than under the Royal College of Physicians."

Could we say the same today? The editorial ended:

> "Self-audit by individual doctors or practices is now increasingly welcomed and needs to be encouraged."

In 1977 in its evidence to the Royal Commission on Medical Education, the Royal College of General Practitioners stated:

> "The College believes that medical education needs radical reshaping to place much greater emphasis on continuing education and medical audit."

It is noteworthy here that the College saw the two as separate matters. To some there is a danger of education being corseted by audit (*JRCGP*, 1979). Much of the difficulty stems from the differing interpretations applied to the word 'audit'. In its strictest sense audit implies the independent examination of all relevant records relative to some external standard. This interpretation has stultified the development of the much wider concept that is generally understood in the medical world, in which the requirements for independent examination and preconceived standards are not generally acknowledged. In medicine, actions should be reconciled with convictions about patient management and these should be derived from scientific knowledge (results of research), assessment of risk, and experience. The exercise of reconciliation is the objective of what we have called practice activity analysis. Shaw (1980) described 96 permutations of terms relating to audit in medicine. Whilst we have used the term 'practice activity analysis', quality assurance and standards of care are the subject matter. We cannot see a division between continuing medical education and audit. Nor do we see the semantic problems of 'review' *vis a vis* 'research'. The assessment of quality, like review or research, requires enumeration (*JRCGP*, 1982).

A particularly unfortunate adverse effect has resulted from the uncertain terminology. Encouragement is given from several quarters towards the pursuit of quality assurance but it is invariably presented in words that do not identify clearly which body should take the initiative. We believe, as far as it concerns general practice in this country, that this is the responsibility of the Royal College of General Practitioners through its Council and administrative machinery. In spite of the pessimistic view expressed by Horder and colleagues (1986) with regard to influencing doctor behaviour by education, we suggest that the positive elements of that report should provide a stimulus now.

We end by quoting the concluding remarks from Duncan's (1980) discussion paper:

> "The need for continuing medical education (CME) is generally accepted, and Merrison, Alment and the BMA have all indicated that peer review should be part of CME. Initiatives have already been shown by individuals and by colleges. It is now for the colleges and their faculties, as the traditional guardians of professional standards, to follow-up their own tentative moves by responding positively, strongly and quickly to the call made by the Royal Commission and to ensure that quality of medical care is seen by society to be firmly and openly assured by the professions themselves for the benefit of the community. At the same time the universities and the General Medical Council should see to it that practitioners of the future have instilled into them as students the attitudes of self and mutual criticism which when followed through into practice, will encourage the development and use of ever improving methods of quality assurance."

The College has taken an initiative with quality assurance. We believe it needs to be more systematized. Duncan (1980) entitled his review paper: "Quality assurance; what now and where next?" These questions remain on the table.

References

Alderson M.R. and Dowie R. (1979) *Health Surveys and Related Studies.* Oxford, Pergamon Press.

Alment E.A.J. (Chairman) (1976) *Competence to Practise.* Report. London, Committee of Enquiry into Competence to Practise.

Ashbaugh D.G. and McKean R.S. (1976) Continuing medical education. The philosophy and use of audit. *Journal of the American Medical Association* **236,** 1485-8.

Bailey A.J. (1979) Home visiting - the part played by the 'intermediary'. *Journal of the Royal College of General Practitioners* **29,** 137-42.

Bain D.J.G. (1979) The relationship between time and clinical management in family practice. *Journal of Family Practice* **8,** 551-9.

Bain D.J.G. (1983) Can the clinical course of acute otitis media be modified by systematic decongestant or antihistamine treatment? *British Medical Journal* **287,** 654-6.

Bain D.J.G. and Sales C.M. (1981) Referring children to an ENT department and prescribing psychotropic drugs to their mothers. *British Medical Journal* **283,** 585-7.

Balint M., Hunt J., Joyce D. et al. (1970) *Treatment or Diagnosis. A Study of Repeat Prescriptions in General Practice.* London, Tavistock Publications.

Ball J.G. (1978) Workload in general practice. *British Medical Journal* **1,** 868-70.

Ballinger B.R. and Feely J. (1983) New drugs - antidepressants. *British Medical Journal* **286,** 1885-87.

Benton E.C. and Hunter J.A. (1984) The dermatology out-patient service: a study of out-patient referrals in a Scottish population. *British Journal of Dermatology* **110,** 195-201.

Bevan J. and Baker C. (1977) *A 'Before and After' Study of the Workload of the General Practitioners and of the Views and Experiences of Patients. Health Services Research Unit Report 26.* Canterbury, University of Kent.

Bevan J., Cunningham D. and Floyd C. (1979) *Doctors on the Move. Occasional Paper 7.* London, Journal of the Royal College of General Practitioners.

Binnie G.A. (1983) Psychotropic drugs and accidents in a general practice. *British Medical Journal* **287,** 1349-50.

Blueston C.D. (1982) Current concepts in otolaryngology. Otitis media in children: to treat or not to treat? *New England Journal of Medicine* **306,** 1399-1404.

British Medical Journal (1974) Towards medical audit. Editorial. **1,** 255-7.

Brook R.H. and Appel F.A. (1973) Quality of care assessments; choosing a method for peer review. *New England Journal of Medicine* **288,** 1323-9.

Brown J.M. (1979) Why not audit hospital referrals? *Journal of the Royal College of General Practitioners* **29,** 743.

Buck C., Fry J. and Irvine D.H. (1974) A framework for good primary medical care - the measurement and achievement of quality. *Journal of the Royal College of General Practitioners* **24,** 599-604.

Burney P., Marson W.S., Evans M. et al. (1983) Chlamydia trachomatis and lower urinary tract infection symptoms among women in one general practice. *British Medical Journal* **286,** 1550-2.

Burton R.H. and Freeling P. (1982) How general practitioners manage depressive illness: developing a method of audit. *Journal of the Royal College of General Practitioners* **32,** 558-61.

Butler J.R. (1979) *How Many Patients Should a General Practitioner Have? A Review of Policies, Concepts and Data. Health Services Research Unit Report 37.* Canterbury, University of Kent.

Buxton M.J. and Klein R.E. (1979) Population characteristics and the distribution of general medical practitioners. *British Medical Journal* **1,** 463-6.

Buxton M.J., Klein R.E. and Sayers J. (1977) Variations in GP night visiting rates - medical organisation and consumer demand. *British Medical Journal* **1,** 827-30.

Carney T.A. (1980) A comparison of workload and morbidity recording by partners in a group practice. *Journal of the Royal College of General Practitioners* **30,** 271-7.

Carney T.A. (1983) Morbidity and prescribing. *British Medical Journal* **287,** 805-7.

Cartwright A. and Anderson R. (1979) *Patients and Their Doctors 1977. Occasional Paper 8.* London, Journal of the Royal College of General Practitioners.

Crombie D.L. (1963) The defects of general practice. *Lancet* **1,** 209-11.

Crombie D.L. (1970) Group dynamics and the domiciliary health team. *Journal of the Royal College of General Practitioners* **19,** 66-78.

Crombie D.L. (1984) *Social Class and Health Status. Inequality or Difference. Occasional Paper 25.* London, Royal College of General Practitioners.

Crombie D.L. and Fleming D.M. (1986) Comparison of Second National Morbidity Study and General Household Survey 1970-71. *Health Trends* **18,** 158.

Crombie D.L. and Fleming D.M. (1987) General practitioner referrals to hospital - the financial implications of variability. *Health Trends* **20,** 53-6.

Cruickshank C.I.T. and Moir D.C. (1979) A system for recording and monitoring repeat prescriptions cards in general practice. *Health Bulletin* No 4, **37,** 180-4.

Cubitt T. and Tobias G. (1983) Out of hours calls in general practice: does the doctor's attitude alter patient demands? *British Medical Journal* **287,** 28-30.

Darwin C. (1874) *Descent of Man.* 2nd edn. Republished 1901. London, Murray.

Davies T. (1986) Accident department or general practice? *British Medical Journal* **292,** 241-3.

Dickinson J.A. (1979) Incidence and outcome of symptomatic urinary tract infection in children. *British Medical Journal* **1,** 1330-2.

Dobbs F.L. and Fleming D.M. (1987) A simple scoring system for evaluating symptoms, history and urine dipstick test in the diagnosis of urinary tract infection. *Journal of the Royal College of General Practitioners* **37,** 100-104.

Donabedian A. (1966) Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly* **44,** No 3, 166-206.

Dowie R. (1983) *General Practitioners and Consultants: a Study of Outpatient Referrals.* London, King Edward's Hospital Fund for London. p.207.

Drury V.W.M. (1973) Repeat prescription cards. *Journal of the Royal College of General Practitioners* **23,** 511-4.

Dudley H. (1974) Necessity for surgical audit. *British Medical Journal* **1,** 275-7.

Duncan A. (1980) Quality assurance - what now and where next? *British Medical Journal* **280,** 300-2.

European General Practice Research Workshop (1982) *Statement on General Practice Research.* October.

Field J. (1980) Problems of urgent consultations within an appointment system. *Journal of the Royal College of General Practitioners* **30,** 173-7.

Fleming D.M. (1983) Repeat prescriptions. *Journal of the Royal College of General Practitioners* **33,** 517-8.

Fleming D.M. (1984) An epidemiological method applied to practices to measure the representativeness of their prescribing characteristics. *British Medical Journal* **289,** 1425-8.

Fleming D.M. (1985) The denominator for audit in general practice. *Family Practice 2.* London, Oxford University Press. pp76-81.

Fleming D.M. (1986) A comparison of the practice activities of trainees and principals. *Journal of the Royal College of General Practitioners* **36,** 212-6.

Fleming D.M. and Cross K.W. (1984) Psychotropic drug prescribing. *Journal of the Royal College of General Practitioners* **34,** 216-20.

Fleming D.M. and Elliott Binns C.P. (1985) Disability as identified from general practice records. *British Medical Journal* **290,** 287-90.

Fleming D.M. and Lawrence M.S.T.A. (1981) An evaluation of recorded information about preventive measures in 38 practices. *Journal of the Royal College of General Practitioners* **31,** 615-20.

Fleming D.M. and Lawrence M.S.T.A. (1983) Impact of audit on preventive measure. *British Medical Journal* **287,** 1852-4.

Fleming D.M. and Maes R.M.J. (1980) Facets of practice in the United Kingdom and Belgium. *Allgemeinmedizin International - General Practice International* **1,** 5-11.

Frampton R. (1971) Repeat prescriptions. Letter. *Journal of the Royal College of General Practitioners* **21,** 437.

Fraser R.C. and Gosling J.T. (1985) Information systems for general practitioners for quality assessment. III. Suggested new prescribing profile. *British Medical Journal* **291,** 1613-5.

Fraser R.C., Patterson H.R. and Peacock E. (1974) Referrals to hospital in an East Midlands city - a medical audit. *Journal of the Royal College of General Practitioners* **24,** 304-19.

Freeling P.G. and Burton R.H. (1982) General practitioners and learning by audit. *Journal of the Royal College of General Practitioners* **32,** 231-7.

Fry J. (1978) Home visiting - how much is necessary? *Update* **16,** 1119-20.

Gilbert J.R. (1978) House calls by Southampton GPs: causes and contents. *Practitioner* **220,** 21-4.

Gillam D.M. (1985) Referral to consultants - the National Health Service versus private practice. *Journal of the Royal College of General Practitioners* **35,** 15-18.

Ginzberg E. (1975) Notes on evaluating the quality of medical care. Sounding board. *New England Journal of Medicine* **292,** 366-8.

Gray D.J.P. (1978) Feeling at home. James Mackenzie Lecture. *Journal of the Royal College of General Practitioners* **28,** 6-17.

Guyer P.B. and Chalmers A.G. (1983) Chest radiography for general practitioners - a low yield investigation. *Journal of the Royal College of General Practitioners* **33,** 477-9.

Harris C. (1976) The case against the use of psychotropic drugs in general practice. *Update* **12,** 1031-7.

Hart J.T. (1985) The changing interface between primary and secondary care. *Ulster Medical Journal* **54,** 128-32.

Hartley R.M., Charlton J.R., Harris C.M. et al. (1984) Influence of patient characteristics on test ordering in general practice. *British Medical Journal* **289,** 735-8.

Heath D.A. (1986) The appropriate use of diagnostic services. Medical audit in clinical practice and medical education. *Health Trends* **18,** 74-6.

Hodgkin K. (1973) *Towards Earlier Diagnosis. A Guide to General Practice.* 3rd edn. Edinburgh, Churchill Livingstone.

Horder J., Bosanquet N. and Stocking B. (1986) Ways of influencing the behaviour of general practitioners. *Journal of the Royal College of General Practitioners* **36,** 517-21.

Howie J.G.R. (1975a) The case against the use of antibiotics in upper respiratory tract illness. *Update* **10,** 1351-3.

Howie J.G.R. (1975b) Psychotropic drugs in general practice. *British Medical Journal* **2,** 177-9.

Howie J.G.R. (1976) Clinical judgement and antibiotic use in general practice. *British Medical Journal* **2,** 1061-4.

Howie J.G.R. (1977) Patterns of work. In *Trends in General Practice.* Ed. Fry J. London, British Medical Journal.

Howie J.G.R. (1987) Quality of caring — landscapes and curtains. James Mackenzie Lecture. *Journal of the Royal College of General Practitioners* **37,** 4-10.

Howie J.G.R. and Biggs A.R. (1980) Family trends in psychotropic and antibiotic prescribing in general practice. *British Medical Journal* **280,** 836-8.

Howie J.G.R. and Hutchinson K.R. (1978) Antibiotics and respiratory illness in general practice — prescribing policy and workload. *British Medical Journal* **2,** 1342.

Ho-Yen R. (1979) A study of repeat prescription cards in a general practice. *Journal of the Royal College of General Practitioners* **29,** 473-7.

Hull F.M. (1978) The management of vaginal discharge in general practice. *Journal of the Royal College of General Practitioners* **28,** 714-8.

Humphreys R.C. (1981) Home visiting in a rural practice. *British Medical Journal* **282,** 115-6.

Hunter D. and McCance C. (1983) Referrals to the psychiatric services by general practitioners in relation to the introduction of sessions by psychiatrists in health centres. *Health Bulletin, Edinburgh* **41,** 78-83.

Irving M. and Temple J. (1976) Surgical audit: one year's experience in a teaching hospital. *British Medical Journal* **2,** 746-7.

Jenner G.H. (1985) Medical patients aged 65 and over admitted to an accident and emergency department. *British Medical Journal* **291,** 113-4.

Jones R., Monkhouse C., Edmonds R. et al. (1984) Outpatient referrals. *Update* **29,** 771-3, 776-7.

Journal of the Royal College of General Practitioners (1979a) Medical audit in general practice. Editorial. **29,** 699-700.

Journal of the Royal College of General Practitioners (1979b) Education in the Northern region. Editorial. **29,** 700-1.

Journal of the Royal College of General Practitioners (1982a) Antibiotics in general practice. Editorial. **32,** 205-10.

Journal of the Royal College of General Practitioners (1982b) Audit, the need for regulation. Editorial. **32,** 3-5.

Keele G. and Freeman J. (1983) Use of antibiotics and psychoactive preparations. *Journal of the Royal College of General Practitioners* **33,** 621-7.

Kelman S. (1980) *Improving Doctor Performance. A Study in the Use of Information and Organisational Change. Centre for Policy Research Monographs.* New York Human Sciences Press **1.**

Knight R. (1987) The importance of list size and consultation length as factors in general practice. *Journal of the Royal College of General Practitioners* **37,** 19-22.

Knowles J.E.A., Savory J.N., Royle R.A. et al. (1979) An audit of ENT referrals assessing training needs for general practice trainees. *Journal of the Royal College of General Practitioners* **29,** 730-2.

Lancet (1980) Medical audit in general practice. Editorial. **1,** 23-4.

Last J.M. (1963) The iceberg. Completing the clinical picture in general practice. *Lancet* **2,** 28-31.

Lloyd G. (1973) Use of investigations in a general practice — a prospective longtitudinal study. *Journal of the Royal College of General Practitioners* **23,** 326-36.

Logan W.P.D. and Cushion A.A. (1958) *Morbidity Statistics from General Practice. Vol. 1 (General) Studies on Medical and Population Subjects No. 14.* London, HMSO.

Loudon J.B. (1987) Prescribing in pregnancy: psychotropic drugs. *British Medical Journal* **294,** 167-9.

McColl I. (1979) Medical audit in British hospital practice. *British Journal of Hospital Medicine* **22,** 485-9.

McCormick J.S. and Allwright S.P.A. (1977) A comparison of general practice in Britain and Ireland. *Journal of the Royal College of General Practitioners* **27,** 271-4.

McFarlane A.H. and O'Connell B.P. (1970) Streptococcal pharyngitis - an analysis of the diagnostic process for ambulance patients. *Canadian Family Physician* **16,** 53-5.

McWhinney I.R. (1972) Medical audit in North America. *British Medical Journal* **2,** 277-9.

Madeley J. (1974) Repeat prescribing via the receptionist in a group practice. *Journal of the Royal College of General Practitioners* **24,** 425-31.

Manasse A.P. (1974) Repeat prescriptions in general practice. *Journal of the Royal College of General Practitioners* **24,** 203-7.

Marcovitch H., Howie J.G.R. and Josse S.E. (1981) Upper respiratory tract infections in children. *British Medical Journal* **283,** 889-92.

Marsh G.N. (1977) Curing minor illness in general practice. *British Medical Journal* **2,** 1267-9.

Matthews M.B. (1979) Self-assessment programmes and aspects of audit. *Journal of the Royal College of Physicians* **13,** 139-42.

Melville A. (1980) Reducing whose anxiety? A study of the relationship between repeat prescribing of minor tranquillisers and doctor attitudes. In *Prescribing Practice and Drug Usage.* Ed. Mapes R. pp 100-108. London, Croom Helm.

Mills K.A. and Reilly T.M. (1983) Laboratory and radiological investigations in general practice. Series 1-4. *British Medical Journal* **287,** 1033-6, 1111-13, 1188-90, 1265-68.

Mourin K.A.A. (1976) Auditing and evaluation in general practice. *Journal of the Royal College of General Practitioners* **26,** 726-33.

Nichols S. and Waters W.E. (1984) The effect of a health education intervention about breast cancer amongst general practitioners on speed of referral and outpatient workload. *Community Medicine* **6,** 115-8.

Office of Health Economics (1987) *Compendium of Health Statistics.* 6th edn. London, OHE.

Office of Population Censuses and Surveys (1973) *The General Household Survey. Introductory Report.* London, HMSO.

Parish P.A., Williams W.M. and Elmes P.C. (1973) The medical use of psychotropic drugs. *Journal of the Royal College of General Practitioners.* Suppl. No. 2. **23.**

Pendleton D.J., Schofield T. and Marinker M. (1986) *In Pursuit of Quality.* London, Royal College of General Practitioners.

Pennington C.R. and Crooks J. (1983) New antibiotics and advances in treatment. *British Medical Journal* **286,** 1732-5.

Pickworth K.H. and Melrose W.M. (1972) Repeat prescriptions: safety and control. *Update* **4,** 961-2.

Public Health Laboratory Service, Middlesex Hospital School (1983) Sexually transmitted diseases surveillance 1981. *British Medical Journal* **286,** 1500-1.

Robson J., Lurie N. and Hart J.T. (1979) Ten years' experience in general practice of dip-slide urine culture in children under 5 years old. *Journal of the Royal College of General Practitioners* **29,** 658-61.

Ross A.K., Davis W.A., Horn G. et al. (1983) General practice orthopaedic outpatient referrals in North Staffordshire. *British Medical Journal* **287,** 1439-41.

Rowe R.G. and Brewer W. (1972) *Hospital Activity Analysis. Computers in Medicine Series.* London, Butterworth.

Royal College of General Practitioners Records and Research Advisory Service (1967) The 'L' book. *Journal of the Royal College of General Practitioners* **14,** 289-93.

Royal College of General Practitioners (1973) *The Present State and Future Needs of General Practice. Report from General Practice 16.* London, RCGP.

Royal College of General Practitioners (1977) *Evidence to the Royal Commission on the NHS.* London, RCGP.

Royal College of General Practitioners (1981) *Health and Prevention in Primary Care. Report from General Practice 18.* London, RCGP.

Royal College of General Practitioners (1985) *Quality of Care. Policy Statement 2.* London, RCGP.

Royal College of General Practitioners (1986) *The Classification and Analysis of General Practice Data. Occasional Paper 26.* 2nd edn. London, RCGP.

Royal College of General Practitioners Birmingham Research Unit (1971) The diagnostic index. *Journal of the Royal College of General Practitioners* **21,** 609-12.

Royal College of General Practitioners Birmingham Research Unit (1977a) Self-evaluation in general practice. *Journal of the Royal College of General Practitioners* **27,** 265-70.

Royal College of General Practitioners Birmingham Research Unit (1977b) Practice activity analysis - punctuality of appointments. *Journal of the Royal College of General Practitioners* **27,** 634-5.

Royal College of General Practitioners Birmingham Research Unit (1977c) Practice activity analysis - choice of chemotherapy. *Journal of the Royal College of General Practitioners* **27,** 763-5.

Royal College of General Practitioners Birmingham Research Unit (1978a) Practice activity analysis - investigations. *Journal of the Royal College of General Practitioners* **28,** 60-2.

Royal College of General Practitioners Birmingham Research Unit (1978b) Practice activity analysis - psychotropic drugs. *Journal of the Royal College of General Practitioners* **28,** 122-4.

Royal College of General Practitioners Birmingham Research Unit (1978c) Practice activity analysis - referrals to specialists. *Journal of the Royal College of General Practitioners* **28,** 251-2.

Royal College of General Practitioners Birmingham Research Unit (1978d) Practice activity analysis - visiting profiles. *Journal of the Royal College of General Practitioners* **28,** 316-7.

Royal College of General Practitioners, Office of Population Censuses and Surveys and Department of Health and Social Security (1974) *Morbidity Statistics from General Practice. Second National Study 1970-71. Studies on Medical and Population Subjects No. 26.* London, HMSO.

Royal College of General Practitioners, Office of Population Censuses and Surveys, and Department of Health and Social Security (1979) *Morbidity Statistics from General Practice. Second National Study 1971-72. Studies on Medical and Population Subjects No. 36.* London, HMSO.

Royal College of General Practitioners, Office of Population Censuses and Surveys, and Department of Health and Social Security (1982) *Morbidity Statistics from General Practice 1970-71. Socio-economic Analyses. Studies on Medical and Population Subjects No. 46.* London, HMSO.

Royal College of General Practitioners, Office of Population Censuses and Surveys, and Department of Health and Social Security (1986) *Morbidity Statistics from General Practice. Third National Study 1981-2. Series MB5 No. 1.* London, HMSO.

Russell M.A.H., Wilson C., Taylor C. et al. (1979) Effect of general practitioner advice against smoking. *British Medical Journal* **2,** 231-5.

Sanzaro P.J. (1974) Medical audit. Experience in the USA. *British Medical Journal* **1,** 271-4.

Sawyer L. and Arber S. (1982) Organising a practice. Changes in home visiting and weekend cover. The patients' view. *British Medical Journal* **284,** 1531-4.

Shaw C. (1980) Aspects of audit - the background. *British Medical Journal* **280,** 1256-8.

Spitzer W.O., Sackett D.L., Sibley J.C. et al. (1974) The Burlington randomised trial of the nurse practitioner. *New England Journal of Medicine* **290,** 251-6.

Spriggs A.I. and Hussain O.A.N. (1977) Cervical smears. *British Medical Journal* **1,** 1516-8.

Stevens J.L. (1977) Quality of care in general practice: can it be assessed? *Journal of the Royal College of General Practitioners* **27,** 455-66.

Taylor R.J., Howie J.G., Brodie J. et al. (1975) Use of bacteriological investigations by general practitioners. *British Medical Journal* **3,** 635-6.

Ten Cate R.S. (1980) Home visiting in the Netherlands. *Journal of the Royal College of General Practitioners* **30,** 347-53.

Tulloch A.J. (1981) Repeat prescribing for elderly patients. *British Medical Journal* **282,** 1672-5.

Varnam M.A. (1981) Psychotropic prescribing - what am I doing? *Journal of the Royal College of General Practitioners* **31,** 480-3.

Walker K. (1971) Repeat prescription recording in general practice. *Journal of the Royal College of General Practitioners* **21,** 748-51.

Watkins C.J. (1981) *The Measurement of the Quality of General Practitioner Care. Occasional Paper 15.* London, Royal College of General Practitioners.

Wheatley D. (1976) The case for the appropriate use of psychotropic drugs in general practice. *Update* **12,** 1137-43.

Whewell J., Marsh G.N. and McNay R.A. (1983) Changing patterns of home visiting in the North of England. *British Medical Journal* **286,** 1259-61.

Wilkes J.M. (1980) Psychotropic drug prescribing and self audit. *Journal of the Royal College of General Practitioners* **30,** 390-5.

Wise R. (1987) Prescribing in pregnancy: antibiotics. *British Medical Journal* **294,** 42-6.

COLLEGE PUBLICATIONS — MEDICINE AND SOCIETY

Patients and their Doctors 1977 (Occasional Paper 8)
Cartwright and Anderson follow up their classic work on patients' views of their doctors. A useful source document on patient opinion. £3.00

A Survey of Primary Care in London (Occasional Paper 16)
Jarman provides the most detailed documentation ever published on the illness and social conditions of patients in London and the characteristics of their GPs and other health services. £4.00

Patient Participation in General Practice (Occasional Paper 17)
Brings together a large number of current ideas and much practical information about patient participation groups. £3.75

Inner Cities (Occasional Paper 19)
Prize-winning report, analysing the problems of general practice in several inner cities in the UK, with suggestions as to how they can be overcome. £3.00

General Practitioner Hospitals (Occasional Paper 23)
A report from a working party reviews the history and literature on GP hospitals. '*... a short, factual and informative report with a good bibiography*' Hospital and Health Service Review. £3.00

Social Class and Health Status: Inequality or Difference (Occasional Paper 25)
Complementing the Black Report on social class and health, Crombie provides new evidence that GPs actively compensate by providing more consultations and more care for patients in social classes 4 and 5. £3.50

Alcohol — A Balanced View (Report 24)
This report of a College working party offers a logical approach to drinking problems which can easily be applied in everyday practice. £5.00

Booking for Maternity Care. A Comparison of Two Systems (Occasional Paper 31)
A detailed study of the views of mothers booked for delivery in a GP unit and those booked for shared care in a specialist consultant unit. £3.50

To Heal or to Harm — The Prevention of Somatic Fixation in General Practice
Describes not only the theory of somatic fixation and the part that the doctor, the patient, and others can play in contributing to this, but practical ways in which it can be prevented. £12.50

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices includes postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — TEAMWORK

Education for Co-operation in Health and Social Work (Occasional Paper 14)
Reports an interdisciplinary conference of social workers, nurses, health visitors and GPs: how they can co-operate and the difficulties involved. £3.00

Promoting Prevention (Occasional Paper 22)
A College working party identified practical ways of carrying out prevention through teamwork in the practice and partnership with other organizations within the Health Service. £3.00

Working Together — Learning Together (Occasional Paper 33)
This reports the successes and failures of courses run over several years to promote teamwork in general practice. £3.00

Preventive Care of the Elderly (Occasional Paper 35)
Based on papers given at a national workshop, this document describes case-finding and screening programmes for the elderly, with special emphasis on team care. £5.00

The Work of Counsellors in General Practice (Occasional Paper 37)
This study, based on interviews with 17 counsellors, shows that although there are problems involved in counselling attachments, there are advantages for doctors, patients and counsellors. £3.50

Prevention and the Primary Care Team
The report of a multidisciplinary working party looks at some of the difficulties and delicate issues in prevention and makes practical recommendations. £3.00

Healthier Children — Thinking Prevention (Report 22)
Covers many principles involved in childcare: examinations, doctor–patient relationship, teamwork, remuneration, monitoring and training. '*... a forward looking report. I have not read anything in recent years so heartening*' Archives of Disease in Childhood.£5.50

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — PREVENTION

Combined Reports on Prevention (Reports 18–21)
This series of classic documents on preventive medicine reprinted under one cover offers excellent value for money. The four reports are on the principles of prevention (edited by Horder), prevention of arterial disease (ed. Tudor Hart), prevention of psychiatric disorders (ed. Graham) and family planning (ed. Hutchinson). £4.50

Healthier Children — Thinking Prevention (Report 22)
Covers many principles involved in child care: examinations, doctor–patient relationship, teamwork, remuneration, monitoring and training. *'... a forward looking report. I have not read anything in recent years so heartening'* Archives of Disease in Childhood. £5.50

Alcohol — A Balanced View (Report 24)
This report of a College working party offers a logical approach to drinking problems which can easily be applied in everyday practice. *'... an excellent account of the varied and extensive damage done by alcohol'* Lancet. £5.00

Promoting Prevention (Occasional Paper 22)
A College working party identifies practical ways of implementing the recommendations of the five reports on prevention. *'... a significant step in the development of primary care'* Nursing Times. £3.00

Preventive Care of the Elderly (Occasional Paper 35)
Based on papers given at a national workshop, this document describes case-finding and screening programmes for the elderly, with special emphasis on team care.£5.00

Prevention and the Primary Care Team
The report of a multidisciplinary working party looks at some of the difficulties and delicate issues in prevention and makes many practical recommendations. *'... should provoke all but the most perfect of general practices'* General Practitioner. £3.00

To Heal or to Harm — The Prevention of Somatic Fixation in General Practice
Describes not only the theory of somatic fixation and the part the doctor, the patient, and others can play in contributing to this, but practical ways in which it can be prevented. £12.50

Handbook of Preventive Care for Preschool Children
This second edition takes into account many of the comments made about the earlier edition. Record cards are again included. £5.00

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — CLINICAL CARE

BOOKS AND PAPERS

Hypertension in Primary Care (Occasional Paper 12)
Provides a useful summary of ideas about the role of the GP in the care of hypertensive patients, with both background theory and practical advice. £3.75

Clinical Knowledge and Education for General Practitioners (Occasional Paper 27)
Reports a questionnaire study comparing the actions of groups of GPs and specialists faced with seven common clinical conditions. Useful for education and research in general practice. £3.50

Booking for Maternity Care — A Comparison of Two Systems (Occasional Paper 31)
A detailed study of the view of mothers booked for delivery in a GP unit and those booked for shared care in a specialist consultant unit. £3.50

An Atlas of Bedside Microscopy (Occasional Paper 32)
Using new techniques of miniaturization, Dr Longmore's text shows how important diagnoses can be made much earlier at the bedside. *'... beautiful colour photographs'* Physician. £8.50

Preventive Care of the Elderly (Occasional Paper 35)
Describes case finding and screening programmes which offer a framework for providing care for the physical, psychological and social problems of the elderly.

The Presentation of Depression: Current Approaches (Occasional Paper 36)
Reopens the debate on the nature of depression in general practice and why it is often not recognized. £4.00

The Work of Counsellors in General Practice (Occasional Paper 37)
This study, based on interviews with 17 counsellors, shows that although there are problems involved in counselling attachments, there are advantages for doctors, patients and counsellors. £3.50

Handbook of Preventive Care for Preschool Children
This second edition takes into account many of the comments made about the earlier edition. Record cards are again included. £5.00

INFORMATION FOLDERS

Information folders on clinical care contain a booklet, usually by a practising GP, a protocol for management of the disease, and other material such as record cards and patient leaflets. Titles available:

Epilepsy	£5.00	(£6.00 non-members)
Cervical Cytology	£5.00	(£6.00 non-members)
Diabetes	£12.50	(£15.00 non-members)
Parkinson's Disease	£7.00	(£8.00 non-members)
Asthma	£9.00	(£10.00 non-members)
Coronary Heart Disease	£6.00	(£7.00 non-members)

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Acess and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — QUALITY IN PRACTICE

Quality in General Practice (Policy Statement 2)
This important document analyses the state of general practice and puts forward far-reaching proposals for career development and the introduction of incentives. £5.50

The Front Line of the Health Service (Report 25)
Subtitled 'College Response to *Primary Health Care — An Agenda for Discussion'*, this document lays particular emphasis on education, teamwork and incentives and sets out College policies with a series of strong recommendations. £5.00

What Sort of Doctor? (Report 23)
Describes the most radical system so far published on the assessment of performance review by GPs in their own practices. £5.00

The Measurement of the Quality of General Practitioner Care (Occasional Paper 15)
A detailed review of the literature on quality of care. Essential reading for those trying to measure and promote quality in general practice. £3.00

Practice Assessment and Quality of Care (Occasional Paper 39)
Review of the literature of quality in general practice with special reference to practice visiting.

In Pursuit of Quality
Written by leading thinkers in the field, including Avedis Donabedian, this book tackles the problems of the meaning of quality and how it can be organized and measured. £15.00

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — RESEARCH AND AUDIT

Medical Audit in General Practice (Occasional Paper 20)
Sheldon's prize-winning essay reviews the literature, analyses key issues, and describes the author's own experiences, together with a protocol for carrying out audit. £3.75

The Classification and Analysis of General Practice Data Second Edition (Occasional Paper 26)
The RCGP's classification of health problems in primary care. Essential for all GPs recording morbidity and other important data on computer. £6.50

Trainee Projects (Occasional Paper 29)
Gives advice about project work for trainees, choosing topics, constructing protocols and preparing for publication, with numerous examples of Syntex Award winning projects. £4.50

Epidemiology in Country Practice
William Pickles' own work — first published in 1939 — the classic example of original research in general practice. '... *an inspiration for us today'* New Zealand Family Physician. £5.50

Epidemiology and Research in a General Practice
Published posthumously, this book comprises 16 chapters of Dr Watson's unfinished work plus nine articles, mainly on the impact of virus diseases in general practice. £10.50

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

INFORMATION FOLDERS

The following information folders can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU.

Prices for members (non-members):

- Age–Sex Registers £3.00 (£4.00)
- Entering General Practice £6.00 (£7.00)
- Practice Premises £3.00 (£4.00)
- Appointment Systems £3.00 (£4.00)
- Medical Records £5.00 (£6.00)
- Epilepsy £5.00 (£6.00)
- Cervical Cytology £5.00 (£6.00)
- Diabetes £12.50 (£15.00)
- Parkinson's Disease £7.00 (£8.00)
- Asthma £9.00 (£10.00)
- Practice Information Booklets £6.00 (£7.00)
- Coronary Heart Disease £6.00 (£7.00)

All prices include postage and payment should be made with order. Cheques should be made payable to RCGP Enterprises Ltd. Access and Visa cards welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS — COMPUTING

Computers in Primary Care (Occasional Paper 13)
This report from an RCGP working party describes current and future possibilities for computerizing aspects of care in general practice. £3.00

The Classification and Analysis of General Practice Data. Second Edition (Occasional Paper 26)
The RCGP's classification of health problems in primary care. Essential for all GPs recording morbidity and other important data on computer. £6.50

Trends in General Practice Computing
Covers computerized prescribing, office systems, computers in the consulting room, attitudes of patients and future developments. An easy-to-read introduction to the subject with plenty to offer those already committed. £12.50

All the above can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Prices include postage. Payment should be made with order. Access and Visa welcome (Tel: 01-225 3048).

COLLEGE PUBLICATIONS

The following publications can be obtained from the Central Sales Office, Royal College of General Practitioners, 14 Princes Gate, Hyde Park, London SW7 1PU (Tel: 01-581 3232). Prices include postage and payment should be made with order. Cheques should be made payable to RCGP Enterprises Ltd. Access and Visa are welcome.

POLICY STATEMENTS

1. Evidence to the Royal Commission on the National Health Service	£3.00
2. Quality in General Practice	£5.50

REPORTS FROM GENERAL PRACTICE

18-21. Combined Reports on Prevention	£4.50
22. Healthier Children—Thinking Prevention	£5.50
23. What Sort of Doctor?	£5.00
24. Alcohol—a Balanced View	£5.00
25. The Front Line of the Health Service. College Response to *Primary Health Care*	£5.00

OCCASIONAL PAPERS

4. A System of Training for General Practice (Second edition, 1979)	£3.00
6. Some Aims for Training for General Practice	£2.75
7. Doctors on the Move	£3.00
8. Patients and their Doctors 1977	£3.00
9. General Practitioners and Postgraduate Education in the Northern Region	£3.00
10. Selected Papers from the Eighth World Conference on Family Medicine	£3.75
11. Section 63 Activities	£3.75
12. Hypertension in Primary Care	£3.75
13. Computers in Primary Care	£3.00
14. Education for Co-operation in Health and Social Work	£3.00
15. The Measurement of the Quality of General Practitioner Care	£3.00
16. A Survey of Primary Care in London	£4.00
17. Patient Participation in General Practice	£3.75
18. Fourth National Trainee Conference	£3.75
19. Inner Cities	£3.00
20. Medical Audit in General Practice	£3.75
21. The Influence of Trainers on Trainees in General Practice	£3.25
22. Promoting Prevention	£3.00
23. General Practitioner Hospitals	£3.00
25. Social Class and Health Status: Inequality or Difference	£3.50
26. The Classification and Analysis of General Practice Data (Second edition)	£6.50
27. Clinical Knowledge and Education for General Practice	£3.50
28. Undergraduate Medical Education in General Practice	£3.50
29. Trainee Projects	£4.50
30. Priority Objectives for General Practice Vocational Training (Second edition)	£3.50
31. Booking for Maternity Care: A Comparison of Two Systems	£3.50
32. An Atlas of Bedside Microscopy	£8.50
33. Working Together—Learning Together	£3.00
34. Course Organizers in General Practice	£4.50
35. Preventive Care of the Elderly: A Review of Current Developments	£5.00
36. The Presentation of Depression: Current Approaches	£4.00
37. The Work of Counsellors in General Practice	£3.50
38. Continuing Education for General Practitioners	£5.00
39. Practice Assessment and Quality of Care	£5.00
40. Rating Scales for Vocational Training in General Practice 1988	£5.00
41. Practice Activity Analysis	£6.50

BOOKS AND BOOKLETS

The Future General Practitioner—Learning and Teaching	£10.50*
Epidemiology and Research in a General Practice	£10.50
A History of the Royal College of General Practitioners	£12.00†°
RCGP Members' Reference Book	£17.50
Notes for Lecturers	£1.00
Epidemiology in Country Practice	£5.50‡
Will Pickles of Wensleydale	£10.50‡
Handbook of Preventive Care for Preschool Children (Second edition)	£5.00
Trends in General Practice Computing	£12.50
In Pursuit of Quality	£15.00
Sir James Mackenzie MD	£12.50
Prevention and the Primary Care Team	£3.00
14 Prince's Gate. Home of the Royal College of General Practitioners	£8.50°
To Heal or to Harm. The Prevention of Somatic Fixation in General Practice	£12.50
The Practice Library	Free**

*£1.00 less for members of the College **Until 1 January 1991 †£2.00 less for members of the College
‡If bought together these two books are obtainable at the reduced price of £13.00
°If bought together these books are obtainable at the reduced price of £16.00

Typeset and printed by Thomas Hill Print (1985) Ltd, Bishop Auckland, Co. Durham
ISBN 850 841 37 2