2007 Indiana Critical Access Hospital Clinical and Technology Needs Survey

Prepared by

Greg Beck, MHA
Jonathan Neufeld, PhD
Beck n'Call Healthcare Consultants

March 9, 2007

BECK'nCall
Advancing health care access through technology

Table of Contents

Table of Contents 2

Executive Summary 3

Introduction 4

Background 4

Definition of Critical Access Hospitals 5

Methods 5

Survey Development 5

Site Visits 6

Note on Aggregate Relative Scoring System 6

Results 7

Electronic Medical Records 7

Imaging Technology 8

Connectivity 9

Clinical Needs 10

Perceptions of Telemedicine 12

Medical Education Needs 13

Note on Network Hospitals 14

Appendix A: Survey Highlights 16

Appendix B: Topics for Discussion 17

Appendix C: Site Visit Notes ..... **Error! Bookmark not defined.**

Executive Summary

Rural hospitals in Indiana face a wide range of challenges, including clinical, financial, and technological. Although critical access hospital status has generally provided firmer financial support for many rural hospitals, these essential points of healthcare access for rural residents still face many challenges to their continued effective operation.

In January and February of 2007, the Indiana State Department of Health, Office of Rural Affairs commissioned an onsite survey of the clinical and technological needs, capabilities, and challenges faced by Indiana's 35 critical access hospitals. This survey was completed by Beck n'Call, a healthcare consultancy firm. Site visitors personally interviewed administrators, clinicians, and information technology specialists at each critical access hospital in Indiana, asking about current and expected clinical and technological capabilities and needs.

Major findings from the survey included:

- Nine critical access hospitals out of 35 (25.7%) reported having an EMR currently in use, but there was some discrepancy regarding what constituted a full EMR.
- Cost was cited consistently by all types of respondents as the primary challenge to EMR implementation.
- Most hospitals (24 of 35, or 68.6%) have a picture archiving communications system (PACS) for imaging services. The majority of those that don't currently have such a system are planning to implement one within 6-12 months.
- Most critical access hospitals (20 of 35, or 57.1%) reported having T1 (1.5 Mbs) wide area networking connections. This bandwidth is sufficient to transfer a 1 gigabit image in about 90 minutes. Eight hospitals, all part of larger health networks, reported having DS3 connections (45 Mbs).
- Mental health was the clinical specialty need most frequently cited by both administrators and clinicians. Other specialties frequently cited included Neurology, Orthopedics, Dermatology, Endocrinology, and Cardiology.
- Thirty of 32 CEO's (93.8%) reported a willingness to look at using telemedicine to provide clinical specialty services. The most attractive elements of telemedicine mentioned by both administrators and clinicians included providing greater access to specialty services and reducing patient travel.
- Nine of 35 CAHs (25.7%) reported having videoconferencing equipment and most of those reported currently using it to provide educational experiences for their clinical staff.
- Critical access hospitals that were part of a larger health care network (regardless of for-profit status) were consistently found to be better equipped technologically than their non-affiliated counterparts.

Introduction

The healthcare challenges faced by our nation's rural communities are not dissimilar to what is happening all over the country. Declining reimbursement rates, stringent managed care contracts, and more uninsured have forced all health care providers to streamline operations and operate as efficiently as possible. Significant increases in the elderly population mean the current health delivery system in our county will be under increasing pressure to meet demand. Utilizing technology in healthcare delivery has become more of a focus in recent years as health providers better understand the potential applications, and learn more about the technology solutions that are already being employed in other industries. Since economists predict increasing shortages among health care professionals, it's important for providers to look for technology that can help them to leverage the services they already provide. It's also imperative that community providers look for unique ways to bring specialized services to their communities.

Telehealth applications were originally intended to address the health shortages that many rural communities face nationwide. By using video technology to virtually bring providers into these communities; many patients have been able to receive specialized care not traditionally available to them. In 1996, Medicare passed initial telemedicine reimbursement policy and since then, more that 35 states have followed with their own policies. Video technologies are also being used extensively in health education and can help bring the latest research and treatment protocols to clinicians in smaller communities. These educational links can help rural providers feel less isolated and more connected with the urban medical communities and latest standards of care.

Another major national objective related to healthcare includes developing a common interface and communication method to share electronic patient information. The US Department of Health and Human Services has taken a leadership effort in this area and has focused on Electronic Medical Records. HHS Secretary, Mike Leavitt, has formed a special commission to address the implementation of a standard electronic medical record and President Bush has declared this a vital component of his vision for healthcare in the next 10 years. Healthcare providers in Indiana are in the process of evaluating or implementing EMR's into their existing medical information systems and face similar challenges.

Background

During January and February of 2007 an on-site survey was performed by Beck n'Call at each Critical Access Hospital in the State of Indiana. The purpose of this survey was to gather hospital specific data for the Indiana State Department of Health, Office of Rural Affairs. As a part of the survey, data were collected from three different sources within each hospital: a hospital administrator (usually the CEO), a clinician (usually a physician or the nursing director), and the IS/IT manager. The data are to be used to better understand the current clinical and technological capacity of Indiana's critical access hospitals and evaluate needs for additional services that may not be locally available. The survey data will also help identify specific technological challenges faced by each

hospital and help improve ISDH's understanding of common barriers to delivering healthcare in Indiana's rural communities. The data may also eventually be used to help determine pilot sites for future state-supported efforts to improve health services through technology-related projects in rural communities.

Definition of Critical Access Hospitals

As defined by the Centers for Medicaid and Medicare Services, (http://www.cms.hhs.gov/CertificationandComplianc/04_CAHs.asp) a Critical Access Hospital can be designated as such by the State in which it is located if it meets the following criteria:

- Is a rural public, non-profit or for-profit hospital, or is a hospital that was closed in previous ten years, or is a rural health clinic that was downsized from a hospital.
- Is a facility located in a State that has established a State plan with CMS for the Medicare Rural Hospital Flexibility Program.
- Is more that a 35-mile drive from any other hospital or CAH (in mountainous terrain, or areas that only have secondary roads, this requirement changes to 15 miles); or is certified by the State in the State plan as being a necessary provider of health care services to residents in the area.
- Has 24 hour/day, 7 day/week emergency care services available.
- Has no more than 15 beds for acute (hospital level) inpatient care. Exception is made for swing-bed facilities which are allowed to have up to 25 inpatient beds that can be used interchangeably for acute or SNF-level care, provided not more than 15 beds are used at any one time for acute care.
- Provides an annual average length of stay of 96 hours per patient for acute care patients.

In 2006, the state of Indiana designated many rural hospitals that were less than 35 miles from another hospital as "necessary healthcare providers" in their region, making it possible for many rural hospitals to gain critical access status that might not otherwise have qualified.

Methods

Survey Development

An interview survey instrument was developed by Beck n'Call team members in collaboration with ISDH personnel to target specific areas of interest to ISDH. The survey items were divided among the intended respondents according to which was most likely to be able to provide the most accurate data. Most questions were targeted at a single informant to avoid duplication, but several questions, specifically those inquiring about clinical service needs and technology challenges, were intentionally duplicated across informants to get multiple perspectives on these complex problems.

Site Visits

All 36 critical access hospitals (CAH's) operating in Indiana on January 1, 2007 were included in the target sample. One CAH, St. Joseph's Hospital of Huntingburg, closed in January 2007 and was dropped from the visit schedule. Three site visitors, each with extensive clinical or hospital administrative experience, visited 10-12 of the 35 sites. One site visit involved all three site visitors and served as an opportunity for team members to standardize and compare their evaluation and scoring methods.

Site visits were scheduled in advance with all informants. When in-person interviews could not be scheduled, telephone interviews were attempted. For some physician informants, printed surveys were completed by hand and returned rather than completing an in-person interview.

No attempt was made to limit or control which informants were present together or separately during interviews other than a general request to administrators to allow for separate interviews whenever possible. Some sites scheduled group interviews in order to save time, and in these cases group consensus was recorded on the survey form as accurately as possible, separated by informant group. When multiple informants from a single group (administration, IS, or clinical services) were present, the general consensus view for this sub-group was recorded.

Note on Aggregate Relative Scoring System

Survey results were compiled in spreadsheets and totals and percentages calculated for each survey item. In the case of importance ratings (for example, ranking of the 3 most pressing clinical needs in a community), a simple aggregate relative scoring system was used to quantify ranked responses as follows. For each respondent, the item ranked first was given 3 points, the one ranked second was given 2 points, and the items ranked third or also mentioned were given one point. Scores were then summed across all sites to give an overall sense of the aggregate relative need across CAHs. For example, if three CEOs indicated that mental health was their most important need (3x3 points), two CEOs listed it second (2x2 points), and one listed it third (1x1 point), mental health was given an aggregate relative score of 14 points (3x3 + 2x2 + 1x1). Scores do not add to any particular value, since the scoring system does not reflect percentages or any other measurable parameter. Aggregate relative scoring simply provides an estimate of the relative importance each item in the list attains, relative to the others, across all respondents.

Results

Electronic Medical Records

Electronic medical records (EMR's) continue to be a focus for many health care providers, including Critical Access Hospitals. Most facilities visited have plans to implement an EMR, but few have done so thus far. According to the survey, nine facilities out of a total of 35 have an electronic medical record (see Figure 1-1). This number may be elevated due to varying definitions of an EMR, and a more careful follow up analysis of hospital medical information systems may be needed to validate responses.

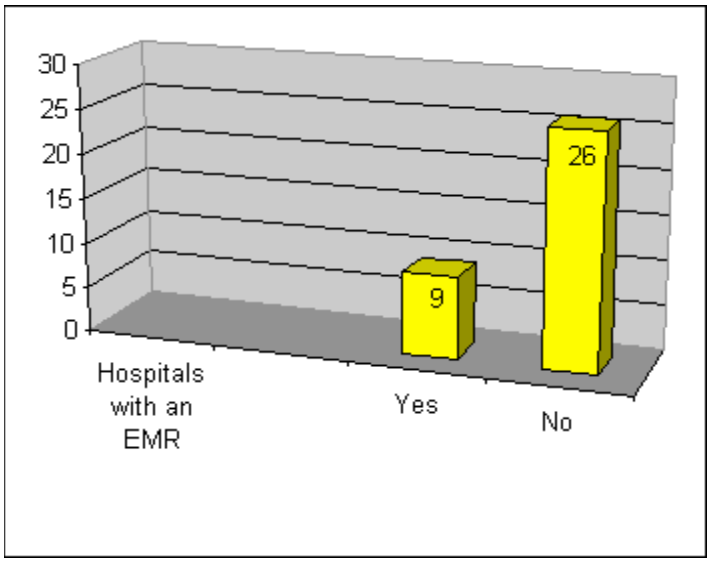

Figure 1-1

Many facilities are struggling with the technical complexity involved in integrating an EMR into existing medical information systems. A number of facilities mentioned a need for more education and technical assistance in determining which product is best suited for them. Most facilities use some form of electronic medical information system for order entry, labs, and pharmacy applications. Very few facilities have gone 'paperless' or have been able to fully migrate to electronic patient charts. According to the survey, the single biggest barrier to implementing an EMR is cost. The next most significant barriers are training and physician resistance, respectively. These findings were very similar among both administrators and clinicians (see figure 1-2, 1-3).

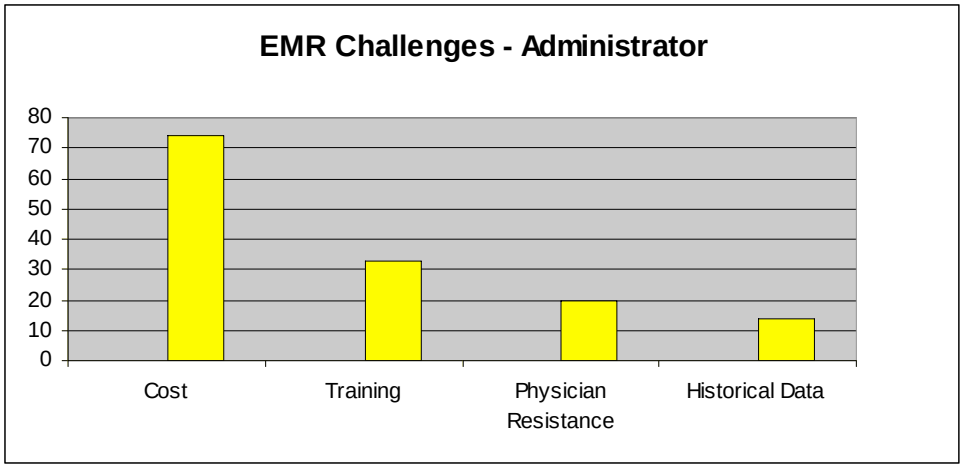

Figure 1-2

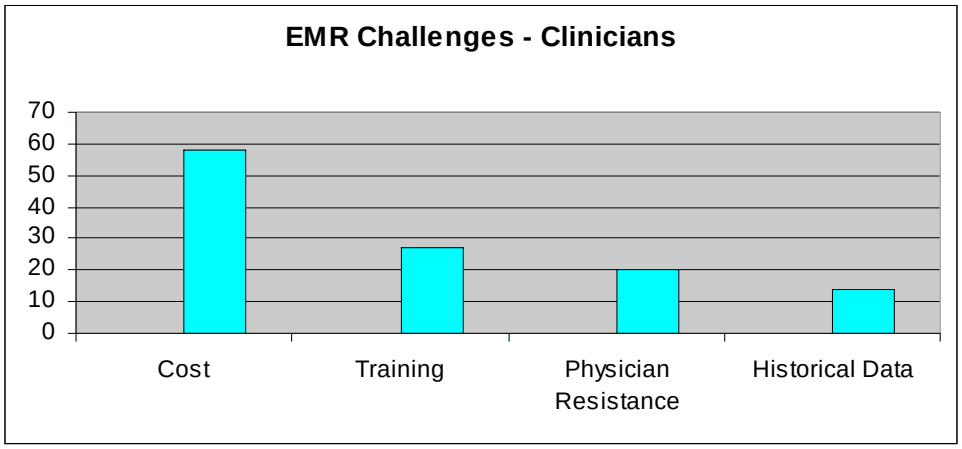

Figure 1-3

Some community physicians have begun to implement EMR's into their practices and many have been pushing their hospitals to do so as well. Some CAH's have found integration even more challenging when trying to establish connections with multiple physician practice EMR's. Harrison County Hospital has done a thorough, in-depth evaluation of EMR vendors over the last year. They may be an excellent resource for other CAH's engaged in the EMR selection process.

Imaging Technology

Most facilities are using a picture archiving communications system (PACS) and most that don't currently have one are in the process of implementing one. According to the survey, 24 facilities are currently using a PACS system (see figure 2-2).

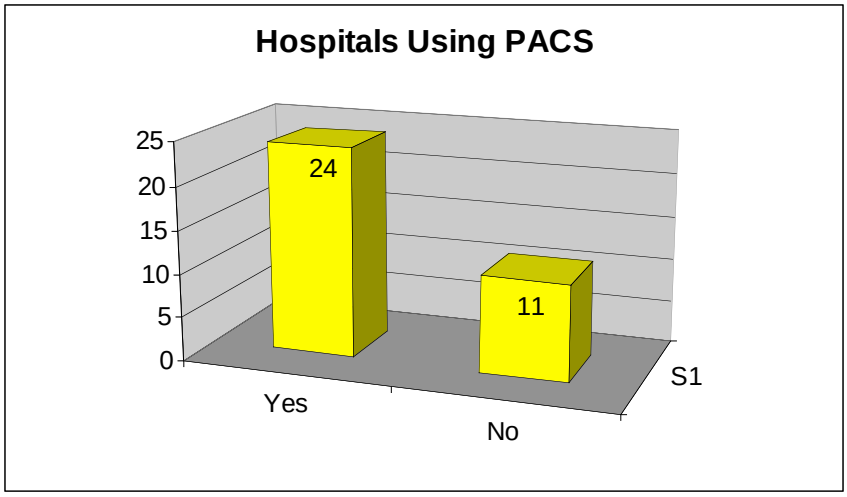

Figure 2-2

A PACS system gives hospitals the ability to digitally store medical images so that these images can be viewed from any location or workstation capable of retrieving the digital image. This expands the possibilities of conventional systems and allows medical professionals to view images from their homes and other off-site locations over broadband internet connections. It also removes any geographical boundaries to specialists capable of reading the images. This is one of the primary benefits of telemedicine – removing geographical distances as a barrier to providing care. It is not uncommon for Radiologists in metropolitan areas to now have dedicated T1 connections to their homes.

The practice of sending images to off-site radiology groups is referred to as tele-radiology. This application is really one of the first widely accepted telemedicine applications and has been an accepted standard of care for many years. CAH's with PACS are utilizing this application extensively, and some are even sending images to off-shore radiologists.

Connectivity

Network bandwidth remains as a key factor when evaluating a partner's ability to participate in technology oriented projects. Many telehealth and telemedicine applications require high-speed broadband connections to allow for the timely transmission of data packets. It's also necessary to have adequate bandwidth to support high quality video transmission for live telemedicine consultations. A relatively new technology, Digital Video Transport System (DVTS), would require at least a T3/DS3 connection (45 Mbs) to enable its high quality video applications.

T1 lines are the most common connections being used for CAH's to connect to the Internet. Currently, 20 facilities use a T1 connection as their primary connection to the internet (see figure 2-1).

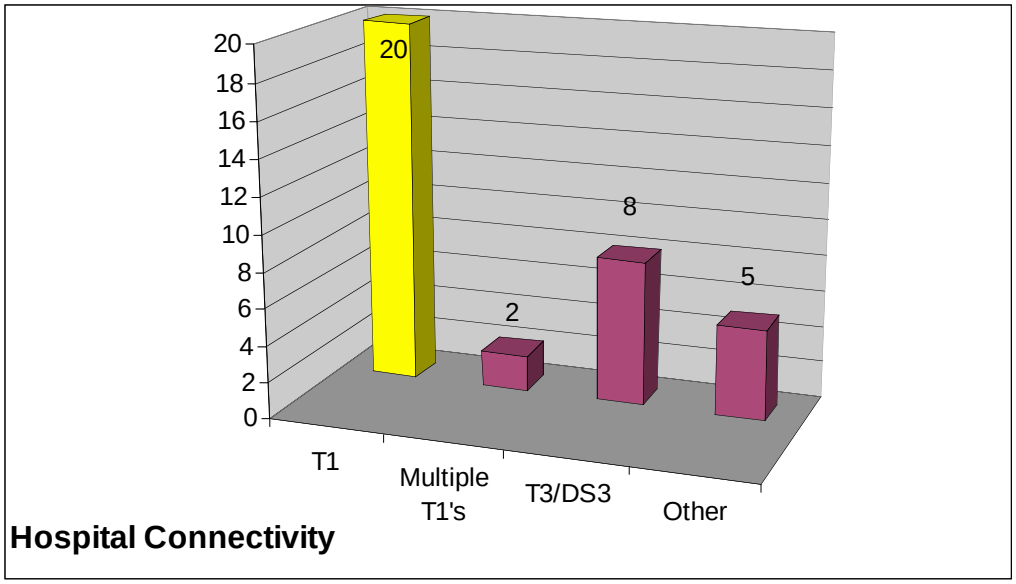

Figure 2-1

While T1's may support regular internet traffic, they are inadequate to regularly transmit clinical files like Magnetic Resonance Imaging (MRI), or Computed Tomography (CT) imaging. For example, a one Gigabyte CAT scan would take over 90 minutes to send over a dedicated T1 line (this is based on the full capacity T1 transmission rate of 1.54 Mbs). Some facilities have purchased multiple T1 connections and have dedicated a single T1 line to be used only for radiology applications.

Fiber optic connections, used by only a few CAHs, are the 'Rolls Royce' of connectivity. They support very high speed connections that can increase the usability of many applications. Unfortunately, these solutions are currently cost prohibitive for most providers and will likely not be commonplace without some form of subsidy. In one relevant example, Smithville Digital worked with Bloomington Hospital in Bloomington to connect their partner CAH hospital in Paoli. This connection was made easier due to the availability of 'dark fiber' (that is, fiber connections available for lease or sale) and the physical location of Smithville Digital, a local fiber provider.

Most communities located around CAH's have some type of broadband access, according to survey respondents. Types of access varied from DSL and cable modems to locally based wireless networks. Respondents indicated that most residents who live outside towns have very limited high-bandwidth options, and many only have dial-up 56K modem capability. It is also evident from survey interviews that definitions of broadband connectivity vary significantly from community to community.

Clinical Needs

The physician employment arrangement for the CAH's ranged from all physician employees to no physician employees. Most, if not all, of the critical access hospitals do use visiting specialists whom offer regularly scheduled outreach clinics for specialties not

available locally. Many facilities are attempting to hire full time specialists to meet specialty demands that are not fulfilled, or even addressed, by outreach clinics.

The ability to retract and retain physicians is a universal challenge for all of the CAH's and is not likely to change in the near future. Thirty-one out of 35 hospital administrators rated the ability to recruit physicians as at least moderately difficult (5 or higher on a 1-10 scale with 10 being the most difficult). The specific specialty needs for each CAH were found to be similar across all areas of the state. The top aggregated relative clinical specialty need areas for the CAH's are mental health, orthopedics, dermatology, endocrinology, and neurology. The rank of perceived specialty needs was similar among administrators and clinicians (see figures 3-1, 3-2 for a detailed breakdown of aggregate relative scoring of needs according to administrators and clinicians).

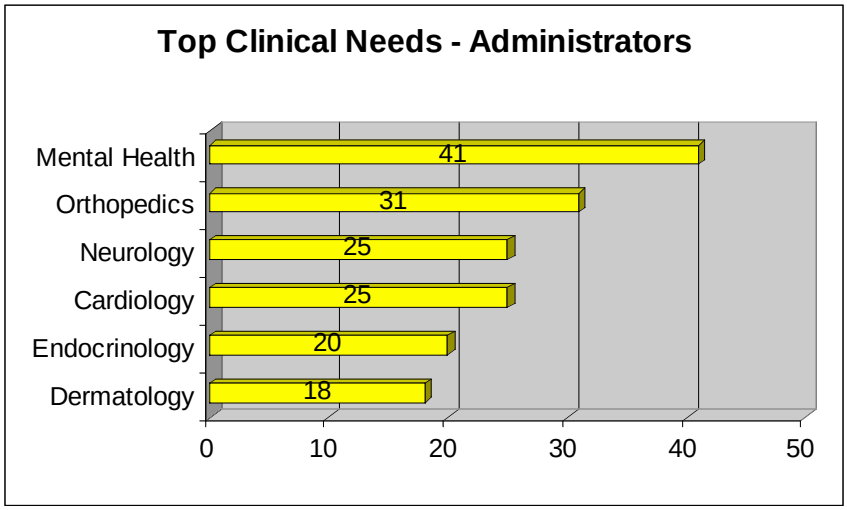

Figure 3-1

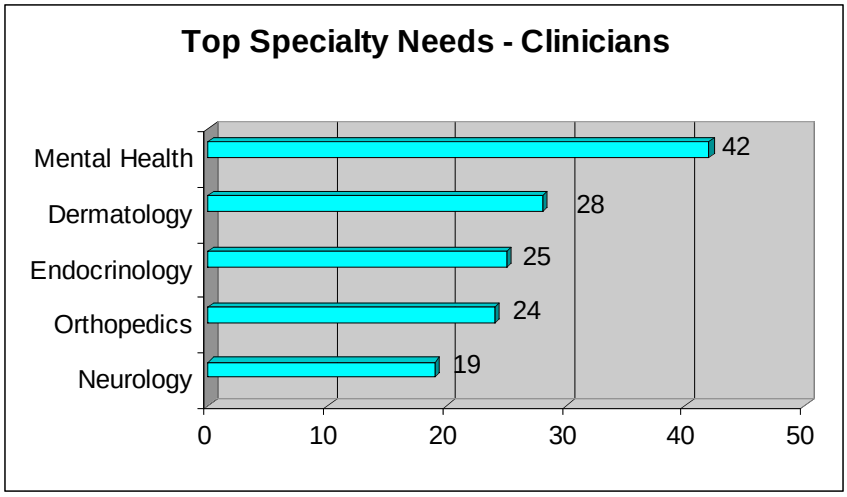

Figure 3-2

Because of the difficulties providing adequate specialty coverage, 94% (30 of 32 CEOs who responded) indicated a willingness to look at telemedicine applications as a potential solution (Figure 3-3).

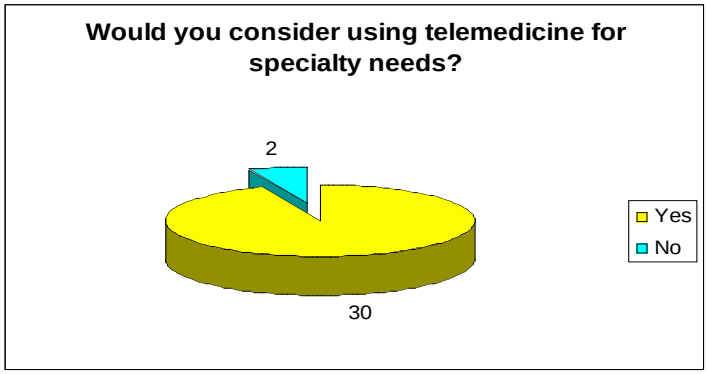

Figure 3-3

Because visiting physicians are used to cover many of the specialty areas, most departments do not have 24-hour, 7-day per week coverage, and many lack evening hours. CAH's are forced to do the best they can with the staff they have available, and many times find it necessary to transfer patients to larger metropolitan areas that have expanded specialist support. If CAH's had a way to consult with off-site specialists when they were not physically present, it would allow them to better triage cases and increase the chances of retaining patients in their hospitals.

Perceptions of Telemedicine

The most attractive element of telemedicine for critical access hospitals, according to the survey, was having access to more specialists. A detailed breakdown of the responses again revealed similar aggregate relative scores between clinicians and administrators (see figures 3-4, 3-5). Clinicians placed more emphasis on 'better call coverage' as compared to administrators and were less interested in additional CME opportunities.

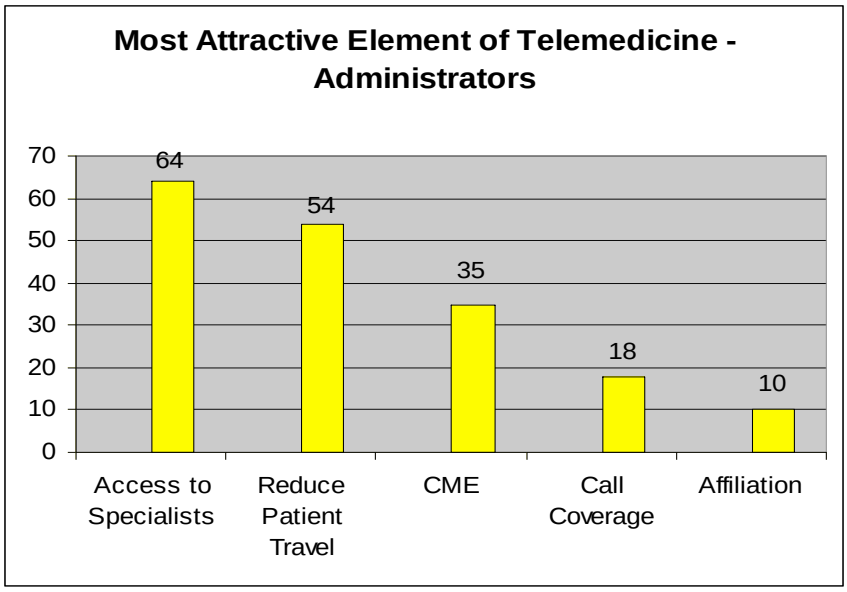

Figure 3-4

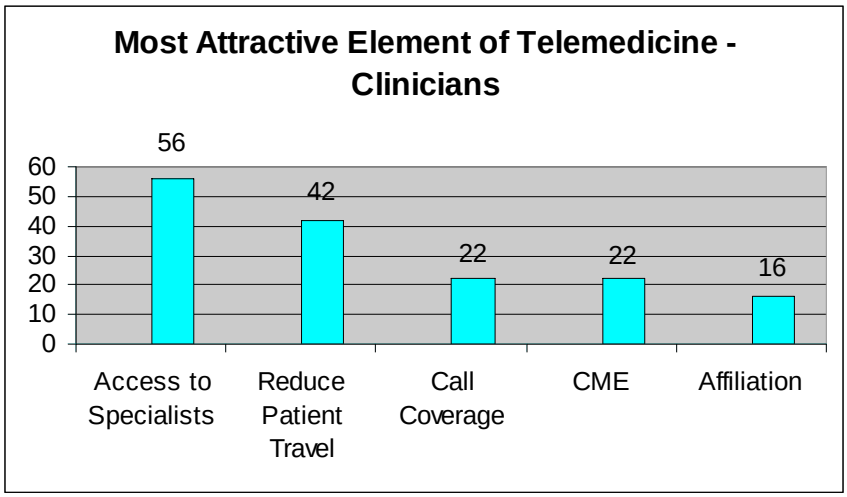

Figure 3-5

Eighteen of the hospitals surveyed, or just over 50%, reported that they would be willing to consider paying for remote specialty coverage if it could be provided via telemedicine. This is a difficult financial decision for administrators to make since many of them do not currently pay their providers for call coverage. It is also hard for them to make projections regarding frequency of need.

Medical Education Needs

Most facilities do not currently utilize video technologies for telehealth applications. About one quarter (26%) of all facilities have video equipment and the capability to support video conferencing (see figure 4-1). A few facilities have impressive regularly scheduled educational offerings that are attended by many physicians and other staff. A

common theme among these facilities was the importance of a dedicated education staff member or physician focused on arranging and promoting educational opportunities.

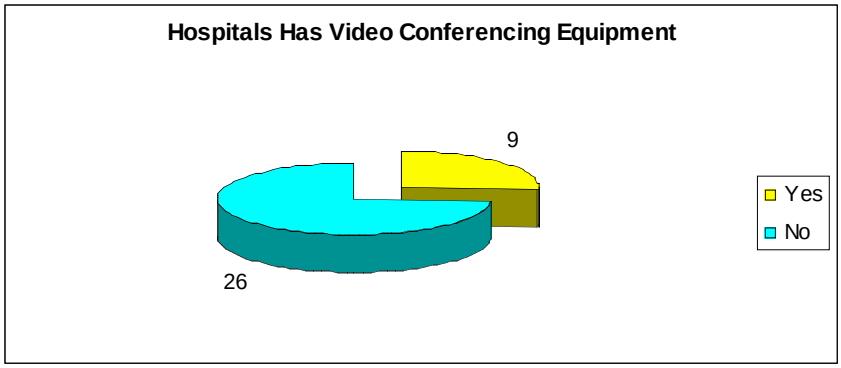

Figure 4-1

Many facilities that provide video-based education characterized their use of the equipment as sporadic. The St. Vincent CAH's all have video equipment as a result of a past FLEX grant and occasionally use it to attend educational conferences out of Indianapolis. Many of the remaining facilities indicated an interest in utilizing the technology (if available) to remotely connect to educational events for their medical staff.

Timing is a key component of successful video education because most CAH physicians operate their own non-hospital based practices and are reluctant to schedule educational meetings during clinic hours. Most CAH's indicated an interest in improving their educational offerings to staff and some administrators said they believe it would help with staff retention.

Interestingly, research conducted by UC Davis Medical Center found a positive relationship between physician retention and access to remote specialists via video conferencing. In addition, positive relationships have been documented between access to specialists at remote academic tertiary care centers and community perceptions of service quality at a rural hospital.

Many web based clinical education materials are available to CAH's. St.Vincent's has developed a web portal which allows any physician to view pre-recorded educational events on a variety of clinical topics that have been archived and organized by category. This mode of education is gaining popularity and allows physicians and other medical professionals to 'log in' on their own time and view events of specific interest while earning continuing medical education credits without incurring any travel expenses. This kind of web-based education does not require dedicated video conferencing equipment or particularly high-bandwidth connections.

Note on Network Hospitals

Generally, the 'network' hospitals seemed to have higher levels of technology resources available to them as compared to the 'non-network' facilities. All six of the St.Vincent/

Ascension Health hospitals have T3 lines to the parent hospital in Indianapolis. These lines have 28 times the bandwidth capacity of the T1 connections that were found in the majority of non-network hospitals. Such a high speed connection allows for more timely transmission of medical images and the possibility of serving other applications (hospital management systems, word processing, etc.) over the connection.

Fast connections can decrease turnaround time for tele-radiology and other services, which can in turn elevate community perceptions of the community hospital. Hospital networks generally understand this relationship, and tend to implement policies that allow smaller rural member hospitals to leverage technologies already being implemented in the more urban areas. For example, Scott Memorial Hospital (part of the Jewish Hospital Health Network), is connected via a high speed wide area network to their parent hospital (Jewish Hospital) in Louisville, KY. Almost all of the hospital's computer applications reside on servers in Louisville and are served dynamically to the rural affiliates. Because of this arrangement, the Scott campus requires less technical management and fewer skilled staff members. Scott is also able to take advantage of monthly continuing education events offered by Jewish Hospital in Scottsburg.

Appendix A: Survey Highlights

Hospitals Visited / Total Critical Access Hospitals…… **35/35 (100%)**

- ∞ Administrators Surveyed **35**
- ∞ MD's Surveyed **14**
- ∞ RN's/Others Surveyed **25**
- ∞ Total Clinicians Surveyed **39**
- ∞ Technical Personnel Surveyed **35**

Hospitals Currently Practicing Tele-Radiology…….**25 (71%)**

Hospitals Utilizing PACS…….. **24 (69%)**

Hospitals using video-conferencing……...**12 (34%)**

Affiliated with a Health Group or Network……...**14 (40%)**

Use or would use mobile 'van' services……..**24 (69%)**

Hospitals with an EMR……**9* (26%)**

Top Clinical Needs

- ∞ Mental Health
- ∞ Orthopedics
- ∞ Dermatology
- ∞ Endocrinology

Hospitals Recruiting For

- ∞ Family Practice……**14**
- ∞ Orthopedics……**6**
- ∞ OB……. **5**
- ∞ General Surgery…….**5**

* The number listed is likely elevated from actual. Further analysis is needed to determine if all hospitals' definitions of an EMR met survey criteria.

Appendix B: Topics for Discussion

- Many small hospitals feel pressure to procure state-of-the-art imaging equipment. Does it make sense for multiple facilities in close proximity to each other to all have such expensive capital equipment? Is more collaboration and referral sharing possible? This may be difficult for many affiliated hospitals.

- A surprisingly large number of hospitals were in transition or had interim administrators. What effect does this have on hospital performance?

- EMRs are clearly an area of focus for CAHs right now. Many are struggling with the technological expertise required to implement them and the cost of integrating them into current systems. Would EMR case study discussions among CAHs assist them in making these important and difficult decisions?