

Adopting New Technology Into Society: Going from an Idea to an Institution

Michael J. Ackerman

How do you introduce a new idea or product and have it adopted by your peers or the population at large? If the idea or product is responsive to an obvious need, then the rest is history. But if the need is not so obvious, it takes persuasion, education, [i.e., advertising] to institutionalize the idea or product. Let's look at the technology called telemedicine.

Telemedicine can be defined as using telecommunications and computers to provide information to support medical decision-making. This is a very inclusive definition and would include examples such as the use of electronic medical records, computer based literature searching, decision support systems, and the very familiar distance consultation and conferencing.

The National Library of Medicine (NLM) sponsored several projects to demonstrate the use of advanced telemedicine techniques. Beth Israel Deaconess Medical Center in Boston conducted a project called "Baby CareLink." Through a telemedicine hook-up between the hospital and their home, parents of severely pre-mature babies could watch and listen to their infant child while the infant was in the neonatal intensive care unit. Another NLM project, "Video House Calls for Patients with Special Needs," was conducted by the National Laboratory for the Study of Rural Telemedicine at the University of Iowa in Iowa City, IA. Medical professionals at the University Hospital in Iowa City were able to evaluate the needs of patients with special needs through a high-speed telemedicine connection between the hospital and the local public school, thus saving hours of difficult travel and overnight arrangements.

In March 2001, NLM sponsored a symposium featuring the NLM supported telemedicine projects (see <http://www.nlm.nih.gov/research/telesymp.html>). The goal was to gain insight into the characteristics that move a telemedicine application from an idea to an institution. Similar studies have been done by others including a report presented at a 2003 conference sponsored by the American Telemedicine Association titled "Telemedicine and Home Healthcare." There are three groups whose needs and expectations must be satisfied if telemedicine is to become institutionalized: patients, providers, and payers.

Patients. From the patient's point of view, telemedicine is an acceptable method for the delivery of healthcare. Patients were satisfied with their healthcare encounters and had a perception of better quality and more caring. They realized that healthcare by telemedicine required more personal responsibility but this gave them a feeling of greater independence

and confidence. Of interest was the perception that although telemedicine was seen by patients in a positive light, they had the feeling that it was being offered as a ploy by their HMO to prevent referral to a specialist.

Payers. From the payer's point of view, there were unanticipated social and economic barriers to the institutionalization of telemedicine. The cost savings attributable to telemedicine is based on the cost accounting method used. Assuming the accounting method used shows a savings, that savings must be realized within the payer's standard financial reporting period. There is a lack of equipment and communications standards so the advantages of interoperability of equipment are difficult to realize. Data communications to the home are problematical and so equipment must be designed for the lowest common communications speed, currently about 28.8k bps, which may not be the most efficient for the information that needs to be transferred.

Providers. Providers may actually be the most significant barriers to the diffusion of healthcare via telemedicine. Providers tend to be predisposed to avoid the use of telemedicine equipment. At best there is a sense of cautious enthusiasm—there is a significant learning curve but a belief that comfort and ease with technology will come with time. The healthcare system must better integrate the telemedicine model into the care model and work with the providers as they learn and adjust to that new model. The healthcare system must adapt in order to benefit from the immediacy and quick turn-around afforded by telemedicine.

In the final analysis, I believe that patient demand, as a market force, will drive adoption of telemedicine. When telemedicine is used in situations where the benefits are obvious to the patients and their families, our experience has shown that patients and their families are willing to pay the extra incremental costs and to pressure the providers and payers to provide this service.

Michael J. Ackerman, PhD, is the Assistant Director for High Performance Computing and Communications of the National Library of Medicine in Bethesda, MD.