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### Information the foundation of health care

Dr Sarah McGhee & Professor AJ Hedley

The medical record is, or should be, the central tool in managing a patient — everything that is worth knowing about the patient should be recorded there. Attempts to use the information, however, are frequently frustrated when patient records are found to be incomplete, disorganized, illegible or inadequate in some other respect.

Clinicians practicing in the Asia-Pacific region are no better than those elsewhere at managing information and a major change of attitude is needed. We must recognize our dependence on information as well as our responsibility for ensuring that its collection and recording is well thought out.

Information and information systems are the roads and drains of health-care services, and without a highway we can't go anywhere. For too long we have accepted an inadequate infrastructure and have not sufficiently maintained it or guided its development.

Consider for a moment what information sources you use to support your clinical care. How well do these sources serve your clinical needs? Could someone audit the care being delivered or evaluate long-term outcomes? Would the information you have be sufficient for this essential process to be completed? Probably not.

Why, in 1997, do we find ourselves in this sorry situation? The reason is that many health professionals have not made information a high enough priority to ensure that it is captured and recorded correctly and used appropriately. We are still using long-outdated information collection methods.

We do not spend enough time and effort improving these methods and harnessing the information technology that is now available.

Most of the information technology in our hospitals is used for management purposes rather than clinical care because it is managers, and not clinicians, who are clamoring for better information.

We do not train aspiring clinicians to create and use medical records and we do not test their ability to do so in higher specialist examinations.

Many governments in the Asia-Pacific region have now recognized the need for information technology in health care and are making provisions for it. Health professionals working in these countries now have another chance, perhaps their last, to change their attitude and give information technology the attention it deserves. If this chance is not taken then the attainment of all the potential benefits of IT will be set back several years.

But it is not a simple task to reform the management of information in an extended health service. One of the biggest problems is that it is simply not possible to apply new technology to existing methods of data collection. The result: garbage in, garbage out.

It is essential, therefore, that clinicians be closely involved in the reform process, taking the lead in ensuring that information systems meet clinical and quality improvement needs. Some individuals are already involved but they are few in number, thinly spread and often tackling these issues in their "spare" time.

Medical and nursing students should be introduced to information technology as early as possible and the essentials of information management should be reinforced at every stage of clinical training.

Raising awareness will help health professionals accept that quality information is necessary to improve both the standard of care and the use of scarce resources. ■

(The Medical Informatics Conference in Hong Kong in October and the Asia Pacific Medical Informatics Association meeting in Australia in August will address these and other important issues.)

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### The Internet set to revolutionize medicine

Dr Au Kah Kay

Just as the railroads of the 19th century brought in the Machine Age and revolutionized the society of the time, the Internet takes us into the Information Age. People telecommunicate over the Internet, allowing some to choose where to work from. The world has been transformed into a global village, transcending time and distance barriers.

This, however, threatens to create a second class citizenship among those without access. With more medical web sites appearing on the Internet, it is imperative that doctors gear themselves up to ride the information superhighway. As a new generation of doctors grows up accustomed to communicating through the keyboard, the Internet is likely to play greater and more important roles in many aspects of medical practice in the future.

The Internet was originally conceived from a Cold War strategy to circumvent the tattered remains of a nuclear war. It has evolved into a worldwide network of computers that allows access to vast repositories of information and services, reflecting the eclectic nature of its component networks. It is estimated that more than 40 million people in about 150 countries around the world are connected to the Internet. Commercial and private use of the Internet is growing by more than 10% each month.

This upsurge in interest in the Internet is due to several mutually reinforcing factors: increased ease and availability of Internet access, lower access charges, faster and cheaper communication, and more organizations offering commercial and non-commercial services over the Internet.

Of particular interest to the medical community is the large and increasing number of scientific and biomedical resources that are available on the Internet. Through the World Wide Web, physicians can access multimedia resources such as databases, recent news and research, atlases and electronic journals. Most major medical institutions, including the National Institutes of Health, have publicly accessible databases and services. The US Centers for Disease Control and the World Health Organization publish their weekly bulletins, Morbidity and Mortality Weekly Record and Weekly Epidemiological Record, respectively.

Leading international medical journals such as the *Journal of the American Medical Association*, the *British Medical Journal*, *The Lancet* and the *New England Journal of Medicine* are now available on cyberspace. MedLine, a useful tool for searching for references from indexed

medical journals, is also available. Physicians can now keep up with current issues in medicine in the comfort of their home or office at a fraction of the journal's subscription cost.

The Internet has also revolutionized medical education. Interactive continuing medical education web sites have been set up by various universities with contents ranging from lecture notes to structured clinical questions complete with high-resolution images of X-rays, ECGs and photographs.

The study of human anatomy has been made easier with the Visible Human Project, developed by the US National Library of Medicine. It is a repository of more than 5000 transverse and longitudinal MRI images of a male and female cadaver at an average of one millimeter slices. The Cyber Medical School, a project of the National University of Singapore, contains valuable information for medical undergraduates such as topical revision notes, sample examination questions and a forum for exchange of ideas with students in other countries.

The non-academic aspect of doctor's lives is not ignored in cyberspace. The Internet provides platforms for physicians to exchange views on common interests and hobbies and to share their problems and experiences on medical and non-medical issues. These take the form of news groups, bulletin boards and chat lines. Job opportunities are also advertized on the Internet.

As the cost of telecommunications decreases and the speed increases, new forms of computer communication, such as long-distance, real-time audio and video services will become more widely available. More doctors will be able to discuss cases and consult with experts at the other end of the globe and transmit images of radiographs and ECGs via teleconferencing. More patients with chronic conditions such as diabetes and asthma will make use of electronic home care monitoring software to transmit clinical measurements like blood sugar levels and PEFV readings to their doctors who can then advise them on dosage adjustment accordingly. ■

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Dr Au Kah Kay

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