Avoid becoming road kill alongside the information highway ...

Like it or not, you are being surrounded. And rapidly. Powerful economic forces and business interests are continuing to generate information technology resources intended not only to make your daily practices more efficient, but also to influence your decisions and evaluate your performance. The intent of this editorial is not to sell the virtues of information technology, which are both real and significant, but to warn about the consequences of failing to be involved now. Consider implications in just two of the announcements that crossed my desk while I was writing this editorial:

Pharmaceutical manufacturers have now begun to see that the database provides a means of encouraging the use of one particular dose or formulation instead of another. Routines have already been inserted into systems to advise the user when they choose a dose or formulation if it is not considered to be the most appropriate. It is only a short step, then, to providing routines that direct prescribers' decisions toward one supplier's product, rather than another... [Dr Glyn Hayes, president of the British Computer Society's primary health care specialist group] said the problem is compounded by the behaviour of GPs themselves: "Users have a tendency to believe what is displayed by a computer. This has already been found to be a problem with doctors accepting computer-suggested doses for drugs, apparently without the critical evaluation that would be expected from professionals."(1)

That tendency might involve more than just placing more trust in machines than in our own memory and mathematical ability: if the human right-brain heritage of trusting images we see is a stronger force than our left-brain critical appraisal of words we read, then the display of messages as graphics, which is common in 'user friendly' software and the internet World Wide Web (WWW), may be another example of the medium becoming the message.

The Medical Review System, a software program designed by Value Health Services, a subsidiary of Value Health, Inc, to help determine whether or not selected medical and surgical procedures are appropriate, has evaluated its one millionth case. (2)

Medical decision support software has the potential to become a tremendous aid in helping clinicians reach the best clinical decisions in the most efficient manner; however, if artificial intelligence works that well, then it also has tremendous appeal to those who pay the bill. Whether artificial intelligence becomes embodied as a tool to enhance the practice of evidence-based medicine or as a golem to restrict medical practices remains to be seen.

There is no doubt that quality of health services can be improved by some health informatics developments, either by bringing powerful tools and structured algorithms to individual practitioners or by bringing specialists into your office through the computer screen despite physical distance (3,4). However, such developments also hold the potential to expand breaches in confidentiality and to automate errors in judgement (5,6). Electronic mail, either to individuals of whom one has personal knowledge or to a group of strangers who all subscribe to discussion groups served by a listserver, makes it easy to share observations or problems (with or without appropriate authorization and protection of confidentiality) and receive opinions (some being very helpful from individuals with real expertise, some well-intentioned from individuals with expertise no greater than your own, and some entirely self-serving from individuals intent on promoting their own agendas) (7). Patients and providers both are purchasing CD-ROM products, participating in Internet discussion groups, and 'surfing the Web' in a search for health care advice. If you want to be able to recommend credible resources, suggest product improvements or reach your patients in time to prevent adoption of unsound advice, you need to be involved.

There is no doubt that computer-based information systems and networks will continue to expand in the health service industry, as they have in other industries, and will challenge the primary roles of health care professionals (8). Those paying the bill will be influenced by success stories such as those of
centres that reduce the inappropriate use and annual cost of antimicrobial therapy and by the impression that people who search electronically for self-help information tend to make less frequent use of more expensive direct health services. It is reasonable to anticipate that increasingly sophisticated diagnostic and therapeutic decision logic will be incorporated into future systems. The role of clinicians is changing in response (9). You are becoming surrounded, and your only hope is to influence development of information systems to ensure that they really will improve the quality of patient care (10). The popular press has already informed your future patients that computers have an important role in predicting their survival and selecting the best treatments (11). For health care professionals who wish to ensure that they remain partners and leaders in selecting courses of action and in monitoring and safeguarding patients' treatment outcomes, the time to become computer literate is now.

If you don't take steps to support appropriate leadership and gain the basic skills needed to use computer software to search for information, you will find your future practices constrained by those who do control the information systems. And they may not share your values! It is not difficult to take the first steps. Tutorials are available from a variety of sources including computer retailers, local educational institutions, professional society workshops or even your own children. Programs supported by federal or provincial initiatives are organizing college students in a number of Canadian cities to provide local businesses with brief, customized, inexpensive tutorials designed to get them 'on line' within hours. If you've already mastered the basics but want to know more, a $49 Canadian self-paced "Mastering Cyberspace" course recently became available on the WWW itself (the course home page is http://www.csstudies.ubc.ca/genesis/courses/mastering.html). Although you may be the student with respect to computer systems, it is your expert knowledge that clinical information systems attempt to model. As a clinical content expert, offer comment in both public and private communication when you disagree with the information or decision logic in an information system. Regardless of how large or small your interest, find and support an advocacy group. Canadian leadership efforts include the following:

- medical informatics departments (such as the Health Information Research Unit at the McMaster University Health Sciences Centre, http://hiru.mcmaster.ca), medical computing journals (such as the now defunct Canadian Medical Informatics), organizations (such as COACH, the Canadian Organization for Advancement of Computers in Health);
- software products, case-based learning curricula, collaborative projects in telematics, imaging, computer-based records and virtual reality;
- special interest professional discussion groups linked by listserv e-mail devices, clinical practice guideline collections on World Wide Web home pages of the Alberta and Canadian Medical Associations (http://www.amda.ab.ca/cpgs/category.htm and http://www.cma.ca/cpgs, respectively).

Numerous other resources abound. However, the gap between the relatively few leaders and many others in specialties such as my own, infection control and hospital epidemiology, appears to be large (14). The sooner that gap is narrowed by widespread computer literacy and an understanding of new informatics paradigms, the more likely that informatics will empower rather than displace professional judgement.

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REFERENCES
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