

# Health care has to move into the hi-tech age

Richard Alvarez<sup>1</sup>

The last 12 months could be dubbed the international year of electronic health records, as electronic health information systems have been identified as a critical ingredient for reinvigorating health care in country after country. In his State of the Union address last year, United States President Bush set the goal of having such records for every person within 10 years. Similar initiatives are under way in almost every other developed country including Australia, Canada, Denmark, France, New Zealand and the United Kingdom. Developing countries are also beginning to take up electronic health records: in Ecuador, Kenya, Malaysia, Uganda and others, electronic systems have either been tried on a pilot basis or are planned on a nationwide scale (1–3).

This awakening to the need for electronic information systems for the delivery of health care is hardly surprising and is long overdue. Consider that it is possible to travel anywhere in the world and, armed with a bank card, withdraw money from a cashpoint at any bank. Airline passengers can thank information systems for quantum leaps in aviation safety — from tracking the performance of thousands of engine parts to running decision-support systems that warn of potential problems.

Nevertheless, if a patient is taken to a local hospital, emergency doctors are likely to have no idea of his medical history, which medications he takes or which tests or treatments he has had. When discharged, his family physician is unlikely to receive a discharge report, nor is there any mechanism for follow-up. This is why almost a third of the hospitalizations of senior citizens are the result of medication toxicity, and almost half of serious medication errors occur because clinicians do not have enough information about their patients or the drugs they are prescribing for them. Why is this happening?

In today's environment, patient information is scattered across the health care network, often buried in inaccessible paper records. This means millions of health care dollars are wasted every day duplicating prescriptions and re-ordering laboratory and diagnostic tests because of lost or misplaced results. In addition to the human costs, these problems ripple through the health care system — affecting waiting times and limited budgets and wasting valuable human resources — as frustrated workers chase information and paper.

The answer is echoed in numerous government reports around the world: accelerate the use of information technology in the health world, in order to provide secure electronic health record systems that get the right information, at the right time, to the right health care professional. Electronic health records have already begun, albeit modestly, to support many elements of health care. Some of these innovations are making a difference in Canada. To eliminate duplicate X-rays, MRIs and CT scans and to use scarce radiology resources to advantage, the provinces of Ontario and British Columbia are proving the medical and economic value of becoming “filmless” and sharing digital pictures over computer networks.

The marriage of digital imaging technology and high-speed networks allows patient images from small community hospitals to be read instantly from larger centres, maximizing limited resources (including radiologists themselves) and minimizing patient transfers. As a result, patients are diagnosed and treated more quickly, radiologists are enthusiastic, and savings are estimated to be 370 million Canadian dollars annually on a national basis, simply by eliminating duplication of procedures and processing of films (4).

Electronic health records are also critical elements in new telehealth ap-

plications that will help reduce health disparities around the world. Electronic records instantly provide complete patient data regardless of where the health care provider is located. As the world population ages, the long-term management of chronic illnesses such as osteoporosis, diabetes and cardiac disorders is a growing challenge. Numerous studies have shown the importance and benefits of empowering patients with access to their medical records to become full partners in managing their health (5). However, there are some challenges to be overcome — issues of privacy, data security and confidentiality remain technological, policy and legal hurdles (6, 7).

Information technology, which has empowered most parts of our daily lives, is woefully absent from health care. Clearly the application of e-health technologies will pay huge dividends in improving the quality of health care for all. ■

1. Rafiq A, Zhao X, Cone S, Merrell R. Electronic multimedia data management for remote population in Ecuador. *CARS International Congress Series* 2004;1268:301-6.
2. Rotich JK, Hannan TJ, Smith FE, Bii J, Odero WW, Vu N, et al. Installing and implementing a computer-based patient record system in sub-Saharan Africa: the Mosoriot medical record system. *Journal of the American Medical Informatics Association* 2003;10:295-303.
3. Hannan TJ, Rotich JK, Odero WW, Menya D, Esamai F, Einterz RM, et al. The Mosoriot medical record system: design and initial implementation of an outpatient electronic record system in rural Kenya. *International Journal of Medical Informatics* 2000;60:21-8.
4. *Canada Health Infoway Annual Report 2003/04*. Toronto: Canada Health Infoway; 2004.
5. *The Economist*, 17 July 2004.
6. Kluge EH. Security and privacy of EHR systems — ethical, social and legal requirements. *Studies in Health Technology and Informatics* 2003;96:121-7.
7. Terry NP. Electronic health records: international, structural and legal perspectives. *Journal of Law and Medicine* 2004;12:26-39.

<sup>1</sup> President and Chief Executive Officer, Canada Health Infoway, 150 King Street West, Suite 1300, Toronto, Ontario M5H 1J9, Canada (email: ralvarez@infoway-inforoute.ca).

Ref. No. 05-023259