ABC of Computing

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IMPLEMENTING A SYSTEM IN GENERAL PRACTICE

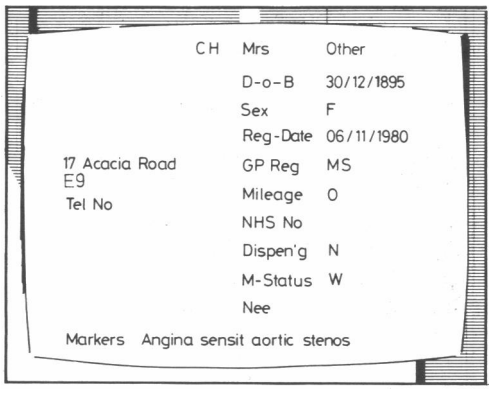
Perhaps the first question a practice should ask is "Why should we buy a computer?" or "Do we really need one?" We have assumed that computers are now becoming necessary, but any practice is entitled to, indeed must, ask itself whether and why. The worst that any practice can do is to fall in with the prevailing fashion and buy a system which may well prove in use to be a collection of programs rather than a well constructed system resulting from a detailed analysis of practice activity. It might then realise that the problems produced are greater than the problems it set out to solve. So, what are the reasons for buying a computer system? Clearly, one answer is inefficient data handling and entry, but in a poorly organised practice this may even be compounded by computerisation. If all that a practice requires is an age-sex register this is more cheaply constructed through the use of punch cards, although, admittedly, maintenance of age-sex registers seems uniformly inefficient.

Many practices manage a repeat prescription service very efficiently without computer help; and proper use of even obsolete family practitioner committee records 5 and 6 would improve many practices. What does the computer do that cannot be done by an ordered, disciplined approach to data handling and manually administered practice organisation?

It can, I believe, do several things that manual systems cannot. It will enable a practice not only to define its objectives but to determine whether the objectives have been achieved. The objectives may be clinical or administrative but once defined it is likely that only a computer can monitor the whole range. It will also diminish the all too familiar experience of waning enthusiasm for any innovation given the lapse of time.

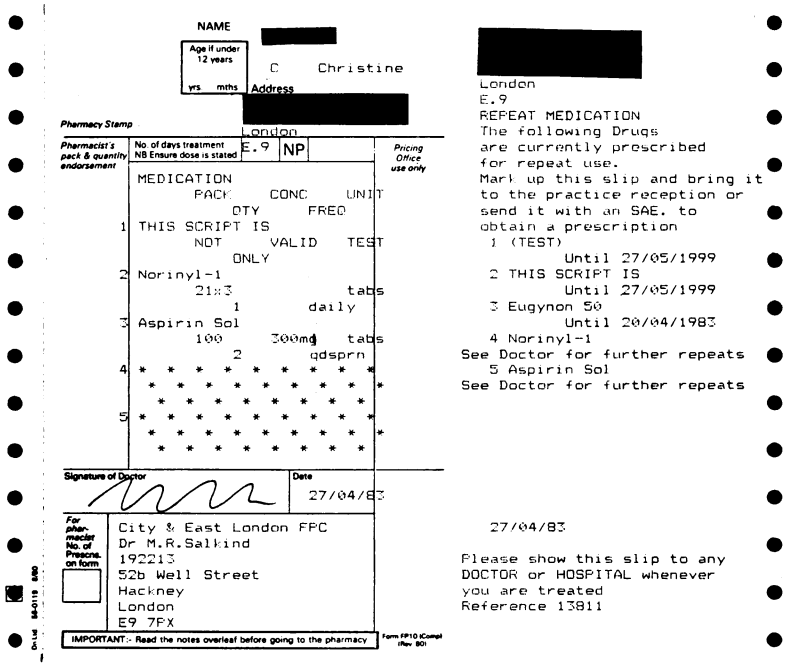
After deciding to purchase a computer, selecting a system, and agreeing its location the practice must then appoint a visual display unit operator. His or her task is to enter data; print output forms such as summaries; help others in the practice with computing tasks; organise medical records; and summon help when hardware or software faults occur, as they invariably do.

Entering data



Simple registration data may be entered at the rate of 200 records a day. This includes: name and address, telephone number, date of birth, registration status, NHS number, doctor with whom registered, milage, and dispensing status. This rate assumes no malfunction of the computer and no absence of the operator through illness or holidays. In practice it needs at least three months to register a practice of 10 000 patients.

We used age-sex cards obtained from the family practitioner committee, and the data from these were entered by an external agency. One thousand cards contrived to lose their way and had to be identified and subsequently re-entered, and it seems that misadventures of this kind are not that uncommon. We also found considerable discrepancies in the age-sex register itself. Nevertheless, the age-sex medium is probably as good as any for initial registration.



1	Registration data which includes FPC requirements
2	Demographic data - occupation, ethnic group, socioeconomic group, place of birth, nationality
3	Repeat prescription program
4	Process data - simple encounter data, laboratory reports, investigations, referrals, certification details, problem marker
5	Risk factors - special risk data
6	Problem list
7	Full encounter data
8	Word processor - hospital letters, recall facilities
9	Search facilities to include some but not all the above

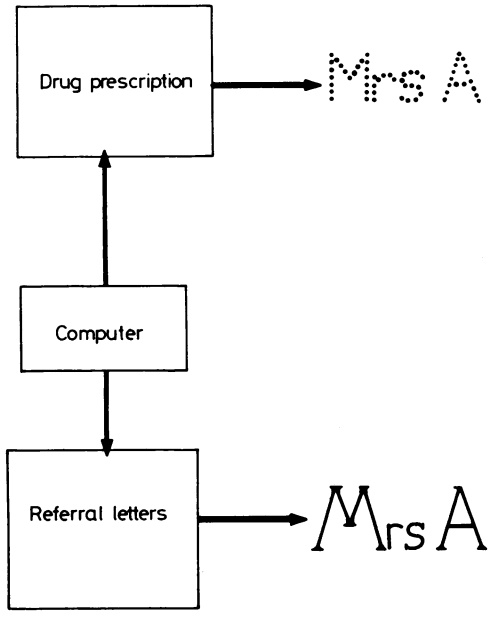
Repeat prescription data—A drug dictionary is required and needs to be constructed by the whole practice. Our drug directory consists of 250 entries and includes the name of the drug commonly used, abbreviations for speedy entry, total pack, concentration, normal unit of prescribing, dose, frequency, the interval permitted for each prescribing period, a chemical code, and a list of contraindications. Additionally a date is required beyond which the system will not issue repeat prescriptions for individual drugs.

Diagnostic codes—The condensed titles for machine processing and computer printouts of the *International Classification of Health Problems in Primary Care* (second edition) were also entered. These form the basis for morbidity analyses, but were found to be inadequate for all cases, the residual rubrics being too heavily used.

Housekeeping codes—Lists of the practice doctors' names, addresses, and telephone numbers; immunisation codes; special patient status codes such as health visitor attenders were all constructed. There are many more of these lists which form the basis for reports and prints, as well as for retrieval purposes.

Computerising any practice therefore requires considerable input of patient and practice data and is not to be undertaken lightly. Most systems in existence today comprise the elements shown in the table.

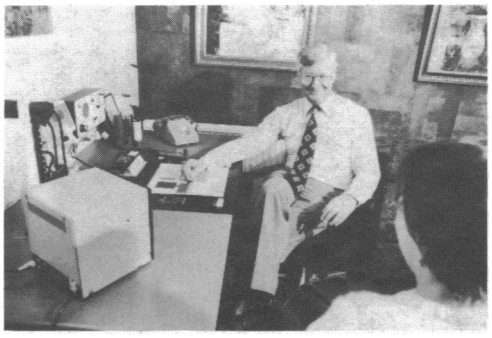
Problems



Unforeseen problems arise in using a system of this sort, which, at this level, apart from search facilities and the repeat prescription program, admittedly resembles an electronic record. One example is in printing a patient summary sheet. If the printer is loaded with the size of stationary required for the patient summary it has to be reloaded with continuous prescription stationary if repeat prescriptions are to be printed. This might seem a simple matter of organisation, but in practice it has proved unexpectedly irksome. Patients are required to give 24 hours notice for repeat prescriptions but many patients require repeats during consultation. How are these to be logged, and when? If summaries are being printed at the end or the beginning of the day, processor time is absorbed so repeats cannot be printed simultaneously. Our solution is two printers, one continuously loaded with prescription forms, the other with stationary for summary forms and other print out modes.

Archiving and back up copying is another set of problems; it can take up to three hours to back up a large list of patients, time during which the computer is out of action for other programs. There is no system in general use in which full archiving is offered, and back up time is scarcely mentioned in the sales documentation.

How best to input?



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CONTACTS                                                        PC,20197
   GP Date---- S Encounter---------- Medication--------    A Re N  Xr
01 MS 18/01/81 O Joint pain          Tolectin DS           A
02 MS 04/08/81 S Venous ulcer ankle                        A
03 MS 05/10/81   Still itchy all ove Face puffy            A
04 MS 05/10/81   Much better                              A
05 MS 26/10/81   Skin muchimproved   so has ulcer          A
06 MS 09/11/81 O Urticaria                                 A        18
07 MS 15/02/82 N Off colour          Multivite caps        A
08 MS 08/03/82 F Urticaria better    Legs OK               A        18
09 MS 08/03/82   Vallergan, Fucidin  Tulle, Prednisolon    A        18
10 MS 06/09/82 N Paracetamol x 100                         A
11 MS 07/03/83 N Paynocil                                  A
12 MS 21/03/83 F Paynocil            60mg 1 bd x 50        A
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PROBLEMS                                                        PP,20197
   Type---------- GP Date---- S Problem------------ Code--        Xr
   Acute Active   MS 1981     F Venous Ulceration   454-         14
                  MS 1981     F Venous Ulceration   454-         16
                  MS 1981     N Urticaria-Tolectin  708-.        18
   Acute Resolved MS 1958     O Arteriosclerosis    440-         01
                  MS 1958     F Facing eviction     3000         02
                  MS 1963     O Post menopaus bleed 627-         03
                  MS 1963     F Ant myocard infarct 410-         04
                  MS 1968     N Thrombo-phleb legs  451-         09
                  MS 1981     N Sore throat         460-         15
                  MS 1981     N Sore throat         460-         17
   Chronic Active MS 1963     F Chr Constipation    5640         05
                  MS 1965     O Varicose veins      454-         07
                  MS 1966     O Varicose ulcers     454-         08
                  MS 1968     O Myocard Ischaemia   412-         11
                  MS 1971     O Recurr Myocard Isch 412-         13
   Chronic Inact  .. ........ . ..................... ......
   Unclassified   .. ........ . ..................... ......
   Personal risk  MS 30/11/82 N Tolectin Sens                     20
   Unspecified    LS 15/10/82 N Jaundice            7889         19
                  .. ........ . .....................? ......     ..
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MEDICATION                                                      PM,20197
   GP Date---- S Medication---------- Pack- Conc--- Unit Qty- Freq--
                    No. Last---- Penult-- Alert   Int  Recall-- Xr
01 MS 01/02/80 R Normacol            500G          Gran 5mls o.n
                 13  15/04/83 08/02/83             60
02 MS 01/01/70 T Sustac              90   2.6mg    Tab  1    om
                  9  30/06/81 29/05/81             0    9
03 MS 26/10/81   Fucidin             25g           Ung
                                                   30   3
04 MS 23/11/81 R Prednisolone        50   10mg     tabs
                 1   15/04/83                      0
05 MS 26/10/81 T Fucidin Tulle       2 x  10piece
                                                   30   22/08/82
06 MS 23/03/82 R Cyclopenthiazide+K  60   0.25mg   tabs 2    om
                 1   15/04/83        THIA          30
07 MS 23/03/82 R Mycardol            60            tabs 2    daily
                 1   15/04/83                      0
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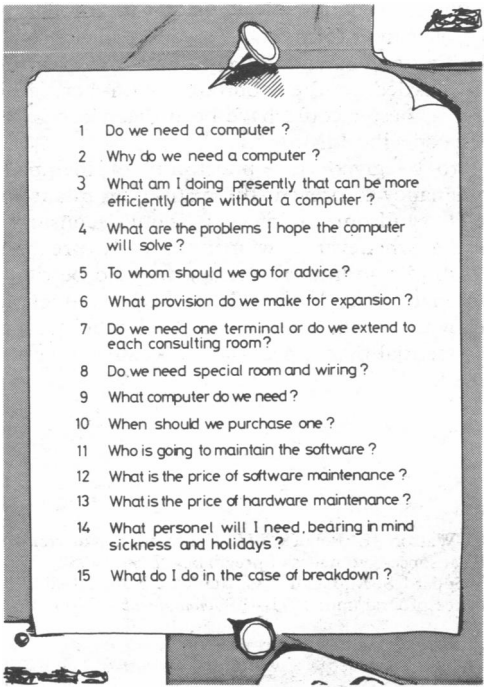
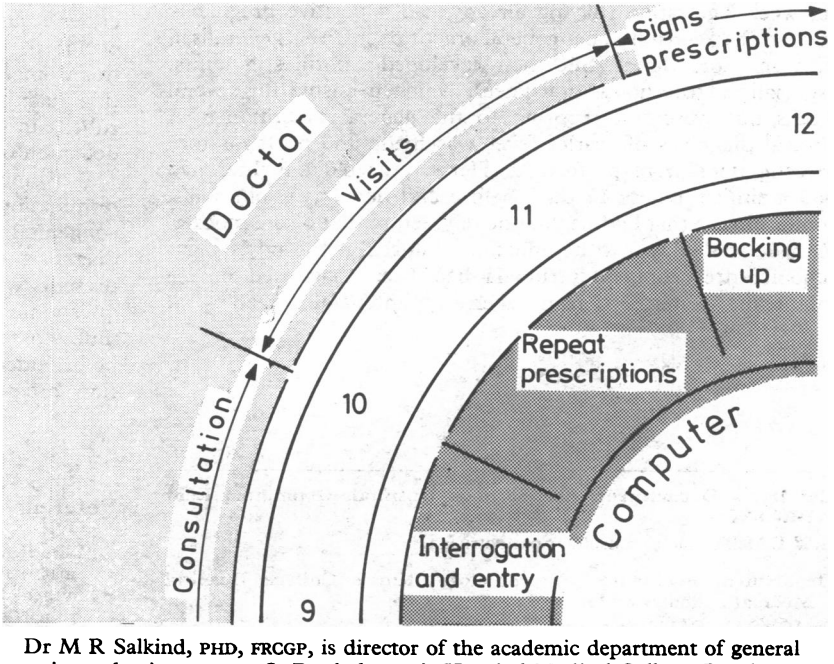
The answer to many problems is to use "real time entry." This means having a screen on the desk and entering the data during or immediately after the consultation itself. It has been suggested that introducing a "live" terminal into the consultation might materially interfere with doctor-patient interaction, a view which commands respect. It is precisely because of this that we have concentrated much of our attention on methods of entering data. With the help of the King Edward Fund for London we have piloted a crossover study of input methods—that is keying in via typewriter keyboard, audiotape recording, and two types of written encounter forms: all had serious deficiencies. We are now developing input methods which we hope will overcome these problems—that is, will not interfere with the consultation itself yet will be fast and accurate.

Having a direct entry and retrieving terminal in each consulting room will resolve many difficulties and may lead on to the next stage of computerisation, which will hopefully result in an immediate change in doctors' behaviour when it matters most—that is, at the time of the consultation. This will use prompts, diagnostic aids, information subscreens, and immediate access to risk factors. What is important is that an advance is made from the electronic notebook stage to a level at which the computer itself reassembles data in a way we could probably manage for ourselves, except that we are human, and fallible, and cannot possibly do it all manually. We cannot always do what we would like to do, but many of us are not actually doing all that we imagine is being done. The computer shows this often, to our surprise and dismay. If all this implies a change in doctors' behaviour, it may be the price we have to pay. It implies a discipline we have shirked and it involves sharpening our diagnostic categories even though in general practice this may involve a certainty that we do not possess.

Certainly any practice considering computerisation is going to have to ask itself many questions. They should be answered with the help of general practitioners who have actually used a system in a working general practice as well as with the help of independent advisors who are not connected with the supply organisation. It is all too easy to be misled by slick bench demonstrations on files containing a small number of entries, in which case speed and ease of access are greatly exaggerated.





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