Hospital Views of Factors Affecting Telemedicine Use

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Introduction and Purpose

Telemedicine (also known as telehealth) is a means to increase access to care, one of the foundations of the Triple Aim.[1] However, the expansion of telemedicine services in the United States has been relatively slow. We previously examined the extent of uptake of hospital based telemedicine using the 2013 HIMSS (Healthcare Information and Management Systems Society) Analytics national database of 4,727 non-specialty hospitals.[2] Our analysis indicated that the largest percentage of operational telemedicine implementations (15.7 percent) was in radiology departments, with a substantial number in emergency/trauma care (7.5 percent) and cardiology/stroke/heart attack programs (6.8 percent).[3] However, existing databases are limited because they do not identify whether a respondent hospital is a "hub" (providing telemedicine services) or a "spoke" (receiving telemedicine services). Therefore, we used data from interviews with hospital representatives to deepen the research and understanding of telemedicine use and the factors affecting that use. Interviews were conducted with key informants at 18 hub hospitals and 18 spoke hospitals to explore their perceptions of barriers and motivators to telemedicine adoption and expansion.

Key Findings

- Respondents from both hub and spoke hospitals reported that telemedicine helps them meet their mission, enhances access, keeps lower-acuity patients closer to home, and helps head off competition.

- Respondents from both hub and spoke hospitals reported licensing and credentialing to be significant barriers to telemedicine expansion. Thus, half of hubs provide services only within their state.

- A variety of one-time funding sources have been used to initiate and grow telemedicine services among hubs and spokes. However, reimbursement issues have impeded the development of workable business models for sustainability. Hub hospitals shoulder the responsibility for identifying sustainable business models.

- Although respondents from both hub and spoke hospitals reported that physician buy-in is mostly positive, they also believe that physician buy-in will improve if physicians are given time to adjust to practicing medicine using telemedicine technology.

Background

As noted above, previous research has looked at hospital participation rates in telemedicine[3]. The effect of governmental policies on that participation has also been examined at state levels.[4,5] Further, Adler-Milstein and colleagues[6] examined data from the Information Technology Supplement to the American Hospital Association's 2012 annual survey to correlate telehealth implementation rates with state licensing and

reimbursement policies. They found that additional license requirements for out-of-state telehealth hubs reduced participation, while policies requiring private payer reimbursement increased use of telehealth. Clearly, state-level policies play a role in the adoption of telemedicine services. However, other factors also contribute to the rate of expansion of telemedicine. Therefore, in this brief, we use data from interviews with hospital representatives to deepen the research and understanding of telemedicine use and the factors affecting that use.

Methods

Telephone interviews were conducted with key informants at 36 hospitals, evenly split between urban/rural and hub/spoke hospitals in 22 states, representing all four U.S. Census regions. Hospitals were identified by online searches, potential relationships with other hospitals, and scores of telephone calls resulting in 18 who qualified as a hub and 18 who qualified as a spoke. Interviews with larger hospitals often involved a director assigned to manage telemedicine services, and interviews with smaller hospitals usually involved either a hospital administrator or director of nursing. While discussions were based on a guide developed and approved by the University of Iowa institutional review board, respondents had opportunities to add information. Thus, themes emerging from the interview questions and follow-up comments were identified using a qualitative inductive approach. These themes were then tested in conversations with staff of the 12 regional Telehealth Resource Centers (http://www.telehealthresourcecenter.org).

While the terms telehealth and telemedicine are often used interchangeably, for the purposes of this research we specifically defined telemedicine as the use of technology for patient treatment in a hospital setting. Thus, health education, preventive care, and services provided to locations such as clinics, schools, and homes were not included.

In our sample, hubs had an average of 5.8 years of telemedicine experience, ranging from 18 years to just starting, and spokes had an average of 4 years of experience, ranging from 12 years to just starting. The 18 hubs connected to 550 spokes, ranging from 2 to 165, and averaging 31 spokes per hub.

As shown in Table 1, of in-hospital telemedicine services offered by hubs, 61 percent provided tele-stroke services. Additionally, 56 percent provided tele-emergency services for conditions other than stroke, including tele-trauma, tele-psychiatry, and tele-pediatric emergency. Other services reported included tele-burn, tele-radiology, and tele-ICU. All spokes used some type of telemedicine services in their emergency departments (EDs). Specifically, 39 percent used tele-stroke, and 22 percent used tele-mental health or tele-psychiatry services. Other services reported included tele-radiology and tele-ICU.

Table 1. Most Common Telemedicine Services in Hub and Spoke Hospitals

Hub Hospitals	Spoke Hospitals
61% ED-based tele-stroke	39% ED-based tele-stroke
56% other tele-emergency	22% ED-based tele-mental health or tele-psychiatry
28% tele-burn	39% other tele-emergency
22% tele-radiology	33% tele-radiology
17% tele-ICU	22% tele-ICU

Findings

Although no two hospitals were at the same level of experience or had followed the same path to providing or using telemedicine, participants from every hospital cited state and national policies requiring physician licensing and credentialing and telemedicine reimbursement as issues affecting their hospital's use of telemedicine. In addition, the depth of physician support varied among the hospitals.

Motivation. For most hub hospitals in our sample, providing telemedicine was aligned with the hospital's service missions. In many cases, telemedicine services had initially been provided because a specialist had noted a need for services in external sites to improve patient outcomes or to support other hospital physicians; telemedicine services in other specialties then followed. Spoke respondents reported that their hospitals were motivated to use telemedicine in order to provide patient care that otherwise would not be available. Unless a transfer was medically necessary, keeping patients in local hospitals was reported as a common stimulus among both hubs and spokes for using telemedicine. Respondents from spoke hospitals reported that the hospital was motivated by the potential financial gain of retaining patients who needed a lower level of care. Respondents from hub hospitals reported that the hospital was motivated by being able to free up beds to accommodate sicker patients. Competition was also cited as a motivation for implementing hub-level telemedicine services. Some hubs reported a positive return on investment (ROI).

Start-Up Costs. For most hospitals, grant funds from a variety of sources were a boon to starting telemedicine services. Federal, state, and foundation dollars were used to purchase and set up equipment and to cover initial staffing costs. Some are still maintaining and expanding on soft dollars. Respondents from at least one hub and one spoke specifically pointed out that their hospitals would not be using telemedicine services if it wasn't for the grants. However, these funds were not consistently available across all states, which might help to explain the state-level variation in telemedicine participation. Some hub hospitals that were not successful in obtaining grants nonetheless provided telemedicine services in order to improve patient care or respond to competition, as noted above. Spoke equipment and technology expense may be shared by the hub and spoke or paid entirely by the spoke. This expense can vary considerably depending on the service being used and the technology required.

Ongoing Costs. When grants are depleted, hubs and spokes must establish a business model for return on investment in an unpredictable environment. The challenge of doing so usually falls to the hub hospitals, at least initially. A hub respondent told of setting an amount for a contractual agreement without knowing whether it would actually cover costs, such as maintaining information technology and staffing for customer support, or would price the hub hospital out of the market to the spokes. A spoke respondent shared that continued use of telemedicine services depended on how much the hub charged after the grant expired.

Reimbursement. Service reimbursement policies are the most volatile issue among hospitals and the policies varied widely. Some hub respondents reported that physicians were reimbursed for telemedicine encounters the same as for face-to-face encounters. Some hub respondents reported being reimbursed, at least to some degree, based on the Centers for Medicare & Medicaid Services (CMS) authorization for Medicare payment at sites meeting the rural definition.[7] But metropolitan area hub respondents reported that despite the rural nature of some hospitals in their areas, the hospitals did not meet the rural definition for CMS reimbursement. Alternately, to avoid reimbursement scenarios altogether, some hubs required spokes to pay a flat monthly or annual fee for access to specialty care. For many, fee policies were in fluid development – from no charge while in formative stages, continuing services unrelated to anyone getting billed or paid, to service payments plus cost per encounter, and then revising as needed. Gradually, as systems within states matured and champions came forward, hub respondents reported that their hospitals were undertaking efforts to work with legislatures as well as private/commercial insurance carriers to promote coherent telemedicine reimbursement policies.

Physician Licensing. Described as tedious, time-consuming, and expensive, state licensure was uniformly viewed as a necessary burden to be shouldered by hub hospitals and hub physicians. Therefore, when considering expansion into another state, hubs reported seeking threshold volumes of spoke hospitals or patient encounters to make the effort worthwhile. A single small hospital would not be as attractive as a consortium of small hospitals. Among hub respondents, 56 percent reported that the hospital provided services only to spoke hospitals in the same state. Other hub hospital respondents reported cases in which the hospital had an existing relationship with, or wanted to provide services to, spoke hospitals in other states, and therefore decided to complete the licensing process despite the burden of doing so. Many hub respondents reported varying levels of effort to license physicians in other states, with some states identified as more or less inviting than others.

Physician Credentialing. Credentialing physicians to practice is the responsibility and legal duty of the hospital receiving the service. Therefore, physician credentialing is required for every spoke hospital regardless of whether the hub and spoke hospitals operate in the same state. This process is potentially costly and labor-intensive for both spoke and hub hospitals (considerable input from the physicians' home hospital is required). As of July 15, 2011, CMS allows a spoke to rely on credentialing and privileging decisions of the hub hospital along with a written agreement that meets CMS requirements.[8,9] Therefore, many hubs reported asking spokes that wanted services to accept credentials by proxy. This often required the smaller hospitals to rewrite bylaws, which may or may not have been practical or even feasible.

Clinician Buy-In. Respondents from both hub and spoke hospitals reported that provider buy-in was mostly positive. However, hub respondents reported that obtaining buy-in was a challenge if physicians were already busy with non-telemedicine patients and if payment was questionable. Hub and spoke respondents agreed that spokes needed ongoing education to keep up with their staff turnover and to encourage use of the technology. While the equipment may have been provided to spokes in the course of a grant, follow-up and ongoing use can wane. Respondents from both hubs and spokes believed that physicians needed time to adjust to practicing medicine using telemedicine technology.

Perceived Value. Telemedicine ED services seem to be expanding at a higher rate than other services. Some respondents reported that because ED services were not defined as in-patient and were, therefore, more likely to be reimbursable, they were easier to implement. Spoke hospital respondents report ED-based tele-stroke and tele-psychiatry to be the most highly accepted and appreciated services at their hospitals—tele-stroke because of the immediate need for expert advice, and tele-psychiatry because of the high level of resources required if there is no local access to specialists.

Discussion

Experts recognize that licensing and reimbursement are barriers to the expansion of telehealth.[4,10] Hub and spoke respondents in our study reported those barriers, and added that physician buy-in at both ends was another frequent obstacle. Those in our sample viewed access as the most important attribute of telemedicine, including access across state lines, making licensing a recurring issue among spokes and hubs to varying degrees, depending on states.

Reimbursement regulations vary dramatically across states.[5,11] Hubs would like to see reimbursement for telemedicine viewed simply as an additional method of delivering medicine and treating patients. However, reimbursement becomes complicated when regulations, definitions, and opinions do not keep up with technology. Thus, some hubs have been successful offering contracts for services, and others are experimenting with doing so. Hub respondents pointed out that telemedicine is not new, but the way it is being used is. With the lower cost of telemedicine and a demand for telemedicine services, a variety of business models for both hubs and spokes have been established and are evolving.

While some physicians are strong supporters of telemedicine, others are less enthusiastic. Hub respondents described lack of physician buy-in to telemedicine among doctors who already had busy schedules and did not grasp how adding telemedicine patients would benefit them. Spoke respondents stated their physicians pushed back when they felt pressured to use telemedicine and when they perceived the use of telemedicine as implying that their skills were inadequate. Respondents agreed that time is required to educate physicians in both hub and spoke hospitals.

Respondents from both hub and spoke hospitals in the sample mentioned significant barriers to adopting and expanding telemedicine. However, they also reported multiple reasons for continuing to develop its reach, including that telemedicine helps address competition, enhances access, keeps lower-acuity patients closer to home, and helps to meet a hospital's mission of providing high-quality care.

Notes

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