Commentary

John Wiecha
Department of Family Medicine, Boston University School of Medicine and Boston Medical Center, Massachusetts, USA

Physicians continue to adopt the Internet more rapidly than the general population. The Internet is a tool for patient management and an emerging source of professional education. Interest in online or Web-based learning among health-care professionals is strong and increasing, and there has been tremendous growth in the educational use of the Internet over the last six years. As an educational resource, the Web fits nicely into physicians' professional lives. It is accessible at any time, the educational content can be selected and customized to individual needs and interests, and it is efficient and cost-effective, particularly when compared with conventional meetings for continuing medical education (CME).

The role of the Internet, and other telemedicine technology, in support of the direct care of patients has not yet matured. While telemedicine has not been shown to be a useful tool for remote patient monitoring and for patient education, it has not entered the mainstream of clinical practice. As Atack et al. point out in their paper, 'most health-care providers are not aware of the concept of telecare and few have experience of it'. Web-based systems for home-based monitoring and patient education are developing rapidly, and the interactivity of the Internet should enable new models of integration of patient monitoring, education and communication.

Various barriers have prevented wider adoption of these potential tools for the management of chronic disease, including factors inhibiting uptake at the level of the patient (acceptance and competence), the provider (physician and nurse knowledge, attitudes, efficiency of training), the finance (cost and reimbursement) and the technology. Atack et al. describe a method for addressing one of these barriers, through the use of an online approach to teaching competence in telemedicine, with a focus on the technology and the practice of telemedicine. This case study is an example of synergy between educational content and process. In this model, the technology-based teaching methods and tools selected to achieve the learning objectives reinforce the technology content of the training programme. Use of a telemedicine tool to teach telemedicine should result in superior educational outcomes.

One of the aims of the course was to integrate existing health-care delivery systems and reduce care 'silos'. This goal echoes several principles which were promoted by the US Institute of Medicine (IOM). In the IOM report, a redesign of health-care processes was suggested, in order to meet patient needs better. Among the recommendations were 10 rules to guide the redesigning:

1. care based on continuous healing relationships;
2. customization based on patient needs and values;
3. the patient as a source of control;
4. shared knowledge and the free flow of information;
5. evidence-based decision making;
6. safety as a system priority;
7. the need for transparency;
8. anticipation of needs;
9. continuous decrease in waste;
10. cooperation among clinicians.

Rules 4, 7 and 10 address the issues of health-care 'silos' and the need for methods to improve cooperation and information sharing as a path to improvements in health-care. The IOM also called for innovative uses of electronic technology, and greater emphasis on teamwork among physicians, and between physician and patient. The care of patients with chronic disease was recognized by the IOM as requiring new models of...
disease management, owing to the increasing complexity of care, multiple patient needs and the goal of promoting the patient as the source of control.

The telemedicine and Web-based patient monitoring and professional education systems described by Atack et al. illustrate the extent to which the goals of the IOM can be promoted through the use of telemedicine. In fact, it would not be an exaggeration to suggest that each of the 10 rules could be substantially assisted by telemedicine.

Continuous healing relationships can be established by a variety of telemedicine methods. Using telemedicine, the needs and values of patients can be communicated effectively, perhaps better than in a brief clinic visit. If patients are provided with better (electronic) access to their medical records and their health-care providers, they will be able to exert appropriate control over their health-care decisions. Transparency will result from increased access by patients to information and to their carers, needs can be communicated more quickly, unnecessary care can be eliminated, and improved communication can be achieved via the communication capacity of the Internet. Similarly, evidence-based decision making is predicated on access to electronic sources of information and safety can be improved via technology engineering.

Although the work described by Atack et al. focused on the use of Web-based learning for technical training in the use of telemedicine, the principles of reducing silos and increasing collaborative learning opportunities and teamwork are a characteristic of properly designed Web-based learning, irrespective of the course content. Online learners may be focused on improving technical skills, enhancing clinical decision making and patient management, increasing knowledge or changing attitudes. Web-based learning provides a platform for adult learners to explore content at their own pace, at a convenient time and in a learning environment that promotes peer-to-peer learning via shared written reflections on course content.

Avoiding silos implies improving teamwork, and we know that team approaches to patient care can improve clinical outcomes. Similarly, team or collaborative approaches to education will motivate participation in learning activities and provide opportunities to learn from peers. However, the challenges inherent in establishing online collaborative activities, whether educationally or clinically oriented, are illustrated by Atack et al. The authors noted that ‘participants reviewed rather than actually participated in the course’ and they suggest that discussion boards were not used. For some learners in this course, the e-learning platform was too complex, and some could not finish the course in time owing to competing clinical demands, inadequate broadband access and previous contributions to the course development.

In our experience with teaching health professionals online, these are predictable outcomes, and one challenge to online educators is to identify and implement strategies to manage them. Solutions include establishing clear expectations at course enrolment, providing incentives for completion, setting clear, day-by-day assignments for each week, and the presence of an active faculty online moderator for the discussion groups. Faculty moderators should be trained in working with online groups. In addition, careful attention to an instructional design based on sound educational theory is no less important in Web-based programmes than in face-to-face courses, and can promote learner satisfaction, adherence and participation.

Clearly, we are at the beginning of what will be a long and fascinating exploration and experimentation into how to use telemedicine and the Internet most effectively for medical education. When advocating the rapid introduction of information technology into medical education and practice, the president of the American Association of Medical Colleges once said that a pitfall would be to embrace the technology but to stop short of taking full advantage of its potential.

References
3 Wiecha JM. The Interdisciplinary eHealth team: chronic care for the future. Journal of Medical Internet Research (in press)