

Health Law and Policy Brief

Volume 14 | Issue 1

Article 2

2020

Telemedicine: Benefits, Challenges, and its Great Potential

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Recommended Citation

Achenbach, Samantha J. (2020) "Telemedicine: Benefits, Challenges, and its Great Potential," *Health Law and Policy Brief*. Vol. 14 : Iss. 1 , Article 2.

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TELEMEDICINE: BENEFITS, CHALLENGES, AND ITS GREAT POTENTIAL

*Samantha J. Achenbach**

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INTRODUCTION

Advancements in technology have changed how we do things in more ways than most of us could have ever imagined. For example, technology has allowed specialties within the practice of medicine to reach locations that were previously without access to those specialties, thus, also reaching a wider range of patients in need.¹ Through the use of telemedicine, doctors in all areas of medicine are able to treat patients regardless of the patient's geographical location.² Additionally, telemedicine gives patients more freedom to decide when and how to see their physicians, and allows them to avoid traveling great distances to do so.³ This helps patients take control and make better informed choices regarding their health.

While the terms “telemedicine” and “telehealth” are often used interchangeably, telemedicine is defined as the remote delivery of healthcare services and clinical information using telecommunications technology, and includes a wide variety of clinical services through Internet, wireless, satellite, and telephone media.⁴ Telehealth, on the other hand, is used to describe diagnosis and management, education, and other fields of health care.⁵ It is important to note that each state tends to have its own definitions of telehealth and telemedicine.⁶ For the purpose of this paper, I will be using the term telemedicine.

To support the advancement of telemedicine, rural and urban areas must work together and continually share information in order to educate physicians, clarify laws for attorneys, and strengthen the overall healthcare delivery system. This article takes a brief look at the history of telemedicine in both rural and urban areas and explores the challenges that come with each.⁷ It explains how telemedicine affects the physician-patient relationship and the issues surrounding the traditional definition of standard of care in the medical field.⁸ Further, it explains the benefits of cross-over licensing that would allow physicians to practice across state lines.⁹ It concludes with a review of potential ways to improve telemedicine in both rural and urban areas, including increasing access to affordable broadband and implementing interstate licensure.¹⁰

¹ *The Ultimate Telemedicine Guide: What is Telemedicine?*, EVISIT (May 25, 2018), <https://evisit.com/resources/what-is-telemedicine/#2> [hereinafter *The Ultimate Telemedicine Guide*].

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ *About Telehealth*, CTR. FOR CONNECTED HEALTH POL'Y, <https://www.cchpca.org/about/about-telehealth> (last visited Nov. 8, 2019) [hereinafter *About Telehealth*].

⁶ *Id.*

⁷ *Infra* Part I.

⁸ *Infra* Part III.

⁹ *Infra* Part III.C.

¹⁰ *Infra* Part IV.

I. BACKGROUND

The first electronic medical record transfer occurred in the 1940's with the transmission of radiology images between two towns that were twenty-four miles apart.¹¹ This subsequently became a widespread practice, and in 1959 the University of Nebraska began using video communication in the medical field.¹² In the late 1960's, closed-circuit television and point-to-point leased lines were first used for communication, and this practice was considered telemedicine.¹³ Further, the National Aeronautics and Space Administration (NASA) was closely involved with the development of early telemedicine systems.¹⁴ NASA needed a way to monitor the astronauts while they were in space, which led to the development of the Integrated Medical and Behavioral Laboratories and Measurement Systems (IMBLMS) program in 1964.¹⁵ This new technology allowed NASA to monitor astronauts during missions, and aided in emergencies when it was impossible for them to quickly return to earth.¹⁶ The data conveyed back to the base helped in guiding medical treatment by the non-physician astronauts on the spacecraft.¹⁷

In 1967, the city of Boston set up a medical station at Logan International Airport that connected to Massachusetts General Hospital which treated patients with a "two-way microwave audio/video link."¹⁸ Subsequently, in 1971, telemedicine was tested in Alaska through satellite communication.¹⁹ Next, in a 1977 clinical trial, critical care patients with limited access to specialists were effectively treated through telemedicine.²⁰ In another study, from 1999 to 2001, two Intensive Care Units (ICU) of a large tertiary care hospital used telemedicine to supplement patient treatment.²¹ The study showed improvements in "clinical outcomes" and "hospital financial performance" due to the supplemental use of telemedicine.²²

¹¹ See Kiley Aycock, *Just a Phone Call Away: Should Texas Require Insurance Providers to Cover Telehealth Services?*, 19 TEX. TECH ADMIN. L.J. 347, 347 (2018) (discussing the first electronic medical record transfer); see also Vanessa Daves, *The History of Telemedicine*, IRIS TELEHEALTH (Feb. 2, 2017), <https://iristelehealth.com/blog/the-history-of-telemedicine> (discussing the development of telemedicine).

¹² Daves, *supra* note 11.

¹³ *Id.*; CJ RHOADS, TELEHEALTH IN RURAL HOSPITALS: LESSONS LEARNED FROM PENNSYLVANIA 77 (2016).

¹⁴ Annalise DeJesus and M. Kamran Athar, *Commentary: Tele-ICU Development and Application*, 12 JHN J. 24, 24 (2017) (explaining that the Integrated Medical and Behavioral Laboratories and Measurement Systems allowed for better monitoring of astronauts during critical times).

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Daves, *supra* note 11.

¹⁹ *Id.*

²⁰ *Id.*

²¹ DeJesus and Athar, *supra* note 14, at 25.

²² *Id.*

Through telemedicine, a patient can interact with a provider over his smartphone, and hospitals that lack certain specialists can facilitate specialist-patient visits through the use of “telemedicine robots.”²³ Roughly one thousand hospitals in the United States use such technology to expand access to specialists;²⁴ the “robots” show a physician’s face on a screen, allow the patient and physician to interact with each other, and give patients access to specialists in areas such as neurology, cardiology, neonatology, pediatrics, and even mental health.²⁵ Furthermore, CVS Pharmacy collaborates with three leading telemedicine technology providers, American Well, Doctor on Demand, and Teladoc, to implement telemedicine services within their CVS Minute Clinics nationwide.²⁶

While advancements in technology have allowed for the recent expansion of telemedicine, its uses, benefits, and pitfalls differ among states. Laws governing and defining telemedicine vary and are not enforced uniformly.²⁷ Additionally, telemedicine may be used differently in a rural location than in an urban setting.²⁸ Exploring and learning from such differences will help strengthen the implementation and continued growth of telemedicine throughout the country and ultimately help to improve patient care overall.

A. Telemedicine in Rural Areas

Generally, people in rural areas tend to have more restricted access to healthcare resources compared to those living in urban areas.²⁹ For patients living in rural areas, telemedicine offers an opportunity to access healthcare services and other resources that would otherwise be unavailable to them.³⁰ Since rural patients would likely need

²³ Terence Chea, *Medical Specialists Are Increasingly ‘Beamed’ Into Remote Hospitals*, BUS. INSIDER (Nov. 18, 2013, 5:28 AM), <https://www.businessinsider.com/robots-let-doctors-beam-into-remote-hospitals-2013-11>.

²⁴ *Id.*

²⁵ *Id.*

²⁶ Laura E.A. Wibberley, *Telemedicine in Illinois: Untangling the Complex Legal Threads*, 50 J. MARSHALL L. REV. 885, 891 (2017); see also *CVS Health to Partner with Direct-to-Consumer Telehealth Providers to Increase Access to Physician Care*, CVS HEALTH (Aug. 26, 2015), <https://cvshealth.com/newsroom/press-releases/cvs-health-partner-direct-consumer-telehealth-providers-increase-access> (explaining that CVS is collaborating with American Well, Doctor on Demand, and Teladoc to connect telehealth providers, retail pharmacy, and retail clinic providers to improve patient care).

²⁷ *About Telehealth*, *supra* note 5; see e.g., *State Telehealth Laws and Reimbursement Policies*, CTR. FOR CONNECTED HEALTH POL’Y, https://www.cchpca.org/telehealth-policy/state-telehealth-laws-and-reimbursement-policies-report?utm_source=Telehealth+Enthusiasts&utm_campaign=a64963125e-EMAIL_CAMPAIGN_2019_05_29_05_05&utm_medium=email&utm_term=0_ae00b0e89a-a64963125e-353236391 (discussing telehealth-related regulations for all fifty states and noting that telehealth policy varies from state-to-state). For example, some form of reimbursement is provided in all fifty states and Washington D.C. for live video telemedicine visits. *Id.* Further, there are only fourteen states that provide reimbursement for “store-and-forward” telemedicine visits, which allow for secure transmission of medical information. *Id.*; Wibberley, *supra* note 26, at 887 n.14.

²⁸ *The Ultimate Telemedicine Guide*, *supra* note 1.

²⁹ Candi Helseth, *Telemedicine Reaches Beyond Clinic Walls*, RURAL HEALTH INFO. HUB (Aug. 17, 2011), <https://www.ruralhealthinfo.org/rural-monitor/telemedicine-reaches-beyond-clinic-walls>.

³⁰ *Id.*

to travel great distances to get adequate medical care, they are more likely to forego regular check-ups and instead wait until their condition worsens to seek medical care.³¹ Furthermore, telemedicine can connect physicians in rural areas with specialists in urban areas by facilitating concurrent examinations and consultations, which may increase the rural physicians' medical knowledge.³²

Since 2010, a lack of medical personnel in rural areas has led to closures of over eighty hospitals across the country, and many more continue to struggle.³³ For example, Idaho, Wyoming, and Montana each currently have less than two thousand specialists in total, and fewer than eleven specialists per ten thousand people, which makes it difficult for patients to receive specialized treatment.³⁴ Consequently, many patients living in these states need to travel great distances to receive specialized treatment, which adds costs that patients living in urban areas do not incur.³⁵

This article argues that priority should be placed on the use of telemedicine to preserve rural hospitals and to improve access to quality healthcare to patients in such areas.³⁶ This next section will discuss the different ways in which states have implemented telemedicine and the various difficulties involved in the effort to deliver quality healthcare to rural areas.

i. Maine

Telemedicine functions differently in various rural areas across the country as each area learns how telemedicine can benefit its residents specifically.³⁷ Maine uses telemedicine networks, the majority of which are managed by Maine Telemedicine Services and include over thirty community health centers along with home care services.³⁸ Additionally, Maine utilizes a boat as a telemedicine clinic to reach patients living on islands off the coast of Maine.³⁹ Patients use the boat for both primary care treatment and specialist appointments.⁴⁰ Maine Telemedicine Services benefits patients by providing them with quality healthcare and ensuring that physicians are properly trained to

³¹ Dominique LeVert, *Telemedicine: Revamping Quality Healthcare in Rural America*, 19 ANNALS HEALTH L. ADVANCE DIRECTIVE 215, 216 (2010).

³² *Id.*

³³ Michael W. King, *Telemedicine: Game Changer, or Costly Gimmick*, 95 DENV. L. REV. 289, 316 (2018).

³⁴ *Id.* at 318.

³⁵ *See id.* at 318–19 (noting that without the expansion of telemedicine, some must travel long distances for “many key aspects of their health care needs”).

³⁶ *Id.* at 319.

³⁷ Roger A. Rosenblatt & L. Gary Hart, *Physicians and rural America*, 173 W. J. OF MED. 348, 351 (2000).

³⁸ Michael A. Edwards, & Arvind C. Patel, *Telemedicine in the State of Maine: A Model for Growth Driven by Rural Needs*, 9 TELEMEDICINE J. & E-HEALTH 25, 25, 26 (2003) (discussing Maine's two interlinked telemedicine networks, which consist of rural health clinics, mental health agencies, Indian health centers, and other social service and state agencies).

³⁹ Helseth, *supra* note 30.

⁴⁰ *Id.*

provide such care.⁴¹ Specifically, Maine Telemedicine Services provides “telemedicine demonstrations for providers, training of local site coordinators, protocol development, scheduling, quality assurance, and continued medical education planning.”⁴²

ii. Texas

In 2009, twenty-five counties in Texas were entirely without physicians, and the areas with the lowest ratio of providers were West Texas, South Texas, and the Panhandle.⁴³ Accordingly, patients often depend on Texas Emergency Medical Service (EMS) to transport them to the nearest hospital; however, in some cases it could take up to ninety minutes to reach the nearest hospital, just to find out that the facility is not equipped to treat the patient’s condition.⁴⁴ To address such issues, Texas University Health Sciences Center, the Commission on State Emergency Communications, and swyMed have partnered to implement telemedicine to facilitate a connection between EMS providers and trauma centers which allows trauma surgeons to virtually assess patients in ambulances and direct treatment.⁴⁵ This helps ensure that patients are transported to the correct facility and that treatment may begin immediately upon their arrival.⁴⁶ In general, the implementation of telemedicine has brought Texas tremendous benefits, some of which include improved access to specialists, increased patient satisfaction, improved clinical outcomes, reduction in emergency room utilization, and financial relief.⁴⁷

iii. North Carolina

North Carolina has two telemedicine programs and a telepsychiatry program, each with its own procedures.⁴⁸ The East Carolina University Telemedicine Center opened in 1992, and operates in three areas: clinical transactions, education, and provider consultations.⁴⁹ Within these areas, the Center provides distance-learning for physicians, consultations for those interested in practicing telemedicine, and scheduled, urgent, and emergent services which include patient assessments, diagnoses, and follow-ups.⁵⁰ Additional treatment areas include dermatology, cardiology, pediatrics, psychiatry, and rehabilitation medicine.⁵¹

⁴¹ *Id.*

⁴² Edwards & Patel, *supra* note 38, at 37.

⁴³ Aycock, *supra* note 11, at 350.

⁴⁴ *Id.* at 351. See also *Professional Emergency Care*, TEX. EMERGENCY MED. SERV., <https://mytexasems.org> (explaining that EMS provides skilled “pre-hospital care and professional emergency medical transportation”).

⁴⁵ Aycock, *supra* note 11, at 351.

⁴⁶ *Id.*

⁴⁷ *Id.* at 350.

⁴⁸ Jennifer M. Little, *Into the Future: The Statutory Implications of North Carolina’s Telepsychiatry Program*, 93 N.C. L. REV. 863, 864, 872 (2015).

⁴⁹ *Id.* at 873.

⁵⁰ *Id.*

⁵¹ *Id.*

In 2010, the North Carolina Telepsychiatry Program was established with the primary objective of “mak[ing] psychiatric assessments readily available for all patients presenting to the emergency department with behavioral health-related issues.”⁵² Over a secure network, a consultant physician can make a diagnosis and treatment recommendation to the physician treating the patient, thus granting access to mental health care to those to whom such treatment would otherwise be unavailable.⁵³ The success of the aforementioned telemedicine programs resulted in the creation of the North Carolina Statewide Telepsychiatry Program, which has continued to grow since its origination in 2014.⁵⁴

iv. North Dakota

Rural communities of North Dakota, and nationwide, face challenges stemming from the lack of available mental health treatment providers.⁵⁵ The University of North Dakota is attempting to address this issue through its residency training program in psychiatry that uses telemedicine to extend psychiatric services to rural areas.⁵⁶ The residents in the program are mainly stationed in Fargo, North Dakota, and use telemedicine to reach and serve rural areas of the state.⁵⁷ The program teaches them how to utilize technology to reach out to healthcare facilities in rural areas which lack psychiatric treatment services on-site.⁵⁸ In addition to having weekly visits with patients using telemedicine technology, the residents make monthly trips to the rural communities to connect with patients face-to-face.⁵⁹

v. South Dakota

A facility in South Dakota works entirely by webcam and contains no inpatient beds.⁶⁰ Since its opening, the admissions to outside area hospitals have decreased by eighteen percent.⁶¹ Additionally, South Dakota’s regional health system, Avera Health, has implemented a program which aims to increase the use of telemedicine for emergency department patients with sepsis.⁶² Through this program, a board-certified emergency

⁵² *Id.* at 874.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ See Jan Orvik, *Telepsychiatry Making the Connection*, UND TODAY (Mar. 22, 2018), <http://blogs.und.edu/und-today/2018/05/telepsychiatry-making-the-connection> (explaining the desperate need of psychiatrists to help combat addiction and psychiatric problems in North Dakota and stating that many towns in the state do not have psychiatric services on site).

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ RHOADS, *supra* note 13, at 87.

⁶¹ *Id.*

⁶² Nicholas M. Mohr et al., *Improving Access to High Quality Sepsis Care in a South Dakota Emergency Telemedicine Network*, RURAL TELEHEALTH RES. CTR. 2 (Aug. 2017), https://ruraltelehealth.org/briefs/2017-8-23_Access%20to%20Sepsis%20Care%20Emergency%20Telemedicine.pdf.

physician and an emergency department nurse can be connected twenty-four hours per day to assist patient treatment.⁶³ While the implementation of the program increased sepsis consultation rates, the rates remained fairly low overall.⁶⁴ Additionally, the project also helped shed light on other potential issues that contribute to the difficulty of treating sepsis in rural areas.⁶⁵ For example, the project revealed that the availability of screening laboratory tests, such as serum lactate measurement, is limited in rural areas, which affects how sepsis patients' risk levels are assessed.⁶⁶

Since the program is still in the early stages of implementation, its effectiveness in treating sepsis patients in rural areas will have to be determined through continued evaluation.⁶⁷ The information that has been obtained thus far provides helpful insight into where improvement can be made with regard to how emergency physicians assess, diagnose, and treat patients with sepsis in rural hospitals. Future focus will be on “measuring the effect of telemedicine in influencing the process of care and clinical outcomes in rural patients with severe sepsis and septic shock,” as well as “the impact of telemedicine utilization on clinical outcomes of sepsis treatment and on barriers to more widespread telemedicine adoption.”⁶⁸

vi. Wyoming

Wyoming has implemented video conferencing technology, Converged Management Application (“CMA”), which allows physicians to connect in a secure, HIPAA-compliant method and exchange information with ease.⁶⁹ Cardiologists, mental health specialists, and nursing homes across the state utilize CMA.⁷⁰ Specifically, the utilization of CMA in mental health areas has allowed providers in remote communities to share information more efficiently.⁷¹

Further, the Wyoming Department of Health awarded a contract to Ptolemy Data Systems, a data storage and managed services provider involved in connecting healthcare providers, to expand and reinforce its support of telemedicine services for “all state-funded healthcare facilities and public health offices.”⁷² Aside from CMA, the state implemented another program to utilize telemedicine through the state’s Prison Health Services.⁷³ The process allows inmates to receive mental health treatment without requiring physicians to travel potentially very long distances to different prisons across

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ Jeff Rowe, *3 Ways Telemedicine is Helping Wyoming*, HEALTHCARE IT NEWS (May 9, 2013), <https://www.healthcareitnews.com/news/3-ways-telemedicine-helping-wyoming>.

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

the state.⁷⁴ According to Wyoming state officials, about 440 telemedicine appointments with prisoners take place every year.⁷⁵

In addition to CMA and the Prison Health Services programs, Wyoming has also developed a Telepsychiatry Project.⁷⁶ The goal of the project is to bring medical and psychiatric care to isolated communities throughout the state.⁷⁷

vii. Idaho

Idaho's largest health system, St. Luke's Health System, has opened a "virtual hospital" to provide access to top specialists and emergency providers to patients in rural areas.⁷⁸ The virtual hospital, called "St. Luke's Virtual Care," joins a number of other facilities that have consolidated telemedicine services into one platform, sometimes called a "hospital without beds."⁷⁹ Provided services include telestroke, telemedicine programs for behavioral health, telepharmacy services, and newborn critical care.⁸⁰ While this system is not intended to replace a patient's primary physician, it can help identify and treat healthcare problems before they become emergencies.⁸¹

Further, Idaho has also attempted to use telemedicine to provide safe abortion access to citizens in need, but this process has come with difficulties.⁸² In 2017, Idaho's Senate voted to amend HB-250, the state telemedicine legislation which prohibited physicians from prescribing abortion-inducing drugs via telemedicine.⁸³ This amendment came after Idaho settled a case with Planned Parenthood over the state's Telehealth Access Act, as well as other legislation that was passed in 2015.⁸⁴ A group led by Planned Parenthood oversees the use of telemedicine to improve safe access to abortion services

⁷⁴ Michael Ollove, *State Prisons Turn to Telemedicine to Improve Health and Save Money*, PEW (Jan. 21, 2016), <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2016/01/21/state-prisons-turn-to-telemedicine-to-improve>.

⁷⁵ *Id.*

⁷⁶ Rowe, *supra* note 69.

⁷⁷ *Id.*

⁷⁸ Eric Wicklund, *New Telemedicine Center to Extend Connected Health Across Idaho*, MHEALTH INTELLIGENCE, (Aug. 28, 2018), <https://mhealthintelligence.com/news/new-telemedicine-center-to-extend-connected-health-across-idaho>; *About St. Luke's*, ST. LUKE'S ONLINE, <https://www.stlukesonline.org/about-st-lukes>.

⁷⁹ Wicklund, *supra* note 78.

⁸⁰ *Id.*; Bart M. Demaerschalk et al., *American Telemedicine Association: Telestroke Guidelines*, 23 TELEMEDICINE J. & E-HEALTH 376, 378 (2017) (explaining that "telestroke" refers to the use of interactive videoconferencing technology for the treatment of acute stroke patients).

⁸¹ *Id.*

⁸² Eric Wicklund, *Idaho Revises Anti-Abortion Telemedicine Legislation*, MHEALTH INTELLIGENCE (Mar. 22, 2015), <https://mhealthintelligence.com/news/idaho-revises-anti-abortion-telemedicine-legislation>.

⁸³ *Id.*; H.R. 250, 64th Leg., 1st Reg. Sess. (Idaho 2017).

⁸⁴ Telehealth Access Act, IDAHO CODE ANN. §§ 54-701-713 (West 2016) (clarifying how telemedicine in Idaho would be used and regulated); Wicklund, *supra* note 82.

in underserved parts of the country, especially where intimidation is used against those seeking an abortion.⁸⁵

viii. Alaska

In 2016, the Governor of Alaska signed two bills that expanded the use of telemedicine throughout Alaska; the first, Senate Bill 74 (SB74), removed the requirement that the provider must be in-state to render treatment, while the second, House Bill 234 (HB234), required Alaska insurance plans to cover mental health treatment received remotely.⁸⁶ Additionally, the bills allow the use of telemedicine for speech pathology, counseling, family therapy, social work, and occupational therapy.⁸⁷ However, communities need to have secure Internet access for residents to receive the full benefits of telemedicine.⁸⁸ To achieve this, Alaska's major telecommunications companies have partnered with health-related nonprofits to expand broadband access to rural communities and provide telemedicine connections that are high-speed and secure.⁸⁹

ix. Illinois

Through telemedicine, Illinois medical providers can consult with patients and licensed clinical staff simultaneously through two-way video, use “store and forward” functions to collect patient data and send to another physician for evaluation, and utilize “remote patient monitoring” for a patient located off-site.⁹⁰ The “store and forward” and “remote patient monitoring” functions each allow on-site physicians to collect patient information, such as laboratory values and heartbeat rhythm, which that physician can forward to an off-site colleague for consultation and concurrent patient treatment.⁹¹ Additionally, some Illinois facilities offer “robot” services, which allow for the instant transmission of data to a specialist physician who can assess and treat potential stroke patients.⁹²

Illinois also offers physician education and telemedicine training programs.⁹³ One such program is the Extension of Community Healthcare Outcomes (“ECHO”) program, launched by the University of Chicago, which enables medical specialists to provide medical guidance and training to rural primary care physicians through live videoconferences.⁹⁴ As of 2014, more than 250 medical providers have been trained

⁸⁵ Wicklund, *supra* note 82.

⁸⁶ Julie Stricker, *Telehealth Expands in Alaska*, ALASKA BUS. J. 28, 28–29 (2016).

⁸⁷ *Id.* at 29.

⁸⁸ *See id.* (stating that state’s “major telecommunications companies have been expanding broadband access across the state”).

⁸⁹ *Id.*

⁹⁰ *See* Wibberley *supra* note 26, at 890–91 (discussing current telemedicine practices that medical professionals in Illinois may provide treatment through).

⁹¹ *Id.*

⁹² *Id.* at 890.

⁹³ *Id.* at 891.

⁹⁴ *Id.* “ECHO” stands for Extension for Community Healthcare Outcomes, and the project was first created by Sanjeev Arora, MD, a specialist at the University of New Mexico Health Sciences Center. *Project Echo*, ROBERT WOOD JOHNSON FOUND., <https://www.rwjf.org/en/how-we-work/grants-explorer/featured-programs/project-echo.html> [hereinafter *Project Echo*]. The project was designed

through ECHO in a variety of areas, including the treatment of hepatitis C and resistant hypertension.⁹⁵ Training programs like ECHO ensure that physicians in rural areas stay informed of advancements in telemedicine and remain connected with their colleagues in urban areas.⁹⁶

x. Georgia

In Georgia, where about fifty-two percent of physicians located in five areas throughout the state serve roughly thirty-eight percent of the state's population, telemedicine can be used to bridge the gap in healthcare.⁹⁷ A new federal grant will allow Augusta University to maintain a two-way teleconnection with emergency departments at Miller County Hospital, Crisp Regional Hospital, Emanuel Medical Center, Washington County Regional Medical Center, and Wills Memorial Hospital.⁹⁸ Additionally, ConnectWell is a program that combines telemedicine and remote monitoring practices by allowing diabetic patients in rural Central and South Georgia to monitor their diabetes from home and interact with their doctors using a tablet that is provided to them.⁹⁹

Currently, Georgia offers telemedicine services in the areas of “maternal fetal medicine, HIV services and counseling, infectious disease care, psychiatry, pediatric emergency and critical care, hospital intensive care, acute stroke care, and general neurology.”¹⁰⁰ Since 2009, the pediatric organization Children's Healthcare of Atlanta has used telemedicine to treat over seven thousand patients and supply over six thousand patients with eyeglasses.¹⁰¹ However, while telemedicine has allowed Georgia to provide healthcare services to many of its rural citizens, the state's Public Health Commissioner recognizes that there are challenges associated with the continued growth of telemedicine, which include obtaining insurer reimbursement and increasing broadband capacity.¹⁰²

to facilitate collaboration between physicians in rural and urban areas using teleconferencing technology. *Id.* The Project is now operational in 46 states across the United States, and in 34 countries globally. *Id.*

⁹⁵ Wibberley *supra* note 26, at 891.

⁹⁶ *Project Echo, supra* note 94.

⁹⁷ See Adelyn B. Boleman, Comment, *Georgia's Telemedicine Laws and Regulations: Protecting against Health Care Access*, 68 MERCER L. REV. 489, 489 (2017) (explaining that advancements in technology could bridge such a gap where physicians are willing to utilize non-traditional means to treat patients and patients “simply [want] access to physicians”).

⁹⁸ Andy Miller, *Telemedicine Spreading in Georgia but There's Still Much Room to Grow*, GA. HEALTH NEWS (Jan. 30, 2018), <http://www.georgiahealthnews.com/2018/01/telemedicine-spreading-georgia-room-grow> (discussing a new federal grant that is part of an effort to grow telemedicine in Georgia).

⁹⁹ Linda S. Morris, *Program Will Allow Rural Diabetic Patients to Manage Disease by Internet*, TELEGRAPH (Jan. 22, 2018), <https://www.macon.com/news/business/article195952859.html>.

¹⁰⁰ Miller, *supra* note 98.

¹⁰¹ *Id.*

¹⁰² *Id.*

xi. Nebraska

In 2016, a group of approximately 450 primary care physicians and specialists affiliated with the Midwest Independent Physicians Practice Association began to use telemedicine to consult with their patients.¹⁰³ The participating physicians have access to a web-based program that allows for the secure exchange of information between the physician and the patient.¹⁰⁴ This prevents rural patients from needing to travel long distances to facilities located in more metropolitan areas of the state.¹⁰⁵ The goal of the program is to enable patients to obtain quality medical care despite the physician shortage.¹⁰⁶

Like many states with large rural geographical areas, one-third of counties in Nebraska have no mental health care providers, and approximately eighty-eight out of its ninety-three counties are experiencing a shortage of such providers.¹⁰⁷ A 2018 study concluded that the use of telemedicine for mental health treatment is scarce; specifically, the study found that some mental health providers did not offer telemedicine services, some providers lacked training, and some are reluctant to offer telehealth services without the patient explicitly asking for the service.¹⁰⁸ Telemedicine advocates have expressed that their colleagues were hesitant to adopt the technology, that they lacked the necessary support staff to successfully implement the technology, and that some feared losing their patients to telemental health.¹⁰⁹ Nevertheless, Nebraska has pushed forward with telemedicine programs, and patients are adapting to the technology; nearly all who used telemedicine for mental health services chose to continue treatment.¹¹⁰

xii. Washington

Roughly 1.2 million residents of Washington state live in areas with a shortage of local access to primary care.¹¹¹ This shortage is estimated to worsen over the next ten to fifteen years, and it is estimated that the state will eventually face a shortage of up to four thousand physicians and twenty-four thousand registered nurses.¹¹² While outpatient clinics throughout Washington possess telemedicine capabilities, the medical provider

¹⁰³ Rick Ruggles, *Telemedicine Service Expanding in Nebraska to Spare Rural Patients Long Trips*, OMAHA WORLD HERALD (May 17, 2016), https://www.omaha.com/livewellnebraska/health/telemedicine-service-expanding-in-nebraska-to-spare-rural-patients-long/article_ac38d6c9-6414-53cc-aaf3-9468f34edb53.html.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* (explaining that the program is meant to be used by patients who live inconveniently far away from the specialists they need to see in person).

¹⁰⁷ Riley Johnson, *Is Telehealth the Answer to Nebraska's Mental Health Care Shortage?*, LINCOLN J. STAR (July 3, 2018), https://journalstar.com/news/local/is-telehealth-the-answer-to-nebraska-s-mental-health-care/article_35a5e37e-e1bd-51ee-9ac6-b3ceb6bca4b3.html.

¹⁰⁸ *Id.* (describing a University of Michigan survey that found only half of 42 responding Nebraska mental health care providers use telehealth).

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ Roger Stark, *The Benefits of Telemedicine in Washington State*, WASH. POL'Y CTR., 1 (2017), <https://www.washingtonpolicy.org/library/doclib/Stark-Telemedicine-in-WA-11.20.2017.pdf>.

¹¹² *Id.* at 2.

shortage will likely be worse in rural areas.¹¹³ Nevertheless, Washington has taken steps to combat this issue; in May of 2017 the state signed on to the Interstate Medical Licensure Compact, which provides an expedited process for out-of-state doctors to treat patients throughout Washington.¹¹⁴

Medicine Telehealth, the University of Washington School of Medicine's system which encompasses fourteen programs in over twenty specialties across five states, is evidence of the state's commitment to servicing rural and underserved patients.¹¹⁵ This program gives patients access to nationally and internationally recognized physicians through reliable and secure communication systems.¹¹⁶ The university's telehealth technologies span from teleconferencing to the storage and forwarding of health data.¹¹⁷

B. Telemedicine in Urban Areas

Urban areas have the advantage of ongoing telemedicine advancements, educational opportunities, and developments in technology that may not reach more rural areas as quickly. For example, at Thomas Jefferson University Hospital in Philadelphia, there is a one-year Telehealth Leadership Fellowship that gives fellows the opportunity to graduate as both a telehealth researcher and a program leader.¹¹⁸ The program gives graduates a solid background in telehealth marketing, finance, health informatics,¹¹⁹ and in legal and ethical concerns surrounding these practices.¹²⁰ During the 2016–2017 academic year, about eighty-four medical schools in the United States offered telemedicine as either an elective or a required course.¹²¹

Another benefit of providing telemedicine in urban areas stems from the abundance of physicians practicing in such areas. Students from urban areas are overrepresented in medical schools; thus, these students are more likely to choose to live and practice medicine in the urban areas that they are familiar with.¹²² The tendency of physicians to

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ *Consultations*, UNIV. OF WASH. MED., <https://www.uwmedicine.org/provider-resource/consultations> (last visited Nov. 8, 2018).

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Telehealth Leadership Fellowship*, T. JEFFERSON U., https://www.jefferson.edu/university/jmc/departments/emergency_medicine/education/fellowships/telehealth_leadership.html (last visited Nov. 8, 2019) (explaining that the program allows fellows to develop the research, knowledge, and skills necessary to contribute to telehealth, as well as the leadership skills needed to successfully implement telehealth solutions).

¹¹⁹ See Tiffany C. Veinot et al., *Health Informatics and Health Equity: Improving Our Reach and Impact*, 26 J. AM. MED. INFO. ASS'N. 689, 689 (2019) (describing health informatics studies as “the use of information technology to improve human health”).

¹²⁰ *Telehealth Leadership Fellowship*, *supra* note 118.

¹²¹ Robin Warshaw, *From Bedside to Webisode: Future Doctors Learn How to Practice Remotely*, AM. ASS'N MED. COLL. (Apr. 24, 2018), <https://www.aamc.org/news-insights/bedside-webisode-future-doctors-learn-how-practice-remotely>.

¹²² Daniel McCarthy, *The Virtual Health Economy: Telemedicine and the Supply of Primary Care Physicians in Rural America*, 21 AM. J.L. & MED. 111, 120 (1995).

remain in urban areas is also reflective of the difference in income levels between rural and urban areas.¹²³ As technology and telemedicine continue to advance, doctors can remain in urban areas which have medical universities, greater earning potential, and more prestige, while retaining the ability to practice in underserved rural communities from afar.¹²⁴

II. CHALLENGES ASSOCIATED WITH TELEMEDICINE

A. Challenges in Rural Areas

While telemedicine offers significant benefits to patients living in rural areas, such areas still face challenges. For example, Montana received a Network Planning Grant from the Health Resources and Services Administration (HRSA) in 2011 to begin offering primary care telemedicine services;¹²⁵ however, by April of 2015 the program was non-operational due to a staffing shortage.¹²⁶ While most physicians do not consider access to telemedicine when deciding where to practice medicine, the idea of being isolated in a rural area deters many from choosing to practice in such locations.¹²⁷ Montana may serve as an example to other states by highlighting the importance of adequate preparation before implementing a telemedicine program. To ensure success in implementation, states should properly educate providers, evaluate the cost of the program, and determine the patient volume.¹²⁸

A lack of access to affordable broadband at adequate connection speeds is another roadblock to providing telemedicine in rural areas.¹²⁹ Many rural communities lack the resources to offer fiber optics at all, which frustrates providers and makes the quality of telehealth treatment lower than in urban areas.¹³⁰ In 2017, Microsoft introduced a plan to make broadband connections more accessible to larger rural healthcare providers and to lower costs, which would allow providers to reinvest additional funds in patient care.¹³¹ Additionally, facilities are encouraging better connectivity in these areas by adopting telemedicine programs.¹³²

¹²³ Lindsey T. Goehring, *H.R. 2068: Expansion of Quality or Quantity in Telemedicine in the Rural Trenches of America?*, 11 N.C. J.L. & Tech. 99, 104 (2009).

¹²⁴ *Id.*

¹²⁵ Chris Hopkins, *Montana Health Network Primary Care Telemedicine*, RURAL HEALTH INFO. HUB, (Oct. 5, 2012), <https://www.ruralhealthinfo.org/project-examples/706>.

¹²⁶ *Id.*

¹²⁷ McCarthy, *supra* note 122, at 127.

¹²⁸ *Id.*

¹²⁹ Maren Niemeier, *Telehealth Use in Rural Healthcare*, RURAL HEALTH INFO. HUB, <https://www.ruralhealthinfo.org/topics/telehealth> (last reviewed Mar. 26, 2019).

¹³⁰ Juliet Van Wagenen, *Rural Connectivity Stands as One of Telehealth's Last Hurdles*, HEALTHTECH (Jan. 16, 2018), <https://healthtechmagazine.net/article/2018/01/rural-connectivity-stands-one-telehealths-last-hurdles>.

¹³¹ *A Rural Broadband Strategy: Connecting Rural America to New Opportunities*, MICROSOFT 40 (July 10, 2017), <https://selectra.co.uk/sites/default/files/pdf/Rural-Broadband-Strategy-Microsoft-Whitepaper-FINAL-7-10-17.pdf>

¹³² *Id.*

B. Crossover Issues in Rural and Urban Areas

i. Protection of Patient Medical Information

Some challenges apply to the implementation of telemedicine in both rural and urban areas; one major concern is the potential for unauthorized access to patients' medical information.¹³³ With the continued use of, and reliance on, electronic data collection and storage and frequent distant data transfer, the risk of exposing patient medical information is substantial.¹³⁴

Several federal and state laws protect patient health data. For example, the Food and Drug Administration (FDA) protects patient information through the Food, Drug, and Cosmetic Act of 1938 and the Medical Device Amendments of 1976.¹³⁵ Videoconferencing systems, including those integrated into a telemedicine unit, are subject to the Food, Drug, and Cosmetic Act of 1938, the purpose of which is to ensure device efficacy and patient safety.¹³⁶ Further, in 2013, the FDA issued a broad regulatory guidance for mobile medical devices that are used for monitoring patients and data transfer.¹³⁷ However, recent data breaches, such as that of Experian,¹³⁸ have shown that even with regulatory protection patient medical information may still be at risk.¹³⁹

Additionally, new healthcare related cell phone applications, such as those that help manage medical conditions, schedule doctors' appointments, and see counselors, store large amounts of patient data.¹⁴⁰ While the Health Insurance Portability and Accountability Act (HIPAA) contains privacy and security provisions designed to protect patient health information, many of these mobile health applications may not be subject to HIPAA.¹⁴¹ The Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH) expanded the protections that HIPAA offers by extending some HIPAA privacy and security requirements to "certain Business Associates that create, receive, maintain or transmit identifiable health information while performing a service

¹³³ Joseph L. Hall & Deven McGraw, *For Telehealth to Succeed, Privacy and Security Risks Must Be Identified and Addressed*, 33 HEALTH AFF. 216, 217 (2014).

¹³⁴ Kimberly Lovett Rockwell, *The Promise of Telemedicine Current Landscape and Future Decisions*, MICH. B.J., 38, 39 (Feb. 2017), <https://www.michbar.org/file/barjournal/article/documents/pdf4article3059.pdf>.

¹³⁵ *Id.*

¹³⁶ Ashley Geraghty, *Are Telemedicine Units a Medical Device?*, AAMI, <https://www.aami-bit.org/doi/pdf/10.2345/i0899-8205-40-6-479.1>.

¹³⁷ See U.S. FOOD & DRUG ADMIN., *Policy for Device Software Functions and Mobile Medical Applications: Guidance for Industry and Food and Drug Administration Staff* (2013).

¹³⁸ *Experian Data Breach Settlement*, FTC (Sept. 2019), <https://www.ftc.gov/enforcement/cases-proceedings/refunds/equifax-data-breach-settlement>.

¹³⁹ Berkeley Lovelace Jr., *FDA Issues Warning on Medical Devices That Are Vulnerable to Takeover From Hackers*, CNBC (Oct. 1, 2019), <https://www.cnbc.com/2019/10/01/fda-issues-warning-on-medical-devices-that-are-vulnerable-to-cyberattacks.html>.

¹⁴⁰ Angus Chen, *How Your Health Data Lead a Not-So-Secret Life Online*, NPR (July 30, 2016), <https://www.npr.org/sections/health-shots/2016/07/30/487778779/how-your-health-data-lead-a-not-so-secret-life-online>.

¹⁴¹ Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104–191, 110 Stat. 1936 (1996); *Id.*

or function on behalf of a covered entity.”¹⁴² However, because third-party developers that make the majority of mobile health applications available to consumers are not considered Business Associates performing a function on behalf of a “covered entity,” the HIPAA protections do not apply.¹⁴³

ii. Physician Licensing Requirements

Another major issue that applies to the use of telemedicine in both rural and urban locations regards licensure.¹⁴⁴ State laws require that physicians are licensed in the state in which they practice medicine, but physicians utilizing telemedicine practice across state lines, which presents a problem.¹⁴⁵ Many states have amended their medical practice laws and enacted regulation to address licensing requirements for the practice of telemedicine, but many of these laws are quite vague.¹⁴⁶ While some suggest that a national licensure system would eliminate this problem, such a system would impose additional requirements that physicians practicing across state lines may be unable to meet.¹⁴⁷ For example, many states define telemedicine differently and have different rules pertaining to when a provider needs to physically see a patient before utilizing telemedicine.¹⁴⁸ Other states require patients to interact with off-site health care professionals while services are being provided, some require in-person follow-up visits after treatment via telemedicine, a few require the presence of a telepresenter¹⁴⁹ during treatment, and so on.¹⁵⁰ Physicians practicing across state lines must also be aware of each state’s particular laws regarding the prescribing of controlled and non-controlled substances.¹⁵¹ Due to these issues, states should look to other states’ laws in the same region when updating and implementing laws regarding the practice of medicine. Regional licensure would benefit physicians practicing telemedicine across state lines because they would be able to practice in multiple states.¹⁵²

¹⁴² Rockwell, *supra* note 134, at 39.

¹⁴³ See *Examining Oversight of the Privacy & Security of Health Data Collected by Entities Not Regulated by HIPAA*, U.S. DEP’T. OF HEALTH AND HUM. SERV., https://www.healthit.gov/sites/default/files/non-covered_entities_report_june_17_2016.pdf [hereinafter HHS]; Chen, *supra* note 140.

¹⁴⁴ Goehring, *supra* note 123, at 107.

¹⁴⁵ *Providing Care Across State Lines*, AM. ACAD. OF ALLERGY, ASTHMA & IMMUNOLOGY, <https://www.aaaai.org/practice-resources/running-your-practice/practice-management-resources/Telemedicine/state>.

¹⁴⁶ Roman J. Kupchynsky & Cherly S. Camin, *Legal Considerations of Telemedicine*, 64 TEX. B.J. 20, 22 (2001).

¹⁴⁷ *Id.*; See e.g. Kip Poe, *Telemedicine Liability: Texas and Other States Delve into the Uncertainties of Health Care Delivery Via Advanced Communications Technology*, 20 REV. OF LITIG. 682, 696–97 (2001) (describing a national licensure system implemented by Congress as being the most workable solution for healthcare providers).

¹⁴⁸ Rockwell, *supra* note 134, at 40.

¹⁴⁹ *Id.* (explaining that a telepresenter is a healthcare provider present at the patient’s location during the telemedicine encounter).

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² Jennifer M. Little, *Into the Future: The Statutory Implications of North Carolina’s Telepsychiatry Program*, 93 N.C. L. REV. 863, 888 (2015).

III. STATE LAWS PERTAINING TO THE PRACTICE OF TELEMEDICINE

A. The Physician-Patient Relationship

Even though treatment via telemedicine does not occur face-to-face, this does not change the fact that certain interactions establish a physician-patient relationship.¹⁵³ One challenge with telemedicine is determining exactly when that relationship begins.¹⁵⁴ In general, a physician-patient relationship has been established when there has been two-way communication, the physician has agreed to treat the patient, and the patient has agreed to accept treatment from the physician.¹⁵⁵

Most states have implemented laws that determine when the physician-patient relationship has been established for the purposes of treatment rendered via telemedicine.¹⁵⁶ For example, in New York, a physician-patient relationship can be established by a mere telephone call that initiates treatment.¹⁵⁷ Similarly, Arkansas law allows for the establishment of a physician-patient relationship via audio-video interaction.¹⁵⁸ Conversely, Georgia and Texas each require an in-person follow-up after the telemedicine visit, even though the telemedicine encounter itself establishes the physician-patient relationship.¹⁵⁹

It is important for states with more rural areas to allow the establishment of physician-patient relationships through the use of telemedicine because patients in those areas often need to travel several hours to get to a physician or a hospital. Some states, including Idaho, Nebraska, North Carolina, North Dakota, West Virginia, and Wyoming, allow for a physician-patient relationship to be established via a two-way video conference.¹⁶⁰ It is likely that the number of states that allow for a physician-patient relationship to be established this way will grow as the use of telemedicine becomes more routine.

B. Standard of Care

Standard of care is defined as “the standard of conduct to which one must conform... [and] is that of a reasonable [physician] under like circumstances.”¹⁶¹ In medical

¹⁵³ Lynette Herscha, *Is There a Doctor in the House? Licensing and Malpractice Issues Involved in Telemedicine*, 2 B.U. J. SCI. & TECH. L. 8, 35 (1996).

¹⁵⁴ *Id.* at 34.

¹⁵⁵ *Id.*

¹⁵⁶ *50-State Survey: Establishment of a Patient-Physician Relationship Via Telemedicine*, AMA (2018), <https://www.ama-assn.org/system/files/2018-10/ama-chart-telemedicine-patient-physician-relationship.pdf> (compilation of state laws related to the establishing a definition of the patient-physician relationship in telemedicine) [hereinafter *50-State Survey*].

¹⁵⁷ Erin Grunzke, *Long-Distance Doctors: The Crossroads of Telemedicine Licensure in Illinois*, 89 ILL. B.J. 362, 363 (2001).

¹⁵⁸ Latoya Thomas & Gary Capistrant, *State Telemedicine Gaps Analysis: Physician Practice Standards & Licensure*, AM. TELEMEDICINE ASS'N. 2 (2017).

¹⁵⁹ Rockwell, *supra* note 134, at 38.

¹⁶⁰ Thomas & Capistrant, *supra* note 158, at 25, 40, 46, 47, 61, 63.

¹⁶¹ Peter Moffett and Gregory Moore, *The Standard of Care: Legal History and Definitions: the Bad and Good News*, 12 WEST J. EMERGENCY MED. 109 (2011).

malpractice cases, the standard of care is generally established through the use of expert testimony.¹⁶² However, the standard of care to which telehealth physicians should be held is not clearly defined by many states.¹⁶³ While some states view telemedicine as a tool used to practice medicine, rather than as its own form of medicine, the standard of care should be the same regardless of whether the patient is seen via telemedicine or in person.¹⁶⁴

In 2017, Texas passed legislation recognizing that since telemedicine services are comparable to those provided in a physician's office, the standard of care should be as well.¹⁶⁵ While this addressed the question of which standard of care should be applied to telemedicine services, Texas also requires the use of a patient site presenter.¹⁶⁶ Therefore, while the physician-patient relationship may be established through a telemedicine interaction, it must occur at an established medical site and in the presence of a patient site presenter.¹⁶⁷

While patient site presenters are not physicians, they usually have clinical experience.¹⁶⁸ The New College Institute's STAR Telehealth Program, which is supported by Virginia Telehealth Network, Mid-Atlantic Telehealth Resource Center, Broad Axe Care Coordination, and Totier Technologies, offers a program for students to become a Certified Telemedicine Clinical Presenter and Technology Professional.¹⁶⁹ The prerequisite to admission into the program is being certified to perform a basic patient exam, and the goal is to give graduates the skills necessary to correctly present patient information during virtual visits.¹⁷⁰ Many states, however, have not yet passed legislation stating whether they require a certified patient site presenter as opposed to another medical professional.¹⁷¹

¹⁶² Robert H. Aicher, *What Standard of Care?* 36 *AESTHETIC SURGERY J.* 376, 377 (2016).

¹⁶³ Alexis Slagle Gilroy, *Telemedicine, Mobile Health and the Standards of Care – A Look at State Specific Policies Altering Traditional Standards of Care Requirements as Applied to Telemedicine and Impacting the Utilization of Mobile Technologies*, *AM. ASS'N. ADVANCEMENT OF SCI.* 3 (2014).

¹⁶⁴ *Id.*

¹⁶⁵ *TEX. OCC. CODE ANN. § 111.004* (Vernon); Clay Wortham & Tesch West, *2017 Legislation Expands Telemedicine Opportunities in Texas and Ends Teladoc Dispute*, 20 *J. HEALTHCARE COMPLIANCE* 59, 59 (2018).

¹⁶⁶ Wortham & West, *supra* note 165, at 60 (explaining that a patient site presenter is a person that facilitates the use of telemedicine equipment along with the encounter at the patient's bedside and is able to communicate with the physician).

¹⁶⁷ *Id.*

¹⁶⁸ *See The Role of Telepresenter*, *NW. REGIONAL TELEHEALTH RESOURCE CTR.* (Sept. 26, 2013), <https://www.nrtrc.org/education-article-19> (stating that a telepresenter is generally a nurse who is trained to use the technology).

¹⁶⁹ *Star Telehealth at New College Institute*, *NEW COLL. INST.*, [https://www.newcollegeinstitute.org/programs/southside-telehealth-training-academy-and-resource-center-\(star\)](https://www.newcollegeinstitute.org/programs/southside-telehealth-training-academy-and-resource-center-(star)), (last visited Nov. 8, 2019).

¹⁷⁰ *Id.*

¹⁷¹ *50-State Survey*, *supra* note 156.

Unlike Texas, Illinois law is unsettled as to the appropriate standard of care that should apply when a patient is treated using telemedicine.¹⁷² Current law broadly allows for independent physician judgment within the bounds of established procedures and for physician discretion under certain circumstances, such as during an emergency situation.¹⁷³

Although Illinois law is vague regarding the applicable standard of care when using telemedicine, the state enacted a law applicable to occupational therapists which states that the standard should be the same regardless of whether the patient is seen face-to-face or via telemedicine, which is a standard that many states have implemented for telemedicine in general.¹⁷⁴ For example, Colorado,¹⁷⁵ New Hampshire,¹⁷⁶ and South Carolina¹⁷⁷ have laws requiring that the standard of care for telemedicine be the same as the standard for in-person visits.¹⁷⁸ Conversely, other states do not follow such standards, and instead have laws specific to telemedicine; for example, the standard of care for telemedicine services in Hawaii is that of “non-in-person consultation,” recognizing that a physician may be limited in performing a proper exam when it is conducted through telemedicine.¹⁷⁹

Regardless of where a physician is providing telemedicine services, it is important that he knows what the standard of care is for that specific area to ensure that he is meeting or exceeding that standard. While it remains to be seen how states choose to implement laws regarding the standard of care for telemedicine, laws will likely differ among states and could include more complex definitions than the traditional standard of care.

C. Cross-Over Licensing for Physicians Practicing Across State Lines

Some states have attempted to facilitate physician practice of telemedicine across state lines by implementing cross-over licensing, which makes it easier for physicians to become licensed in that state.¹⁸⁰ However, many states still have strict licensing requirements which may negatively affect the utilization of telemedicine since obtaining multiple licenses can be impractical.¹⁸¹ For example, Michigan law states that private payers and Michigan Medicaid “need not reimburse telemedicine services not furnished by a Michigan-licensed provider.”¹⁸² Such strict laws may contribute to the physician

¹⁷² Wibberley, *supra* note 26, at 908.

¹⁷³ *Id.* at 909.

¹⁷⁴ COLO. REV. STAT. § 10-16-123 (2017); Wibberley, *supra* note 26, at 910.

¹⁷⁵ § 10-16-123.

¹⁷⁶ N.H. REV. STAT. ANN. § 329:1-d (LexisNexis 2019).

¹⁷⁷ S.C. CODE ANN. § 40-47-37(A) (2016).

¹⁷⁸ Wibberley, *supra* note 26, at 910-11.

¹⁷⁹ *Id.* at 912.

¹⁸⁰ *Telemedicine Policies*, FED’N. STATE MED. BD. (Oct. 30, 2019), http://www.fsmb.org/siteassets/advocacy/key-issues/telemedicine_policies_by_state.pdf.

¹⁸¹ Goehring, *supra* note 124, at 107.

¹⁸² Rockwell, *supra* note 134, at 41.

shortage since out-of-state physicians cannot treat patients using telemedicine unless they undergo the possibly rigorous licensing process for that state.¹⁸³

One solution to the licensing problem is special telemedicine licensing certificates.¹⁸⁴ Nine states currently issue such certificates, which allow a physician to practice telemedicine in his state if he meets certain requirements.¹⁸⁵ Additionally, some states, including New York, Maryland, and Virginia, have reciprocity statutes that allow a physician licensed in bordering states to practice within their state without needing to obtain a separate license.¹⁸⁶ Finally, multiple states have adopted a version of the Federation of State Medical Board's Interstate Medical Licensure Compact ("IMLC"), which allows physicians to become licensed through an expedited process.¹⁸⁷

The IMLC makes it easier for physicians to become licensed in multiple states and thus establish jurisdiction at their patients' locations.¹⁸⁸ The program aims to reduce barriers to multistate licensure and to enable "licensure portability and telemedicine while expanding access to health care by physicians, particularly in underserved areas of the nation."¹⁸⁹ The fact that the director of the Wyoming State Board of Medicine originally proposed the exploration of an interstate compact evidences the importance of its implementation in states with large rural areas.¹⁹⁰ In June of 2017, Maine became the twenty-second state to join the IMLC,¹⁹¹ and in 2018 Guam became the first U.S. territory to join.¹⁹² For Guam, this is an opportunity to ensure that its residents can obtain "quality health care, regardless of geographical challenges."¹⁹³ Since it joined the IMLC, more than 750 medical licenses have been issued in Guam.¹⁹⁴

Interstate licensing could be exactly what rural areas need to help ensure that, despite physician shortages, patients get adequate treatment via telemedicine services. It appears that the Federation of State Medical Boards ("FSMB") considered both patient protection

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

¹⁸⁸ *The IMLC, INTERSTATE MED. LICENSURE COMPACT*, (Oct. 30, 2019), <https://imlcc.org>; Katie Dvorak, *Interstate Medical Licensure Compact Ready for Consideration by States*, FIERCE HEALTHCARE (Sept. 5, 2014), <https://www.fiercehealthcare.com/it/interstate-medical-licensure-compact-ready-for-consideration-by-states>.

¹⁸⁹ Dvorak, *supra* note 188.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* (noting that Alabama, Arizona, Colorado, Idaho, Illinois, Iowa, Kansas, Maine, Maryland, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming, Guam and the District of Columbia have joined the Compact).

¹⁹² *Guam Joins Interstate Medical Licensure Compact*, FED'N. STATE MED. BDS. (Feb. 27, 2018), <http://www.fsmb.org/siteassets/advocacy/news-releases/2018/guam-joins-interstate-medical-licensure-compact.pdf>.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

and patient needs in rural areas of the country when creating the IMLC.¹⁹⁵ In mid-2017, after Maine joined the IMLC, the president and CEO of FSMB, Dr. Chaudhry, stated, “[a]t a time when our nation’s physician shortage is disproportionately impacting rural communities, it is critical that states like Maine are able to attract eligible physicians from across state lines to treat patients in need.”¹⁹⁶

The IMLC shows no plans of slowing down, and approximately eighty percent of physicians in the United States meet its criteria for licensure.¹⁹⁷ Since April 2017, approximately 3,426 medical licenses have been issued and roughly 497 licenses have been renewed through the IMLC.¹⁹⁸ This may be a step towards helping lessen physician shortage in rural areas; however, the actual impact of this initiative and whether it has increased access to quality healthcare in rural communities will continue to be assessed.

D. Overall Growth of Telemedicine

Telemedicine technology has improved dramatically from when it was first introduced, and it has reached patients that would otherwise have been unable to obtain adequate medical care. In 1959, the Nebraska Psychiatric Institute used a microwave link for telepsychiatry consultations with a mental hospital that was 112 miles away.¹⁹⁹ The same year, teleradiology was introduced in Montreal, Quebec, which allowed for the transmission of telefluoroscopic exams over coaxial cable.²⁰⁰ Today, radiologists can manipulate imaging in ways that were previously impossible, which gives them the ability to reach a more accurate diagnosis and make better clinical recommendations.²⁰¹

In 1999, the term “telestroke” was first introduced with the goal of reducing complication rates associated with the administration of intravenous tissue-type plasminogen activator (tPA).²⁰² A tPA injection is considered “the gold standard” treatment for ischemic stroke, as it dissolves the clot that caused the stroke and thus helps restore blood flow.²⁰³ While some rural hospitals previously had to transfer ischemic stroke patients to hospitals

¹⁹⁵ *Maine Joins Interstate Medical Licensure Compact*, FED’N. STATE MED. BDS. (June 28, 2017), <http://www.fsmb.org/siteassets/advocacy/news-releases/2017/maine-joins-interstate-medical-licensure-compact.pdf>.

¹⁹⁶ *Id.*

¹⁹⁷ *Interstate Medical Licensure Compact Commission Issues 3,000th License*, FED’N. STATE MED. BDS (Nov. 8, 2018), <https://www.fsmb.org/advocacy/news-releases/interstate-medical-licensure-compact-commission-issues-3000th-license>.

¹⁹⁸ *Id.*

¹⁹⁹ Douglas A. Perednia & Ace Allen, *Telemedicine Technology and Clinical Applications*, 273 JAMA 483, 483 (1995).

²⁰⁰ *Id.*; See *Fluoroscopy*, FDA, <https://www.fda.gov/radiation-emitting-products/medical-x-ray-imaging/fluoroscopy> (explaining that fluoroscopy is a type of medical imaging).

²⁰¹ Rashid L. Bashshur et al., *The Empirical Foundations of Teleradiology and Related Applications: A Review of the Evidence*, 11 TELEMEDICINE J. AND E-HEALTH 686, 868 (2016).

²⁰² Lawrence R. Wechsler et al., *Telemedicine Quality and Outcomes: A Scientific Statement for Healthcare Professionals from the American Heart Association/American Stroke Association*, 48 J. AM. HEART ASS’N., e3, e4 (2016).

²⁰³ *Stroke*, MAYO CLINIC, <https://www.mayoclinic.org/diseases-conditions/stroke/diagnosis-treatment/drc-20350119>.

hundreds of miles away for treatment, telestroke allows such hospitals to treat patients with the use of intravenous tPA on-site.²⁰⁴ As the practice has evolved, it has helped to bridge the gap in care in areas without stroke centers and neurologists, or with limited neurological expertise.²⁰⁵ As telestroke advances, it has the potential to help areas with and without available neurological expertise by providing increased speed and quality aids to improve treatment outcomes of stroke patients.²⁰⁶

Telemedicine has virtually revived home visits, which were almost a thing of the past.²⁰⁷ Thomas Jefferson University Hospital in Philadelphia has emergency medicine physicians available twenty-four hours a day, seven days a week, to see patients via JeffConnect, an on-demand video service.²⁰⁸ Patients can communicate with emergency medicine physicians, schedule video visits, and even schedule remote second visits using their cell phone, tablet, or computer.²⁰⁹ JeffConnect also offers virtual rounds, which allows patients to meet their care team, and Jefferson Health Neuroscience Network, which connects patients and doctors in regional hospitals with specialists that have neuroscience expertise.²¹⁰

In addition to improving overall patient care and providing access to specialists in isolated areas that would not otherwise have such access, telemedicine has also been introduced into the correctional system.²¹¹ Incarcerated individuals have health issues that must be treated, diagnosed, and managed.²¹² In *Estelle v. Gamble*,²¹³ the Supreme Court held that all prisoners have the right to adequate medical care.²¹⁴ Telemedicine has “remove[d] the requirement for multiple guards and special transport equipment for moving prisoners to conventional healthcare settings,” and “reduce[d] poor public acceptance of shackled prisoners in the waiting area with non-prisoner patients.”²¹⁵

Telemedicine has expanded in ways that were unthinkable at the time it was first implemented; for example, teaching hospitals are beginning to incorporate telemedicine

²⁰⁴ *Id.*

²⁰⁵ See generally Wechsler, *supra* note 202, at e3 (stating that telestroke is one of “the most successful applications of telemedicine, bringing the experience of stroke experts to hospitals lacking appropriate stroke expertise.”).

²⁰⁶ *Id.*

²⁰⁷ See generally *Telehealth and Its Impact on Facilities Management*, HEALTHCARE TECH OUTLOOK (Sept. 3, 2019), <https://www.healthcaretechoutlook.com/news/telehealth-and-its-impact-on-facilities-management-nid-1457.html> (stating that “home calls are now starting to revive virtually—thanks to increased use of telehealth”).

²⁰⁸ *Faster, Easier Way to See a Doctor—by Video!*, JEFFERSON U. HOSP.: JEFFCONNECT <https://hospitals.jefferson.edu/jeffconnect.html> (last visited Nov. 8, 2019).

²⁰⁹ *Id.*

²¹⁰ *Id.*

²¹¹ Jeremy D. Young and Melissa E. Badowski, *Telehealth: Increasing Access to High Quality Care by Expanding the Role of Technology in Correction Medicine*, 6(2) J. CLIN. MED. 20, 23 (2017); Ollove, *supra* note 74.

²¹² *Id.* at 22.

²¹³ 429 U.S. 97 (1976).

²¹⁴ *Id.* at 103.

²¹⁵ Young & Badowski, *supra* note 211, at 23.

into their curriculum.²¹⁶ To keep advancing telemedicine and give patients in rural areas better access to medicine, and to keep physicians interested and up to date, it is important that telemedicine becomes a regular part of healthcare education.²¹⁷ It is also important to ensure that all physicians, regardless of their experience level, are dedicated to helping telemedicine evolve in their facilities and to becoming comfortable with the technology.²¹⁸

IV. IMPROVING ACCESS TO TELEMEDICINE IN RURAL AND URBAN AREAS

One significant challenge to advancing access to telemedicine is a lack of in-depth research regarding its implementation in rural areas. This may be because many telemedicine programs are fairly new but may also be due to issues such as a lack of follow-up on the programs' progress, ineffective implementation, or a lack of follow-through to ensure success. Whatever the issues may be, it is important to utilize this information to improve telemedicine in all areas.

Improving access to affordable broadband and ensuring that enough physicians are available would help improve access to telemedicine in rural areas.²¹⁹ As discussed above, interstate licensure would benefit rural areas since physicians would be able to become licensed in multiple states more easily, and thus be able to utilize telemedicine across state lines.²²⁰ However, even if the problem of physician shortage is ameliorated with interstate licensure, patients will still be unable to access health services via telemedicine if they cannot obtain affordable broadband and a smartphone, tablet, or computer.²²¹

It is worth exploring further how Georgia was able to afford to give tablets to their diabetic patients living in rural communities to interact with their doctors from home, and to determine if this could be implemented in other states.²²² This could potentially solve the issue faced by patients living in rural areas who are unable to afford the smartphone, tablet, laptop, or desktop computer required to access telemedicine services. However, this would solve only half of a two-pronged problem for citizens living in rural areas; even if patients were given tablets free of charge, they would still need Internet access to connect with the telemedicine provider.²²³

Alaska may serve as a model for others with regard to finding solutions to implement affordable broadband.²²⁴ In addition to Alaska's major telecommunications companies

²¹⁶ Elizabeth Veringa, *Training Clinicians with Telehealth*, HEALTH RECOVERY SOLUTIONS (June 19, 2019) https://www.healthrecoveryolutions.com/blog/teaching_telehealth.

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ See *supra* notes 129–132 and accompanying text.

²²⁰ Dvorak, *supra* note 188.

²²¹ Gianluca Montanari Vergallo et al., *The Doctor-Patient Relationship in Telemedicine and Mobile Health*, 4 SENSES SCI. 1, 2, 5 (2017).

²²² Miller, *supra* note 98.

²²³ Niemeier, *supra* note 129.

²²⁴ Stricker, *supra* note 86.

partnering with health-related nonprofits to bring access to high-speed, secure telemedicine options, one such company, General Communication Inc. (GCI), has expanded broadband capacity to many rural villages throughout the state via its TERRA project.²²⁵ The project helped build a terrestrial microwave system in Alaska's Northwest Arctic region that provides rural Alaskans with faster and more reliable internet access.²²⁶ In addition, communities are provided access to Connect MD Medical Network Solution, which has been implemented across Alaska for more than a decade.²²⁷ Also, in late 2016, the state implemented Doctor on Demand, an application that allows patients to connect directly to board-certified physicians.²²⁸ However, while the application is free and Alaskans pay a flat fee per visit, Doctor on Demand does not partner with any insurance companies that operate in Alaska, which creates a barrier for some patients.²²⁹

As new technology becomes available, telemedicine will continue to expand. However, to ensure that telemedicine is properly implemented in facilities throughout the country, physicians must be on board.²³⁰ Many physicians are resistant to change their preferred method of practice, and telemedicine often does not fit into that practice; one potential solution to this problem is to begin to utilize telemedicine technology as part of a standard curriculum in medical schools and during residencies, so that physicians can become accustomed to its use early on in their careers.²³¹

CONCLUSION

There is much that we have learned from the implementation of telemedicine thus far, and even more that we have yet to learn as it continues to evolve and create more innovative ways to treat patients. While new treatments and technological advancements will likely reach urban areas first, it is important that rural areas are not left behind.

Many difficulties and challenges that arise from the implementation of telemedicine occur in both urban and rural areas.²³² Thus, those areas need to work together to determine the best approach to overcome challenges. This could mean sharing information with physicians in rural communities regarding new technology for treatment of certain diseases, new radiologic innovations, and even introducing additional telemedicine education to ensure physicians in rural areas are kept up to date on new advancements. Further, ensuring that physicians in both urban and rural areas are comfortable with using telemedicine technology will create more telemedicine opportunities in rural areas.²³³

²²⁵ *Project Summary*, STG INC., <https://stgincorporated.com/project/gci-terra>.

²²⁶ *Id.*; Stricker, *supra* note 86, at 20.

²²⁷ Stricker, *supra* note 86, at 20.

²²⁸ *Id.* at 29.

²²⁹ *Id.* at 30.

²³⁰ Patrick Y.K. Chau and Paul Jen-Hwa Hu, *Investigating Healthcare Professionals' Decisions to Accept Telemedicine Technology: An empirical Test of Competing Theories*, 39 INFO. & MGM'T 297, 298 (2002).

²³¹ Veringa, *supra* note 216.

²³² *Supra* Part II.B.

²³³ Veringa, *supra* note 216.

Additionally, physicians' voices and those of other healthcare providers using telemedicine services play an important role as use of telemedicine continues to grow. Further, the physicians using telemedicine technology in rural communities could have important insight and ideas on how to improve use and reach more patients in rural areas throughout their states.

Attorneys practicing in health law and other related areas also need to be aware of changes that arise as telemedicine advances. The more widespread the use of telemedicine becomes the more likely states are to implement laws pertaining to treatment via telemedicine. Similarly, to provide adequate representation, attorneys need to remain up-to-date on state laws regarding when a physician-patient relationship is formed when telemedicine is the mode of treatment, and of any adjustments made to the standard of care with regard to treatment rendered via telemedicine.

Telemedicine will continue to grow and improve in areas where it has already been implemented and is likely to expand into areas that have not yet reaped its benefits. It is important that all physicians, regardless of experience, are committed to this growth and improvement. Implementing telemedicine into the medical curriculum and offering extensive continuing education courses involving telemedicine, especially in rural communities, will improve the use and function of telemedicine in both urban and rural areas, and will also help improve overall patient care and treatment.