

Addressing telehealth's foremost barrier: Provider as initial gatekeeper

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Objectives: During the past decade, telehealth has enjoyed a plethora of public funding and publication outlets around the world. Yet, rhetoric appears to be outpacing the actual diffusion and utilization of telehealth technologies for patient care. Several barriers, such as reimbursement and legal/regulatory issues, are commonly cited as impeding the successful deployment of this innovation. However, two separate studies carried out in Michigan that controlled for these barriers point out a more significant initial gatekeeper to the deployment of telehealth, namely providers.

Methods: Multiple data collection strategies were used in both the telehospice and telepsychiatry projects, including utilization logs, surveys, telehospice nursing notes, cost frame data collection, patient interviews, caregiver interviews and focus groups, and videotaped visits.

Results: This study summarizes data from the two studies to support the hypothesis that the provider is the most important initial gatekeeper for telemedicine.

Conclusions: The implications from this conclusion have important consequences for health system deployment strategies. Specifically, telemedicine project managers must keep providers' needs (ease of use and incentives) in mind when designing a telemedicine system.

Keywords: Telemedicine, Delivery of health care, Professional–patient relations, Health services research

Evidence from scholarly and trade publications indicates that telemedicine is an emerging field making great strides. The Telemedicine Information Exchange's Web site includes a search engine with over 15,000 articles related to telemedicine. Two peer-reviewed journals (*Telemedicine and e-Health Journal* and *Journal of Telemedicine and Telecare*) are indexed on MEDLINE and have been in production for almost 10 years. So many health systems use some form of telemedicine that it is no longer possible to quantify the number of telemedicine programs (28).

Despite the investment and enthusiasm surrounding telemedicine, actual diffusion and adoption remain almost universally disappointing (12). Common barriers to explain disappointing utilization trends include reimbursement, liability, technical challenges, and licensure/credentialing (2;7;23). However, work conducted by this research team

has occurred in environments where these traditional barriers have been minimized or eliminated, yet the same adoption challenges emerge. Data from two independent studies presented in this article point to perhaps the most significant initial barrier, namely provider acceptance. The remainder of this study briefly reviews literature concerning provider perceptions and presents data from two studies to support the hypothesis that the provider is the most important initial gatekeeper for telemedicine.

PROVIDER PERCEPTIONS

A variety of recent provider satisfaction studies published since 2000 conclude that overall satisfaction or acceptance is positive, if not high (1;6;10;14;16;19;21). Variations on this general theme have been published previously in the literature: nurses are more enthusiastic than doctors (13); referring physicians are more satisfied than the referred specialists (31); satisfaction increases with time and use (8;13);

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and providers do not universally advocate telemedicine for all situations (25). Studies that go further than simple provider satisfaction with telemedicine reveal richer details. As examples, patient-provider relations and patient care may be improved, and telenurses experience equal work satisfaction as hospital-based nurses (3;17;26).

Given the overwhelming evidence of positive provider satisfaction and perceptions, it may appear contradictory that generally satisfied providers could be critical gatekeepers. However, a review concludes that we still lack scientific documentation on the impact of telemedicine on patient-physician relations, quality and quantity of medical work, and provider satisfaction (5). Examining the process of gaining acceptance generates some insights, namely that provider acceptance is neither unconditional nor automatic. The direct involvement of providers in the development of telemedicine systems positively impacts acceptance and use as does initial and follow-up training (15;20;22). Furthermore, many studies do not reflect the entire population of health-care providers but only willing participants who may be part of a grant or pilot project. In other words, there is an inherent selection bias whereby the providers who are studied already had an accepting, if not embracing, attitude toward telemedicine.

Inclusive studies of both users and non-users of telemedicine illuminate barriers to provider acceptance that are impossible to detect in user-only studies. A typology of physicians may best describe the true range: Early Adopter, Traditional Family Doctor, Hesitant-Defensive Acceptor, and Unwilling-Uneasy Participant (18). Factors influencing provider acceptance have been cited as turf, efficacy, practice context, apprehension, time to learn, and ownership (9;24). To determine which barriers must first be overcome, it is crucial to control environments so that traditional macro-barriers, such as reimbursement or licensure, are eliminated. Data from two independent research projects are provided in the next section. In the first project, telehospice, all payment is on a per diem basis so that delivery modality was irrelevant. In the second project, telepsychiatry, reimbursement is provided through a capitated arrangement and is also not impacted by delivery modality.

STUDY 1: TELEHOSPICE IN MICHIGAN

In late 1999, researchers from Michigan State University and Hospice of Michigan jointly launched a telehospice project funded by the US Department of Commerce. Videophone equipment was placed in rural and urban hospice patients' homes and traditional hospice services were augmented with this equipment. A total of 189 patients participated in the project and 749 visits were recorded.

Methods

The research plan included questions regarding access/utilization, patient perceptions, provider perceptions, and de-

livery of services. Data regarding patient acceptance in this project has been reported elsewhere (27). Data regarding provider perceptions were gathered by means of a preproject survey ($n = 55$), postproject survey ($n = 46$), and mid-point and end-point focus groups.

Results and Discussion

To gauge provider preperceptions of telehospice, a survey was administered to fifty-five nurses at the participating offices 2 weeks after the project launch. At the conclusion of the project, a postprovider survey was administered to forty-six nurses from the same participating offices. The postsurvey included eleven items from the original survey and was expanded to address issues that emerged during the course of the project. The *t*-tests on pre- and postsurvey data demonstrated no significant differences in the mean responses for the pre- and postperception surveys. Survey responses were also summed for individual respondents to look for overall changes in perceptions, but these aggregate scores also exhibited no change between pre- and postperception surveys.

Contrary to expectations, cross-tabulations indicated that there was little impact on responses for personal perceptions based on actual experience or demographics. The only statistically significant items included (i) those who had conducted eleven or more telehospice consults reported feeling higher comfort and perceived ease of use with the equipment, and (ii) those with 5 or more years of experience in the health field reported stronger agreement with the statement that telehospice is a good way to receive care. There were no significant relationships between position, level of education, years at Hospice of Michigan, or years experience in position with all other provider perceptions regarding telehospice.

Two focus groups were conducted to follow-up on the pre- and postsurvey results, which revealed several interesting trends. First, providers believed that they received adequate training and organizational support for telehospice. Second, providers believed that telehospice was helpful for patients and were quite aware of success stories at Hospice of Michigan. Still, many providers stated their preference to see patients in person and expressed ongoing concern that telehospice care may not prove to be comparable to care they provide in person. Perhaps most interesting were explanations of reluctance to use telehospice for personal reasons. More than half of the nurses expressed concern at losing mileage reimbursement, which represents a significant percentage of their monthly pay. In addition, more than 60% of the nurses were worried that telehospice might change the nature of the position. Specifically, they enjoyed the autonomy and flexibility of being a home-health nurse.

STUDY 2: TELEPSYCHIATRY IN MICHIGAN

In the Fall of 2000, researchers at MSU partnered with Life-Ways, a Medicaid-managed care behavioral health provider

to implement and evaluate a four-phase telepsychiatry program through funding from the US Department of Commerce. It is important to emphasize that the term "phase" does not indicate a sequential order to the four pieces of the project; instead, the LifeWays project consisted of four separate subprojects referred to as phases. The four phases of the project included (i) a link from *clinic to clinic*, connecting the urban clinic to the rural clinic; (ii) a link from the urban *clinic to county youth correctional center*; (iii) a link from the urban *clinic to a freestanding crisis home facility*; (iv) a link from *clinics to patients' homes*. The total number of patients was 297 (phase 1, $n = 82$; phase 2, $n = 7$; phase 3, $n = 106$; phase 4, $n = 102$) with many patients receiving multiple televisits.

Methods

The research plan included questions regarding access/utilization, patient perceptions, provider perceptions, delivery of services, and health outcomes. Data regarding patient perceptions of these telepsychiatry services are reported elsewhere (29). Data regarding provider perceptions were gathered by means of pre- and postproject focus groups ($n = 16$; $n = 9$, respectively) and provider interviews ($n = 36$).

Results and Discussion

During late 2000 and early 2001, three focus groups were conducted with behavioral health providers. During the preproject focus groups, providers identified potential benefits for telepsychiatry but most expressed reluctance to try telepsychiatry. During the spring of 2003, a postproject focus group was conducted. Physicians participating in this focus group were pleased with the use of telemedicine in their particular organization. The providers viewed organizational issues as a significant hindrance, especially in terms of staff and technological support for practitioners who desired to use the system. Individual interviews with providers ($n = 36$) resulted in similar findings. More than 90% of the providers explained that they either started the project with a positive attitude about telepsychiatry or developed a positive perception after using the system over time.

When a provider did not warm to telemedicine, an alternative strategy became required for continuation of a phase. In the crisis home phase of the project, the psychiatrist initially assigned to the project simply refused to use the telepsychiatry system. A psychiatrist from another division was approached. He took home a POTS-based system and routinely saw patients in crisis from his farm in rural Michigan.

Providers explained that a traditional psychiatric consult differs from a telepsychiatric consult. Although providers did not generate a long list of disadvantages, many believed that telepsychiatry is a less-personable experience. Providers were concerned about the ability to touch their patients, although some expressed surprise at the ability to retain close-

ness to a patient by means of telepsychiatry. During the interviews, providers stated that there are some psychiatric services best delivered in person (e.g., crisis intervention). However, the providers also perceived that there may be psychiatric services best delivered by means of telepsychiatry (e.g., paranoid patients who do not like to leave their homes).

Providers believed telepsychiatry had impacted patients both positively and negatively. Physicians stated that the system improved access to providers for patients, but that it could not be a permanent replacement to traditional care as it lacks the face-to-face contact of office visits. Some providers look at telepsychiatry as a viable replacement to traditional care with at least some of their patients over time, others viewed it only as an augmentation to traditional care. All providers responding believed that telepsychiatry increased patients' access to psychiatric care, information, and services.

CONCLUSION

Hospice providers make or break the successful use of telehospice. Nurses were the primary gatekeepers to the use of telehospice services for patients. We know that these and other patients and caregivers are comfortable receiving services by means of telehospice, yet this finding can only happen if providers use the service (4;11;25;27). Other research had demonstrated that hospice patients and caregivers have positive reactions to telehospice services. Survey data informed us that experience does not have the impact we had hoped to see. Telehospice providers have preconceived notions about whether they want to use this technology or not, and watching others successfully use this technology does not appear to sway those with little enthusiasm for telehospice. This finding has significant implications for how hospice organizations should launch and use telehospice services in the future.

In the telepsychiatry project, the providers expressed more positive attitudes about telemedicine over time, but the role of the providers as gatekeepers of telemedicine services should not be underestimated. More than 90 percent of patients reported that their providers were the decision-makers regarding whether they were able to use telemedicine. Almost 95 percent of the patients were informed about telemedicine from their provider (27;30). Without a provider advocating telemedicine, most patients will not have access to the service. Power concerning the use or nonuse of telemedicine appears to be in the hands of the provider.

Although results of any telemedicine project are certainly contextually bound, telemedicine project planners need to consider the importance of the provider when developing incentives and/or mandates for provider use. Key issues to consider include the following.

Provider issues supersede reimbursement issues. Both the telehospice and telepsychiatry projects were

conducted in environments where reimbursement was not a problem, yet providers still did not universally embrace telemedicine from day one.

Ease of use often trumps technological quality.

In the telepsychiatry project providers cared less about technical quality than having equipment that could be used easily and even spontaneously. The implication is that providers will do more with less if it facilitates their access and increases their flexibility or mobility.

Continued pressure from upper management may be necessary in many organizations. Efforts by a designated advocate of the telehospice project helped make it clear to providers that telehospice was to be a part of their work. Still, low levels of use by the after-hours extended coverage unit were largely a result of lack of management support. Health systems must incorporate incentives or formal policy to impact provider utilization.

The use of incentives to promote provider acceptance should be further explored. In the telepsychiatry project, several providers became extremely enthused about telemedicine when offered a portable, POTS-based unit that they could keep at home.

Potential Policy Implications

Understanding the role of provider as a barrier to the deployment and adoption of telemedicine offers an important perspective for policy issues meriting consideration. First, payers may have to require health-care organizations to mandate use of telemedicine in situations where it has clear advantages—in terms of reduced costs or improved efficiency, for example—over traditional modes of health-care delivery. This requirement potentially could be true at the national level, in time, with legislation mandating use of various telemedicine technologies should they be proven superior to more traditional methods of providing health care. A second policy consideration involves reimbursement strategies for delivery of services as alternative methods of reimbursement may be required to encourage providers to offer services by means of telemedicine and e-health solutions. For example, experimental projects in the United States currently are testing lower fee schedules for physicians using e-mail to communicate with a patient. Policies that alter the way providers are reimbursed and create incentives for providers to use innovative and cost-efficient ways to deliver care could help remove providers' reluctance to adopt telemedicine solutions. Finally, policy issues involving licensure and liability may need further attention to increase the comfort level of health providers in regard to telehealth care.

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