Book Review

Telemedicine: A Guide to Assessing Telecommunications in Health Care. By the Institute of Medicine of the National Academy of Sciences, Marilyn J. Field (ed). Washington, DC: National Academy Press, 1996.

The Institute of Medicine (IOM) of the National Academy of Sciences has recently published a report entitled *Telemedicine*: *A Guide to Assessing Telecommunications in Health Care*.''[1] The report is the work of a 15-member committee and 6-member Technical Advisory Panel appointed by the IOM as part of a project sponsored by the National Library of Medicine with assistance from the Agency for Health Care Policy and Research. Telemedicine is defined in this monograph as ''the use of electronic information and communications technologies to provide and support health care when distance separates the participants.'' The committee confronted directly the problem that, in spite of over 30 years of technology development and demonstration projects, conclusive evidence of the effectiveness and cost-effectiveness of telemedicine is only sparsely represented in the published literature. As a corollary, they observe that demonstration and pilot projects historically have generally not survived after the end of grant funding or other subsidy, and they predict that current telemedicine projects may suffer the same fate.

A variety of reasons contribute to the paucity of usable research data, but the committee found that the single most important cause has been the failure to build evaluation into the design of telemedicine projects from the start. Weak evaluation designs have been further eroded by the fact that neither health care nor telemedicine is static, and by the lack of methods to differentiate failures of system design from failures to implement systems as designed. The committee identified contemporary threats to telemedicine development, including high telecommunications costs, awkward and quickly outdated technology, low patient volumes, lack of physician interest, and limited insurance coverage. When resources are tightly constrained, the temptation to reduce or eliminate formal evaluation of a new system is strong indeed.

As an antidote to these problems, the report provides a framework for prospective and systematic evaluation of telemedicine projects, including sets of sample evaluation questions that address outcomes of Quality, Access to Care, Cost, and Acceptability. Methods for developing evaluation plans are given, with attention to the issue that evaluations may focus on measurements of process and outcome at the clinical level, institutional level, and/or societal level. Two special recommendations deserve note. The first is that telemedicine projects should very early in their development have a business plan or project management plan that models the financial sustainability of the proposed system. The second recommendation recognizes that rapid change is affecting nearly all of the processes of health care delivery as well as the technologies upon which telemedicine depends. A partial statistical remedy for such ''unstable environments'' is that evaluation plans include a sensitivity analysis of the major assumptions, indicating how robust the conclusions would be if those assumptions must be revised during the study.

If there is a single phrase that characterizes the spirit of the report, it is the words ''. . . compared to the alternatives.'' The committee repeatedly emphasizes the concurrent, prospective measurement of the health care processes that are the alternatives to a telemedicine-based process in pursuit of a specific health-related objective. Spending precious time and resources in the careful measurement of an established manual set of procedures that are the alternative to an exciting technology-based approach may seem anathema to the technology advocate, but without this discipline evaluations risk becoming, in the words of R. E. Clark, ''a triumph of enthusiasm over careful analysis.''[2]

The 271-page IOM report has other features that recommend it, including a review of the historical development of telemedicine and a bibliography of over 330 references to specific telemedicine projects and to modern methodologies of technology assessment in health care. The committee makes the point that the evaluation of telemedicine has few elements that are unique; it deserves neither more nor less rigor than the evaluation of any other technology that influences the delivery of health services. In fact, an interesting exercise for a reader of this report is to mentally undertake throughout the monograph a ''global search and replace'' of the word ''telemedicine'' with the words ''medical information systems'' or even ''medical informatics.'' The message remains true and inescapable. In these times of convulsive change, as system developers attempt to hit a moving target from a moving platform, careful evaluation will be the only enduring proof that one has done something worth doing.

"Telemedicine: A Guide to Assessing Telecommunications in Health Care" is available from National Academy Press (phone 800-624-6242) as a printed volume, and online at http://www.nap.edu

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2. Clark RE: Dangers in the evaluation of instructional media. Acad Med. 1992;67:819–20.

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