

Telemedicine in Rheumatology



The last half century has given birth to truly revolutionary telecommunication and information technologies. It has also seen a parallel explosion in medical technologies and advances in medical science. It is hardly surprising, then, that the two innovations should partner and offer us telemedicine.

Telemedicine, defined as the exchange of information at a distance, embraces a variety of practical applications including transmitting images such as radiographs, advising patients over the telephone using computer based protocols, or more comprehensive activities such as remote surgical procedures and consultations.

Need and revenue have driven the application of telemedicine around the world. On the need side, governments have been interested in ways of providing specialty medical services to people living in remote, usually rural, communities¹. Similarly, many countries that lack specialty expertise have been anxious to link with health care centers in more developed nations². These partnerships have clear benefits for the patients, as well as a substantial educational yield for the referring physician. On the revenue side, health maintenance organizations can provide service to potentially new referrals in relatively underserved areas³. Even beyond generating revenue through attracting new patients into a system, telemedicine can deliver cost savings by improving the efficiency of health care. One study compared the outcomes of patients in an intensive care setting in a hospital without staff intensivists after instituting 24 hour remote management by trained offsite intensivists⁴. The authors found that patient mortality decreased, intensive care length of stay diminished and intensive care unit costs were decreased during the period that intensivist expertise was available through telehealth technologies.

Although many physicians welcome the potential of these technologies, most are realistic about their limitations and the problems that may arise with their implementation⁵. It is common to send electrocardiograms electronically for interpretation elsewhere, and physicians are becoming increasingly familiar with magnetic resonance (MR) imaging and other

radiographic data stored on CD-ROM. Many of the more visual specialties that lend themselves to image transfer are much further ahead in exploring telehealth. Radiology has led the way, probably partly because it is inherently a more technology based specialty, but also because it is easy to accumulate large numbers of stored images and thereby evaluate their diagnostic accuracy. Dermatology has also explored the transfer of photographic images of skin lesions, as has pathology with histopathology slides⁶. However, the interpretation of the radiograph, MR scan, slide, or photograph of a skin lesion relies to some extent on the quality of the image transferred. Physicians will need to be reassured by more than published studies that the technology used is adequate and reliable. Professional societies need to establish comprehensive standards for the use of this technology⁷. This has been done in radiology, but other professional society groups need to follow their example.

It is relatively straightforward to grasp the application of telemedicine in visual specialties such as radiology. However, it seems somewhat radical to imagine that a video camera and satellite transmission could replace the presence of a physician in a specialty based consultation. It seems even more improbable that technology would have much of a role in rheumatology, which, as we all pride ourselves, is a practice highly based on physical examination. In this issue of *The Journal*, however, Davis, *et al* have shown that telehealth rheumatology consultations were both feasible and acceptable⁸.

Most impressively, Davis, *et al* found that patients were satisfied with teleconsultation, and 84% felt that the care received was as good as an "in person" visit. Their study does depend on a skilled family physician in the targeted remote area, Keeweenaw, who performed a supervised joint examination as well as the requisite history, examination, and presentation of relevant investigations. A similarly expert local general practitioner may not be available in every community connected to specialty advice with this technology. And this is the weak link for its application in rheumatology. However, it

See Evaluation of telehealth in the provision of rheumatologic consults to a remote area, *page 1910*.

is conceivable that a more suitable role for telerheumatology may be in the delivery of ongoing care to patients with chronic diseases once they have established a relationship with a specialist.

Telemedicine holds great potential. As medicine becomes more complex and patients more informed, physicians will be increasingly reluctant to practice in remote areas physically distant from specialty support. It is economically impossible for any government to provide full medical services for all communities, and politically impossible to assign rural citizens a second class status in terms of health care. Because the technology is available and the application seems to address evident problems, telehealth will be used increasingly frequently. Yet "telecare" is still an infant within the profession of medicine. It is our profession's responsibility to demand that the same standards are applied as this infant matures, so that we can assure society that there is no compromise in the quality of care.

No matter how promising this technology may seem, telemedicine will only be accepted when it offers a service in a cost efficient, time efficient manner *and* the service delivered remains true to the principles of personal, confidential, ethical, and accountable care that govern the practice of medicine as traditionally provided.

JODY LEWTAS, MD, FRCP,
Rheumatology, Internal Medicine,
Markham Stouffville Health Centre,
Markham, Ontario, Canada L6B 1A1.

Address reprint requests to Dr. Lewtas.

REFERENCES

1. Grigsby J, Sanders JH. Telemedicine: where it is and where it's going. *Ann Intern Med* 1998;129:123-72.
2. Morrissey J. A phone call away: foreign doctors tap U.S. expertise through telemedicine links. *Mod Health C* 1998;28: i;18-22.
3. Tieman J. Monitoring a good opportunity. *Mod Health C* 2000;30:75-82.
4. Rosenfeld BA, Dorman T, Breslow MF, et al. Intensive care unit telemedicine: alternate paradigm for providing continuous intensivist care. *Crit Care Med* 2000;28:3925-31.
5. Langer B, Wetter T. Physicians' attitudes towards health telematics – an empirical survey. *Stud Health Technol Inform* 2000; 77:1106-11.
6. Harrison PV, Kirby B, Dickinson Y, Schofield R. Teledermatology high technology or not? *J Telemedicine Telecare* 1998;31-2.
7. Stanberry B. Telemedicine: barriers and opportunities in the 21st century. *J Intern Med* 1998;129:123-7.
8. Davis P, Howard R, Brockway P. An evaluation of telehealth in the provision of rheumatologic consults to a remote area. *J Rheumatol* 2001;28:1910-3.