PRACTICE OBSERVED

Practice Research

Preparing to introduce a computer into a health centre

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The recent Royal College of General Practitioners' working party on computers¹ predicted that computer systems will probably be in widespread use in general practice in five years, but that this depended on general practitioners accepting that introducing computers would result in greater business and clinical efficiency without requiring too much extra time, cost, or effort of themselves or their staff.

There are already several comparatively cheap off-the-shelf systems based on microcomputers that could perform many functions required by a general practice information system. Many general practitioners who are interested in improving patient follow-up, surveillance of repeat prescriptions, or aspects of preventive medicine can seriously consider purchasing a computer package, even though they have no knowledge or interest in computer technology. As the working party stated, only a small minority of doctors will have a clear idea of the revolution in office procedures that is coming, and an equally small number have probably considered making the requisite changes in their own record-keeping, though Greene investigated these in 1970.²

The usefulness of computers depends on the satisfactory collection and input of information, and this means a firm commitment by medical and office staff. Therefore, if it is necessary to alter the attitudes of staff or the way they work then this should be assessed before a computer system is introduced.

An attempt was made to assess the attitudes of staff to using a computer in one health centre.

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Method

The University of Manchester department of general practice decided to look at the process and effects of installing an off-the-shelf microcomputer system at Didsbury House Health Centre, which provides general medical services for 11 000 patients. The practice manager and two general practice principals, who were also members of the academic staff, were asked to investigate the many different types of systems. It was thought that acceptability to the users was an important factor, so it was decided to find out the attitudes of all practice staff to using a computer in the health centre.

All staff were asked to complete a questionnaire—the "computer oracle." The aim was to gather broad impressions from different groups of staff. The results were not intended for analysis, and the reported figures should be regarded only as indicators. The questionnaire looked first at three basic functions that are required for the development of more complex information systems: details of patient registration, information about patients' medical background, and information about encounters between staff and patients. Staff were asked their opinions on how useful a more complex facility such as a control over repeat prescriptions and registers for administrative, preventive health care, and educational purposes would be. Since there was no intention of introducing real-time computing in to each consulting room (that is, staff using the computer while consulting with patients) staff were not asked to give their opinions on fully computerised clinical records or on computer-assisted diagnosis.

Results

Thirty-five questionnaires were circulated to all staff in the department of general practice and the health centre, excluding research secretaries. One academic administrator and one senior research fellow returned their questionnaires because they were not relevant to their work, and one senior research fellow failed to return his. The 32 completed forms came from 12 doctors (seven academic principals, one National Health Service clinician), 11 administrative staff (secretaries, receptionists, and records clerks) and seven others (social worker, health visitor, district nursing sister, school nurse, and three research staff).

of concern about repeat prescribing we thought that considerable interest would be shown in this. Table 1 shows that all groups put a high value on controlling and processing repeat prescriptions by computer, but the doctor's anxiety may be reflected in the value given to altering about drug interaction. The low interest in recalling form FP100 may be related to the fact that an academic department with mainly salaried principals has no personal interest in item-for-service fees.

Fig 3—The percentage of respondents who thought that it was important to have access to information about each encounter between patients and staff on the computer.

TABLE 1—Information about medication

Percentage of respondents according to mode frequency (mode 4-5)	All respondents (n=32)	All doctors (n=12)	GP principals (n=8)	Administrative staff (n=13)
(1) Processing and controlling repeat prescriptions by computer	66	67	75	77
(2) Individual summaries for all medicines	59	67	75	38
(3) Alerting about drug interactions	59	67	75	100
(4) Alerting of failure to require repeat prescription	59	67	75	23
(5) FP100 recall	28	33	38	15

Question 5 Information specific to the practice

The questionnaire lastly asked about using a computer to construct practice logs and registers for clinical, administrative, or educational purposes. Manual methods are arduous, and the advantage of a computer is obvious but few staff members would need to use the information. Only moderate interest in having registers in the three categories was shown (table 1), even though this was a practice committed to teaching and research, except for those concerned with preventive health. Administrative staff, who would not expect to use these registers, attached little importance to them. Some of the marked differences, however, might have implications for organising an effective system—for instance, doctors were more interested in lists of patients by social class, but occupation is seldom available on current records. There is no system for collecting and coding information, and the lack of interest shown by administrative staff, together with the objections noted above, may make the provision of such lists difficult.

Discussion

When introducing a computer information system it is important to overcome the idea of the "spontaneous generation" of information. Many reports³⁻⁶ have emphasised the value of

TABLE 2—Practice registers

	All respondents	All doctors	GP principals	Administrative staff
Administrative				
Complete alphabetical list	34	25	37	46
Complete age-sex register	34	16	25	38
Selected age group	33	33	87	15
Summary register structure	40	33	37	38
List by geographical location	9	0	12	5
Work-based				
Patient contacts	44	41	62	7
Investigations/procedures	37	33	75	12
Consultation	39	33	62	7
Referral log	34	33	50	15
Preventive health procedures				
Patient recall/visit times	56	75	87	30
Child health surveillance	51	75	100	11
Maternity/postnatal	33	75	87	30
Cervical cytology	33	75	87	30
Risk factors	28	33	50	7
Preventive procedures				
For example, flu vaccine	28	41	62	7
Genetic surveillance	51	58	87	30
Teaching/audit				
Complete disease register	43	41	37	34
Selective disease register	43	41	37	34
By doctor	46	50	50	30
By drug group	28	33	50	15
By problem	28	33	50	15
Listing by social class/socioeconomic group	25	41	62	0
Listing by ethnic group/nationality	15	41	50	7

computers in improving patient care or practice administration. Only information can beget information, however, and the advantages can only be realised if the staff is motivated to provide the right information from the beginning. Most practices will not be able to afford consulting-room terminals at first and therefore will need a system of "encounter forms," so that relevant information is passed by the doctors to the administrative staff to be entered. This poses problems of confidentiality that are not the subject of this report, and it also means a change in practice work-patterns. If existing staff are to be redeployed they must appreciate the value of the change and the relevance of the information.

This study was limited to one large practice, but it suggests that there may be sharp differences in thinking between the medical and the administrative staff over how much information is necessary—even though they agree on having a computer. The patient files are the building-blocks of any primary care information system, but many details are either not there or not easily accessible. To gain the full benefit of a computer these details need to be collected, and we must be aware that occupation, social classification, ethnicity, and even marital status, for example, are sensitive areas that some staff feel uneasy about handling. Although doctors may realise the value of knowing which women in social class V have not had cervical cytology, such lists are unlikely to be adequate unless all staff are prepared to collect and process the information. Again, considerable interest was shown in including alcohol consumption, smoking status, and other among risk factors, but this requires getting the information from patients and a change in work process to ensure that the information is adequate. Computer printouts can only remind us of the absence of information. The lack of interest in having lists of patients with risk factors suggests an ambivalence that might affect data collection, despite the encouragement of the recent RCGP working party on prevention⁶ to ascertain the smoking behaviour and weight of patients under 64 years.

The lack of interest shown by doctors in information about encounters between patients and staff may also foreshadow problems in changing the pattern of recording that is necessary for data collection, though the considerable interest in disease registers and facilities for repeat prescriptions may counteract this, especially if they are seen to be effective.

The questionnaire (the "oracle") showed that there is

They were asked to grade from 1 (not important) to 5 (essential) the importance they attached to having a computer available for each facility. A grade of 4 or 5 indicated a considerable interest in having that facility. These grades were added and expressed as a percentage of all respondents. The percentage that showed considerable interest was also calculated for three separate groups: all doctors, general practitioner principals, and administrative staff, the other groups were too small for separate analysis. In certain instances the respondents were asked to forecast how frequently a facility would be likely to be used, and the mode frequency forecast is reported.

Question 1 Background information about patients

The respondents were told that a computer could hold background information on all registered patients that might range from simple details to a personal profile. They were asked to grade the overall importance they personally attached to this information being available on the computer, and to say how frequently they thought they would need access to it. A list of possible items for inclusion was given and respondents were asked to specify which should always be included, might usually be included, or should never be included—the latter aimed to pinpoint particularly sensitive areas of information-handling.

Fig 1 shows the general response. All groups were interested in

Fig 1—The percentage of respondents who thought that it was important to have access to background information about patients on the computer.

having this information available for use daily. Administrative staff showed the highest interest—mainly for name, date of birth, address, National Health Service number, practice number, and registered doctor—suggesting that this was largely due to their frequent need to check registration details. Medical staff also gave high priority to including telephone number, marital status, and occupation, which was expected in the light of Richardson and Berkeley's⁷ findings on general practitioners' views of essential items on records.

Half of the respondents had reservations about some items. One said that the socioeconomic group should not be included "until I know what it is"; one receptionist would have excluded marital status, occupation, social class, religion, ethnicity, birthplace, and nationality. Social classification was most frequently objected to, not only because it was a sensitive issue but because it was likely to be inaccurate. Two research staff wanted all the social information but would have excluded the name for confidentiality. Four respondents had reservations about religion and birthplace and three about nationality.

Question 2 Information on medical background

To develop a disease register, or a register of patients at risk, or other practice registers requires collecting details about past medical

history, screening procedures, etc as well as knowledge of the current problems of each patient. Individual summaries could therefore be available as a printout. The questionnaire asked how valuable they would find such summaries. There was only moderate interest (fig 2) except from doctors. Senior administrative staff saw no reason for access to this information, and most administrative staff thought they would "never" use the summaries. This may suggest that the few less experienced staff who attached priority to access may not have thought out the issue of confidentiality.

Fig 2—The percentage of respondents who thought that it was important to have access to information about patients' medical background on the computer.

Respondents were also asked to choose from a list the areas that should always be included. Doctors showed particular interest in past medical history, family history, and summaries of current problems and medication, but less in birth history, risk factors, and screening and preventive health procedures. Respondents were then asked to specify items under none of these headings. Family history: 36 suggestions that ranged from diabetes to "attitudes to deviance," but only four—diabetes, ischaemic heart disease, stroke, epilepsy—were mentioned by 10 or more people. Risk factors: 29 suggestions from "alcohol" to "ignorance," but only alcohol, obesity, and smoking were mentioned by 10 or more people. Screening/preventive health: 19 subjects, with immunisation status, cervical cytology, blood pressure, and urinalysis appearing 10 or more times.

Question 3 Encounters between staff and patients

The information about a patient's personal background and thus the practice registers comes from the encounters between patients and staff. When a practice has no real-time consulting-room computer no information must be collected, in addition to manual records, on separate encounter forms or by amending existing computer printouts in the records. If the latter method is used a summary of each encounter may be printed and filed to be used at the next contact. In a practice with up to 150 patient contacts a day this would be a heavy load of computing and filing. This question was asked to see if staff thought such printouts had any value in their own right, but the staff showed little interest and the doctors none (fig 3). Those who did think that they were important may have been reflecting their own frustration at not finding legible information when they received telephone calls from pharmacists or laboratory technicians to check on missing doctor's requests.

Question 4 Information about medication

Most off-the-shelf computer systems have facilities for controlling prescriptions, particularly repeat prescriptions. Because there is a lot

considerable interest in having computerised facilities in this practice, to be used especially in time-consuming or anxiety-provoking areas, and this should ease the introduction of a computer. Interest may develop in using a computer in other areas as well. It appears, however, that educating staff and developing simple methods of data collection will be required before such potential can be realised, and we now know which areas will need careful handling.

We think that the "oracle" has shown that it is important to make a survey of staff attitudes before introducing a computer information system.

Conclusions

Introducing a computerised information system to a health centre will affect the work of all the staff. If the attitudes of the staff are taken into account this will facilitate introducing the system. A questionnaire, called the "computer oracle," was used in one large health centre to find out the attitudes of different groups of staff to using a computer.

My thanks are due to all the staff for completing the Oracle, especially to Dr E J Williams, senior lecturer in general practice, and

Miss Margaret Flynn, practice manager, my colleagues on the sub-committee, and Mrs R Arditi for her help with typing.

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(Accepted 28 April 1981)

Trainees Corner: Managing Chronic Disease

Asthma

I: Managing the acute attack

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This article is based on an audiovisual presentation made for vocational trainees in general practice by the MSD Foundation. Further information about the tape-slide programme on which this series is based is available from the MSD Foundation, Tavistock House, Tavistock Square, London WC1.

At least a quarter of a general practitioner's consultations deal with the problems of patients with chronic disease. These patients return year after year to seek help for conditions that are often incurable in the strict sense, but which the doctor can do much to alleviate.

In these presentations on managing chronic disease in general practice we emphasise the active planning of managing patients both on an individual basis, corresponding with the needs of each patient, and collectively by using policies that

take into account the characteristics of the group of patients with the condition and the organisation and resources of the practice.

This is the first of two articles which deal with managing the asthmatic patient in general practice. In the average practice about 5% of the patients have asthma at one time or another, and the disease may occur in all age groups. This first article considers the general practitioner's role in diagnosing and treating the acute attack, and the second article will consider long-term management of the condition.

Asthma is a formidable problem in general practice and one that is worthy of intensive study and continual surveillance. There are several different definitions of asthma, but we define it as "potentially reversible airways obstruction." The first priority when the disease starts with an acute episode is of course to relieve the respiratory distress. The relief can be dramatic: the symptoms may well vanish on the end of a needle. But it is only one episode in a long story; one aspect of a disease you and the patient may have to cope with for a long time.

Four patients

Let us consider four patients who are chosen to illustrate different aspects of asthma. The first, a wheezy infant, could become the second, an asthmatic child, who might in turn become the third, an

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