

This is a brief overview of personal computing as it affects the Maltese GP of the 1990s.

INTRODUCTION.

Computers have become ubiquitous in today's world. Computers are important, sometimes essential, tools for the handling of information. They are useful because they accept and store large volumes of data in a structured manner; these data can be manipulated, sorted and retrieved accurately, rapidly and consistently. However, a Health Warning is in order: the benefits of computerisation only accrue if you have the right computer and

program for the task at hand, and if you feed the computer properly!

Persons convinced of the usefulness of computers often ask: "What computer should I buy?". The correct reply to this remains: "What exactly do you want a computer for?".

You should:

1. Determine the job to be done,
2. Find a program that does exactly the job,
3. Buy a computer that runs the program that does the job.

Having said this, what uses does a GP have for a computer?

- Like everyone else, a GP may simply need the computer for general data processing e.g. word processing, databases.
- A GP may also wish to computerize his/her clinical records, or other specific functions within his/her practice.

SPECIAL USES FOR COMPUTERS

Specific areas for which computers have already been used in general practice include the following:

- ☐ Patient registration (age/sex register)
- ☐ Repeat prescriptions
- ☐ Immunisation/screening call and recall
- ☐ Surveillance records (eg hypertension, diabetes)
- ☐ Protocols for history / diagnosis / management
- ☐ Opportunistic screening
- ☐ Drug interactions monitoring
- ☐ Automation of referral letters
- ☐ Pathology records
- ☐ Patient literature / instructions
- ☐ Educational / CPD packages
- ☐ Research / audit
- ☐ Communication with (to/from) remote databases:
 - ☐ hospital departments
 - ☐ Primary care centres
 - ☐ Libraries / research centres

THE DESIRABLE ATTRIBUTES OF A GP INFORMATION SYSTEM

When considering the computerisation of various facets of general practice, we would do well to consider the desirable attributes of a GP information system, as compiled by the Royal College of Practitioners of the UK in 1980, and which are still perfectly valid today:

1. The information system must be readily acceptable by doctors so as to facilitate and encourage the provision of a high standard of patient care.

a. The system should assist the primary care team to apply good community medicine to the practice population. To do this it is desirable to identify groups of patients at risk, so that health education, screening, immunisation, and other techniques of preventive medicine can be economically applied. For this purpose the team will require, for example, lists of patients of particular age ranges and sex; with particular illnesses; those undergoing treatment with particular drugs; or any combination of these specifications.

b. It should be so structured that it prompts the doctor to undertake or avoid particular actions that he might otherwise overlook. This is especially important in the long-term surveillance of chronic illnesses, in preventive medicine, and in the avoidance of drug interactions and allergies.

c. The record should remind the doctor at the time of the consultation of up-to-date practice in the diagnosis, treatment and management, relevant to the patient's needs.

d. The system should provide a record of clinical material structured in a form which can be used for undergraduate, vocational, and postgraduate teaching, including self-assessment by the doctor.

2. The records must be stored in a manner which fully satisfies the demands for confidentiality.

3. The method of storage and transmission of the record must ensure that there is negligible risk of losing it temporarily or permanently.

4. The contents of the record must be readily accessible, legible, and easily updated by a doctor working under pressure.

5. It must be possible to remove redundant information and, if desirable, to summarize it quickly and easily during normal use of the record.

6. The system must be of adequate capacity for the storage of a lifetime record of relevant information for every patient.

7. The whole or appropriate parts of the record should normally be easily available whenever required.

8. With the total exclusion of any patient identification particulars, the system should be capable of providing accurate data for health service management at district, area, regional, and national levels.

9. Similarly, the system should facilitate clinical and organisational research.

10. A record must be rapidly and securely transferable when a patient registers with a new doctor. There must be no possible access to the clinical data during the transfer process.

11. The record system should assist practice management, including the most economical and effective deployment of staff. This would require the monitoring of variations in workload, and the efficiency of the appointment system. Financial management should be facilitated, including stock control, payment of salaries, and other expenditure, and the calculation of the optimal relationship of working capital, cash flow, and profitability. Maximum income must be ensured with a quick and accurate submission of claims for payment of fees and allowable reimbursement of costs.

12. The system must be capable of adaptation to provide new functions.

13. It must be capable of use throughout the National Health Service, including linkage with systems used by family practitioner committees.

THE USER INTERFACE

If a particular program seems to suit your needs, it is a good idea to go through the following checklist in order to judge the quality of the "user interface" (the look and feel) of the program:

- *Is text laid out in a clear way?*
- *Are there menus or function keys for most commands, and is their pattern consistent?*
- *Are clear and unambiguous user instructions given at each decision point in the program?*
- *Are there "help" facilities for the user at various points in the program?*
- *Is the software foolproof (is the entry of nonsense data prevented or reduced by automatic data validation)?*
- *Does the program have built-in "data dictionaries" (e.g. medical terms, names of drugs)? Will updates be available?*
- *Can entry mistakes be corrected easily?*
- *Is there good integration, i.e. is it possible to move easily from one part of the program to another?*
- *Does the system have a fast response time, e.g. when sorting and retrieving records?*
- *Is it possible to escape from the program at any point without losing data?*
- *Are there password / screen blanking facilities?*

THE HARDWARE AND THE SOFTWARE

Let us assume that you have decided on the computer programs you need, and you have set out to buy personal computer hardware which will run the program. What would you actually need to buy?

The heart of a personal computer system is the microcomputer. At the time of writing, this would typically be an IBM or compatible, or an Apple Macintosh. If one were to buy an IBM-compatible, the minimum specification that would be advisable for the standard software (including Windows) being published at present would be an 80386SX processor-based machine, with at least 2 Mb of Random Access Memory, a 40 Mb hard disk,

and a mouse. The current standard for a Visual Display Unit (VDU) to go with the microcomputer is VGA; colour is important for graphics-based programs.

A printer is a *sine qua non* in any personal computer system. You would typically consider a 24-pin dot matrix printer or perhaps a laser printer. Think of speed, noise, print quality, stationery size, stationery loading and cost of printer ribbons/toner cartridges before deciding.

Data security is important, so consider investing in a surge protector, and perhaps a tape streamer (for rapid frequent backup of data) and/or an uninterruptible power supply. If communications are high on your agenda, a modem will be required to connect the computer to the phone system.

Networking of several microcomputers is an ambitious step ... and an expensive one. Apart from the pricey networking software, this would involve the installation of network interface cards, cabling, connectors, terminators, and possibly ducting.

The last, but not least, item of capital expenditure is the software. Typically, today, you would require MS-DOS, MS-Windows, a word-processing package, a database package, possibly a spreadsheet package, and, of course, specialized GP software. The cost of original, licensed software can be very substantial, but needs to be met. Software piracy is illegal and immoral. Moreover, it is short-sighted and dangerous to build your practice (i.e. your business, your livelihood!) around a computer system that relies on incomplete and unsupported software.

RECURRENT EXPENDITURE

You should plan for any ongoing costs of a personal computer system. The most substantial are those associated with

maintenance agreements (usually 8 to 10 percent of the initial equipment outlay per annum). Then, there is the cost of floppy diskettes, of computer stationery, and of printer ribbons or toner cartridges. If you are into communications, keep an eye on the cost of annual subscriptions to databases, and, if relevant, the tariffs of overseas telephone calls.

SUPPORT FROM THE COMPUTER HARDWARE/SOFTWARE SUPPLIER

When it finally comes to buying the system, it is a good idea to purchase the equipment from a well-established supplier, with a proven track record (this may be judged from the number of systems he has marketed). Both the hardware and the software should come with proper documentation and user manuals. Desirable items in a hardware maintenance agreement are: hotline telephone support, guaranteed rapid response to emergency calls, and the supply of replacement equipment during repairs. A software maintenance agreement should take into consideration the possibility of amending or upgrading the program, and the feasibility of transferring data to other programs.

CONCLUSION

Much of this article was taken up by "caveats" intended to protect you, the GP, from the dangers of a hasty, uninformed entry into the world of computing. It is necessary to emphasize that beyond the nasty pitfalls there lies the immense power that computerised information processing can give you. For GPs as for everyone else in the 1990s, the power is there for the taking.

