The Impact of Telemedicine: Bridging the Gaps in Healthcare Delivery While Simultaneously Being Compliant with the Law

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ABSTRACT

The United States health care system is the most expensive in the world. In 2014, its annual health care spending reached nearly 3.8 trillion dollars (“Annual U.S. Healthcare Spending Hits $3.8 Trillion”). Despite the high health care costs, the United States has relinquished the title as world leader in healthcare when comparing health outcomes, quality, and efficiency amongst other nations. Health care leaders and professionals recognized these gaps; however failed to preemptively respond until after the Obama Administration passed the Affordable Care Act in 2010. The Affordable Care Act encourages healthcare goals of efficiency, quality, and cost effectiveness. The innovative technique of telemedicine can help meet these Affordable Care Act goals.

Through my research, my thesis will evaluate the current and potential use of telemedicine, specifically in the state of Indiana. I have analyzed the positive effect telemedicine has had on the delivery of healthcare. This technology is moving rapidly; therefore the law can’t keep up with these advances. The law is reactive rather than proactive which essentially is creating barriers with licensure, prescribing, reimbursement, and privacy regulations regarding telemedicine usage. It is essential that laws and regulations are fully developed before this innovative approach to healthcare can be the standard level of care in the United States.

“One of the things we’re doing to fuel more inventiveness, to fuel more private sector innovation and discovery, is to make the vast amounts of America’s data open and easy to access for the first time in history.”

-President Obama, May 9, 2014
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INTRODUCTION

Medical care and delivery is a rapidly transforming field due to evolving healthcare technology systems. In today’s society, doctor’s visits and procedures can be conducted through the phone, video, and computer programs. These advancements, have allowed doctors to perform medical diagnosis, consultations, procedures, surgeries, and treatments miles away from their patients. This type of delivery of health services is called telemedicine.

The prefix of “tele” derives from the Greek word “far” or “remote” (Salcido). Thomas Bird, created the word “telemedicine” in 1970 to describe a physician’s ability to examine distant patients through the receptiveness of telecommunication and technology (Salcido). Today, telemedicine is most prevalent in the specialty of Radiology and Emergency/Trauma Care; however, Table 1 illustrates that the Cardiology and Psychiatry sectors are increasingly utilizing telemedicine. (RUPRI Center for Rural Health Policy Analysis: Rural Policy Brief").

Telmedicine will continue to expand in various healthcare fields because this technology has improved quality, efficiency, and access to care.

<table>
<thead>
<tr>
<th>Department/Program</th>
<th>Overall n</th>
<th>%</th>
<th>Urban n</th>
<th>%</th>
<th>Rural n</th>
<th>%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiology (MRI, CT, EKG, EEG, Ultrasound)</td>
<td>744</td>
<td>15.7%</td>
<td>339</td>
<td>13.9%</td>
<td>405</td>
<td>17.7%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Emergency/Trauma Care</td>
<td>355</td>
<td>7.5%</td>
<td>153</td>
<td>6.3%</td>
<td>202</td>
<td>8.8%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Cardiology/Stroke/Heart Attack</td>
<td>323</td>
<td>6.8%</td>
<td>181</td>
<td>7.4%</td>
<td>142</td>
<td>6.2%</td>
<td>0.01</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>166</td>
<td>3.5%</td>
<td>88</td>
<td>3.6%</td>
<td>78</td>
<td>3.4%</td>
<td>0.06</td>
</tr>
<tr>
<td>Critical/Intensive Care</td>
<td>158</td>
<td>3.3%</td>
<td>86</td>
<td>3.5%</td>
<td>72</td>
<td>3.1%</td>
<td>0.05</td>
</tr>
<tr>
<td>Neurology</td>
<td>153</td>
<td>3.2%</td>
<td>106</td>
<td>4.4%</td>
<td>47</td>
<td>2.1%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Obstetrics/Gynecology/NICU/Pediatrics</td>
<td>151</td>
<td>3.2%</td>
<td>93</td>
<td>3.8%</td>
<td>58</td>
<td>2.5%</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Data Source: HIMSS Analytics.
Innovative telemedicine delivery systems have become more attractive to physicians and patients because it helps meet the Affordable Care Act’s goals of providing more efficient and quality care. Potential benefits to telemedicine include a reduction in medical care costs, expanded access to quality health care, and increased specialty knowledge amongst medical professionals. The positive achievements accomplished by telemedicine technology support an expansion in telemedicine usage in the future. Unfortunately legal barriers create challenges to further use and expansion. The law’s slow, regulatory structure encumbers the advancements of telemedicine. This prevents the practice of healthcare in the form of telemedicine from being capitalized throughout the United States. Despite these legal barriers, telemedicine has continued to progress in the forms of teleconsultation, telemonitoring, tele-education, and telesurgery.

**TYPES OF TELEMEDICINE**

The revolution that the nation’s health care system is facing has created a demand for innovation. Innovation coupled with telemedicine has the propensity to transform the nation’s healthcare. Already, telemedicine has been modernized into different forms and processes. Telemedicine embodies the ability to provide individuals access to quality healthcare regardless of their geographic location. In order to provide this care, telemedicine is progressing by finding other outlets to connect a specialized physician to a patient. Currently, Telemedicine can be classified into four scopes: teleconsultation, telemonitoring, tele-education, and telesurgery. In effort to understand how telemedicine expansion is causing legal barriers it is important to be familiar with the four scopes of telemedicine.

Teleconsultation is the largest, yet least complex component of telemedicine. This form of technology renders audio and visual communication between health professionals and patients. Fundamentally, teleconsultation transfers the expert to the non-expert. Technology
allows physicians to form a network by communicating virtually amongst one another. The patient has two options when electing this method, he or she can either engage in off-line or on-line consultations. Those who opt for off-line, or asynchronous teleconsultations, are not communicating in real time ("Tele-Consultation"). Instead, there is a lag in time between when the patient vitals are sent and when the physician responds to the reports. Customarily, patient information is delivered through various sources like email, forums, or telephones. During asynchronous teleconsultations, the doctor exams the patient’s information and then will diagnose the patient at a later time ("Tele-Consultation"). The delay between communications makes asynchronous teleconsultations the most effective for areas such as such as dermatology, orthopedics, and pathology ("Best Teleconsultation’s Theory Practice Model"). Some states are unaccepting of this delay and believe efficient consultations should be streamed live regardless of the situation. States that accept both on and off-line forms, typically utilize on-line consultations for situations where a patient’s condition is actively changing in areas such as urgent care and psychiatry. The technical term for on-line consultations, is synchronous teleconsultations ("Best Teleconsultation’s Theory Practice Model"). Figure one, provides a visual for when a patient would prefer on-line versus off-line teleconsultations. Both of these approaches, on-line and off-line, are used in another type of telemedicine, telemonitoring.

Figure 1: TELECONSULTATION'S THEORY PRACTICE MODEL:
Telemonitoring is a second area where telemedicine is emerging. The healthcare industry is faced with a disparity when comparing the number of physicians and patients. Telemonitoring is a component of telemedicine that minimizes this gap by providing home monitoring systems. This process requires telemonitoring devices within individual homes. Many home medical devices can be linked to a patient’s phone or computer. Telemonitors can issue automatic reminders for patients to take their medication; thus reducing disorientation and instability amongst patients. Information is then sent through the internet where it can be viewed in real time or off-line. This telemonitoring process allows patient information to be continuously updated, monitored, and sent to physicians and medical centers. Patients have the ability and access to supervise their own reports as well. This allows patients to regulate their health and assume the role of self-diagnosis. Diabetes, hypertension, cardiac, and pulmonary conditions are most commonly tracked by these devices (Paré, Mirou, Claude). Telemonitoring systems are the most popular amongst the Baby Boomer generation who are at the age where they are affected by these health issues. They often utilize this type of telemonitoring system to receive assisted living in the comfort of their own homes. Whereas telemonitoring allows conveniences for patients, tele-education, is most practical for the convenience of physicians.

Tele-education, the third form of telemedicine, is another area that is transforming healthcare delivery. Physicians are annually required to earn Continuing Medical Education, or CMEs. Throughout the United States, physicians complete over 8 million credit hours a year (Zollo). In the past, physicians had to attend physical lectures; however tele-education has allowed healthcare providers to take courses online and then receive credits by taking a web based exam (Zollo). This form of telemedicine not only is more convenient for physicians but it also allows them to spend less time traveling and more time focusing on patient care. Tele-
education uses components of teleconsultation to conduct academic presentations. This allows specialists to share their knowledge and skill with other physicians through virtual communication. Physicians can become better educated and precise in their jobs, benefiting the overall well-being of patients’ healthcare. Other benefits include a reduction in costs and absenteeism amongst physicians which is expressed in Table 2 (Zollo). The physician’s easy access to learning begins the cycle of more precise and quality care. Advancements with both tele-education and the other two forms of telemedicine have resulted in the adoption and prevalence of telesurgery.

Table 2: Cost of Telemedicine

<table>
<thead>
<tr>
<th>Table 1. Formula for Comparing CME Costs: Interactive Video vs. Travel to On-site Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual expenses</strong></td>
</tr>
<tr>
<td>Facilities cost</td>
</tr>
<tr>
<td>Coverage/loss of productivity (no. of days x no. of staff x hourly salary)</td>
</tr>
<tr>
<td>Travel</td>
</tr>
<tr>
<td>Speakers’ fees</td>
</tr>
</tbody>
</table>

A fourth type of telemedicine that is arguably the most advanced and unique form of telemedicine is telesurgery. Telesurgery combines the knowledge and process adapted by all other forms of telemedicine. Surgery can be performed regardless of a patient’s location. The most advanced form of telesurgery is the da Vinci Surgical System (Rassweiler Binder, and Frede). Every surgical maneuver conducted by the robot is under the control of the surgeon. The
surgeon’s hand movements are mimicked by the robot. The robot consists of four interactive arms, camera chips, and a touch screen data processor. The robotic arms are voice controlled and allow the robot a greater range of movement than a surgeon. One of the machine’s greatest assets is the flexibility of the wrist pivots (Rassweiler Binder, and Frede). Simultaneously, the surgeon makes his or her intricate movement by using the microchip as a virtual camera (“Frequently Asked Questions”). The camera is able to make images 3D, magnify, and continuously motion scan. This allows the surgeon to tailor his or her hand movements accurately. Additionally, the robot has a built in function to perform regular safety checks (Rassweiler Binder, and Frede). This high tech system allows enhanced surgical precision and control. The robot can currently perform minimally invasive surgeries; however the constant advancements to the robot make the robot’s surgical performances limitless in the future. It is important to note that the da Vinici Robot is an extension of the surgeon, not a replacement. In Indiana, there are 155 surgeons who have performed procedures with the da Vinci Surgical System ("Frequently Asked Questions").

In all four of these forms of telemedicine, telemedicine has been designed to substitute the classical in person interactions between patients and physicians. Telemedicine is an expanding field that is continually building upon its recent programs to become more advanced. All four forms of telemedicine are interrelated to one another. For instance, to receive the most effective results, telemonitoring will often work simultaneously with teleconsultations in order to give patients the highest quality of care. Telemedicine has a promising future of modernizing the healthcare delivery system and is making significant advancements in improving care, saving money, and maintaining many of the goals behind the Affordable Care Act.
BACKGROUND

Individuals across the nation find the concept behind telemedicine new and unfamiliar. Telemedicine may seem like a “new and confusing” idea; however after comparing the definition of telemedicine to telegraph it becomes evident that this model has been evolving for centuries. A telegraph is defined by the Merriam Webster dictionary, “an old-fashioned system of sending or exchanging messages over long distances by using wires and electrical signals”. Meanwhile, the American Telemedicine Associations defines telemedicine as, “the exchange of health information between healthcare professionals and patients over long distances through the use of electronic and telecommunication technology”. The two terms share the commonality of exchanging messages over long distances. Many of the social networks used today such as phones, FaceTime, and Skype are built on the same foundation as telemedicine. In simple terms, one may view telemedicine as an accessible way to form two-way communication amongst people.

The exact date that telecommunications were used for the purpose of health care is an open question. Some argue that the Civil War, in 1861, marks the commencement when telegraphs allowed soldiers to report causalities or needed medical supplies (Zundel). Followed by this development, the creation of the telephone and radio in the 1900s allowed physicians to exchange medical information across the nation. Other studies claim that NASA, National Aeronautics and Space Administration set the foundation for the current telemedicine system.

NASA’s telemedicine development began in the 1960s after research and data confirmed the change in environmental conditions, such as atmospheric pressure and gravity in space. A pending medical concern was how the human body would respond to these abrupt changes in
space. It was crucial to monitor astronauts’ heart rates, blood pressure, carbon dioxide levels, and overall health through a Mission Control Center. NASA’s first project, STARPAHC, Space Technology Applied to Rural Papago Advanced Health Care, was created as a test trial to create healthcare for the isolated community in the Papago Indian Reservation located in Arizona (Garshnek and Burkle). Individuals within this community were given mobile, advanced, technological machines, such as two-way televisions, radios, and x-ray machines. The information from these devices were sent to physicians through a microwave transmission that allowed physicians to diagnosis and treat patients from afar (Fuchs).

STARPAHC as a whole was deemed successful. Not only did it allow patients in remote areas access to healthcare, but it also introduced the application of computerized medical records as well. The program included computerized medical records to secluded locations. The overall consensus by providers was that electronic records and voice communications were the two factors of telemedicine that would result in the best outcomes (Fuchs). They also were able to establish what types of equipment were needed for certain procedures and conditions. For instance, the two way television was notable for patients experiencing heat failure, a snake bite, and appendicitis (Fuchs). Patient travel within this testing site was significantly reduced and the severity of illness were minimized as a result of the readily available telemedicine. This specific program may have ended; however NASA has the never-ending challenge of advancing telemedicine.

NASA’s contribution to Telesurgery is their primary focus at this time. NASA was able to form a partnership with the McDonald Atwater Associates, creator of robotics used in space ("ISS Benefits of Humanity."). In 2010, this company successfully built robots that could operate...
within MRI machines ("ISS Benefits of Humanity."). These robots are ultimately performing surgeries for patients living in areas lacking specialized doctors.

NASA continues to evolve and make the function of medical robots more precise. NASA’s robot called, Robonaut 1 was initially created in 2000 with the purpose of helping astronauts perform daily tasks outside of space shuttles (Dunbar). Robonaut 1 is permanently based outside of the shuttle but in order for the robot to operate properly the astronaut has to have a visual to what Robonaut 1 sees. The initial Robonaut’s achievement or recognizing tools and textures lead scientists to believe a future robot could essentially be manipulated to provide medical services (Dunbar). Since the creation of Robonaut 1, NASA is in the process of perfecting Robonaut 2. This Robot has an entire body designed after the human body rather than just the upper body of Robonaut 1. This allows the robot to interact similarly to the astronaut crew as far as speed and movement; however it has greater ability as far as precision and range of motion including the ability to administer injections (Dunbar). Eventually, NASA’s goal is for the robot to learn more procedures that can either be directed by a physician or even function on its own (Espiner). Currently, the greatest struggle engineers’ face is the lapse in time between the physician’s direction and the robot’s movement (Espiner). Additionally, Robonaut 2 is unable to walk in zero gravity (Espiner). After this issue is resolved, NASA hopes to not only utilize the robot in space but also build replicas of the robot so that individuals living in remote places have access to care as well (Espiner). Robonaut 2 would provide patients with a nurse, physician, and specialist all in one form. As telemedicine technology continues to improve, the benefits of telemedicine also continue to grow.
BENEFITS

Telemedicine offers smart solutions for improving the wellness and health of individuals. This new form of healthcare is mutually beneficial for medical professionals and patients. The technology meets the demands and criteria of the Affordable Care Act by giving more individuals access to quality care. The most powerful attributes of telemedicine include its widespread access of care, convenience, and reduction in medical spending.

The high cost of healthcare is imposing a burden on the nation’s economy. The effects of telemedicine are helping to relieve this burden for patients, medical staff, and government medical funding programs. One factor attributing to lower cost is the elimination of travel. Doctors no longer are required to travel for CMEs and patients don’t have to travel far distances to receive medical attention or specialized surgeries. Many correctional facilities are utilizing telemedicine for the mere fact that it reduces medical travel expenses. According to the American Telemedicine Association, correctional facilities annually spend nearly $302 million to transport prisoners to physician offices (“A Matter of Urgency: Reducing Emergency Department Overuse.”). In 2013, 543,000 transports were avoided, saving the government $210 million (“A Matter of Urgency: Reducing Emergency Department Overuse”). Fewer travel expenses and reducing the number of emergency room visits helps to minimize medical costs. 80% of the nation’s costs are attributed to the chronically ill (“A Matter of Urgency: Reducing Emergency Department Overuse”). These patients often inhabit the emergency rooms which comes at a great cost. Specifically, Teleconsultation, telemonitoring, and telesurgery has reduced the occupation rate in emergency rooms by lessening the number of patients that need to be transported from one hospital to another. This reduction has saved $537 million in medical
transports ("A Matter of Urgency: Reducing Emergency Department Overuse"). Additionally, costs are saved by reducing the length of stay because patients can rely on home monitoring systems. On average the fee for, “at home healthcare” was 19% less than a typical outpatient visit in 2013. This number is expected to decrease as more healthcare providers become familiar and practice telemedicine.

The accessibility of healthcare without traveling great lengths does not only save money but it also conveniently makes healthcare more accessible. Today, telemedicine gives rural, isolated communities the opportunity to make connections with healthcare professionals. Electronic communications allow patients to link with physicians through means of electronic communication. Geographically, rural communities and Indian Reservations who lack a strong healthcare system have been impacted the most by telemedicine (Garshnek and Burkle). Nearly 55 million individuals reside in rural suburbs; yet had substandard quality of specialty care before the utilization of telemedicine ("Benefits of Telemedicine"). The aging population, living in both urban and rural locations, benefits from the accessibility of healthcare.

Telemedicine improves healthcare accessibility while simultaneously providing better quality care. Technology advancements on equipment such as the da Vinci Robot reduces medical related errors by constantly scanning for safety breaches (Rassweiler Binder, and Frede). Telemonitoring devices such as heart monitoring machines can constantly relay information to the medical professionals. These mobile devices warn physicians of unusual results; therefore preventing a lapse of misjudgment on the patient’s health. The transmission of self-patient tests immediately warns physicians when their medical care is needed to minimize the frequency of unexpected emergency care situations.
CHALLENGES-LICENSEURE

The advent of telemedicine is helping our country overcome the challenges of providing both accessible and cost effective healthcare. However, this technology based medicine has its own legal challenges. Telemedicine has the potential to make significant contributions to the nation’s healthcare system; however the inconsistency of laws and regulations amongst states makes a nationwide adoption of telemedicine an arduous task. On April 26, 2014 the Federation of State Medical Boards finalized the Model Policy for the Appropriate Use of Telemedicine Technologies in the Practice of Medicine in an effort to acknowledge and accept telemedicine challenges (Weissert). It is important to note that states are not subject to ratify this Model Policy; however the Federation of State Medical Board’s large representation of medical and osteopathic boards affirms the model’s prestigious recommendations and principles (Weissert). The Model Policy was created with the intent to standardize and establish consistency of telemedicine laws and regulations amongst the nation (Ntrcs).

Medical state licensure regulations are governed on a state by state basis (Ntrcs). In traditional medical service, the site where the doctor is providing care is the “site of service”. The ability to provide health services over far distances makes the “site of service” difficult to distinguish. Without this clear identification, it was difficult and in some states, impossible, for telemedicine physicians to give care to patients residing outside of the physician’s medical state of licensure. The, Model Policy, states that medical care takes place where a patient is located (Ntrcs). The practitioner must be licensed under the medical board’s discretion in the state where the patient is receiving care. Telemedicine physicians form a “relationship” with patients; yet if the patient moves to a state where the physician isn’t licensed or is on vacation in a different
state, he or she will not be able to receive care from their primary caregiver. Telemedicine physicians become discouraged by the strenuous process of earning a license in multiple states that may each have different standards. For instance, states may require the physician to take a diverse range of exams and require a specific amount of time in post-graduation school (Mayo, Kepler). Achieving these state by state demands can be costly, time consuming, and discourages the physician from practicing in telemedicine. Indiana specifically acknowledges telemedicine and does permit “telemedicine full licenses”; however states that do not explicitly address telemedicine still typically require physicians to receive these “full licenses”, or go through the entire license procedure in each state (Mayo, Kepler).

Several states encourage telemedicine physicians by creating an abbreviated licensing process. Physician burden may be abated in states that offer the Endorsement, Registration, and Mutual Recognition Models. States that adopted the Endorsement Model allow health professionals to authorize licenses in states that have medical board standards similar to the state where the doctor received his original license (Mayo, Kepler). The Registration Model grants physicians the opportunity to work part-time in another state (Mayo, Kepler). Health care professionals are required to pledge compliance, in front of a medical board, to the state’s laws. The third model, is the Mutual Recognition Model (Mayo, Kepler). The agreement between two state licensing boards allows physicians to practice medicine in one another’s states with the assumption that the medical provider complies with both of the states’ laws and regulations (Mayo, Kepler). Currently, the Mutual Recognition Model is primarily recognized by nursing licensures. For instance, a nurse licensed in Arkansas and a nurse licensed in Iowa may interchangeably practice medicine in one another’s state without obtaining a new license because
both of these states honor the Mutual Recognition Model. States who follow these standards
minimize the complexity of practicing telemedicine across state lines.

Indiana is one of seven states throughout the nation that does not require “infrequent”,
out of state physicians to acquire an Indiana license to practice medicine. Frequency is not
defined in Indiana’s statues; therefore it is up to Indiana’s Medical Licensing Board to interpret a
health provider’s frequency. Other Indiana regulations and codes include (Mayo, Kepler):

**Ind. Code § 25-22.5-1-1.1(a)**

“[A] nonresident physician who is located outside Indiana does not practice
medicine or osteopathy in Indiana by providing a second opinion to a licensee or
diagnostic or treatment services to a patient in Indiana following medical care
originally provided to the patient while outside”

**Indiana. Ind. Code § 25-22.5-8-1**

“It is unlawful for any person to practice medicine or osteopathic medicine in this
state without holding a license or permit to do so, as provided in this article.

**Ind. Code § 25-22.5-1-2(a)(5)**

“This article, as it relates to the unlawful or unauthorized practice of medicine or
osteopathic medicine, does not apply to any of the following… an individual who
is not a licensee who resides in another state or country and is authorized to
practice medicine or osteopathic medicine there, who is called in for consultation
by an individual licensed to practice medicine or osteopathic medicine in
Indiana.”

Health professionals practicing telemedicine are required to educate themselves on the
licensing regulations and requirements within the states they practice medicine in. Physicians
who fail to adhere to the laws and regulations can be assessed a civil fine, have their medical
licenses suspended or retracted, and be excluded from Medicare or Medicaid programs.
Consultation between practicing staff and the medical board counsels are recommended to
ensure state compliance. The sanctions are established and reinforced to manage ethical behavior
amongst providers and quality care to patients. Eventually, the American Telemedicine Association aims to have a nationwide licensure acceptance, similarly to the Veterans’ Affairs Physicians (Mayo, Kepler). This would allow physicians to provide care across the nation with a single license.

**CHALLENGES-PRESCRIBING**

The American Medical Association, AMA, deems that there must be an “established patient-physician relationship” created before prescriptions can be administered ("Telemedicine: Is Prescription Writing Allowed?"). States’ judicial medical boards have contrasting interpretations of this statement due to the ambiguity of whether or not this “established relationship” can be formed through technology. Recently, the AMA’s Council included report A-14 to clarify that a patient-physician relationship could be established after a face-to-face interaction was held either in person or virtually ("Telemedicine: Is Prescription Writing Allowed?"). The key words of this depiction is “face-to-face”, various states are unable to fathom forming a relationship through means of technology; therefore prescribing medicine remains incongruent throughout the nation ("Telemedicine: Is Prescription Writing Allowed?"). Despite the AMA’s clarification in report A-14, many states require patients to have pre-existing relationships with their physician, excluding technology, before being granted prescribed medicine. Indiana, is one of the thirty-four states that abides by this concept ("Internet Prescribing Summary").

844 Ind. Admin. Code 5-3-2.

“Evaluation of the Patient. A documented patient evaluation, including history and physical evaluation adequate to establish diagnoses and identify underlying conditions or contraindications to the treatment recommended or provided, must
be obtained prior to providing treatment, including issuing prescriptions, electronically or otherwise.”

844 Ind. Admin. Code 5-3-3.

“Treatment, including issuing a prescription, based solely on an on-line questionnaire or consultation is prohibited.”

844 Ind. Admin. Code 5-4-1. Sec. 1.

“(a) Except in institutional settings, on-call situations, cross-coverage situations, and situations involving advanced practice nurses with prescriptive authority practicing in accordance with standard care arrangements, as described in subsection (d), a physician shall not prescribe, dispense, or otherwise provide, or cause to be provided, any controlled substance to a person who the physician has never personally physically examined and diagnosed. (b) Except in institutional settings, on-call situations, cross-coverage situations, and situations involving advanced practice nurses with prescriptive authority practicing in accordance with the requirements of IC 25-23-1-19.4 and 848 IAC 5, as described in subsection (d), a physician shall not prescribe, dispense, or otherwise provide, or cause to be provided, any legend drug that is not a controlled substance to a person who the physician has never personally physically examined and diagnosed unless the physician is providing care in consultation with another physician who has an ongoing professional relationship with the patient, and who has agreed to supervise the patient’s use of the drug or drugs to be provided.”

The American Medical Association created Report A-14 to prevent medical professionals from writing prescriptions for individuals who simply submitted patient questioners or surveys. Harmful allocations of drugs would be easily accessible without this provision. One of the first criminal prosecutions for telemedicine prescribing occurred through an Internet Pharmacy between a physician in Colorado and a patient in California ("California Attorneys Representing Licensed, Regulated and Other Professionals"). This case revolves around the challenges of both telemedicine licensure and prescription. The physician, Dr. Hageseth, failed to receive a license in the patient’s state, California; therefore it was illegal for this doctor to prescribe a generic Prozac to the depressed individual ("California Attorneys Representing Licensed, Regulated and Other Professionals"). The case hearing took place in California since this was the patient’s
home site. Additionally, the court ruled that this case lacked an established patient-physician relationship due to a lack of face-to-fact contact ("California Attorneys Representing Licensed, Regulated and Other Professionals"). Instead, the patient received his prescription through an interactive website that only required a questionnaire upon submission. Several weeks after the prescription was filled, the patient committed suicide using carbon monoxide and alcohol ("California Attorneys Representing Licensed, Regulated and Other Professionals"). Despite the fact that the generic Prozac was not the cause of the individual’s death, Dr. Hageseth was charged for criminal prosecution. The defendant was charged $4,000 to reimburse the Medical Board of California for investigation costs, required to terminate his medical licenses, and was sentenced to 9 months in jail ("California Attorneys Representing Licensed, Regulated and Other Professionals"). The outcomes of this trial are specific to California’s court system. The vast regulations in regards to telemedicine could have resulted in incommensurable outcomes.

CHALLENGES-REIMBURSEMENT

Healthcare organization heavily rely on forms of reimbursement in order to receive payments. Medicare is the largest insurer in the healthcare system; thus giving this governmentally run organization significant influence on the nation’s healthcare system. Initially, Medicare programs opted to avoid engagement with telemedicine because telemedicine was not deemed as “appropriate or necessary” (Mayo and Kepler). Some private-payers and state reimbursement organizations uphold these beliefs; however in 2000 the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act was created (Mayo and Kepler). This Act acknowledges telemedicine as an acceptable way to receive medical attention and thereby would provide reimbursement for “interactive telecommunications” between a patient
and medical professionals with the following titles: physician, nurse practitioner, physician assistant, midwife, clinical nurse specialist, clinical psychologist, clinical social worker, or registered dietician (Mayo and Kepler). In order to receive Medicare funding, physicians and patients must adhere to the strict regulations and requirements enacted. Medicare requires telemedicine services to occur in real time (Mayo and Kepler). Off-line consultations will not be considered for refunding. Additionally, the patient receiving this on-line care must have a physician physically involved during this telemedicine service (Mayo and Kepler). In order for a physician to monitor the electronic appointment, the Medicare beneficiary is required to go to an originating site in order to receive telemedicine (Mayo and Kepler). An originating site can be defined as, “the location of an eligible Medicare beneficiary at the time the service being furnished via a telecommunications systems occurs” (Mayo and Kepler). These sites must be located in communities with an insufficient amount of health professionals. Acceptable sites include physician offices, inpatient/outpatient hospitals, critical access hospitals, rural health clinics, or federally qualified health centers (Mayo and Kepler). If these requests are fulfilled, Medicare will reimburse the “distant site” provider with the same amount of subsidy as an in person appointment (Mayo and

Just as individual states have diverse laws regarding telemedicine, State Medicaid programs have forged ahead with their own diverse reimbursement policies. The states decides whether to accept or deny reimbursement for telemedicine. In the states that consent to telemedicine reimbursement, ae then responsible for distinguishing the types of services, quality of care, and other deeming prerequisites that must be met before receiving the reimbursement (Mayo and Kepler). Private payers coincide with states by creating their own requirements regarding telemedicine; however several states have created statutory requirements that prevent

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private payers from discriminating against reimbursement for telemedicine services (Mayo and Kepler).

Indiana accepts the Medicaid reimbursement for the following types of telemedicine services: consultations, outpatient treatment, individual psychotherapy, psychiatric diagnostic, pharmacologic monitoring, and end stage renal disease. Recently, Indiana eliminated its mandate to have at least a 20 mile distance between the provider and Medicare beneficiary. Now reimbursement will be provided regardless of the space between the on-site and distant site. Additionally, Indiana has the following Codes in order to receive full Medicaid Reimbursement.

IN Admin, Code, Title 405, 5-8-1

“Telemedicine services refer to a specific method of delivery of certain services, including medical exams and consultations, which are already reimbursed by Medicaid. Telemedicine uses videoconferencing equipment allowing a need a space medical provider to render and exam or other service to a patient at a location”

IN Code, 12-15-11

“Indiana Medicaid will reimburse for live video, as long as certain conditions are met:

- The hub site provider must determine if it is medically necessary for a medical professional to be at the spoke site.
- For a medical professional to receive reimbursement for professional services in addition to payment for spoke services, medical necessity must be documented. If it is medically necessary for a medical professional to be with the member at the spoke site, the spoke site is permitted to bill an evaluation and management code in addition to the fee for spoke services. There must be documentation in the patient's medical record to support the need for the provider's presence at the spoke site. The documentation is subject to post-payment review.”
IN Code, 12-15-5-11

“Indiana Medicaid will reimburse providers for telehealth services provided as home health service but must have one of the following conditions:

- Chronic obstructive pulmonary disease
- Congestive Heart Failure
- Diabetes
- Must initially have two or more of the following events related to one of the conditions listed about within the previous twelve months:
- Emergency room visit
- Inpatient hospital stay

IN Code, 12-15-11

“Indiana Medicaid will reimburse for live video, as long as certain conditions are met:

- The hub site provider must determine if it is medically necessary for a medical professional to be at the spoke site.
- For a medical professional to receive reimbursement for professional services in addition to payment for spoke services, medical necessity must be documented. If it is medically necessary for a medical professional to be with the member at the spoke site, the spoke site is permitted to bill an evaluation and management code in addition to the fee for spoke services. There must be documentation in the patient's medical record to support the need for the provider's presence at the spoke site. The documentation is subject to post-payment review.”

CHALLENGES-PATIENT PRIVACY

The uprising of criminals that have the expertise to infiltrate and exploit a computer system creates another challenge for telemedicine. Therefore, the growth of technology with telemedicine has the potential to increase the breach of confidentiality between a physician and a patient. Practitioners who use telemedicine are ultimately sending and receiving patient medical records through technology that includes but is not limited to email, internet, or fax. Laws and
regulations at both the state and federal level have been established to minimize privacy infringements. Physicians practicing telemedicine need to abide by confidentiality laws for each state in which they practice medicine. The Health Insurance Portability and Accountability Act of 1996, HIPAA, was enacted to create a new standard of protecting patient’s privacy rights (Prior). Information such as social security numbers, billing information, medical records, or any other unique identifying information that puts the patient at risk is deemed confidential. Although HIPAA delegates a system to keep patient information private, its focus was initially addressing traditional patient information systems (Prior). The uprising of Electronic Health Records, EHRs, caused an expansion of HIPAA by creating additional privacy acts to minimize patient breaches. First, the Electronic Signatures in Global National Commerce Act in 2000 was created. Then the 2009 HITECH ACT and 2013 HIPPA Omnibus rules were also enacted ("Health Information Technology for Economic and Clinical Health (HITECH) Act | Healthcare IT News”).

Initially, HIPPA didn’t consider electronic signatures on medical documents to be a viable way to create a contract between a patient and a physician. Congress established the Electronic Signatures in Global and National Commerce Act to legally validate an electronic signature. This Act encouraged patients to utilize telemedicine by accrediting electronic signatures.

15 USC 7001 Sec. 101 General Rule of Validity

(a) "In General.-Notwithstanding any statute, regulation, or other rule of law (other than this title and title II), with respect to any transaction in or affecting interstate or foreign commerce-

1) A signature, contract, or other record relating to such transaction may not be denied legal effect, validity, enforceability solely because it is in electronic form; and
2) A contract relating to such transaction may not be denied legal effect, validity, or enforceability solely because an electronic signature or electronic record was used in its formation “

The HITECH Act, Health Information Technology for Economic and Clinical Health endorsed the implementation and valuable use of health information technology systems across the nation (Prior). Subtitle D of this Act clarifies the privacy concerns of electronic health records ("Health Information Technology for Economic and Clinical Health (HITECH) Act | Healthcare IT News"). A section of Subtitle D can be found following this paragraph. To further enhance the HIPPA privacy the Omnibus rule was created. With these new rules, patients are able to ask for a copy of their electronic copy of their medical records. The Rule, prohibits the sale of health information without authorization and created harsher penalties for health practices that fail to be compliant with HIPPA’s rules and regulations (Prior). The most popular Electronic Health Record Systems being used by organizations utilizing telemedicine include eClinicalWorks, McKesson, Cerner, AllScipts, and Athena Health because each of these software solutions are HIPPA compliant. Health organizations as a whole are taking special provisions to assure their offices and clinics yield HIPPA’s guidelines in order to assure patient privacy and avoid legal complications.

Subtitle D Privacy SEC. 13400

1. Breach-
   A. In General-the term “breach” means the unauthorized acquisition access, use, or disclosure of protected health information which compromised the security or privacy of such information, except where an unauthorized person to whom such information is disclosed would not reasonable have been able to retain such information”
CONCLUSION

The future of an improved healthcare system will be a result of telemedicine. Currently, the nation’s healthcare system is in a transformational period because it needs to reduce healthcare spending costs while simultaneously maintaining the quality of care. This compelling substitute to traditional practices decreases healthcare spending, escalades access and quality of healthcare, and promotes independence. The integration and overall growth of technology acts as both a benefit and a barrier to the overall incorporation of telemedicine in the health system. The constant advances in technology holds promising potential for society’s overall wellbeing. The radiology sector in telemedicine is already flourishing and in the future, the availability and precision of medical robots similar to Robonaut 2 will only continue to revolutionize this industry. Telemedicine has and will continue to extend healthcare not only in the United States but across the globe. Amidst the positive benefits of technological advancements, technology is moving at a faster rate than the law. Until medical boards and states are able to overcome the vast array of barriers to telemedicine, telemedicine can and will not be the standard level of care in the United States.
WORKS CITED


