Conference Report

Computers in medicine: searching for the rainbow and the crock of gold

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Two assumptions seem to underlie all conferences on computers and medicine: firstly, that their wholesale introduction into all medical activities is inevitable; and, secondly, that they will be of great benefit. Neither of these assumptions seems entirely justified, yet disappointingly they were addressed directly by only a few of the speakers at last week's conference on computers and medicine, which was organised jointly by the BMA and the Institution of Electrical Engineers as a contribution to Information Technology (IT to the cognoscenti) Year.

In the last decade computers have rapidly become smaller, faster, and cheaper, and much more powerful and reliable. The software—that is, the programs, the instructions that tell the machines what to do—is becoming much more standardised, which means that programs and data can be more easily transferred from one computer to another. Also, very importantly, the various forms of information technology—microcomputers, video, word processors, and viewdata (information available on television screens to viewers who have special adapters)—are all beginning to converge.

Important consequences flow from this rapid development, as Peter Williams of Granada TV rental explained. Firstly, with such rapid development machines may effectively be obsolete even before they reach the market place: this frightens both sellers and buyers. Secondly, most of the cost of a computer—in contrast to 10 years ago—is now in the software rather than in the hardware (the actual machine), and yet the price is still tied to the hardware, which means that the costing is poor. Thirdly, programming skills are in short supply, and some businesses are selling machines without being able to offer the back-up that is essential. Many of these companies are going bankrupt and merging; this “instability in the marketplace” explains why many GPs find themselves with computers that they cannot use because they are not programmed or they are broken.

But, most speakers believed, all of these problems will be overcome, and computers will infiltrate into every part of the Health Service. The conference heard about computers being used in hospitals, in general practices, and in health service planning and management and for helping the disabled.

Computers in hospital medicine

One of the best papers at the conference was given by Mr Tim de Dombal, a consultant surgeon and reader in clinical information science from Leeds. As many readers of the *BMJ* will know, he has used computers to improve the accuracy of doctors in diagnosing abdominal pain. Fed with information on the patients by the registrar, the computer will get the diagnosis right preoperatively in about 90% of cases. The doctors them-

selves do not do quite as well, but they do do rather better after some kind of system is introduced than they did before. Just structuring their information better improves their performance. As Mr de Dombal said, computers encourage doctors to maintain first class standards by paying attention to detail. Because of improved diagnosis, which remarkably has been maintained for eight years in Leeds, fewer negative laparotomies are done, more patients are sent home from casualty, and both lives and money are saved.

This is a convincing demonstration of the worth of the computer, but, as Mr de Dombal explained, it is not easy. His project is already about 12 years old, and there has not yet been a national trial, although one is due to start soon. He does hope, however, that a diagnostic package will be on the market by 1985. Similar techniques have been developed in other parts of the world: a trial in Mexico showed that surgeons who had access to computers made and continued to make significantly better diagnoses than a group that did not. Other kinds of clinical endeavour are also amenable to improvement with computers—for instance, predicting the outcome of gastrointestinal bleeding.

Mr de Dombal's scheme had restricted aims, and thus its worth could be fairly easily evaluated. Professor Neil McIntyre, from the Royal Free Hospital Medical School, described a much more ambitious scheme—PROMIS (Problem Orientated Medical Information System)—developed in America. In one fell swoop this totally comprehensive record system sets out to solve many of the main problems in current medical practice: lack of co-ordination of the endeavours of all the different health workers; excessive reliance on human memory; failure to pursue logical pathways, which hinders the detection of errors; and an inability to use the data available in patient records for clinical decision making and health planning. Professor McIntyre, who described the system with a gleam in his eye, started out by saying that the Department of Health and Social Security had refused to sponsor development of this system at the Royal Free. He found this decision incomprehensible, but many other people at the conference thought that he was trying to “run” when most of the rest of the country was incapable of “walking.”

With the PROMIS system every single piece of patient information—history, physical examination, vital signs, nursing, laboratory results, and administrative information, everything—is included in the record. What is more, the machine constantly prompts. For instance, as you decide which antidepressant to prescribe the machine will tell you the dose, indications, side effects, contraindications, cost, etc, of every antidepressant available in the hospital pharmacy. If you want to check whether the patient has any degree of renal failure or a history of cardiac arrhythmia you can do so in a trice. It was very easy to see why Professor McIntyre was so enthusiastic about the system but also how it seems wildly ambitious for Britain at the moment.

A simpler but still extensive system for providing information on how various drugs interfere with the results of laboratory tests was described by Dr J Salway and Dr C T Morse of the University of Surrey. They have thousands of relevant papers

on file. One of their problems, however, is a problem shared by all who keep data bases (large accumulations of data—a book is one kind of data base)—deciding what to put into the system. As every editor knows, not every paper written or, indeed, every paper published is perfect—many are flawed, and on strict statistical, biochemical, and logical analysis crumble away. So how do you decide what to enshrine in your data base? There is a horrible tendency for the system to be clogged up with “grey information,” which is of little value.

Another hospital problem for which computers have been used for some time is intensive care, where large amounts of data are constantly being generated. Professor J Payne from the Royal College of Surgeons discussed the uses of computers in intensive care and considered also why doctors were so conservative when it came to the introduction of computers. One of his conclusions was that it was older doctors who were so resistant to change, but, he said, they will soon all be gone. This must have cheered the enthusiasts.

Computers in general practice

Of the 8000 general practices in Britain only about 100 are “seriously” using computers; about another 900 have computers, but these machines are mostly cluttering up the garage or playing “space invaders” with the practitioner’s children. This tardiness on the part of general practitioners partly infuriates the computer salesman and partly makes them slaver at the mouth with the thought of the money that is to be made from installing 7900 systems. The lack of enthusiasm on the part of GPs Mr Roger Peel from CAP Ltd put down to four reasons: the conservatism of the profession; GPs being self-employed and so immediately feeling the impact of expenditure; GPs being contracted to the Government and so unable to increase their fees in order to pay for a computer; and the failure of computer companies to spend time educating, advising, and preparing GPs. Mr Peel thinks, however, that 1982 will be the year when everything begins to happen. The announcement at the conference that the Government is going to provide money to help install computers in 150 practices may have encouraged Mr Peel in his belief.

For Mr Peel the local and national benefits of computers in general practice were obvious. One national one that he harped on was the suggestion that close monitoring using computers of prescribing in general practice might save 1.5% of the national drug bill. This saving over five consecutive years would, he announced with satisfaction, pay for a small business computer in all of the 8000 practices in Britain. But this was speculation run amok. Why should information technology save drug costs? It might just as well increase them: drug advertisers can promote their products through some of the forms of the new technology, and then a system that prompted the GP’s prescribing might remind him of a better but much more expensive drug. Nor did many of the computer men seem to have much insight into the current state of general practice manual records, which is mostly indifferent, to put it at its politest; computerisation may be a much bigger task than the enthusiasts envisage. The conference seemed to spend too much time dreaming of the future and not enough concentrating on the brutal present.

Computers in planning and managing the Health Service

Just as many of Mr de Dombal’s junior surgeons improved their performance when the idea of computer diagnosis came into the air, so the prospect of computers seems to have been one of the factors that have encouraged the NHS to improve its data collection. The old systems—such as the Hospital Activity Analysis—have been criticised both by users and by study groups such as the Royal Commission on the NHS for being inaccurate, slow, and irrelevant. In 1980 the Secretary of State

at the DHSS (then Patrick Jenkin) set up the Steering Group on Health Services Information under the chairmanship of Mrs E Körner. Mrs Körner addressed the meeting and explained how her committee had set about deciding what data should be collected nationally and routinely. The group had decided, she said, on “three and a half” criteria: desirability, feasibility, affordability, and that the data should be capable of strict definition. The group’s final report on the data to be collected in hospitals will be published in September 1982; other reports on community data will follow. Recently a computer policy committee for the NHS has also been established. This committee will decide what computers the NHS should have and what they should do. It will be working with Mrs Körner’s, and it does seem that things are happening the right way round: first the NHS is deciding what information it wants and then how to collect it.

Computers can also play a great part in managing individual hospitals. IBM has picked up a scheme that was originally designed in the United States and is marketing it around the world. Mr Raymond Evans described this scheme and how two hospitals in Canada had saved large amounts of money by installing it. The “saving” seemed to be made, however, by greatly increasing the throughput of the hospital. This would not lead to a saving in Britain.

Computers for the disabled

Last year was the year of the disabled, and continuity is maintained with Information Technology Year, as the technology has a great deal to offer the disabled. Dr H S Wolff, director of the bioengineering department at the Clinical Research Centre, explained how he likes to talk about “tools for living” rather than “aids for the disabled.” Thus elderly people, for instance, who are not really disabled can benefit greatly from various kinds of aid. The new technology can help with “tools for living” in two ways; firstly, by allowing new kinds of tools to be designed, and, secondly, by providing information systems that allow individuals and their helpers to track down any that might be helpful. Professor Wolff has a file of more than 4000 different aids.

A flawed conference

Despite bright moments this whole conference was disappointing and for much of the time downright boring. Conference organisers (particularly those concerned with information technology, communications studies, and other such fashionable commodities) need to think much more about how their conferences are structured. This one consisted of a series of long talks, often poorly related to each other, and delivered in the dark to the accompaniment of successions of slides that mostly contained too much information. Furthermore, on the first day not until the very end was there an opportunity for questions. If an audience is kept inert in the dark and overloaded with information, many will lapse into stupor.

Each day started with emollient speeches from politicians—Mr Kenneth Baker, Minister of State for Industry and Information Technology, on the first day, and Lord Trefgarne, Parliamentary Under Secretary of State for the Health Service, on the second day. These speeches, which were full of grand phrases that signified little (like most political speeches), may have given the conference status but they did not give it a bright start or a clear direction. Indeed, quite what the point of the conference was never became clear; there was little of practical help for the doctor wanting to install a system; nor was there any rigorous academic debate of what computers had to offer; nor was there much for those who were responsible for planning long-term strategies. This absence of a clear purpose may explain why, apart from the speakers, the organisers, and the press, there were precious few people at the conference.