Program Evaluation:
Indigo Health Partners Telemedicine Staffing Crisis

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Executive Summary

Program Evaluation: Indigo Health Partners Telemedicine Staffing Crisis

This research paper surveyed and evaluated clinical providers at Indigo Health Partners. This study focused primarily on, “Physician satisfaction with telemedicine services and what the administrative team members can do to increase satisfaction to fill these shifts?” In order to discover what was causing the hesitation from providers doing telemedicine shifts there were additional sub-questions addressed. The sub-questions included the following: “Is the credentialing process lowering the interest providers have in signing up for telemedicine shifts?” “Are there any technology barriers between physicians and the telemedicine equipment?” “What other issues does telemedicine create for physicians? Are these issues the organization can assist in eliminating or alleviating?” “Would more providers sign up for telemedicine shifts if they were still able to see patients face-to-face?” All of these questions were developed into a survey that would assist in determining the underlying issues to then provide recommendations to Indigo Health Partner’s Administration Team.

The beginning of this research paper provides background on what exactly telemedicine is and then multiple literature reviews. The literature reviews assisted in determining if other practices and providers were having similar issues or if it was only this organization. The majority of the literature found was from countries outside of the United States. Even though telemedicine has been around for decades there are fewer studies published in the United States regarding telemedicine satisfaction and usage.

The researcher chose to do a program evaluation type of study. At the time the study was conducted, there had been no previous program evaluation for this service. The researcher
created an electronic survey through Survey Monkey’s website. The researcher also developed hard copy surveys for those that wished to do a paper form of the survey. All surveys were completed electronically and no one chose to do the paper form. The questions were scaled and provided the respondents the opportunity to rate each of the issues and provide feedback in comment sections if they had any. The electronic survey was sent to the providers work email addresses. It was open for three weeks. The data collected from the survey was analyzed after the survey had been closed.

The majority of the data related to the literature reviews however there were some differences. Connectivity issues were one of the topics that were discussed in the literature reviews mentioned in Chapter 2. In those studies, providers found telemedicine connectivity to be difficult. They also found the equipment to be bulky to transfer patient-to-patient or set-up. One topic that differed from the literature reviews is that the majority of respondents felt that they would miss the face-to-face interactions with patients. This is one of the sub-questions that the researcher examined. The researcher found that malpractice fears, losing face-to-face connections with patients, and patient safety were among the largest hesitations for Indigo Health Partner’s physicians to sign up for telemedicine shifts. The researcher made four recommendations to the administrative team that included: Provide communication to providers regarding what exactly telemedicine shifts entail. Insure that the malpractice insurance covers telemedicine type services.

This study provides insight to administration on what the providers are struggling with and how they can accommodate them to make it easier to use. After the administrative team analyzes the results from this research study and reviews the recommendations the telemedicine staffing crisis should potentially be solved for future scheduling purposes.
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Chapter 1

Problem Definition

Administrative Problem

Background

Indigo Health Partners is a relatively large organization that continues to grow immensely. The organization is primarily located at the largest hospital they work with in Traverse City, Michigan but also offers services to satellite sites in many rural areas. Currently, many providers have to travel to these rural sites, sometimes up to 300 miles, to provide care unless they are using the telemedicine software. Additionally, they offer night coverage to many different hospitals that is provided through telemedicine.

The terms telehealth and telemedicine are sometimes used interchangeably. However, they are significantly different. Both are used to describe a form of technology that is used in a healthcare type setting. Telehealth focuses on the electronic transfer of patient information such as medical records, x-rays, data, lab results, etc. On the other hand, telemedicine is a form of care done so by a licensed provider through a type of device. Examples of devices used are computers, interactive videos, and even entire telemedicine carts. Telemedicine carts operate similarly to video chats. A cart with a monitor is wheeled into a patient’s room and a physician can see the patient, hear the patient, the only limitation is the physician is unable to touch the patient. The cart itself is operated by a registered nurse or a midlevel provider. The individual operating the cart can assist the physician for any telemedicine limitations that may occur. This is done to insure quality care is delivered to a patient in a convenient manner. “Tele is a prefix meaning “at a distance,” and it is used in terms such as telescope, or telemetry. The prefix tele, when combined with the term scope, has the single clear following meaning: an instrument to
view phenomena at a distance. However, in health care, as in other arenas, the prefix *tele* often takes on several meanings. For example, the term *telemetry* is described as a process, data, and an electronic device related to the task of remote measuring and reporting of information of interest. There is inconsistent and emerging nomenclature related to *tele* in health care” (Hughes, 2008).

Telemedicine dates back to the 1960s. However, it has only become more recognized within the last few years due to its increasing usage and advancements. More healthcare facilities are becoming interested in the uses of telemedicine and incorporating it into a significant part of their healthcare system. It is not only a piece of equipment that is used but it also helps to “bridge the gap between scientists, engineers, and medical professionals by creating synergy in the related fields of biomedical engineering, information and communication technologies, network operations, business opportunities, and dynamically evolving modern medical and healthcare practices. It includes how medical personnel use information and communication technologies, as well as sensors, techniques, hardware, and software. It gives information on wireless data transmission, networks, databases, processing systems, and automatic data acquisition, reduction and to bridge the gap between scientists, engineers, and medical professionals.” (Eren, 2015)

As mentioned above, “Telemedicine – the use of information and telecommunications technologies to provide and support healthcare when distance separates the participants – is receiving increasing attention not only in remote areas where health care access is troublesome but also in urban and suburban locations” (Field, 1996). The use of telemedicine has many capabilities and advantages but limitations do occur. It allows credentialed providers to reach individuals that live in remote areas, or those without means of traveling, and provide care at all hours of the day. It not only is used to provide healthcare to patients that are significantly farther
away but also to provide physician support to hospitals that do not have enough physicians to cover their needs. With a significant physician shortage that is currently happening in the United States and reported to only increase telemedicine may be the answer to those areas experiencing detrimental shortages. A physician can be in any location and see patients around the country while not ever moving. This is ideal in many areas that cannot find a nighttime physician to cover.

**Research Problem**

Even with all of the advantages, there are disadvantages to telemedicine. Connectivity issues, cost, training, physical limitations, credentialing, insurance coverage, and even reimbursement are a few of the disadvantages of telemedicine. Many studies have been conducted that indicate patients believe the care they have received through telemedicine was satisfactory. In a majority of the studies, patients do not feel there are any barriers between them and the physicians. In the surveys that are discussed in the Literature Review section, it was discovered that patients did not have any issues or concerns with telemedicine. Many patients actually preferred it. There have been very few studies that have focused on the satisfaction of the physicians providing the care through telemedicine. **The overall pending question is whether physicians at Indigo Health Partners are satisfied with the new telemedicine care services being offered and what some of the issues are with using it. This includes improvements that can be made to make the transition easier.** The overall outcome of researching this problem is to see what the organization can do to fill their telemedicine shift openings faster and have more providers interested in taking on these crucial shifts.

This study discusses the following issues:

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**Commented [PK1]:** This is a good focus for your study. However, the issues below do not align well with this focus in that the list below (except for #4) focuses on patient care vs physician satisfaction.

So, think about your focus. For example, if you intend to “see what the organization can do to fill their telemedicine shift openings faster and have more providers interested in taking on these crucial shifts.” I do not see how answering the items below will give you this answer.
1. Is the credentialing process lowering the interest providers have in signing up for telemedicine shifts?

2. Are there any technology barriers between physicians and the telemedicine monitors/equipment?

3. What other issues does telemedicine create for physicians? Are these issues that the organization can assist in eliminating or alleviating?

4. Would more providers sign up to do telemedicine shifts if they were still able to see patients face-to-face?

The data collected is from Indigo Health Partners. Indigo is a hospitalist group located in northern Michigan. The organization recently integrated telemedicine within the last year and offers the service in some of their rural satellite sites including Iron Mountain, Manistee, Ludington, Traverse City, and Cadillac, Michigan.

A survey was generated with questions seeking answers to the above issues. It was sent to all of Indigo’s physicians totaling to 100 physicians at all sites. All physicians surveyed have been practicing for at least one year at Indigo Health Partners. Both responses are from physicians that have or currently are using telemedicine and those who do not have experience using telemedicine will be included.

**Research Objective**

The research was conducted to discover what Indigo Health Partners Administrative Team can do to increase satisfaction in telemedicine in order to fill the numerous, vacant, shifts that are available. There have been only a handful of volunteers to be trained and credentialed in telemedicine. The others involved were asked to by Indigo’s Administration but there are still telemedicine shifts that need to be filled. It focused on whether this form of care is helpful or is
more of a hindrance with the main focus being on physician job satisfaction while using it. Is the credentialing process too problematic, has connectivity caused any issues, would paid training courses assist anyone with technology issues, and to determine whether physician satisfaction has increased or decreased since the use of telemedicine?

The findings from the survey and research may help the organization discover ways to increase physician satisfaction and understand what can be done to improve the volunteer rate for telemedicine shifts. It may help understand what hurdles may be involved by agreeing to provide this type of care. By understanding the different issues involved, the data collected was ultimately to provide recommendations to administration members, including the Vice President of Telehealth, on any changes that may need to be made.

Scope

The research conducted was done only through physicians currently employed at Indigo Health Partners. It included all physicians at all of their sites. The majority of responses are from Traverse City, Michigan’s site. This site has the most providers located there. The information that was collected through a survey was organized and analyzed as a whole organization. The data and information was not broken down into individual sites.
Chapter 2

Literature Review

Telemedicine has surprisingly been around for centuries. It dates back to a time before telephones, internet, and much of the technology that is commonly used today. Many people used drums, signal flares, instruments, and other forms of signs to signal a type of message to another individual some distances away. There is still evidence that some of these signals are still used to this day.

Fast forward to the 1800s when the first use of electronic communications were used in the United States during the Civil War. Information regarding medical supplies, the need for medics, and lists of casualties were transmitted through an electronic telegraph system. As time progressed, the telephone was invented and over the course of a few years it was improved considerably. More individuals had access to telephones and it became a common household item. Individuals were able to call their providers to ask questions and receive consultations over the phone. Saving them a trip to see their provider and also saving them the risk of getting others ill. Telemedicine has significantly advanced throughout the years and continues to be ever more expanding as more technology becomes available. However, all of these innovations have helped lay the foundation for what is known today as telemedicine.

Many papers and articles that have been written about telemedicine discuss the ever increasing advancements that have been made. They focus on where it originated and where it is headed. They also place emphasis on patient’s overall satisfaction with receiving healthcare information digitally instead of face-to-face. Additionally, there have been an increasing number of articles that delve into whether or not telemedicine is compliant with the Health Insurance Portability and Accountability Act (HIPAA). Of course, telemedicine itself is HIPAA compliant;
However, there are many factors and situations that need to be monitored so that patient health information is not comprised.

The researcher has found little information from studies and articles composed strictly of the physician’s satisfaction with telemedicine in and of itself and why there may not be as much interest as was originally thought. Many of the suggestions and materials found have been one or two questions out of an entire interview that was focused on a different topic overall. For the purpose of this topic, information was drawn from the literature that has previously been published.

**Presentation of the Literature**

Telemedicine allows physicians to connect with patients through a number of ways: telephone, electronic medical records, and even mobile telemedicine video-based carts. One study was conducted looking at satisfaction for both the patient and physician in a very specific patient population, those with hypertension. The National Institute of Health conducted and published, “Patient and Physician Satisfaction in a Clinical Study of Telemedicine in a Hypertensive Patient Population.” It was published in the Journal of Telemedicine and Telecare in 2014. The research collected from this study was very small and done through personal interviews. Only five physicians were trialed over a twelve-month time period where 107 visits were monitored. (National Institute of Health, 2014) The overall study concluded that there where both positives and negatives to using telemedicine. Physicians were using both telemedicine and continuing to do in office visits with patients throughout this twelve-month span. This mixed delivery of care kept physicians mindful of the day-to-day tribulations and understandings of both aspects of care.
In this study, physicians noticed that using telemedicine actually increased their amount of workload. Since they were relatively new to using it they also found that it created a taxing amount of mental stress on them compared to the regular in person visits. The study did not mention a specific number, time, or percentage of increased workload. Physicians also found that by using telemedicine and seeing patients through a monitor they had a number of technical issues arise. Some issues included connectivity, volume, and other technology barriers that would not have been an issue if they were able to visit with the patient exclusively in the office. “Patients reported slightly but significantly higher satisfaction scores for the following for in-person than for telemedicine meetings: technical quality, interpersonal care and time spent.” (Krousel-Wood, 2001). Since this study in 2001 technology has advanced tremendously. Part of this study is to discover whether the increased workload was due to technological hindrances at the time or just a learning curve for new users.

The Republic of Ireland conducted a telemedicine study in which they surveyed 187 different hospitals. (Mahar, 2007). This study discovered that although Dublin, the capital of Ireland, was going to be the center for telemedicine services, many of the outlying cities were networking and trying to operate telemedicine services as well. This study (Mahar, 2007), determined that the nation needed some form of nationwide telemedicine network. By developing a network, it would help the transition of patient information and care become much more accurate. The study did not survey physician’s views on telemedicine it was more directed to the function of telemedicine itself. As more organizations begin to offer telemedicine services it may be wise for Indigo Health Partners to look into their software to make sure in the future information can be accessible to other networks.
Another study was conducted in Sweden over a thirteen-month trial period. The information was collected through a survey and the data was then collected from the responses. A survey size was not mentioned in the article that was published. Physicians used telemedicine capabilities with patients that had head and neck cancer. Similar to the 2001 study (Krousel-Wood, 2001) this study was done with a specific patient population. The study conducted in Sweden was developed by the Department of Otolaryngology, Head and Neck Surgery of Sahlgrenska University Hospital, and the Swedish Institute for Health Services Development. (Stalferse, 2003). Many patients in this study, much like the other one, were overwhelmingly satisfied with their care conducted through telemedicine. They did not feel as if it created any type of barrier without the physician physically being in the room with them. They felt that it delivered the same type of care as if they were face-to-face.

Physicians using telemedicine found that they were faced with many obstacles while using the equipment. The study did not focus specifically on physician’s overall satisfaction with telemedicine but it did explain that there were some instances that delayed their delivery of care due to technical issues. The number of calls for technical help due to connectivity or other technology issues was tracked. Fifteen percent of the twenty-eight telemedicine cases required some form of technology assistance or had connectivity issues. Many dealt with sound and distorted picture/video quality. None of the instances affected overall patient care during this study though. This was determined through patient satisfaction reviews.

This research paper focused on the literature the National Institute of Health conducted and the study conducted in Sweden. It has involved physician satisfaction, issues with telemedicine, and any improvements that can be made in the overall process with Indigo Health Partners. Much like the physicians in these studies, the Indigo physicians are relatively new to
the use of telemedicine and visiting with patients via video chat carts. When technology is involved in any scenario, there is always the possibility of barriers, challenges, and limitations.

Physicians in Greenland began to offer services to citizens’ remotely through telemedicine as well as early as 2008. “Greenland is divided into sixteen health care districts. One to four physicians and support staff and serve communities of 550 to 5,500 residents” (AMD Telemedicine, 2001). Greenland’s healthcare system is somewhat similar to Indigo Health Partners in that the majority of their sites are in rural areas. The rural areas Indigo Health Partners provide care to are for the most part larger than some of Greenland’s villages but still struggle with the same issues including transportation to and from medical facilities. “On average 22% of Greenland's residents live in villages located up to hundreds of kilometers from any health center. Transport and travel to medical facilities is costly and there are limited connections to many towns and villages” (AMD Telemedicine, 2001).

After the telemedicine services were offered to citizens in this region, the group performed a study by sending a survey to patients to see how their visit went. The survey was sent out to eighty patients and had fourteen responses. “The aim of this study has been to explore how citizens living in the Greenlandic settlements experience the possibilities and challenges of telemedicine when receiving healthcare delivery in everyday life” (Neilson, 2016). Through their survey they discovered, much like the previous studies mentioned, that the patients received the care very well. There were also some challenges that the physicians faced with connectivity and issues that would not have been of concern had the patients been in the room with the provider. The study did mention that it is difficult to have telemedicine equipment set up at patient’s homes or places of residence. The equipment during the time of this study (August 2010) was not as mobile as it is today.
Another study was conducted by the American College of Chest Physicians Critical Care Institute. This study measured, “structural features and processes of critical care delivery in the domains of organizational context and characteristics of ICU teams, ICUs, hospitals, and of the communities supported by an ICU” (Lilly, 2015). This group of physicians is similar to Indigo Health Partner physicians because they see patients that are in the hospital, not in an office type setting. Approximately 20% of Indigo Health Partners daily patients at Munson Medical Center are critical care patients. Of that 20%, 5%-10% are located in the Intensive Care Unit (ICU).

The American College of Chest Physicians Critical Care Institute (Lilly, 2015) conducted a telemedicine survey type study in hopes of bringing as well as understanding the best delivery of patient care. In this study a thirty-two question, electronic, survey was sent to the 311 ICU providers and 170 completed the survey. The graph below from their survey shows the data:

![Survey distribution and return.](image)

Figure 1 (Science Direct – Lilly, 2015)

From the survey, the researcher gathered that, “Analyses of the survey revealed substantial variation in the practice of ICU telemedicine, including ICU telemedicine center
staffing patterns; qualifications of providers; case sign-out, ICU staffing models” (Lilly, 2015). This survey found that telemedicine has been a huge help with seeing patients while still providing safe, quality, patient care. The telemedicine technology, based on this survey, has been seen as a “vital instrument of patient care” (Lilly, 2015).

The survey also mentions there are some downsides to using this type of technology rather than seeing the patients face-to-face. One of the major issues stated is that there are significant staffing issues. In place of having physicians there on sight, the telemedicine equipment is used and there seems to be a need for more physicians to be at the telemedicine support center. This support center is there for “by the bed” side assistance. That is if the physician sees the patient electronically has issues or needs a physician in person they are ready and available to be there.

A survey conducted by a peer-reviewed journal called, Healthcare Leadership Review also found telemedicine to be in high priority. “The majority of healthcare professionals now feel that telemedicine is a high priority for their organizations and that it can deliver similar outcomes to in-person care” (Healthcare Leadership Review, 2016). 84% of respondents to this survey found that telemedicine equipment had similar outcomes and achieved similar care as if they were to be seen in person.

Telemedicine is even being used not only by Indigo Health Partners in rural areas in the United States but also in some of the most isolated locations across the globe. It has even been used in Antarctica. “The increasing use of Telemedicine has helped to reduce this isolation and to improve access to secondary healthcare for those who live in the most remote bases in the world” (Grant, 2004). One organization, The British Antarctic Survey is a very prestigious
research organization and they conducted in the Antarctic regarding telemedicine type services. In Antarctica the population in the winter is approximately 45-55 people (Grant, 2004). This number jumps to approximately 250 in the areas summertime season (Grant, 2004).

There is only one large teaching hospital in the area which could potentially be hundreds or more miles away from these individuals. In order to reach these individuals, the use of telemedicine has been put into place. “British Antarctic Survey tends to be relatively "low tech" in approach, using voice communication, email, fax, and still pictures rather than video, or more complex equipment. Historically telemedicine has been used since communication with the Antarctic Continent became possible, and Antarctic doctors have rapidly embraced novel ways of improving patient consultation” (Grant, 2004).

This survey was sent out to 450 staff members to see if they found telemedicine to be useful. Overall, the majority of those who responded found it to be useful but said that their workload is often low and keeping up their skill levels to use telemedicine is often difficult. The respondents did mention that, “As technology advances further the medical isolation of the past will become steadily less and healthcare close to that of the first world will become ever more available to the few inhabitants of the Antarctic continent” (Grant, 2004).

A survey completed about telemedicine in correctional facilities was also conducted. This survey was developed by the Association of Telehealth Service Providers and Telemedicine Today. (Lowes, Robert). “One-fifth of all telemedicine activity occurs in prisons, according to a survey by the Association of Telehealth Service Providers and Telemedicine Today magazine. By connecting inmates to caregivers electronically, correctional facilities are spared the expense- and hazards-of transporting prisoners to doctors' offices and hospitals.” (Lowes, Robert). This provides safer conditions for clinical providers to see inmates without risking their lives. This
survey did not provide any other results other than how often it is used throughout the correctional facilities. It does provide insight and other potential services Indigo Health Partners may be able to use to expand their telemedicine services in the future.

REACH is a telemedicine software company, the same software company Indigo Health Partners use, surveyed 390 different U.S. health care professionals in 2009. Each professional had varying experiences with the use of telemedicine. This survey found that “96% of respondents said improving patient outcome was a top objective in developing telemedicine programs, according to the survey. Increasing patient convenience (87%) and improving patient engagement (86%) also rated highly. Other objectives included providing remote and rural patients with access to specialists (83%) and improving leverage of limited physician resources (81%). Percentages do not equal 100% because respondents could choose more than one objective” (Gallegos, 2016).

This study also asked a question regarding reimbursement, similar to the question the researcher at Indigo Health Partners asked. Reimbursement ranked as the top barrier to telemedicine. Respondents rated private plan payment as the No. 1 challenge (38%), followed by Medicare reimbursement (36%) and Medicaid reimbursement (36%). Electronic medical record in capabilities and liability risks also ranked as primary challenges” (Gallegos, 2016). Reimbursement and malpractice issues are some of the topics mentioned in Indigo Health Partners Telemedicine Satisfaction survey as well.

Centers for Medicare & Medicaid Services (CMS) also conducted a survey on telemedicine to 25,000 patients across the United States. In a memorandum statement written by Thomas Hamilton from CMS to the different State Survey Agency Directors they mentioned
PHYSICIAN SATISFACTION TELEMEDICINE

their findings. They did not provide statistical data but an overall synopsis of the data.

“Telemedicine has great potential to expand availability of specialty care services, including emergency medicine services, to rural populations. However, misconceptions about CAH CoP and EMTALA requirements may cause unnecessary concerns about, or create barriers to, using telemedicine” (Hamilton, 2013).

The World Health Organization conducted a global telemedicine study in 2009. They sent surveys to thousands of healthcare facilities worldwide. Their findings determined that 25% of the countries that responded used telemedicine. Of that 25% only 20% stated that the service is fully functioning and had been implemented. In both, developed and developing countries, there were high satisfaction scores among the clinical providers. “Telemedicine applications have successfully improved the quality and accessibility of medical care by allowing distant providers to evaluate, diagnose, treat, and provide follow-up care to patients” (World Health Organization, 2010). It is important for Indigo Health Partners to be up to speed on the latest, greatest technology that telemedicine has to offer based on their patient population.

The University of Michigan also conducted a study regarding “Telemedicine and Doctor Patient Communication” (Miller, 2001). In this study, there were 38 different individual studies. “Six were surveys of provider and community attitudes; 21 were post-encounter surveys of participants in a medical consultation; and 11 were qualitative analyses of behavior in a medical encounter. Twenty-one of the 38 investigations originated in the USA, six in the UK, four in Australia, three in Norway, two in Canada, one in Finland and one in Sweden” (Miller, 2001). Combined, it totaled to a 213 results. The study concluded that 80% of the 213 responses favored telemedicine. The study also did state that “further research is necessary if the nature and content of the communication process are to be fully understood.”
British Journal of Healthcare Computing conducted a nationwide survey of 4,000. They found that even though the telemedicine, wearable technology, and even phone apps are in plenty it is only being used by 17% of the respondents. They found that there is plenty of technology available that assists in tracking one’s health, including telemedicine, but it is not being optimized. The survey did not provide examples or explanations as to why this might be. Indigo Health Partners has been facing similar dilemmas. They have the telemedicine equipment but do not have enough clinical providers signing up for shifts to utilize its potential.

A survey, the most similar to this survey, was conducted in 2012 by three physicians in Saudi Arabia. Dr. El-Mahalli, Dr. El-khafif, and Dr. Al-Qahtani wanted to develop a survey that looked further into telemedicine and not just patient satisfaction. This survey, titled “Successes and Challenges in the Implementation and Application of Telemedicine in the Eastern Provider of Saudi Arabia,” targeted both nurses and physicians. (El-Mahalli, 2012). This survey’s purpose was to collect data regarding the different benefits as well as challenges of using telemedicine. This survey showed that 88.5% of respondents who had not implemented telemedicine thought it would be useful and were interested in learning more about this type of service. One of the sites the survey was sent to was in Lagos. It was sent to a telemedicine teaching school there. They found, “majority of respondents believed that [telemedicine] would enhance access to health care services (23.4%), improve quality of care (14.1%), and reduce health care expenditures (6%)” (Shittu, 2012). Overall the study determined telemedicine to be useful but even though the technology has been around for decades many individuals do not know enough about the infrastructure. They were not aware of how to implement it and one they did have it the equipment was not put on high priority to begin using right away due to training purposes.
A similar survey to that of the one in Saudi Arabia was sent out to 483 different clinical providers, at 63 different healthcare institutions, in 2011. This study was conducted in order to determine the different barriers providers had when using the telemedicine software (Neilson, 2016). These surveys were sent specifically to the Emergency Departments and Critical/Intensive Care Units of the different institutions. Similar to Indigo Health Partners they see patients in the Emergency Department and inpatient-only type settings.

Out of the 483 survey sent out 106 individuals responded creating a response rate of 21.9% (Neilson, 2016). They found that although the implementation process and training was not creating a barrier for providers there were a few other barriers discovered. “Licensing, costs for technology, and reimbursement for RTM (telemedicine) continue to impede progress’’ (Neilson, 2016). These barriers are mentioned through Indigo Health Partner’s survey as well to determine if the Administrative Team there can assist in process improvements.

A study was conducted on pediatric care providers regarding telemedicine and its barriers as well. This study consisted of a survey that was sent to 25 different, “current, former, and planned pediatric emergency telemedicine programs in the United States” (Uscher, 2014). In this survey, similar to the one sent to Indigo Health Partners, the providers were asked to decide what the major barriers were in telemedicine. Unlike the previous study published in The Journal of Telemedicine and E-health, this study found reimbursement and credentialing/licensing were far less significant to pediatric providers using telemedicine. They did, however, find that the telemedicine equipment to be more of a cultural issue. They thought that it was better to see pediatric patients face-to-face rather than through telemedicine technology. They also found that by seeing patients both face-to-face and through telemedicine it disruptive their workflow by having to transition from each.
The last study for this Literature Review looks at a study done by the Journal of Telemedicine and Telecare. This study surveyed physician’s overall attitudes towards telemedicine type of care. This study was conducted in Milan and a survey was sent to 2,987 different physicians and had a response of 361 12% response rate (Rogove, 2012). The majority of the responders agreed with the statement that telemedicine had the opportunity to create better quality care for patients by expanding accessibility and saving time by being able to see patients faster. The study also determined that there is low interest by higher-seniority physicians. They determined that this was mostly likely due to depending on technology as the source of seeing a patient.

This research study differs slightly from studies mentioned above in that Indigo physicians see only patients in inpatient type settings, specifically hospitals. Unlike the majority of studies discussed in the Literature Review, Indigo Health Partner physicians see a variety of conditions being that they are located in a hospital and practice inpatient care. Their patient population is much more diverse. Severity, acuity, and illness vary from patient to patient for Indigo providers. The hospitals in which these providers are practicing have an extensive IT department that offer 24/7 assistance. The acuity of the patients is higher than those mentioned in many of other studies. Many patients in the hospital experience comorbidities as well. Overall, the portions of all of the literatures discussed are applicable to this study. They discuss many of the benefits and barriers that telemedicine has for providers which is ultimately what this study is looking to understand.
Chapter Three discusses the type of research that was conducted and the methods in which the research has been collected. Physician satisfaction with telemedicine surveys are not very popular as the technology is still advancing and many organizations do not offer it yet. However, Indigo Health Partners has taken on this service beginning in 2014. In order to collect data regarding the physician’s satisfaction with telemedicine and what can be done to increase involvement to fill telemedicine shifts, a survey was sent out. There are no previous measures or data present in this specific organization. No studies, program evaluations, or research have been done previous to this so there was no benchmarking available. The data was new and is available to be used in future data collections. It can be used as a benchmark for the organization to base their processes and implementation of telemedicine programs off of.

Data Collection Approach and Procedures

Data was collected from physicians specifically through a survey with both the providers that use the telemedicine technology and providers that do not use the technology. The purpose of collecting this information was to better understand any tribulations in the onboarding of a telemedicine provider, credentialing process, and operating the telemedicine software. The data provided information that can be used in order to increase interest in the telemedicine shifts to reduce the current staffing crisis the organization has for these shifts.
Data Collected

In order to receive the most responses from the survey it was sent through their organization’s email and also available in paper form in hopes to get as many responses back as possible. The survey was to 100 providers located throughout Michigan in the Indigo Health Partners system. This number was determined based on the number of physicians that were currently working for the organization and had been working there for at least one calendar year. Multiple sites were.

The survey that was sent contained Likert scaled-questions. There was also a comment box available for any explanations providers felt that they should share. Since Indigo’s physicians participate in many surveys throughout the year that deal with patient care, performance appraisals, and hospital specific content, this survey was relatively quick to answer in hopes of receiving the highest amount of responses back.

All questions were scaled questions that involve the telemedicine practice as a whole in hopes to understand how comfortable the telemedicine users feel operating the software, accessing information online, credentialing processes, patient safety, malpractice, and even reimbursement was addressed.

Data Analysis

As mentioned in the introduction, data collection was from a survey that was available both electronically as well as a hard copy. There were zero providers that utilized the hard copy version of the survey. All responses came electronically through the Survey Monkey link provided to them in the email that was sent to them. There were fifty respondents that completed the survey. The option to skip questions was available so there are not fifty responses on each
question in the survey. The target population was all of the currently employed providers at
Indigo Health Partners. This opportunity has allowed the organization to get feedback from those
users that work with the technology. By sending the survey to these providers it has assisted in
making sure that data collected was the most relevant and reliable data that exists. This is
especially true in the healthcare setting.

The submission date for these surveys to be completed was within twenty-one days (three
weeks) after the original survey was sent. The initial email requested that the survey ideally be
completed within seven days of the initial email. A reminder email was generated a week after
the initial email that stated the remaining time they had left to complete and submit the survey.

Many of Indigo’s physicians work seven days straight and then have seven days off. The
time span of twenty-one days or three weeks was so that they had sufficient time to complete the
survey regardless as to if they were working or not. The surveys were developed through an
outside website that they all had access to at any computer with internet access. The website that
was chosen was Survey Monkey. The link, as mentioned above, was provided in the emails that
were sent to them to make it easy to access.

The hardcopy surveys were available for anyone that wished to do a hard copy form. The
physicians were notified to place hardcopy surveys in a secured envelope and place them in the
Indigo inter-office mailbox at the Administrative Office with a label that identified it as
confidential. Both emailed and hard copy surveys had a cover letter that explained the survey’s
purpose, data that was to be collected, where it would be submitted, and also suggested that the
respondents provide their name but will not require it. This option of displaying their name on
the surveys allowed the researcher to be able to reach out to them if any further clarification was
PHYSICIAN SATISFACTION TELE MEDICINE

needed. Ultimately, allowing the researcher to get the best understanding as to what issues they have experienced.

The hard copy versions of the survey had the same twenty-one day response time period. These were not utilized. Everything was completed electronically by the providers. Providers did not submit any surveys with their names on them either. All surveys were done anonymously so the researcher was not able to communicate with individuals separately for further clarification on responses.

Proposed Approach for Data Analysis and Synthesis

Collecting data from physicians provided intriguing information. The administrative members see only one side of the spectrum as do the clinical providers that use the technology. The administrative members do not use telemedicine technology; they simply work on implementing it. These administrative members may not know how patients receive the information or the day-to-day issues that may be occurring. Since the clinical providers do not set-up the telemedicine software they are able to provide feedback that the administrative team can use in the future to make the transitions easier for all.

The researcher developed a survey through Survey Monkey’s website. Once the data was compiled the researcher analyzed the data through descriptive analysis. Descriptive analysis was beneficial in this survey because there were multiple variables as to why there is low interest in telemedicine shifts. By using this type of analysis it was able to provide information on multiple, complex, questions and assisted in determining the respondent’s opinions towards the topic. The Likert scaled questions also assisted in the rating scale helped in determining the recommendations made in Chapter 5. The feedback was also presented to the administrative
members at Indigo Health Partners in hopes of developing a solution to the staffing crisis by addressing the issues the data has discovered existed.

Methodological Limitations

The largest limitation in this study had been the organization and its providers receive an overwhelming number of surveys. Also due to the providers’ busy schedules, they may not find the time or feel the need to respond. The researcher did send an organizational email in advance making them aware of the survey that will be populated and sent to them. The population size is also small. There are only 100 providers at Indigo Health Partners. The number of providers that have used telemedicine is even less than that. By sending the email with the survey to the entire Indigo organization, not one specific location, it allowed the researcher to get the largest return of responses. The researcher is determined to present the information in the most accurate way to correctly depict the overall census of satisfaction with telemedicine.

Another limitation is that there has been no previous data collected from this organization that involve physicians’ satisfaction specifically with telemedicine. Additionally, there is limited information available from other organizations. Many of the physicians that have been using telemedicine are also relatively new to the process and may not have had much experience with the software. This is another limitation because they may not know exactly the advantages and disadvantages at this time.
Chapter 4

Data Analysis

Introduction

The data collected through a survey to the providers at Indigo Health Partners was a tremendous help in answering the primary research question of: “What Indigo Health Partners Administrative Team can do to increase satisfaction in telemedicine in order to fill the numerous, vacant, shifts that are available?” Ten out of sixteen questions in the survey addressed the overall questions that are listed in Chapter 1. They were all multiple choice, scaled, questions which allowed individuals to select one answer that they found to be the most accurate. The Likert scaled questions focused solely on the credentialing processes, scheduling, connectivity issues, and reimbursement.

Question 4 addressed comfortableness with technology, Question 5 addressed night shift coverage (the hardest shift to fill), Question 6 addressed interest in telemedicine, Question 7 addressed the ease of the credentialing process, Questions 8 and 9 addressed the quality of care in seeing patients face-to-face versus “seeing” them virtually. Question 12 discussed different protocols when using telemedicine at different hospitals. Questions 13 and 14 addressed reimbursement and connectivity issues. The last question, Question 16 asked them, “What do you see being the biggest challenge with telemedicine?” This question provided them a chance to select more than one answer but based on the number of responses made on this question it is safe to assume that each individual chose only one answer.
Each question was examined individually and listed below. Every question is shown in a chart as well as a brief description after each question to provide additional information. The purpose of this is to provide a better overall understanding and comparison of the data.

**Question 4:**

How comfortable are you with using technology: (computers, software, EMR, electronic billing etc.)?

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Comfortable (1)</td>
<td>35</td>
</tr>
<tr>
<td>Somewhat Comfortable (2)</td>
<td>13</td>
</tr>
<tr>
<td>Not Comfortable (0)</td>
<td>2</td>
</tr>
<tr>
<td>Avoid Using (4)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

Table 1: Telemedicine Satisfaction Survey Results

Table 1 shows how comfortable providers are when using all different types of technology in general. Thirty-five out of the fifty (70%) that answered this question selected “very comfortable” when responding to this question. Thirteen (26%) responded with a neutral response stating they are “somewhat comfortable” when using technology. Two (4%) responded saying they are “not comfortable” when using technology. Lastly, zero responded with stating they “avoid using” technology.
The data shows that there was an overwhelming response in the “Very Comfortable” category. This means that 70% of the providers feel as if they know technology very well and are comfortable using different types of technology. This is important for Indigo Health Partners administrative team because it gives them an idea on how much training the majority of the providers may need based on their comfort levels with different forms of technology.

**Question 5:**

![Survey Results Chart]

**Table 2: Telemedicine Satisfaction Survey Results**

Table 2 has quite a broad span of responses. The data displayed in this table discusses providers’ willingness to work nights if they could do so via telemedicine. Night time staffing is
one of the biggest challenges Indigo Health Partners has. Currently there are only three
nocturnist physicians and two nocturnist mid-level providers.

As shown in this table, out of fifty responses over half of the respondents (56% or 28
individuals) said they either strongly agreed or agreed that they would be more willing to pick up
night shifts if it meant they could do so via telemedicine. Ten of the fifty (20%) said they are
undecided. Lastly, a combination of twelve respondents (24%) disagreed or strongly disagreed
stating they would not be willing to pick up night time shifts via telemedicine.

Since nighttime staffing is the biggest challenge for Indigo Health Partners, finding out
that twenty-eight individuals would be willing to cover shifts at night if they could do so
virtually via telemedicine is extremely helpful. That would cover one shift every night for almost
an entire month at a time without someone having to do more than one shift. It would also allow
the full-time nocturnist that was hired in to do strictly night shifts vacation time and additional
days off as needed.
Physician Satisfaction Telemedicine

Question 6:

Table 3: Telemedicine Satisfaction Survey Results

Table 3 provides information regarding the credentialing process and also asks the providers if they would be interested in being credentialed in telemedicine if they are not already. There is quite a span of responses to this question. The majority of the responses are located in “I am not credentialed but might be interested” answer choice. This answer has 32% or 16 individual responses out of 50. 22% (11 respondents) are either already credentialed or in the process of becoming credentialed. 26% or 13 individual responses are not credentialed but are
interested in becoming credentialed. Four individuals (10%) are undecided and six individuals (2%) are not interested.

This data provides insight for Indigo Health Partner’s Administrative Team on the interest of becoming credentialed. The majority of the providers are interested in becoming credentialed in this service. Prior to this data many members of the administrative team thought that there was low interest in the telemedicine shifts; however, based on this data that does not seem to be true.

**Question 7:**

**Table 4:**

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>22.22%</td>
</tr>
<tr>
<td>Agree</td>
<td>13.89%</td>
</tr>
<tr>
<td>Unsure</td>
<td>36.36%</td>
</tr>
<tr>
<td>Disagree</td>
<td>5.56%</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>0.99%</td>
</tr>
</tbody>
</table>

**Table 4:**

Telemedicine Satisfaction Results
Question 7, Table 4, examines the process of being credentialed. Since there are a number of providers that have taken this survey and are not credentialed (may be in the process of being credentialed) the data shown is not surprising. There are an overwhelming number of responses in the “unsure” answer choice. Twenty-one of the thirty-six individuals or 58.3% are unsure of the telemedicine credentialing process. Eight respondents (22%), which are credentialed in telemedicine, strongly agreed that the process was easy. Five respondents (13.89%) agreed that the process was easy and two respondents (5.56%) disagreed that the process was easy.

A number of respondents skipped this question, assuming they have not been through the process and are unsure of how it is done. This question and question six had the most “unsure” responses. It is important for Indigo Health Partner’s administrative team to educate the providers, both interested in telemedicine and not, on the credentialing process. If more providers understood the steps of this process, they may have been more apt to want to offer this service to patients.
Question 8, Table 5, also has a wide disbursement of responses. The majority of the respondents, 31% or 14 of 44 individuals, were undecided if seeing patients virtually through telemedicine was as fitting as seeing patients face-to-face. This data, along with the previous two questions’ data, are not unexpected being that the majority of providers that completed the survey have not had experience in telemedicine.

27% or 12 individuals disagreed and 4% (2 individuals) strongly disagreed with this statement. Collectively 15 individuals (36%) either strongly agreed or agreed that seeing patients
through telemedicine was just as fitting as seeing them in person. The median of this data is 3.00, the mean is 2.75 and the mode is 3.

**Question 9:**

There are few times that a provider has to be face-to-face with a patient to understand their plan of care.

![Graph showing distribution of responses](image)

**Table 6:**

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree (1)</td>
<td>26.05%</td>
</tr>
<tr>
<td>Agree (2)</td>
<td>26.05%</td>
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<tr>
<td>Undecided (3)</td>
<td>13.90%</td>
</tr>
<tr>
<td>Disagree (4)</td>
<td>14.90%</td>
</tr>
<tr>
<td>Strongly Disagree (5)</td>
<td>2.00%</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 6, question 9, provides similar data as Table 5. Question 9 asked providers if they felt that they needed to actually see a patient in person to understand their plan of care. Similar to the previous table there is a wide range of responses. Collectively the majority of responses are in the strongly agree and agree answer choices. There is also a high response rate in the “disagree” answer choice. 18 of 50 respondents (36%) felt that they strongly agree they do not need to see a patient in person to understand their care plan. 13 (26%) agreed with this statement.
6 were undecided (12%). 12 (24%) disagreed and 1 (2%) strongly disagreed. The median of this data collection is 2.00, the mean is 2.30, and the mode is 1.

**Question 12:**

I am comfortable with knowing the different hospital protocols in order to see patients remotely from multiple, different, healthcare facilities during my telemedicine shift.

**Table 7: Telemedicine Satisfaction Results**

Question 12, Table 7, asks the question of whether or not providers feel comfortable knowing multiple hospital protocols. During a telemedicine shift, they can see patients from different facilities. Each healthcare facility may have different protocols for the delivery of care. Currently, they work at one facility and very rarely travel to different sites for shifts. Over half of the providers felt like they would not feel comfortable knowing different protocols for different hospitals. 51%, 23 of 45 respondents, felt as if they would not be comfortable knowing and
following different hospital protocols all during one shift. 15%, 7 combined respondents, felt that they would feel comfortable knowing the different protocols. 33%, 15 respondents were undecided.

This is important information to take into account when recruiting for telemedicine shifts. If there are enough patients at one facility that could be seen virtually by a provider then they potentially may not have to know multiple protocols for different healthcare facilities. This would be important information to share with the providers because it could elevate this barrier and potentially make them more comfortable for the telemedicine shifts.

**Question 13:**

Is the reimbursement for seeing patients via telemedicine the same as a face-to-face visit?

<table>
<thead>
<tr>
<th>Answer Choice</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes – the same reimbursement</td>
<td>23%</td>
</tr>
<tr>
<td>More reimbursement for telemedicine</td>
<td>25.87%</td>
</tr>
<tr>
<td>Somewhat the same</td>
<td>28.38%</td>
</tr>
<tr>
<td>Less reimbursement for telemedicine</td>
<td>70.97%</td>
</tr>
</tbody>
</table>

Total: 31

Basic Statistics

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>4.00</td>
<td>4.00</td>
<td>3.65</td>
<td>0.92</td>
</tr>
</tbody>
</table>
Table 8: Telemedicine Satisfaction Results

Table 8 provides information on telemedicine reimbursement. 70%, 21 of the 31 respondents, said that there is less reimbursement for services done through telemedicine than face-to-face. 25%, 8 respondents said there was somewhat the same reimbursement. Zero respondents said there was more reimbursement and 3% (1 respondent) said there was the same reimbursement. The median for this data is 4.00. The mean is 3.65 and the mode is 4.

Currently, reimbursement for telemedicine is not the same state by state or even insurance by insurance. “There is no single widely-accepted standard for private payers. Some insurance companies value the benefits of telehealth and will reimburse a wide variety of services. Others have yet to develop comprehensive reimbursement policies, and so payment for telehealth may require prior approval. Likewise, different states have various standards by which their Medicaid programs will reimburse for telehealth expenses” (Health Resources & Services Administration). Depending on the patients insurance, it may not be a covered service. The response to this question is heavily weighted in the less reimbursement answer choice.
Question 14, Table 9, discusses connectivity issues with telemedicine. The majority of responses said they are unsure if there are connectivity issues. 57%, 24 out of 42 responses, said they were undecided. This could potentially be because they have not done a telemedicine shift before or it may vary from site to site, depending on the hospital’s different information systems. 26% or 11 respondents felt that there have been connectivity issues when using telemedicine. 16% disagreed that there were no connectivity issues when using telemedicine. 0 individuals strongly disagreed.
In Chapter 2, there were multiple different studies that mentioned connectivity was the majority of their issues. Unlike those studies this one seems to have more individuals unsure. The others that are familiar with telemedicine also agreed that connectivity is an issue much like the other studies referenced.

**Table 10:**
Telemedicine Satisfaction Results

Question 16, Table 10, shows a wide range of data. Question 16 asked providers to choose one answer choice that they felt was or would be the biggest challenge with telemedicine. Unlike the studies mentioned in Chapter 2, connectivity did not have the highest response rate.
The majority of providers said that “losing face-to-face interaction with patients” would be the biggest challenge with telemedicine. An overwhelming 56%, 27 respondents, felt this way. Malpractice fears and patient safety came in second with 12% (6 respondents each), then connectivity with 6% (3 respondents). Training was second from last with 4% of the responses (2 respondents). Different shifts, reimbursement, and other were the least selected answered. Each answer choice made up 2% of the data and 1 individual response each.

After analyzing this information, one can conclude that there is still a lot of discussion and resources that need to be put into this service. There are a number of providers that are interested in doing the telemedicine shifts but also a number of barriers to work through before signing up for these shifts. There are a lot of individuals that are unsure of the credentialing/licensing process, hospitals protocols, and have malpractice fears. Overall, these items could be addressed to the providers by the administrative team to hopefully diminish the barriers and make the providers feel more comfortable in carrying out this type of care.
Chapter 5
Summary, Conclusions, Recommendations

Introduction

The purpose of this research was to determine why there are limited clinical providers signing up for telemedicine shifts. It was developed in hopes to get a better understanding of the different limitations telemedicine has and the perception Indigo Health Partner’s physicians have which have seemed to show limited interest in telemedicine. It was also developed so that the administrative team members who implemented the telemedicine services, but do not use the telemedicine equipment, received insight on what they could do to assist to increase interest in telemedicine shifts during their current staffing crisis. There was one primary research question and four supporting sub-questions developed to help answer these pending issues. They are listed below:

Primary Question: “What is Indigo Health Partners physician satisfaction with telemedicine services and what can the administrative team members do to increase satisfaction to fill these shifts?”

Sub-questions:

1. “Is the credentialing process lowering the interest providers have in signing up for telemedicine shifts?”
2. “Are there any technology barriers between physicians and the telemedicine equipment?”
3. “What other issues does telemedicine create for physicians? Are these issues the organization can assist in eliminating or alleviating?”
4. “Would more providers sign up for telemedicine shifts if they were still able to see patients face-to-face?”

Chapter 5 provides an overview and summary of the data collected for this study. It summarizes the data collected and displayed in Chapter 4 along with references in the literature review in Chapter 2. It also provides a program evaluation through recommendations to Indigo Health Partner’s Administrative Team. The recommendations are to assist the administrative team in making any process improvements needed to potentially increase the interest of telemedicine shifts.

Summary

In this summary an overview of the literature review in Chapter 2 will be discussed. It provides important information that relates to this study. It also includes as well as references the data collected and displayed in Chapter 4.

Chapter 2 Literature Review and Chapter 4 Data Collected

In Chapter 2, the Literature Review portion of this paper, it began by discussing a brief history of telemedicine. Surprisingly, telemedicine has been around for decades but up until recently it has only made its way into healthcare in the form of virtually seeing patients through the telemedicine software. The majority of studies the researcher has found were based on telemedicine in medical office practices or used in specific medical specialty type cases (pediatric, Intensive Care Units, Cardiovascular.) However, information was able to be used from these different types of studies that still related to Indigo Health Partners and their current telemedicine situation.
The information in Chapter 4, Data Analysis, was collected from a 16-question survey. This survey was sent to all 100 Indigo Health Partner clinical providers that are current employees and have been with the practice for at least one year. The survey consisted of Likert scaled questions and provided comment sections on each one. The comments sections were not utilized. Many providers chose to skip questions if they were unsure of how to respond and did not provide a comment explanation. The last question allowed providers to choose more than one answer. It asked providers what they thought of being the biggest issue with telemedicine.

**Major and Summary of Findings – Chapter 2 and Chapter 4**

The Literature Review found a number of different benefits and barriers when using telemedicine. Each study mentioned both having positives and negatives to using telemedicine. The majority of the studies said that technology (connectivity, equipment, software) tended to be the biggest barrier resulting in lower physician satisfaction with telemedicine. Many of the clinical providers did not have a strong internet connection either where they were conducting telemedicine from or from where the patient was located (their home, rural hospital, etc.) The size of the equipment was also mentioned as a barrier in the study conducted in Greenland (AMD Telemedicine).

In Chapter 4, connectivity and equipment usage is addressed in questions 4 and 14. These questions also addressed sub-question two for this study titled, “Are there any technology barriers between physicians and the telemedicine equipment?” Questions 4 and 14 asked providers about their comfort levels with technology in general. As well as if they personally experienced connectivity as an issue when using telemedicine software. Unlike the information found in the literature reviews, 70% Indigo Health Partner providers said that they were
comfortable with using technology and 24% were undecided when asked if connectivity had been an issue with telemedicine. This also addressed the second sub-question posed in this study:

Question 13 focused on reimbursement for telemedicine shifts. Similar to the study conducted by physicians in Saudi Arabia reimbursement rates were much lower for telemedicine services and seen as one of the bigger barriers. However, the pediatric physicians surveyed at other facilities rated reimbursement lower on the list. Being that they had practiced it independently and were being supplemented other ways to make up for the lower reimbursement.

There were also three questions regarding the credentialing/licensing process in the Indigo Health Partners survey and two questions regarding reimbursement. These questions also addressed the first sub-question for this study, “Is the credentialing process lowering the interest providers have in signing up for telemedicine shifts?” In the literature review, Telemed JE Health found that in Saudi Arabia licensing and costs was the highest issue for physicians. In question 7 of this survey, Indigo Health Partners found that the majority of providers (58%) were unsure of the credentialing process. 35% found the credentialing and licensing process to be easy. Question 6, asked providers if they had gone through the telemedicine credentialing process and if they were interested in it. The majority, 32% had not gone through the process but were interested. Those that went through the process (22%) found it to be easy.

Questions 8 and 9 discussed quality of care when seeing patients virtually versus seeing them face-to-face. These questions also addressed the fourth sub-question for this study, “Would more providers sign up for telemedicine shifts if they were still able to see patients face-to-face?” Similar to the studies mentioned in the literature review the majority of providers at Indigo
Health Partners found telemedicine was just as fitting to see patients as face-to-face. 62% either agreed or strongly agreed that there are few times providers need to be face-to-face with a patient to understand their plan of care. Although Indigo Health Partner providers found telemedicine shifts to be just as fitting (in terms of patient quality) as face-to-face visits; question 16 of their survey found that the majority of providers were most concerned with losing face-to-face relationships with patients.

The biggest challenge and barrier that was found in Chapter 4 was the discomfort Indigo Health Partner providers felt in knowing the different cross-hospital protocols. Since providers are credentialed at multiple hospitals they can see patients at different hospitals all at once during one telemedicine shift. Of course, this is dependent upon the scheduling. Question 12 asked providers if they felt comfortable knowing all of the different protocols and policies at each hospital. 42% disagreed with the statement “I am comfortable with knowing the different hospital protocols in order to see patients remotely from multiple, different, healthcare facilities during my telemedicine shift.” This question was not portrayed in any of the studies conducted in the literature review. One assumption for this is that the providers in the studies mentioned work from one medical office or one department in a single health care entity. Indigo Health Partners provide staffing at multiple, different, healthcare facilities.

Question 16 asked providers what they found to be the biggest challenge in telemedicine, overall. The question also addressed the third sub-question, “What other issues does telemedicine create for physicians? Are these issues the organization can assist in eliminating or alleviating?” The top three answers included 56% losing the face-to-face interactions with patients. Second and third place were a tie. They included malpractice fears and patient safety. In the literature review the pediatric providers surveyed in one study found similar barriers. Their biggest fear,
same as Indigo Health Partners, was the cultural impact it had on patients. They lost the face-to-face interaction with their patients by seeing them virtually. The same care was being done but it was not in respect of the same culture.

Conclusions & Recommendations

Conclusions

Throughout the literature review and the data collected it is clear to see that there has been major emphasis on patient safety and culture. Through these findings the potential barriers Indigo Health Partner providers have are evident. This helps in determining what Indigo Health Partner’s Administrative Team can do to answer the primary question of “What is Indigo Health Partners Physician Satisfaction with Telemedicine?”

After reviewing the questions in this survey the researcher has concluded that there are three main areas Indigo Health Partners can focus on and improve to bring more interest to the telemedicine shifts. This would in turn eliminate the staffing crisis. Overall, Indigo Health Partner providers found few issues with connectivity issues. As long as the equipment is maintained and utilized so that providers are able to be current with any upgrades this should continue to not be an issue. They also were either unsure of the credentialing process or found it to be easy to complete. The three biggest areas of concern were: malpractice fears, patient safety, and losing the face-to-face interaction/relationship with patients.

Recommendations

Based on the data collected for this survey and the information found in the literature review the researcher has four different recommendations for Indigo Health Partners
PHYSICIAN SATISFACTION TELEMEDICINE

Administrative Team. These recommendations may be found as helpful when reviewing the telemedicine program. It information may also be helpful for benchmarking purposes that may be conducted to evaluate this program in the future. The recommendations for this program include:

1. Provide communication to providers regarding what exactly telemedicine shifts entail. Currently there are an overwhelming number of physicians at Indigo Health Partners that feel they will lose their face-to-face interactions and relationships with patients if they choose to sign up for telemedicine shifts. By signing up for telemedicine shifts the providers have the option to do one shift a month, one week a month, or an entire month. The schedule is posted monthly and they have the flexibility of creating their own telemedicine schedule.

   There seems to be some communication barriers between Indigo Health Partner’s Administrative Team and the clinical providers. The providers seem to be assuming that if they sign up for telemedicine shifts they will not be able to see patients face-to-face as well. This is not the case; they can actually create their own schedule on what works for them. The recommendation the researcher has to eliminate this issue is to have the administrative members visit each of the sites the providers are located at and explain how it works. When the program was implemented there were email communications sent out but it is apparent that many providers did not see this communication. They may also still have questions regarding the scheduling process and the email that was sent out.
2. *Insure that the malpractice insurance covers telemedicine type services.* The second biggest fear and hesitation providers have at Indigo Health Partners is malpractice fears. The researcher’s second recommendation would be to look into the malpractice insurance policies the providers have and the company has to see if telemedicine services is covered. If it is not, then it would be wise to look into malpractice insurance policies that do cover telemedicine services. This is especially true if the company continues to use and expand their telemedicine services that they offer.

3. *Continue to evaluate the telemedicine program and patient safety.* The other top concern by Indigo Health Partner providers is patient safety. The researcher suggests sending out patient satisfaction surveys to patients that have had telemedicine services. Currently, the organization does not send out satisfaction surveys to patients. By sending these surveys out to future patients it will provide feedback from their point of view.

4. *24-hour telemedicine service line.* The researcher also suggests maintaining an open line of communication to telemedicine providers in case there is any issues they run into during a telemedicine shift. This 24-hour service line would assist providers in a technology or connection issues. Although connectivity issues were not seen as a huge barrier for Indigo Health Partner providers it may provide them comfort in knowing that there is backup for any technological issues that may arrive.

**Final Suggestions**

The recommendations listed above will require nominal resources from the organization to implement. The largest cost, the telemedicine software and equipment has already been
implemented. These recommendations will only require a few additional steps for the Administrative Team.

It will require the Administrative Team to reach out to providers to communicate how telemedicine scheduling occurs. This will allow providers to ask any questions or discuss any concerning issues they may have that may not have been addressed in this survey. That feedback, along with the feedback from the patient satisfaction surveys that were recommended, will provide the administrative team with additional information on how the program can be improved for the future. It is also important to communicate malpractice and telemedicine. It is crucial to address any fears that providers regarding malpractice and telemedicine. Explaining whether or not their malpractice insurance covers these types of services and what can be done.

The 24-hour service line recommendation may take some time to implement. However, the researcher finds that this is important. The equipment and software is relatively new now. It currently has few issues. As the equipment is utilized and used more there is a greater potential for it to fail. This is the main reason as to why it is important to have this service line available to providers when needed. It could be set up through the hospital where the telemedicine service is being provided. Their IT Department could be trained and potentially not require any additional staffing or resources from Indigo Health Partners.

The researcher for this study sincerely hopes that Indigo Health Partners has found this study to be intuitive and that the program evaluation will assist them in their telemedicine staffing crisis. This data and the recommendations are hoped to be used in further benchmarking as well. The researcher also hopes that the Administrative Team members at Indigo Health
Partners found the data collected to be beneficial and that it will assist in further improving their telemedicine satisfaction providers have.
References


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*Healthcare Leadership Review*, vol. 35, no. 6, June 2016, p. 16,


Stalferse, J. et al. "Satisfaction with telemedicine presentation at a multidisciplinary tumor meeting among patients with head and neck cancer."


Appendix A:

Date: 08/26/16

Alicia McCurdy
3148 Hunters Ridge Drive
Traverse City, MI 49684

Dear Alicia,

I have reviewed your request to conduct a research project involving the providers at iNDIGO Health Partners and the survey and data that will be used. I feel that this project will be beneficial to iNDIGO Health Partners. The project and survey will discuss “Physician Satisfaction with Telemedicine.” You have my permission to collect, distribute, and submit this data for this project.

The following stipulations should be observed:

Share final survey results and analysis with VP Clinical Program Development and Chief Clinical Officer

If you have any questions regarding this letter of approval, please contact me at dladd@indigo247.com or 231-313-0081

Sincerely,

Daniel F. Ladd, PA-C, DFAAPA

Chief Clinical Officer
Appendix B:

From: Prout, Christina Leigh  
Sent: Friday, September 9, 2016 3:48 PM  
To: McCurdy, Alicia E  
Cc: Kelley, Patricia A; Zeh, Colleen Marie  
Subject: Research Review Application approval/A. McCurdy

Dear Alicia,

Your Research Review Application has been reviewed and approved. You may start your data collection. This approval will not expire as long as your topic and methodology remain unchanged. If your topic or methodology changes, please submit a new Research Review Application and supporting documents to your instructor by e-mail.

Please contact your instructor if you have any questions. Also, be sure to check with your instructor concerning the due dates for your project.

Good luck with your project. This is the only notification you will receive. Please keep a copy for your records.

Kim Gribben

Assistant Director, MSA Program

Christina Prout
Administrative Secretary Master of Science in Administration Program  
Rowe 222 | Central Michigan University | Mount Pleasant, MI 48859  
(: 989-774-6525 6: Fax 989-774-2575  
1-800-950-1144, ext. 6525  
*: prout1cl@cmich.edu  
8: Visit us online!

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Appendix C:

1. How long have you been practicing medicine?
   o Less than a year
   o 1-5 years
   o 5-10 years
   o 10+ years
   Comments:

2. What is your practice/specialty?
   o Inpatient
   o Pediatrics
   o Primary Care
   o Other

3. Please share your age.
   o 25-35
   o 35-45
   o 45-55
   o 55+

4. How comfortable are you with using technology: (computers, software, EMR, electronic billing etc.)
   o Very comfortable
   o Somewhat comfortable
   o Not comfortable
   o Avoid Using
   Comments:
5. Would you be more willing to work nights if you were able to do so remotely from your home via telemedicine?
   o Strongly Agree
   o Agree
   o Undecided
   o Disagree
   o Strongly Disagree
   Comments:

6. Are you currently credentialed to practice telemedicine? If not, are you interested in this option? Please explain.

7. The process of becoming credentialed in telemedicine was easy.
   o Strongly agree
   o Agree
   o Undecided
   o Disagree
   o Strongly Disagree
   Comments:

8. When seeing patients telemedicine is just as fitting as seeing patients face-to-face.
   o Strongly agree
   o Agree
   o Undecided
   o Disagree
   o Strongly Disagree
   Comments:
9. There are few times that a provider has to be face-to-face with a patient to understand their plan of care.

- Strongly agree
- Agree
- Undecided
- Disagree
- Strongly Disagree

Comments:

10.) On average how many patients do you see in the hospital (face-to-face) a 12 hour shift?

- 0-5
- 5-10
- 10-15
- 15-20
- 20+

Comments:

11.) How many patients are you able to meet with via telemedicine during a 12 hour shift?

- 0-5
- 5-10
- 10-15
- 15-20
- 20+

Comments:

12.) Is the reimbursement for seeing patients via telemedicine the same as a face-to-face visit?

- Yes – the same reimbursement
13.) What do you see as being the biggest challenge with telemedicine?
- Connectivity
- Training
- Malpractice fears
- Patient Safety
- The different shifts (more nights/weekends)
- Currently there are few policies in place to monitor
- Reimbursement
- Losing the face-to-face interaction with patients
- Other – please comment.

Comments: