



INTERGOVERNMENTAL ADVISORY COMMITTEE

to the

FEDERAL COMMUNICATIONS COMMISSION

ADVISORY RECOMMENDATION No: 2019-2

**In the Matter of State, Local Tribal, and Territorial
Regulatory and Other Barriers and Incentives to Telemedicine**

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I. INTRODUCTION

The Commission charged the Intergovernmental Advisory Committee (IAC) with producing a report on “*how to identify state, local and Tribal regulatory barriers/incentives to telemedicine. The report should examine, among other issues, state and local licensing laws or regulations that prevent Telehealth providers from treating patients across state lines and intrastate restrictions that may inhibit the provision of telemedicine.*” This Report provides researched insight regarding the tasking.

Telemedicine and Telehealth are one of the most promising quality of life opportunities in the United States today.¹ Fundamentally all of the digital divide concerns and challenges that face urban and rural America, the U.S. Territories and the Tribal Nations are applicable to Telehealth. When thinking about healthcare, we conjure up images of office visits or trips to the emergency room (ER). Whether it's for a routine check-up, lab tests, an outpatient procedure, or major surgery, the norm is for patients and caregivers to leave their homes to meet their doctor at a physical healthcare facility of some kind. But things are changing. Based on advances in information and communications technologies, medical professionals as well as other health care providers can now offer increasingly robust, remote (from their location to another), interactive synchronous and asynchronous services to consumers, patients and caregivers. As the Commission recently stated: “Telemedicine has assumed an increasingly critical role in health care delivery as technology and improved broadband connectivity have enabled patients to access health care services even when they cannot access a health care provider’s physical location. Advances in Telemedicine are transforming health care from a service delivered solely through traditional brick and mortar health care facilities to connected care options delivered via a broadband Internet access connection directly to the patient’s home or mobile location.”² This Report describes the technical underpinnings necessary for effective Telemedicine, the barriers that impede its full deployment, and makes recommendations to address these barriers.

II. DISCUSSION

REMARKS OF FCC COMMISSIONER BRENDAN CARR AT THE TRI-AREA COMMUNITY HEALTH CENTER IN LAUREL FORK, VIRGINIA

“With advances in telemedicine, health care is no longer limited to the confines of traditional brick and mortar health care facilities, . . . with an Internet connection, patients can now access high-quality care right on their smartphones, tablets, or other devices regardless of where they are located.”

Source: <https://docs.fcc.gov/public/attachments/DOC-358052A1.pdf>

A. Overview

In drafting this Report, the IAC has utilized data assembled by the FCC on actions to accelerate the adoption and accessibility of broadband-enabled health care solutions, as well as related inquiries covering a broad range of regulatory, policy, technical and infrastructure issues. After the months of engagement by the IAC, it remains that “people-based” issues, not those technology-based, are some of the most significant challenges related to the adoption of Telehealth. The process of elected officials developing appropriate regulatory guidance and legislation and licensing criterion for providers is complex and is complicated more by advocacy positions than by generally held policy principles. Current

¹ For purposes of this Report, the IAC uses the terms “Telemedicine” and “Telehealth” as used in *Promoting Telehealth for Low-Income Consumers, Notice of Proposed Rulemaking (Connected Care NPRM)*, WC Docket No. 18-213, FCC 19-64, rel. July 11, 2019 at para 21.

² See *Connected Care NPRM* at para 1 (citing examples of connected care services delivered to patients at their residence or mobile location rather than a health care provider’s physical location include, but are not limited to, synchronous video consultations and visits, store and forward services (asynchronous transfer of patient images and data for interpretation by a physician), remote patient monitoring, and patient health education).

and rapidly advancing technologies available for Telehealth offer government officials and other policymakers the opportunity to examine these advocacy positions in light of the need for equipment, software applications, and broadband adoption necessary to ensure access to Telehealth services for all Americans, whether in urban, rural or Tribal areas.

As patients find the use of Telehealth applications and remote communications to be increasingly easy, health-care providers are confronted with scalability issues, the need for meticulous planning, strategic phasing, and ongoing assessments in deployment of the system of systems (SoS) that comprises the Telehealth ecosystem. These issues are likely to remain challenges across the board even as the “Digital Divide” of unified telecommunications access to broadband Internet remains daunting in rural areas and creates a persistent disadvantage for reliable services in areas most needing the support. Understanding these challenges from the perspective of State, Local, Tribal and Territorial (SLTT) officials offers a unique approach to regulatory policy for people and process. Opportunities for support, teaching and training through implementation of specific funding and support will enhance and encourage sound Telehealth policy ensuring scalability, adoption and success.

The Report includes insight into the various state, territorial, Tribal and local laws or regulations that prevent Telehealth providers from treating patients across state lines; and the possible intrastate restrictions that may inhibit the provision of Telemedicine. As discussed in the Report, the emerging broadband health ecosystem includes health care providers, public health and social service agencies, hospitals and clinics, innovators, entrepreneurs, developers, academic and research facilities, policymakers, patients and their caregivers, fixed and wireless broadband companies, as well as other participants in the health ecosystem. Notwithstanding this significant landscape of issues encompassed by Telehealth, the Report is purposefully narrow in scope – seeking to explore the specific areas of broadband deployment, specific identified state, local, Tribal and territorial regulatory barriers, digital literacy and adoption, among hospitals, clinics, laboratories, pharmacies, Individual Smart Devices and disaster response (EMT) teams. Selected case studies of Telehealth implementation are set out in Appendix A.

B. Access to Broadband

REMARKS OF FCC CHAIRMAN AJIT PAI AT THE U.S. DEPARTMENT OF VETERANS AFFAIRS’ “ANYWHERE TO ANYWHERE, TOGETHER” TELEHEALTH/VIRTUAL CARE THOUGHT LEADER SUMMIT

“ . . . At the same time, we can’t realize the promise of Telehealth without connectivity. This is one of the reasons that, since day one as FCC Chairman, my top priority has been closing the digital divide. Every American—and every veteran—who wants Internet access should be able to get it. High-speed Internet access, or “broadband,” is important in our daily lives and is increasingly critical to getting health care. Yet too many people still don’t have broadband. About 19 million Americans lack access to home broadband service at speeds of at least 25 Mbps downstream and 3 Mbps upstream. What’s worse, those who stand to benefit the most from Telehealth are often on the wrong side of the digital divide: Roughly 24% of households in rural communities—again, communities facing shortages of physicians, particularly specialists—can’t get fixed broadband.”

Source: <https://docs.fcc.gov/public/attachments/DOC-355421A1.pdf>

As FCC Chairman Pai and Commissioner Carr accurately observe, access to broadband is an essential element to the successful deployment of telehealth, and the corollary – that lack of access to adequate broadband presents a significant barrier to telehealth - is equally true. While FCC reforms have expanded the benefits of high-speed Internet to millions of consumers across the country, access to broadband continues to be fragmented especially in rural areas. In the 1996 Act, Congress established the following guiding principle for universal service: “Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to

telecommunications and information services” of reasonably comparable quality and at reasonably comparable rates to services provided in urban areas.³ Closing the digital divide, ensuring that every American has access to next-generation broadband and the opportunity it enables, is a top priority for the FCC in re-orienting universal service programs to support this important goal. Broadband access is critical to economic opportunity, job creation, education and civic engagement. That is why closing the digital divide is the Commission’s top priority. For communities throughout the nation to thrive and prosper, residents must have the option to obtain high-speed Internet access.⁴

The Connect2HealthFCC (C2HFCC) Initiative provides an overview of *Mapping Broadband Health in America*.⁵ The analysis reveals vastly different outcomes between connected communities and digitally isolated communities. This finding holds true for Telehealth issues such as access to care, quality of care and health outcome metrics. Almost half of U.S. counties have high burdens of chronic disease and a need for greater broad-band connectivity. The majority of “double burden” areas fall into “clusters” of five or more counties with total populations over 100,000. This has significant implications for crafting successful and sustainable business models for connected health in rural areas. In addition, the rural/urban gap is growing. In many “critical need” counties, broadband access levels and health metrics have worsened.⁶ This analysis helped provide the context for the IAC’s work.

There are two primary elements of broadband deployment that affect Telehealth:

- An overall shortfall in rural areas of access to adequate broadband limits the ability to deploy Telehealth and
- A shortfall in implementing proper redundancies for broadband infrastructure to ensure around the clock connectivity to health care affects those areas where broadband access exists.

1. Broadband and Infrastructure Requirements for Telehealth

Broadband infrastructure for Telehealth needs varies substantially by setting. Telemedicine settings include hospitals, clinics, provider offices, schools, skilled nursing facilities, and private homes, among others. Each Telemedicine setting (whether an originating or distant site) requires both connectivity and equipment, with differences in the type and acuity of the care delivered requiring varying levels of technology and support. Other settings must also have the necessary infrastructure, including homes of older adults (to support aging in place), and clinics or independent provider offices in rural and frontier communities that are far from a hospital. Equipment and software must be interoperable, and ideally, equipment owned by one provider should be able to be accessed by other, authorized, providers. Accordingly, providers must also make sure that any equipment and software they purchase meets industry standards for interoperability and can be used to connect to multiple Telemedicine platforms.⁷

³ 47 U.S.C §254(b).

⁴ See *In the Matter of the Rural Digital Opportunity Fund, Connect America Fund, FCC 19-77, WC Docket Nos. 19-126, 10-90, Notice of Proposed Rulemaking, rel. Aug. 2, 2019, (Rural Digital Opportunity Fund NPRM) at para 1.*

⁵ See [Connect2HealthFCC](#) (last visited Aug. 29, 2019).

⁶ See [Mapping Broadband Health in America](#) (last visited Aug. 29, 2019).

⁷ For a general assessment of the healthcare IT standards landscape in 2019, see Interoperability Standards Advisory, Office of the National Coordinator for Health IT, <https://www.healthit.gov/isa/sites/isa/files/inline-files/2019ISAReferenceEdition.pdf> (last visited Sep. 3, 2019)

Broadband is not one-size-fits-all. Differences in broadband needs must be considered when evaluating the appropriateness of Telemedicine in various settings. For example, mobile broadband plays an important role for Telemedicine, especially in rural areas and in applications used by emergency responders and mobile clinics. Further, redundancy of access to broadband is important so that patient care is not interrupted. The task is to identify the facilities (hospitals, clinics, shelters) that require broadband infrastructure for Telehealth implementation that requires many different types of telecommunications, software, and equipment in order to realize a successful outcome and service and redundancy.

2. Optimal Technical Features for Broadband Telehealth

Broadband infrastructure requires accessible communications capabilities. Metrics of broadband for Telehealth should be more than up/down speed observed such as the popular www.speedtest.net, as those are easy to "game" by ISPs. More comprehensive measurements should be taken over long periods of time, to gauge latency, dropped packets, and various data transfer patterns (see <http://speedof.me> references). Those broadband measurements should serve as a basis for assessing performance of Telehealth software applications.

Required technical features of Telehealth should include live video with image and audio quality sufficient for a healthcare provider to assess a patient. The audio quality should be crystal clear to avoid adding to the difficulty of understanding of local accents, non-native English speakers' pronunciations, and people with disabilities. The audio also should preserve intonations, tremolos and other non-verbal sounds relevant to understand stress levels. The visual image should be clear enough to permit distinguishing facial expressions, insect bites or rashes and labels of medication. Both audio and video refresh rate should be fast enough to provide continuous quality images while the camera is in motion and provide no delay between the audio and the video. The lag between transmission by the patient and viewing by the provider should be less than a few seconds to reduce cross-talk.

Access to latest patient information should include lab results, medication and previous Telehealth video recordings. Full access to the patient chart is desirable in the long term, but not mandatory to derive benefits from Telehealth.⁸ Access to data from remote monitoring medical devices installed at the patient's mobile device (smartphone and/or tablet) should be accessible, and wireless devices used for Telehealth should have battery strength lasting long enough for a Telehealth session. Wireless devices should have front and rear cameras to display data as well as a medical condition on the body of the patient or the face of the patient). Underlying Wi-Fi and cellular networks should be available for redundancy. Any device should have sufficient computing power and memory to support modern video compression and upload algorithms and should be capable of running on one of the top three mobile operating systems in the USA.

In order to support these requirements, broadband networks must provide low latency, sufficient upload bandwidth, resiliency and reliability to support the requirements for audio and video listed above. Low total latency in data packets should be defined as the transition time between each hop in the network, starting with the mobile device and ending with the provider. Further, because each hop adds to the total latency, the reduction of the number of hops is important. This requires optimizing the network through routing configurations and/or the reduction of in-between hops through direct connections. Finally, the lag time for each hop depends on the type of technology. Going from very slow to very fast: satellite, cellular, WiMAX, cable/DSL, fiber. The closer the fiber is connected to the patient and provider end-point, the lower the total latency.

⁸ For an example of patient directed healthcare data exchange using blockchain technology, see Patient Directed Healthcare Data Exchange, <https://www.youtube.com/watch?v=UcDiMf2HuC8> (last visited, Sep. 3, 2019).

Telehealth software infrastructure should be required to allow providers to retrieve the latest information as each session begins. Over time, this requirement should evolve to gather data from a wide variety of sources, from multiple emergency rooms (ERs or EMRs), laboratories, primary care providers, emergency services (hospital or 911), and preventive care plans. This would require the Health Information Exchanges (HIE) to be non-proprietary and open in its interfaces. Data and documents should be able to be transferred in multiple formats and structures in order to be operable in the various application programming interfaces (API), rather than in the prevailing “PDF” format, to allow electronic transfer with full interoperability and use of the underlying data elements. In order to be considered interoperable, software vendors should be required to open up their systems to communicate electronically patient information.

In addition, 911 EMT services are starting to adopt video to provide better service, in particular to SLTTs with longer driving distances. This optimizes dispatch decisions (e.g. recommending that the patient be driven by a family member to a local health center, rather than awaiting the arrival of an ambulance). It is also a way to serve more citizens during emergencies when resources must be prioritized (mutual assistance does not work given the distances). Those 911 video initiatives are de-facto Telehealth and should be included.

3. Need for Accurate Broadband Mapping

Lack of accurate geographic broadband availability data and USF coordination between state and federal universal service programs, aimed at expanding broadband, creates inefficiencies and fragmentation. A variety of state and federal programs administer funding mechanisms that target Internet service availability in unserved areas, including universal funds. Lack of coordination between these different programs can diminish their effectiveness and the efficiency with which they pursue their shared goal of wider access to Internet service. Proper coordination is needed to avoid having different programs supporting service availability in the same area, and to ensure that support goes to areas without broadband service and without the likelihood of receiving it in the foreseeable future. The lack of geographic data on what type of services are available, where, and under what circumstances makes such coordination difficult.

The Commission has taken recent steps to increase the accuracy of broadband mapping by adopting an Order and Second Further Notice of Proposed Rulemaking that initiates a new process for collecting fixed broadband data to better pinpoint where broadband service is lacking. As the Commission stated:

Accurate broadband deployment data is critical to the Commission’s efforts to bridge the digital divide. Effectively targeting federal and state spending efforts to bring broadband to those areas most in need of it means understanding where broadband is available and where it is not. . . . We therefore initiate a new data collection, the Digital Opportunity Data Collection . . . that will gather geospatial broadband service availability data specifically targeted toward advancing our universal service goals. . . . we limit the new data collection obligations to fixed broadband providers at present and seek comment on how best to incorporate mobile wireless coverage data into the Digital Opportunity Data Collection. . . . we seek comment on certain aspects of the Digital Opportunity Data Collection to enhance the accuracy and usefulness of broadband deployment reporting. . . . We also seek comment on . . . new data collection to precisely identify the homes and small businesses . . . With respect to mobile wireless coverage, we seek comment on how to align the Digital Opportunity Data Collection with changes in mobile broadband deployment technology, markets, and policy needs. . . . (and) on how we can improve the

satellite broadband deployment data.⁹

4. Access to Broadband in Tribal Areas

Some states have the lowest rates of broadband adoption on Tribal lands where the need for Telehealth is the greatest. The Rural Healthcare Connect Fund helps but is inadequate to provide sufficient broadband to enable Telehealth. As the FCC noted in its 2019 Broadband Progress Report, broadband deployment on Tribal lands continues to lag behind and is less robust than in urban, and rural, areas.¹⁰ The Commission has made efforts to address the digital divide that persists in Indian Country, but the lack of broadband deployment in Indian Country continues to affect Indian health and the utilization of Telehealth.¹¹ Approximately 75% of Indian Health Service (IHS) sites are located in areas defined as ‘rural’ by the FCC. To help fund the monthly recurring circuit costs associated with these upgrades, IHS is increasingly leveraging the financial support provided by the Healthcare Connect Fund. However, large numbers of IHS facilities do not currently have sufficient bandwidth to offer Telehealth and related services.

C. Regulatory Barriers

It is extremely difficult to enable effective regulatory support for Telehealth in SLTT administrations in an environment of changing Federal and State legislation and regulation, which often lags industry innovation in broadband deployment across unified telecommunications infrastructure. While Telehealth has been utilized for decades, the policy and regulatory landscape has not kept pace with the rapid development and ability of the technology. However, over the last few years, this has slowly been changing as state and the federal governments have attempted to resolve barriers to encourage the utilization of Telehealth. These solutions have varied in their breadth and success and significant obstacles still remain. There are six significant policy areas where regulatory and/or policy barriers remain and impact the use and willingness of practitioners to employ Telehealth. They are:

- Reimbursement
- Licensing
- Health Information Exchanges
- Insurance Parity and Malpractice Coverage
- Privacy - Information Sharing and HIPAA
- Establishing a Doctor/Patient Telehealth-based Relationship

⁹ *In the Matter of Establishing the Digital Opportunity Data Collection*, Report and Order and Second Further Notice of Propose Rulemaking, FCC 19-79, WC Docket Nos. 19-195 and 11-10 (2019), at paras 1-4.

¹⁰ Federal Communications Commission (FCC), [2019 Broadband Progress Report](#), FCC 19-44 (May 29, 2019), at 10-11.

¹¹ For example, on August 20, 2019, the Commission adopted an order that adopted certain reforms to the Rural Health Care Program rules to promote transparency and predictability and to further the efficient allocation of limited program resources. Among other things, this order prioritized funding to rural Tribal areas. *See Promoting Telehealth in Rural America*, Report and Order, FCC 19-78, WC Docket No. 17-310, FCC 2019 WL 3956443 at para 13 (2019). On August 22, 2019, the FCC announced that it had authorized support over the next decade for maintaining, improving, and expanding affordable broadband in 44,243 homes and businesses on Tribal lands nationwide; *See* Press Release, FCC, FCC Authorizes Support for Broadband in Over 44,000 Tribal Homes and Businesses Nationwide (Aug. 21, 2019), <https://docs.fcc.gov/public/attachments/DOC-359226A1.pdf>.

1. Reimbursement

Telehealth reimbursement policy varies greatly on the federal and state levels. Restrictions in the Medicare program include limitations on where Telehealth services may take place, both geographically and facility-wise. Reimbursement challenges to Telehealth, both real and perceived, undermine the adoption of Telehealth. Physicians and other providers, especially in rural areas, are still unsure they will be reimbursed for services they provide. Reimbursement challenges, both real and perceived, undermine adoption.

Reimbursement remains a central barrier to the ubiquitous use of Telehealth. Currently, reimbursement policies for Telehealth vary widely from federal policy (Medicare) to state Medicaid policies (all different for all 50 states and the District of Columbia),¹² private payers, Medicare Advantage plans and Medicaid Managed Care plans. This creates a complex and confusing landscape for practitioners to navigate, especially if they have patients from multiple payers and multiple jurisdictions.

Telehealth reimbursement policy can be broken into specific issues in which much of the established federal and state policies revolve. These issues include:

- What type of modality of Telehealth would be reimbursed?
- What location, both geographic and facility/site, must a patient be located in order for the Telehealth delivered service to be reimbursed?
- What type of practitioner is providing the service via Telehealth?
- What type of service is being provided via Telehealth?

Recent proposed rules for the Centers for Medicare & Medicaid Services (CMS), part of the Department of Health and Human Services (HHS) include revisions to “Payment Policies” under the Medicare Physician Fee Schedule, Quality Payment Programs, and streamlining hospital outpatient and ambulatory surgical center requirements for conducting comprehensive medical histories and physical assessments. These changing CMS policies are germane to the administrative provisioning of Telehealth.

Expanding the list of eligible Telehealth services would help drive adoption of Telehealth in the Medicare program. Telehealth reimbursement policy in Medicare remains one of the most limited policies in the nation with restrictions on: Modality; Location - The patient must be located in a rural health professional shortage area (HPSA) or a non-Metropolitan Statistical Area (MSA), and only a specific list of sites are allowed to be originating sites. For nearly all of the services that can be provided by Telehealth in Medicare, the majority cannot be provided in the home or a non-medical type of facility such as a school); Providers – Only a specific list of providers can bill for Telehealth delivered services in Medicare. Allied professionals are not allowed such as physical therapists, speech pathologists, audiologists; and Services Only a specific list of Current Procedural Terminology (CPT) codes are allowed to be billed if provided via Telehealth. Of the approximately 80,000 eligible codes that can be billed in Medicare, only about 100 are reimbursed if provided via Telehealth.

There have been some changes in recent years. For example, the Bipartisan Budget Act of 2018 did allow for other locations, both geographic and site, to be eligible originating sites for acute stroke and End Stage Renal Disease treatment. However, these have been very narrow, specific changes aimed at particular conditions.

Further, not categorizing certain broadband-enabled health services, such as broadband-based remote patient monitoring, as “Telehealth” may increase their chance of being reimbursable. This

¹² See Ctr. for Connected Health Pol., *State Telehealth Laws & Reimbursement Policies*, NAT’L TELEHEALTH POL. RESEARCH CTR. (Fall 2018), https://www.cchpca.org/sites/default/files/2018-10/CCHP_50_State_Report_Fall_2018.pdf (last visited Feb. 9, 2019).

distinction between Telehealth services vs. other broadband-enabled health services serves as a barrier to adoption of Telehealth.¹³ Some changes that Medicare has implemented through administrative actions have also helped to increase the use of Telehealth. In 2015, Medicare began to reimburse for Chronic Care Management (CCM) services which utilizes remote patient monitoring technology to provide services. These services were not called “Telehealth” and were not subject to the statutory restrictions noted above, although other limitations were put on CCM such as the type of Medicare enrollee who qualify to receive such services. This current year, Medicare began to reimburse for other technology-delivered services that were also not called “Telehealth,” but “Communications Technology-Based Services.”¹⁴ While utilizing Telehealth technologies, as with CCM, by labeling the services as something different from “Telehealth,” they would not be subject to the existing statutory limitations. Therefore, these Communications Technology-Based Services could be provided in a wider range of locations, both geographic and site, and by a larger pool of practitioner types.

One particular issue that CMS could address administratively is the geographic limitation. As noted earlier, an originating site must be located in a “rural” HPSA. However, the definition for “rural” is not in federal statute and CMS could redefine that term to allow for more areas to be eligible originating sites, something they did once before in 2014.¹⁵ In addition, CMS has the authority to add services to the list of Medicare Telehealth services either through an internal process or via public requests.

Furthermore, removing unnecessary administrative burdens associated with patient consent requirements for the purposes of payment for certain virtual care services and enrollment in health plans and networks would further incentivize adoption resulting in greater access to care, particularly in rural physician shortage areas. Many state Medicaid programs and commercial payers have not released their Telemedicine guidance documentation and reimbursement rules. CMS could encourage both to make this information more readily available. Lastly, CMS could create a national provider credentialing process to address this barrier.

a. Private Payers and Community Health Center Reimbursement

As of October 2018, thirty-nine states and the District of Columbia have private payer laws that vary in requirements and strength on what type of obligation health plans have to reimburse for Telehealth delivered services.¹⁶ However, only three states have specific laws that require that payers pay the same amount for a Telehealth delivered service as would have been paid had the service been provided in-person. These states are Delaware, Hawaii and Minnesota.¹⁷

Community Health Centers (CHCs), which include Federally Qualified Health Centers (FQHCs) and Rural Health Centers (RHCs), are at the forefront of providing needed services in rural and underserved areas and are also main players to address the opioid crisis. However, certain policy barriers

¹³ See *Connected Care NPRM* at para 21 (seeking comment on the definition of “connected care” as a subset of Telehealth that is focused on delivering remote medical, diagnostic, and treatment-related services directly to patients outside of traditional brick and mortar facilities).

¹⁴ Center for Medicare and Medicaid Services, “Final Policy, Payment and Quality Provisions Changes to the Medicare Physicians Fee Schedule for Calendar Year 2019”, Press Release (November 1, 2018). (<https://www.cms.gov/newsroom/fact-sheets/final-policy-payment-and-quality-provisions-changes-medicare-physician-fee-schedule-calendar-year>) (last visited March 13, 2019).

¹⁵ Center for Medicare and Medicaid Services, Pub 100-04 Medicare Claims Processing, Transmittal 2848, Expansion of Medicare Telehealth Services for CY 2014. (<https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/Downloads/R2848CP.pdf> (last visited March 13, 2019)).

¹⁶ *Ibid.*

¹⁷ *Ibid.*

limit the extent to which CHCs can utilize Telehealth. For example, CMS defines a “visit” for an FQHC and an RHC as being “face-to-face.”¹⁸ This definition eliminates the ability of FQHCs and RHCs to utilize two modalities of Telehealth: store-and-forward and RPM because neither modality is “face-to-face.” Additionally, by statute, FQHCs and RHCs can only act as originating sites for Telehealth-delivered services and not as distant sites under the Medicare program.¹⁹

The scope and scale of Telehealth practices to date have largely been restricted by laws and regulations that govern how Telehealth may be practiced and paid for, which ultimately incentivize adoption and use, more than it has by technology factors. U.S. providers often encounter a patchwork of conflicting and disparate legal and regulatory requirements for coverage and practice as a result of an inconsistent state-by-state approach to governing how Telehealth may be practiced, and the fact that the majority of payment flows in healthcare continue to favor delivery processes tied to traditional care settings.”²⁰

b. Medicaid Reimbursement

Medicaid reimbursement policies – referred to briefly above - are as diverse as the number of programs that currently exist. Each Medicaid program does reimburse for some Telehealth delivered services, and while some states follow Medicare’s limitation to rural areas, many do not make this restriction. However, no two state’s Medicaid Telehealth reimbursement policies are the same.

In Medicaid, there is much confusion as to what CHCs can with Telehealth. Policy in Medicaid is less clear. States have different policies, some more restrictive than others, and much of this is based on confusion as to what is allowed. Some states believe that the limited Medicare policies apply on the state level as well, while other states have been much more progressive in their Telehealth policies related to CHCs, such as allowing FQHCs to act as a distant site provider. Overall, it creates a confusing environment for CHCs to navigate and impedes further utilization of Telehealth and access to services for Medicaid enrollees.

2. Licensing.

One of the main features of Telehealth is its ability to overcome geographic barriers, such as state borders. However, licensing of health practitioners typically requires that a license be obtained in the state in which the patient is located. This would require a Telehealth provider who treats patients in multiple states to obtain a license in each of those states, a costly and time-consuming hurdle. Licensing thus creates another impediment to the implementation of Telehealth.

A number of initiatives are underway to assist providers with practice across jurisdictions: The Federation of State Medical Boards offered their own type of solution for physicians by creating model language for an Interstate Medical Licensure Compact that allows member states to create an expedited process to obtain a license in member states. There is also the Physical Therapy Interstate Compact, the Psychologist Interjurisdictional Compact (PSYPACT), and the Recognition of EMS Personnel Licensure Interstate Comp Act (REPLICA).

Notwithstanding these national initiatives, occupational licensing generally is within the purview of states to control and regulate. The majority require a license from the state in order to provide services,

¹⁸ Center for Medicare and Medicaid Services, Medicare Learning Network, “Federally Qualified Health Center,” January 2018, (<https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/fqhcfactsheet.pdf>) (last visited March 13, 2019).

¹⁹ 42 USC 1395m(m)(1).

²⁰ See <https://healthtechmagazine.net/article/2018/02/4-non-technical-barriers-Telehealth-and-how-industry-can-overcome-them>.

although a few exceptions exist in a few jurisdictions. To address this issue, some states have formed licensing compacts to facilitate greater ease for practitioners to operate in multiple states. However, these compacts operate differently. For example, the Nurse Licensure Compact is one where a nurse who is licensed in a compact member state, can practice in another compact member state with that original license.²¹ There is no need for nurses to get multiple licenses. However, the Interstate Medical Licensure Compact for physicians provides an expedited process for them to obtain a license in a compact member state.²² A physician will still need to get multiple licenses, but it would be a faster process.

3. Health Information Exchanges

In furthering the FCC task of identifying barriers/incentives to Telemedicine, the interoperability (multiple formats and structures within APIs) and electronic information exchange of data and documents in Telehealth should be considered an essential component and a significant barrier if the emphasis is limited to the establishment of only broadband capacity and interconnection to the Internet. Understanding and discussion of HIEs for rural and underserved areas in the states, territories, and Tribal nations is essential. Such discussion should cover where HIEs have been, where they are now, and where they must go in the future.

Providing resources to overcome barriers is required to produce desired outcomes including (1) up-to-date knowledge of current issues with HIE technology and implementation, (2) understanding HIE conceptual frameworks, (3) understanding federal and non-federal financial and human resources to support HIE implementation, (4) agreement on leadership and resources required to undertake HIE in the underserved areas of states, territories, and Tribal nations, and (5) agreement on action steps and responsible persons required to implement HIE for Telehealth. Collaboration with the National Health IT Collaborative for the Underserved (NHIT), the Association of State and Territorial Health Officials (ASTHO), and the Association of Public Health Laboratories (APHL) should be considered.

Accordingly, an overview of HIE in underserved areas and an assessment of the incorporation of the latest HIE technology within state, territory and Tribal nation health agency models can determine if jurisdictions are poised to move into the future of Telehealth. Policy implications for the cloud, bandwidth, and health information exchange technology for public health “outside” of Telehealth need to be identified.

4. Malpractice Insurance Parity and Coverage

Providers must be cognizant to two malpractice insurance coverage issues: Whether their malpractice plan covers Telehealth delivered services and whether that coverage extends into other states Tribal lands and territories in which they are providing Telehealth services. Not all malpractice carriers will cover Telehealth delivered services, or they may charge additional or high premiums for such coverage. This may discourage providers from incorporating the technology into their practice. Additionally, not all carriers’ plans operate in all states. A provider whose malpractice insurance covers services that practitioner provides in his or her home state, may not receive the same protection in another state. Telehealth malpractice cases are likely to increase the more Telehealth is widely used. Not all carriers will provide malpractice coverage involving Telehealth delivered services and not all of the coverage a provider has will be viable in another state, territory, or Tribal jurisdiction.

²¹ National Council of State Boards of Nursing, Licensure Compact, (<https://www.ncsbn.org/compacts.htm>) (last visited August 29, 2019).

²² Interstate Medical Licensure Compact, (<https://imlcc.org/>) (last visited August 29, 2019).

5. Privacy - Information Sharing and HIPAA

HIPAA does not have specific requirements related to Telehealth. A Telehealth provider must meet the same requirements of HIPAA as would be needed if the services were delivered in-person. However, to meet those requirements an entity may need to take different or additional steps that may not have been necessary were the service delivered in-person. While many applications and vendors market themselves as HIPAA compliant, this is not always accurate, and the legal and regulatory obligations still rest with the HIPAA-covered entity.

The Office of the National Coordinator for Health Information Technology (ONC) announced in February 2019 the next phase of the 21st Century Cures Act with the impending release of a proposed rule on interoperability and information blocking. This ONC policy is critical in furthering the task of identifying regulations that prevent Telehealth providers from treating patients across state lines and intrastate restrictions that may inhibit the provision of Telemedicine. The proposed ONC Rule supports secure access of electronic health information and strongly discourages information blocking. The proposed ONC rule supports the bi-partisan 21st Century Cures Act, enabling patients to access and share their electronic health information, giving them the tools to shop for and coordinate their own health care. The pending rules of both CMS and the ONC are critical in the provision of Telehealth to the patients. Understanding and supporting the federal policy changes will enable the task of removing resource barriers to Telehealth in the states, territories and Tribal nations.

6. Establishing a Doctor/Patient Telehealth-based Relationship

A relationship built via Telehealth needs to be considered a valid means of establishing a relationship. The Ryan Haight Act dictates how Telehealth (Telemedicine in the Act) may be used to prescribe controlled substances. The Act provides specific scenarios on how the interaction between patient and provider must take place. The onset of the current opioid epidemic and potential for Telehealth may be used to deliver aspects of Medication Assisted Therapy (MAT), which uses a combination of medication, and behavioral health therapy. States have control over how everything else is prescribed (except controlled substances) when Telehealth is used, and the policies continue to vary across states. Some states have very specific rules for the use of Telehealth in prescribing while others are more vague or silent. Some of the rules center on whether Telehealth is adequate to establish a patient-provider relationship which, again, varies across the states.

In the last few years, states have begun to pass legislation or regulations that detailed how and when Telehealth may be used to establish a patient-provider relationship, and when it can be used for prescribing. With the exception of controlled substance prescribing which is under federal law, confusion over when Telehealth may be used to establish a patient-provider relationship and prescribe is slowly being addressed. However, prescribing of controlled substances via Telehealth continues to remain an issue especially as the nation addresses the opioid/substance use disorder (SUD) crisis.

Interest in how Telehealth can be used to treat SUD and address the opioid crisis has increased in the past eighteen months, with much of the attention on the behavioral health component. Telehealth could also be used in the medication side of MAT, but federal law limits the use of Telehealth to prescribe many of the typical medications used, specifically controlled substances such as buprenorphine.

D. Other Barriers to Telehealth

1. Digital Literacy

In the context of this IAC Telehealth Report, digital literacy and adoption apply most directly to the infrastructure providers rather than to the patient. Although the acumen of the patients and their families are a critical part of seeking and Telehealth utilization, the public exhibits an increasing familiarity with smart devices and web applications and utilities. It is the overall Telehealth infrastructure

of Federal, State, Territorial, Tribal, and Local governmental policy makers and regulators that needs to improve to provide the necessary legal and regulatory framework for success.

As the world moves towards “5G” and the Internet of Things (IoT) the understanding of digital literacy competence and adoption in all communities is essential. One way to look at the Telehealth vertical is as a complex system of networks where dynamic interactions between overlapping networks form a System-of-Systems (SoS) of integrated e-health supply chains that adhere to core principles of business process management. Software products and services that allow Telehealth business partners to search and share critical information seamlessly and in real-time regardless of software platform or technical sophistication in a secure and reliable infrastructure is more and more critical for effective medical infrastructure support.

Technology innovation continues to improve the potential for cooperation among the various Telehealth stakeholders, particularly where complex – and often incompatible Electronic Health Records (EHR) systems are concerned. Within this group of stakeholders there are primary care providers, specialized medicine, hospitals (public and private), emergency response technicians, insurance providers, pharmacies, and associated suppliers of medical products that cross the spectrum of goods and services within the medical industry. Each of these entities represents multi-node networks with multiple linkages (multi-plex) that penetrate economic sectors outside of health care. In addition, the movement of materials, organs, and persons across and within the SoS of integrated health care adds a layer of complexity that few other integrated systems can replicate.

Increasing support must be given to rural and disadvantaged communities so that digital literacy and adoption does not exacerbate the digital divide. One example of these efforts is the National Digital Equity Center (NDEC), which is committed to closing the Digital Divide in Maine and across the United States, through advocacy for Affordable Broadband, Affordable Equipment, Digital Literacy Training and Public Computer Access. NDEC is focused on creating digitally literate residents across Maine and beyond, providing communities with the expertise to mobilize broadband technologies through digital inclusion and literacy efforts.²³ One of the NDEC’s primary initiatives is “Aging in Place”. With one of the oldest populations in the United States and the rural distribution of Maine’s population, on-line tools that help the aging population remain in their home is essential to quality of life. However, in order to assist this population, deployment of emerging technologies, coupled with recognition among health systems, hospitals and local providers, as well as state and national policy makers, must be a strategic imperative.²⁴

²³ National Digital Equity Center: www.digitalequitycenter.org

²⁴ Ibid.

2. Integrating Telehealth into Disaster Planning, Response and Recovery

‘Without planning and coordination, emergency operations can suffer from serious misdirection. To facilitate rapid, efficient emergency operations, a system is required that enables all participants in the incident to work together. An integrated emergency management system is a conceptual framework to increase emergency management capability by networking. That increased capability would not be readily available, especially in a disaster, without establishing prior networking, coordination, linkages, interoperability, partnerships, and creative thinking about resource shortfalls.’

-- From the US Federal Emergency Management Administration’s (FEMA) Course on Principles of Emergency Management

a. Relevance of Disaster Planning, Response and Recovery to Telehealth

After a disaster, when local healthcare facilities may be destroyed or otherwise unavailable, Telehealth may be the only way for vital health care services to be provided to the public. For Telehealth to be effective in responding to disasters, healthcare organizations and local governments must be able to deal with the unexpected. Not only may the location, nature, cause and scale of the disaster be unpredictable, but the actors in the relief chain may be new. In 2004, following Hurricane Charley, the American Red Cross, Greater Miami and the Keys Chapter dispatched hundreds of spontaneous volunteers to assist devastated families in affected areas on the West Coast of Florida, four hours away. The desire to assist friends, neighbors, and fellow humans was overwhelming.

When disasters reach crisis proportions, assistance can come from halfway around the world as it did in Asia post-tsunami. An effective Telehealth system should not be closed to those people or organizations that might be prepared and uniquely able to assist during an emergency, just because they are not part of the coordinated system that existed before the disaster occurred. The international Telehealth relief chain must be able to accommodate new actors, challenges and opportunities at an appropriate level, if it is to be effective. Flexibility is key.

Despite the differences in urban and rural, intra-and inter-jurisdictional Telehealth capabilities, it is the medical support commercial community that has been at the vanguard of promoting flexible solutions. Globalization has made this an inevitability. Today’s emergency Telehealth infrastructure offers much quicker realignments in demand and supply capacity than in the past, while remaining more predictable and manageable than disaster relief chains themselves. Business organizations, in contrast to many humanitarian organizations, rely on processes and technology to create this flexibility. Humanitarian organizations tend to be driven by people and paper. On this point, humanitarian organizations have much to learn from commercial supply chains. Our national public utilities are well versed in these commercial aspects. The role of regulators in disasters can be an effective bridge between these commercial and government aspects.

The utilization of Telehealth capabilities can be an essential element of effective disaster response. The requirements and capabilities of Telehealth infrastructure in a disaster response can offer extraordinary support when crucial for relief and recovery. State, Tribal, and Territory Public Service Commissions (PSCs) are in a unique position, while balancing the needs of government, the public utilities, and the public, to coordinate federally declared disaster relief efforts in an area’s critical

infrastructure. Tribal authorities and PSCs can provide the same coordination. The salient issue is effective jurisdiction during emergencies.

Wireless cell, integrated Internet cell, smartphones with VOIP, Static VOIP, Social Media communications with voice and texting (Twitter, Facebook, Messenger, WhatsApp, Waze) has become the standard of communications across multiple platforms all of which can assist in communications during a crisis. Military and FEMA/DHS emergency tactical telecommunications, satellite and radio assets need to be coordinated with the local infrastructure, especially in setting up Wi-Fi hot spots in shelters and other community locations. Refueling of both Federal and local government and public utilities needs to be coordinated. Finally, first responders – whether local or from other states and territories - need access. These are the salient infrastructure components required for the subsequent deployment and utilization of Telehealth services in a disaster.

Restoring and repairing communications networks is always critical to bringing much needed immediate relief to heavily damaged disaster areas, and to beginning the long road to restoring normalcy. Telehealth services can be a much needed and essential part of resiliency and a significant part of relief and recovery assists. For that reason, it is essential that mitigation efforts include planning for Telehealth and ensure that resilient broadband infrastructure is in place to support critical facilities and enable remote medical support to rural areas.

b. Integration of Telehealth into Disaster Management Plans

Many SLTT governments and health care providers have not yet integrated Telemedicine into Disaster Management Plans to account for disaster planning, response and recovery. “In many ways, disaster response parallels the challenges of delivering health care in rural areas with limited resources. Telehealth can help manage the surge in visits that results from injuries, exacerbations of chronic conditions, and the closure of outpatient offices. In higher-acuity situations, Telehealth can facilitate efforts by on-site clinicians to stabilize patients and rapidly triage them to definitive care.”²⁵ Telehealth services are reliant on power and telecommunication infrastructure. Thus, it is imperative that coordination among the various Telehealth stakeholders is documented in Disaster Management Plans.

Telehealth coordination should include the identification of communication and contingency systems that are rapidly deployable in areas with compromised communication service. It also requires the coordination of healthcare service providers onsite, and those assisting remotely. Remote health care providers may alleviate some of the surge in needed disaster related health services by Telehealth connectivity. There are increasingly advanced self-contained “medical units” that provide connectivity to electronic medical records, video/image capabilities, and clinical equipment necessary for Telehealth consults.²⁶ These units may be cost-prohibitive for some communities and satellite communication may not be readily available in areas, such as insular island territories in the Pacific Islands. Careful identification of feasible technical solutions and resources must be coordinated among the many disaster

²⁵ Lurie, Nicole, and Brendan G Carr. "The Role of Telehealth in the Medical Response to Disasters." *JAMA Internal Medicine* 178.6 (2018): 745-746. Web.

²⁶ Ajami, S., & Lamoochi, P. (2014). Use of telemedicine in disaster and remote places. *Journal of education and health promotion*, 3, 26. doi:10.4103/2277-9531.131886
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4089116/>

response and recovery government and non-government organizations to optimize saving lives, efficiency, and cost-effectiveness.

Severely under-resourced areas have the greatest a need for support and funding for technical assistance to plan, analyze and develop the integration of Telehealth protocols and procedures into Disaster Management Plans. Advance planning will enable us to take advantage of the wide adoption of electronic medical records and advancements self-contained medical units to provide an opportunity for better health care, disaster response, recovery, and coordination.

E. State & Federal Telehealth Policy Legislation Roundup and Selected Case Studies

According to the Center for Connected Health Policy, 2018 was an active year for state Telehealth legislation.²⁷ In general, they state that there has been a slowing of enacted legislation addressing private payer reimbursement of Telehealth. Adopted regulation focused on Telehealth practice standards by professional Boards. Among 39 states and DC, 65 legislative bills passed in the 2018 legislative session, up slightly from 62 bills in 2017. Additionally, 49 Telehealth related regulations were finalized in 38 states related to Telehealth. The enacted legislation that year focused mainly on broadening Medicaid policy, establishing regulatory requirements and enacting interstate licensure compacts. For selected case studies, please see Appendix A to this Report

III. CONCLUSION AND RECOMMENDATIONS

The IAC finds that Telehealth services are one important solution to the challenge of health care access, particularly in rural, Tribal, and territorial areas and should be an integral part of disaster response, recovery, planning and implementation. However, the successful implementation of Telehealth nationally is dependent on broadband availability and access, as well as on the updating of laws, regulations and other restrictions that currently impede the provision of Telehealth services.

A. Broadband Recommendations

- Broadband needs to be funded. FCC initiatives such as the recent Connected Care NPRM and the Rural Digital Opportunity Fund can support bringing Telehealth services directly to low-income patients and patients in underserved, rural, Tribal, and territorial areas
- Coordination needs to be improved between state and federal universal service programs aimed at expanding broadband to avoid having different programs supporting service availability in the same area and to ensure that support goes to areas without broadband service and without the likelihood of receiving it in the foreseeable future.
- Broadband Telehealth services should be independent of the technology used to provide such service, particularly in rural areas. Creative ways of deploying hybrid fiber along with wireless, satellite, and TV white spaces offer different advantages and opportunities.
- The term “Telehealth” should be construed broadly, and should incorporate the need for software, equipment, data storage and patient record access along with the various spectrum and telecommunications solutions and broadband deployment.
- Telehealth policy should address the deployment of necessary infrastructure, including homes of older adults, and provider offices in rural and frontier communities that are far from a hospital.
- Improved geographic data should include the types of services that are available in various locations.

²⁷ <https://www.phi.org/news-events/1550/2018-in-review-state-federal-telehealth-policy-legislation-roundup>(last visited Aug 29, 2019); and <https://www.cchpca.org/sites/default/files/2018-12/2018%20Legislative%20Roundup%20FINAL.pdf> (last visited Aug 29, 2019).

- Providers must ensure that any equipment they purchase is interoperable and meets industry standards and can be used to connect to multiple Telemedicine platforms.
- Data and documents should be able to be transferred in multiple formats and structures in order to be operable in the various application programming interfaces (APIs), rather than in the prevailing “PDF” format, to allow electronic transfer with full interoperability and use of the underlying data elements.
- To be considered interoperable, software vendors should be required to open their systems to communicate electronically patient information.

B. Regulatory Recommendations

- The FCC Rural Health Care Program (RHCP) program should expand eligible equipment and services to cover institutional mobile technologies that are not currently covered under the program. Mobile telephones and service should be an eligible cost item of the RHCP.²⁸
- The FCC should reach out to relevant federal agencies to address reimbursement disparities for services categorized as “Telemedicine,” whether in Medicare or other medical services.
- Telehealth, almost by definition, is a geographically dispersed, often interstate service. The complexities of interstate licensing, credentialing and privileging should be revised and simplified to allow for virtual multi-state service.
- Malpractice insurance coverage should cover Telehealth delivered services and should extend into other states in which Telehealth services are being offered.
- Health benefit plans should not exclude from coverage a covered health care service or procedure delivered by a preferred or contracted health professional to a covered patient as a Telemedicine medical service or a Telehealth service solely because the covered health care service or procedure is not provided through an in-person consultation.
- The FCC should work with other governmental agencies to ensure that the same standard of care and other measurements should be applied to both in-person and virtual visits.
- HIPPA and other privacy rules should be revised to allow patients to share Telehealth information with Telehealth providers and for treating Telehealth providers to share that information with each other.
- The FCC should encourage legislation or regulations that detail how and in what manner Telehealth can be used to establish a patient-provider relationship and when it can be used for prescribing medicine, particularly controlled substances.

C. Other Recommendations

- The public, state, local, Tribal, and territorial governments and health care providers all need to be aware of the technologies and services available for Telehealth.
- Telehealth considerations and the infrastructure to provide health services virtually should be integrated into all state, local Tribal and territorial emergency planning.

²⁸ See *In the Matter of Promoting Telehealth in Rural America Report and Order* FCC 19-78 WC Docket No. 17-310 rel. Aug. 20, 2019 at para 2.

APPENDIX A - Selected Case Studies

A. PUERTO RICO

1. Puerto Rico Broadband Deployment Strategic Plan

In May 2012, Puerto Rico issued its *Puerto Rico Broadband Strategic Plan* prepared by the *Puerto Rico Broadband Taskforce* (PRBT) with support from *Connect Puerto Rico*, a subsidiary of *Connected Nation, Inc.*²⁹ The PRBT is a non-partisan, public-private partnership that includes key broadband stakeholders in the island with two objectives: to ascertain the size and scope of the digital divide in Puerto Rico, and to identify strategies to close it by steering public and private stakeholders to action.

The *Plan*, funded in part by the *National Telecommunications & Information Administration, U.S. Department of Commerce*, with support from the *American Recovery and Reinvestment Act*, seeks to close the digital divide by promoting access to high-speed broadband infrastructure, universal adoption of the technology, increased utilization across key strategic sectors, such as education, healthcare, and the provision of government services, recognizing that broadband is essential and its universal access, adoption, and utilization is critical to maintain a competitive economy. It focused on:

- **Access:** - Ensuring investment in infrastructure deployment to meet the increasing demand for broadband capacity.
- **Adoption** – Ensuring universal adoption and penetration of broadband services.
- **Utilization**- Ensuring that all communities, particularly community anchor institutions such as schools, hospitals, and clinics, are using broadband technology to pursue economic opportunity, improve government services, and leverage educational and e-Health resources.

At that time, *Connect Puerto Rico* worked with all broadband providers in the Commonwealth of Puerto Rico to create an island-wide detailed map of broadband coverage, as well as used research surveys to analyze adoption and usage trends across the residential and business sectors in Puerto Rico, in order to pinpoint remaining gaps in broadband availability.

It found that by June 2011, 86% of households across Puerto Rico had access to broadband from at least one fixed broadband provider at speeds of at least 768 Kbps download (DL)/200 Kbps upload (UL). This implied that approximately 14% of households, typically located in more rural parts of the island, remained without any form of fixed broadband service. In contrast, 95% of U.S. households were served by broadband at these speeds.

The broadband gap in Puerto Rico at higher capacity speeds was even more acute. By June 2011, only 57% of Puerto Rico households had access to broadband at speeds of 3 Mbps DL/768 Kbps UL, and only 32% of households had access to broadband at speeds of 10 Mbps DL/768 Kbps UL. Such minimum speeds are necessary to sustain many services increasingly demanded by business and residential customers.

The *Plan* identified capacity and investment lags for the service and high costs of build-out and operation maintenance. To help overcome these issues, the *Plan* set a series of infrastructure and capacity goals across both urban and rural areas of Puerto Rico. At the most basic level, the Strategic Plan set a goal of 98% of all households served by broadband at actual speeds of at least 4 Mbps DL/1 Mbps UL by 2015.

Regarding the healthcare service sector, the *Plan* encouraged broadband-enabled applications like online electronic records, Telemedicine, and real-time digital imagery that would directly impact the

²⁹ See <https://www.connectpr.org/strategic-plan>

quality of service, positively affect national health statistics, and lower the cost of healthcare provision. To ensure this, healthcare providers needed to have access to very fast broadband to sustain two-way high-definition video imagery and conferencing in real time. Concretely, goals were set so that:

- By 2015, a nationwide e-care network would exist that would ensure interconnectivity between all stakeholders, including patients, healthcare providers, and payers.
- By 2015, ensure broadband network capacity to healthcare providers:
 - 4 Mbps to all healthcare providers
 - 10 Mbps to nursing homes and rural healthcare providers
 - 25 Mbps to clinics and large physician practices (5-25 physicians)
 - 100 Mbps to hospitals
 - By 2020, ensure 1 Gbps to academic and large medical centers

It also recommended policies that could overcome legal and logistical challenges to implement health information records system across Puerto Rico that meet U.S. standards; and rapid expansion of broadband adoption and usage across the medical and nursing community.

The *Plan* was updated in 2015 and *The Gigabit Island Plan* was issued, setting new broadband capacity goals for Puerto Rico, so that its residents, businesses, and public institutions could have access to broadband speeds of 1 gigabit per second.³⁰ The *Plan* evaluated Puerto Rico's broadband trajectory in the previous five years and proposed a new public policy for continued expansion of both public and private broadband network investment. It also encouraged expansion of broadband adoption and use among Puerto Ricans that remain disconnected, as well as expansion of gigabit connectivity to all schools across the island.

Accordingly, it found that as of June 2014, 77.8% of households had access to broadband of at least 10 Mbps download and 1.5 Mbps upload speeds, up from only 24.5% in 2011. Additionally, whereas no household had broadband available at speeds of 100 Mbps in 2011, by June 2014, 52.9% of households had access available at that speed. Furthermore, 99.9% of households had access to mobile broadband speeds of at least 3 Mbps download and 768 Kbps upload. The Puerto Rico broadband landscape had met, and in some cases even surpassed, many of the infrastructure goals established in 2012.

Puerto Rico was paused in all its broadband deployment efforts by Hurricane's Irma and María in 2017. Notwithstanding, new efforts have been made by carriers to get back on track, and they include two private closed fiber rings across the island that include a substantial amount of underground fiber, and the deployment of a new submarine cable that will enter PR from the Southern part of the Island. Also, on the pipeline are certain courses of actions established by the Communications/IT Sector from FEMA and the Commonwealth, such as deploying government-owned conduits so that providers can install their own buried fiber optic cables and establishing a rural area network, taking into considerations that Puerto Rico has a mountainous central region, that is costly to serve, sparsely populated and therefore, not commercially cost effective to serve.

In May 2018, the FCC made additional immediate funding available from the federal Universal Service to all facilities-based providers ETCs, to accelerate the restoration of communications networks in Puerto Rico and the U.S. Virgin Islands that were damaged and destroyed during the 2017 hurricane season. To accomplish these goals, the Commission created the *Uniendo a Puerto Rico Fund (Bringing Puerto Rico Together Fund)* and the *Connect USVI Fund*.

The Order and Notice of Proposed Rulemaking included:

- \$64 million in additional funding for short-term restoration efforts.

³⁰ <https://www.connectpr.org/gigabit-island-plan>

- Conversion of \$65.8 million in advanced funding the Commission provided in 2017 to carriers in Puerto Rico and the U.S. Virgin Islands into new funding, by declining to offset the money from future universal service support payments.
- Request of public comments on a proposal to allocate \$444.5 million in funding for Puerto Rico and \$186.5 million for the U.S. Virgin Islands, over the next decade for the expansion of fixed broadband connectivity.
- Solicitation of public comment on a proposal to allocate approximately \$259 million in medium-term funding for the expansion of 4G LTE mobile broadband connectivity in Puerto Rico and the U.S. Virgin Islands.

Another source of funding is the *Puerto Rico State Universal Fund*, pursuant to Law 213-1996, which has a program that has funded isolated communities that are underserved or unserved. This state fund also provides for funding health providers, as established in Regulation 7795-2010. Although this provision exists on the Regulations, it has never been used for Telemedicine.

2. Barriers to Broadband Deployment

Puerto Rico's barriers for broadband deployment include its fiscal situation. Since 2006, Puerto Rico's economy has shrunk by more than 10% and lost more than 250,000 jobs. More than 45% of the Commonwealth's residents live in poverty and its unemployment rate is greater than the national level. These challenges have sparked the largest wave of migration since the 1950's. Puerto Rico's governmental budgets were overestimated, bonds were issued to finance deficits and the government defaulted, hence Puerto Rico lost access to financial markets.

This situation resulted in the appointment of a *Financial Oversight and Management Board*, created under the *Puerto Rico Oversight, Management and Economic Stability Act of 2016*. The Board consists of seven members appointed by the President of the United States and one *ex officio* member designated by the Governor of Puerto Rico that oversee all financial aspects of government.

Another challenge is the Island's environment which is very hard on technology, due to its humidity and ambient salt levels, its geographical location in the Caribbean and on an active tectonic plate boundary which makes it prone to hurricanes and earthquakes, and its topography; Puerto Rico is an island with a central mountain system, which makes deployment in the rural areas very difficult and costly. A third challenge is the need for an updated broadband infrastructure map. Since 2014, when the funding for Connect PR ran out, the map has not been actualized. A final challenge exists in overcoming barriers to build-out. More needs to be done to stimulate broadband build-out and maintenance, including streamlining construction permitting or pole attachment processes, and regulatory processes. Regarding permitting, the Island has 78 municipalities and central and federal government permitting processes.

3. Digital Literacy and Adoption

The residential survey research conducted by *Connect Puerto Rico* in 2012 revealed an acute lag in broadband adoption across the island. Although 86% of Puerto Rican households had access to broadband, in 2010, only 31% subscribed, implying an adoption gap in Puerto Rico of 55%; in other words, more than one-half of Puerto Ricans had basic broadband service available but choose not to subscribe. In comparison, data collected in 2010 by the NTIA indicated that 68% of U.S. households subscribed to broadband service. The mobile broadband adoption gap was also acute, as only 27% of Puerto Rico residents reported accessing mobile broadband service in 2010; which was significantly lower than the 59% U.S. average. The broadband non-adopters were generally people of low-income, senior citizens, and/or people with less education. These trends mirrored demographic patterns across the U.S., however, the adoption gap in Puerto Rico for each of these groups was more acute. While across Puerto Rico broadband adoption was 31%, the broadband adoption rate was 5% among adults 65 and older; 7% among residents without a high school diploma; and 15% among households with annual incomes below \$15,000.

The top barriers to broadband adoption in Puerto Rico included: relevance of the online experience to non-adopters (a lack of value proposition); affordability of the broadband service and access technology; and lack of computer ownership and digital literacy (or knowledge of how to use the technology).

The PRBT believed that it was imperative to address barriers to broadband adoption. Failure to do so would increase the gap between the haves and have-nots across Puerto Rico, creating an Internet underclass at risk of being left behind. Furthermore, for the economy, a broadband adoption gap would limit Puerto Rico's ability to develop sustainable economic models that fully leverage the Island's unique position as a bridge between the U.S. and the Caribbean and Latin America. Moreover, because of the economies of scale and density of broadband networks, low levels of broadband adoption increased the cost per-subscriber for providers.

Other recommendations that were proposed, included aggressive digital literacy programs targeted to vulnerable communities to be conducted in partnership with existing non-profit institutions; promotion of mobile broadband as a lower cost and technically easier to use technology; aggressive expansion of public computing centers across the island and expansion of digital literacy programs in these centers; a public-private partnership to develop targeted awareness campaigns regarding the benefits of the online interaction for both personal use and small business enterprises; and strategies to address the affordability challenge. Another effective broadband strategy would be to encourage adoption in the Education and Healthcare sectors.

The 2015 Plan observations included that the promotion of broadband adoption still significantly lagged from the U.S. rate. Broadband adoption continued to be a challenge among certain demographic groups, including low-income households, senior citizens, adults with disabilities, and adults with less education. The barriers to adoption among these groups were affordability of broadband service and/or the digital device, relevancy of online resources, and lack of digital skills.

4. Disaster Planning, Response and Recovery

After the passing of Hurricanes Irma and Maria through the Island in September 2017, the need for robust, resilient and ubiquitous broadband telecommunications and data became obvious to everybody. More than 90% of the commercial, public safety and governmental communications systems were lost because of the hurricanes.

Telemedicine is one of the tools that can work. A clear example is the alliance between the *American Red Cross* and the *Medical School of the University of Puerto Rico* that brought health services, including Telehealth, to eleven low income and rural municipalities in Puerto Rico. Telehealth was used for clinical evaluations, diagnostics, lab work analysis and reading of images (radiology).

During the hurricanes, the services that affected health and the utilization of Telehealth services included:

- Use of satellite (v-sat) and microwave for backhaul.
- Old fashion radio systems.
- Alliances between non-governmental agencies, academia and the government, particularly to bring physical and mental medical care to low income and rural areas.
- Agreements with small broadband providers for data redundancy. Most medical facilities found temporary communication solutions from small broadband providers (ISP's), while the big providers fixed their networks.
- Energy redundancy for medical institutions.

Long term, the Puerto Rico Communications/Information Technology Solutions Based Team, composed of Federal and Commonwealth Stakeholders, following the "whole community" engagement policy in emergency preparedness, made a comprehensive assessment of the challenges and identified

potential courses of action for the recovery and improvement of services in the Island, as well as to develop an innovative, redundant private-public Communications IT infrastructure framework to ensure the delivery of government-private essential services to the residents of Puerto Rico, using Federal hurricane recovery funds, other grants and private money.

As a final thought, any effort for resiliency should take into consideration the supply chain, the interdependency in the power and transportation sectors; and the need for highly technical workers.

5. Other Resource Barriers

Challenges specifically related to Puerto Rico and Telehealth must take into consideration the physician's shortage in the Island, particularly after the passing of Hurricane Maria. In the last three years, six out of 10 general practitioners have left the Island. 8,143 specialists also left during that period, and the trend has increased in 2017 and 2018. The *Puerto Rico Medical Association* has stated that 9,000 doctors are presently serving a population of some 3.4 million people. Also, there exists a disparity in federal support for Medicaid and Medicare programs to residents in Puerto Rico that needs to be addressed. For example, Medicare Advantage (MA) plans in Puerto Rico receive 40% lower payment rates than those in the mainland U.S. Therefore, the public policy of the Government of Puerto Rico is to promote, facilitate, and incorporate technological advances into the practice of medicine in the jurisdiction.

6. Existing Telehealth Efforts

Puerto Rico's first telemedicine law, Act No. 227-1998, known as the *Puerto Rico Telemedicine Regulating Act* was recently updated by Act 168-2018, *Telemedicine Use in Puerto Rico Act*. Through the Act, the Puerto Rico Legislative Assembly expressed that:

[T]he intent of this Legislative Assembly is to eliminate existing barriers that limit the people's access to essential healthcare services. Technological advances and Telemedicine are critical tools to expand the services provided by specialists who are currently in short supply on the Island, since such tools allow specialists to monitor, assess, supervise, train, consult, and offer a wide range of services that are not necessarily available to all patients.

The main purpose of the *Telemedicine Use in Puerto Rico Act* is to ensure that the health care services rendered and offered to the residents are of the highest quality and that no types of barriers prevent access to the services.

The Act defines Certification as an authorization to practice medicine through telemedicine in Puerto Rico. This certification shall be issued to health professionals authorized to practice medicine in Puerto Rico. Said certification shall only be issued to physicians holding a valid license in the jurisdiction of Puerto Rico or in the federal jurisdiction.

Telemedicine, on the other hand, means the practice of medicine from a distance incorporating diagnosis, treatment, and medical education, through the use of technological resources to optimize health care services. Such services shall include, but are not be limited to, complementary services and immediate attention from a specialist; immediate diagnoses by a specialist in a particular area or region; distance education for students of nursing and medical schools and health professionals; digital records of radiologic examinations, ultrasounds, medical emergencies, and others.

Puerto Rico is incentivizing Telemedicine also by including the services in the *Economic Incentive Code* proposed in Senate Bill 1013. Chapter 3, Section 2031.01, subsection (a) (16). That section states that hospital and laboratories services, including medical tourism and Telemedicine facilities are part of the export services that can benefit from economic incentives, either through entities or natural personas with an office or bona fide establishment in Puerto Rico which carries out, or may carry out, eligible services in or outside the Island. Meanwhile, Act 20-2012, known as the *Export Services Act* states that it shall be the public policy of the Government of Puerto Rico to foster a service

industry geared toward the export of all types of services. Eligible services include hospital and laboratories services, including medical tourism and Telemedicine facilities. There are currently 2 doctors offering Telemedicine in Puerto Rico, one of them in Florida and Puerto Rico, due to the exodus of Puerto Ricans to that jurisdiction, particularly after Hurricane Maria.

B. US Virgin Islands

1. Broadband Infrastructure for Telehealth.

The task in the USVI is to identify the facilities (Hospitals, Clinics, Shelters) that require broadband infrastructure for Telehealth. The provision of buried fiber is optimal for the required functionality and made with resilient pathways and yet not redundant capacity. The actual implementation will require many different types of telecommunications, software, and equipment in order to realize a successful outcome and service.

2. Pole and Conduit Requirements and USF.

In 2010, when only Innovative (now VIYA) and a handful of other ISPs operated in the USVI, federal studies showed the USVI as being “woefully underserved with its Internet service”; the average “high speed” service available was only 1.5 Mbps. As a result of slow Internet speeds at very high prices, Internet service was expensive when it was even available. It was also non-existent in many places in the USVI. The American Recovery and Reinvestment Act of 2009 (ARRA) stepped in and funded a new government “Middle Mile” entity “viNGN” using funding from the federal government and USVI bonds. viNGN is a publicly-funded company using a “one time” grant that requires it to become a self-sufficient government owned business without an annual budget from the USVI. viNGN must make money providing wholesale transmission service to many ISPs who, in turn, sell their that service USVI consumers. viNGN is required to provide the USVI people with a neutral, open and world-class network that included wholesale transmission service of quality bandwidth at low wholesale prices compared to

VIYA was tasked by the VIPSC to do expanded broadband infrastructure. Both entities have pole and conduit mandates and viNGN has an open access mandate. VIYA received and continues to receive millions of USF dollars on an “ongoing basis” over decades to provide voice service. In that time, VIYA has since been required by the PSC to make major investments in a middle-mile wholesale transmission service to provide Wireline and Internet service and are required to provide open access to their poles and conduits. viNGN has always been subject to an open access mandate and allowing them to circumvent that mandate when it comes to the poles and conduits places entities like VIYA and WAPA at a competitive disadvantage. VIYA is receiving FCC support from the federal high cost fund. That support, however, also contains an ancillary mandate that they provide access to their poles and conduits to entities like viNGN even as they must compete against viNGN to serve the same customers.

Pole attachments and conduit access law, rates, rules, or regulations are subject to Section 253. The USVI, in recovering from the 2017 hurricanes, is seeking under mitigation to bury fiber along with the power lines. There is proposed legislation to address the topic of requiring equal and nondiscriminatory access requirements when it comes to the terms and conditions under which all competitors will have access to USVI and municipal ROW. Equally important, electric poles are about 75% of the poles where things for middle mile need to be attached and the telephone company poles are about 25%. This includes cable companies who must use those electric and telephone poles as well.

3. Disaster Planning, Response and Recovery Efforts during 2017 Hurricanes

In September 2017, Hurricanes Irma and Maria hit our US territory.” Maria caused massive damage to the U.S. Virgin Islands and had a catastrophic impact on communications networks. Cell sites / towers were 68.9 percent compromised and out of service in the U.S. Virgin Islands. Large percentages of consumers were without either cable services or wireline service.

Section 254(e) of the Telecommunications Act and Section 54.7 of the FCC Commission’s rules provide that carriers receiving federal universal service support “shall use that support only for the provision, maintenance, and upgrading of facilities and services for which the support is intended.”³¹ In the aftermath of the 2017 Hurricanes the FCC determined that, in the context of Hurricane Maria’s devastation of Puerto Rico and the U.S. Virgin Islands, high-cost support may be used to aid in the restoration of telecommunications capabilities in these areas.³² While the full extent of the impact on communications facilities and capabilities due to the extent of the hurricane’s devastation is still being mitigated, the FCC’s immediate action enabled carriers serving Puerto Rico and the U.S. Virgin Islands to plan and execute repair efforts as rapidly and widely as possible, so as to restore service as quickly as possible. Rapid restoration of communications capability is critical to other relief and reconstruction efforts across the islands.

Funding carriers, while important, for the telecommunications infrastructure is not sufficient without restrictive and prescriptive requirements for earmarking specific strategic purposes to be achieved such as Telehealth, shelters, port facilities and infrastructure. Regulatory jurisdiction over all unified telecommunications is also a significant challenge to overcome. In the USVI under VI Title 30 legislation, the Public Services Commission established a Hurricane Integrated Telecommunications (HIT) Team under the auspices of “Customer Service” restoration. The team consisted of VI Government entities (Bureau of Information Technology (BIT), VI Next Generation Internet (viNGN), Department of Licensing and Consumer Affairs (DLCA) and Public Utilities (Water and Power Authority (WAPA), AT&T, BBVI, T-Mobile, Level-3, Sprint, VIYA, and SBA). The team invited members embedded by the NCC Watch and Witt O’Brien’s supporting the Virgin Islands Territorial Emergency Management Agency (VITEMA).

4. Prior Legislation

Prior USVI legislation required Telehealth providers to have a Telemedicine license issued by a Telemedicine subcommittee of the Board of Medical Examiners. Unfortunately, no committee was ever created by the USVI Department of Licensing and Consumer Affairs (DLCA) and no licenses were given out. New USVI legislation removed the requirement for a Telemedicine license and allowed for any provider licensed in the USVI to provide Telemedicine services. The first draft was vetoed, and corrections were made and passed. It is still up for review by the Governor. Once this legislation is in place USVI will be able to utilize Telemedicine to improve access to healthcare especially for those specialties with low volume and no provider readily available on island.

A local Medical Clinic, Plessen, was awarded a grant in October 2018 for Telemedicine by the USDA to increase access to education, workforce training and health care opportunities in rural communities. The purpose is “Empowering rural Americans with access to services for quality of life and economic development is critical to rural prosperity,” Secretary Perdue said. “Distance learning and Telemedicine technology bridges the gap that often exists between rural communities and essential education, workforce training and health care resources.”³³

5. Local Languages

A significant number of USVI residents use unique local words, expressions and pronunciation. Some of those residents are unable to communicate differently, in particular when under stress. This is a

³¹ 47 CFR § 54.7.

³² In the Matter of The Uniendo a Puerto Rico Fund and the Connect USVI Fund Connect America Fund ETC Annual Reports and Certifications, *Order and Notice of Proposed Rulemaking*, 33 FCC Rcd, 5404 (2018).

³³ <https://content.govdelivery.com/accounts/USDAO/bulletins/218547c>

unique challenge for Telehealth providers not familiar with the USVI language specifics and magnifies the need for high quality audio and supporting images.

6. Availability of fiber for Internet links

The islands are blessed with high capacity fiber Internet links, but those need to reach further, ideally into every communication tower for WiMAX and cellular as well as into concentrators for cable-based Internet service.

Coverage must be improved to reach areas of the USVI without WiMAX or cellular service. This requires the installation of additional towers with the associated backup power and means to resupply this backup power (gas and/or replacement batteries/solar).

Bandwidth is important but less critical that it was several years ago. New sophisticated software (such as adaptive video) supports the requirements in 1 above with a lot less than the official definition of broadband. It is important to know that for Telehealth the bottleneck is not download speed (defined as 25Mbps) but sustained upload speed at the patient's location. Several Mbps are required.

Reliability is critical and not just in emergency situations (911 calls with video support). It implies that the networks (for Telehealth defined as Wi-Fi or cellular) performs consistently in term of bandwidth, latency but also at the higher Internet application layers (e.g. Domain Name Service). For providers to stay on schedule and patient to gain access to their provider in a timely manner, the networks must perform consistently at a level of 99.9% ("three nines").

The local providers of both Wi-Fi and cellular even in normal times do not perform beyond 90% in sustaining data connectivity. Performance fluctuates also in latency and available up/down bandwidth. This is due to a wide variety of factors such as ill-defined internal procedures, lack of technical personnel, insufficient qualified customer service, and shortage of back-up equipment or monitoring devices. In short, the operators offer a service that is insufficient for the requirements of Telehealth.

Resiliency is very important if Telehealth becomes a substitute for in-person care. It is also essential in remote locales and geographical areas impacted by severe weather.

The USVI have and will continue to be hit by major hurricanes. It is reasonable to expect that future storms will damage telecommunication equipment, power supply, ports of entry and the overall supplies necessary to repair them. With over 1000 miles of waters separating it from the US mainland, the USVI must have the means to replace damaged telecom equipment without awaiting inbound shipments. The inventory of spare equipment and must be vastly increased to avoid the outages experienced in the previous Irma/Maria hurricanes. Plans must also be put in place to rapidly secure and transport into the USVI a skilled repair workforce.

Separate network for remote medical devices: the increasing availability, functionality and affordability of remote monitoring devices can significantly enhance the patient data available to a Telehealth provider. The communication needs of such devices are very similar to those "Internet of things" devices: very low volume of data, occasionally connected and capable of mitigating temporary network issues. Upcoming 5G cellular service is designed to support such IoT activity. There is a lesser cost and readily available technology called LoRa that is perfect for IoT traffic with its long-range (several miles in urban areas, up to 20 in open areas) resilient mesh networking architecture.

Based on the small size of the USVI, the large number of cell towers and their connectivity to fiber (see above), LoRa could be implemented quickly and at a fraction of the cost of any alternative, providing connectivity to medical IoT devices in areas not served today or in the near future by cable, WiMAX or cellular – or to patients without the means to access cable, WiMAX or cellular.

LIS, EMR and EHR vendors have collectively refused or made it unnecessarily hard to communicate patient information to third parties in a commonly accepted electronic format such as HL7.

Those hurdles particularly hurt the USVI as local providers do not have the technical (and financial) resources to overcome those hurdles.

C. Commonwealth of the Northern Mariana Islands Disaster Planning, Response and Recovery

Super Typhoon Yutu made landfall on the Commonwealth of the Northern Mariana Islands of Saipan and Tinian on October 24 and 25, 2018. It was reported to be “the strongest to make a direct hit on the Mariana Islands since modern record-keeping began. Yutu is the 31st cyclonic storm of the Pacific typhoon season and the tenth category 5 storm on Earth in 2018, the second most in any year. In 1997, there were twelve category 5 storms.”

Health care systems in the Marianas reverted to paper records and forms as a result of the devastating damage caused by Super Typhoon Yutu to the communication systems. The response and recovery operations that need to be addressed in preparation for future incidents include, "the need for NIMS (National Incident Management System) certification at all levels of the CHCC and in the Tinian Health Center. Mental health services, although made available, were in some cases underutilized, and in future responses there is a need to address the mental health stigma in the community and plan for mental health outreach strategies that will be effective on Saipan and Tinian. Documentation was also an issue on both Saipan and Tinian, and the creation of electronic reporting strategies using (real time information systems such as) Google Drive will be important for data collection and dissemination."³⁴

D. American Samoa

In American Samoa telecommunications infrastructure remains one of the major challenges that the LBJ Tropical Medical Center, the only hospital in the territory, still faces on a regular basis. Telehealth is an important and viable option for increasing access to care in American Samoa. Even in the absence of a disaster, telephone voice services are still problematic where there is frequent interruption of trunk line operations. The hospital often resorts to redundancy cell phones for basic voice communications for the facility because of these outages. Frequent outages are not caused by specific disasters but rather operational equipment failure or other technical issues. A recent example in December 2018, a whole section of the island telephone services (including Emergency Operations Center and Police Substation serving the most populated district) were offline for half a day³⁵.

Mobile telephones and service should be an eligible cost item of the FCC Rural Health Care Program. There are modest Telehealth services including tele-echocardiographic studies for rheumatic heart disease, tele-consultation with Shriners Hospital for Children in Honolulu, continuing medical education and in-home early intervention services conducted by interactive video teleconferencing with specialists off-island. The hospital as a critical service provider has asked their local telecommunication carriers for a remedy to assure more reliable basic telephone voice services, however they still experience an average of 3-4 hours of downtime during times of outages.

During times of disaster such as when Cyclone Gita swept through American Samoa, all the hospital's primary trunk lines were out, and the primary telecommunication carrier's cell tower was damaged so mobile phone services were offline. The hospital was able to utilize their redundant mobile phones with the other telecom carrier that served as a critical lifeline for communications on and off-island. The hospital was fully prepared for such outages because it is a normal occurrence. American Samoa's hospital needs improved telecommunication reliability. There is need for assistance in conducting island-wide communications vulnerability studies and a strategic telecommunication plan

³⁴ Commonwealth Healthcare Corporation Typhoon Yutu (31W) After Action Report
Published January 23rd, 2019 Abbreviated Version.

³⁵ <https://www.talanei.com/2018/12/06/all-699-lines-down-thursday-morning/>

to understand the telecommunication carriers' infrastructure issues, redundancy measures, and to address the current reliability issues.

E. Colorado

In Colorado, the Colorado Telehealth Network (“CTN”) was formed in 2008 through \$9.7 million in federal awards to establish statewide, dedicated health care networks. \$5.1 million was awarded to the Colorado Behavioral Healthcare Council (CBHC) to develop the Rocky Mountain HealthNet (RMHN) to support the behavioral health care community. \$4.6 million was awarded to the Colorado Hospital Association (CHA) to develop Colorado Health Care Connections (CHCC) to support the physical health care community. The two programs have operated jointly since their inception as CTN, distinguishing Colorado as providing integrated service to both behavioral and physical health care communities. The Colorado Telehealth Network is a leader in Colorado and an example nationwide of how to bring together the healthcare community, state, federal and local government to leverage existing programs to support rural broadband and Telehealth expansion, in both the physical and behavioral health areas. Significantly more resources are needed to advance these goals and achieve the kind of healthcare delivery systems in rural Colorado that are comparable to the services that are being delivered in the urban and suburban parts of the State.

CTN leverages the FCC Rural Health Care Program’s Healthcare Connect Fund to administer these subsidies. Today, CTN is the state consortium leader in administering federal dollars to aid eligible health care entities gain access to broadband connectivity to provide health care services in their communities, especially in underserved regions of the state.

While not a regulatory barrier per se, CTN reports that there is a lack of hospital resources generally, including dedicated staff and financial support, to deploy Telehealth services. Improving broadband deployment in rural areas and increasing the funding from various federal and state sources will help. However, the elimination of the kinds of regulatory barriers identified by some of the other jurisdictions contributing to this report are also necessary to create the kind of environment where dedicated staff who can deploy Telehealth services will become more frequently employed in rural healthcare facilities.

With regards to licensure, Colorado is a member of both the Interstate Medical Licensure Compact and the Enhanced Nurse Licensure Compact (noted above in this Report) which allow for reciprocal licensure with other compact states, helping to bridge Telehealth issues between various states.³⁶

F. Rhode Island - Block Island

Block Island is a village within the town of New Shoreham, Rhode Island and has a population of just over 1,000 year-round residents. That number can surge up to twenty times that during the summer months. There is one medical center on the island, and when providers initially reached out to the Northeast Telehealth Resource Center for assistance with implementing Telehealth to increase access to care for residents and reduce the burden of travel to the mainland, the lack of adequate bandwidth was quickly identified as a primary barrier. Since that time, partners have worked on a plan for implementing an island-wide fiber optic network to bring much needed capacity (1Gb symmetric service) to the medical center, school and public safety building in Phase I of the project, with Phase II expanding to all businesses and households. These efforts have required substantial collaboration among key parties, including the town, cellular, phone, cable and Internet service providers, and power companies, as well as commitment of financial and other resources through voter approved bonds, the local library, school and medical center. The scope of work and considerations for ongoing ownership and maintenance of these

³⁶ See <http://coTelehealth.com/>, <https://imlcc.org/>, and <https://www.ncsbn.org/11945.htm> (last visited August 29, 2019).

shared networks are complex, and additional resources for facilitating and managing these types of models would be beneficial for establishing equitable access among island communities.

G. Florida

1. Defining Telehealth

One main issue has been that Florida did not define Telehealth. There is no universally accepted definition of Telehealth. In broad terms, Florida follows the World Health Organization definition of Telehealth:

The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.³⁷

2. Florida Legislation

Like the rest of the United States, the State of Florida is experiencing a health care provider shortage. Florida is the third most populous state in the nation and currently ranks as having the 21st highest physician to population ratio. Florida had 236.1 physicians actively providing direct patient care per 100,000 population in 2016.

On February 21, 2019, the Florida House of Representatives filed bill #HB 23 to provide additional guidelines on the use of Telehealth in the State of Florida. On April 29, 2019 the state legislature passed the bill and sent it to the governor for signature where it is expected to be signed into law. The bill authorizes out-of-state health care professionals without a Florida license to use Telehealth to deliver health care services to Florida patients if they register with the Department of Health, (DOH), or the applicable board, meet certain eligibility requirements, and pay a fee.

A registered Telehealth provider may use Telehealth, within the relevant scope of practice established by Florida law and rule, to provide health care services to Florida patients, but is prohibited from opening an office in Florida and from providing in-person health care services to patients located in Florida. The bill provides an effective date of July 1, 2019, except that the provisions relating to health insurers do not go into effect until January 1, 2020. Telehealth does not include audio-only telephone calls, e-mail messages, or fax transmissions.

HB 23 created a definition for Telehealth as “the use of synchronous or asynchronous telecommunications technology by a telehealth provider to provide health care services, including, but not limited to, assessment, diagnosis, consultation, treatment, and monitoring of a patient; transfer of medical data; patient and professional health-related education; public health services; and health administration.” References to Telehealth in the Florida Statutes are in ss. 364.0135, 381.885, and 394.453, F.S. Section 364.0135, F.S., which relates to broadband Internet services and does not define or regulate Telehealth in any manner. Section 381.885, F.S., relates to epinephrine auto-injectors and expressly states that consultation for the use of the auto-injector through electronic means does not constitute the practice of Telemedicine. Section 394.453, F.S., provides legislative intent for the Florida Mental Health Act, in which the Legislature finds that the use of Telemedicine for patient evaluation, case management, and ongoing care will improve management of patient care and reduce costs of transportation.

³⁷ Telemedicine: opportunities and developments in member states, World Health Organization Pub No. 9789241564144 (2010). *See also* World Health Organization, Telemedicine, Opportunities on the Second Global Survey on Health (2010). https://www.who.int/goe/publications/goe_telemedicine_2010.pdf (last visited October 2, 2019).

In 2014, the Florida Board of Medicine adopted a rule setting forth standards for Telemedicine. It defines Telemedicine as the practice of medicine by a licensed Florida physician or physician assistant where patient care, treatment, or services are provided through the use of medical information exchanged from one site to another via electronic communications. The definition could be interpreted to limit the use of Telemedicine to physicians and physician assistants; however, the Board does not have the authority to regulate other professions. The rule provides that:

- The standard of care is the same as that required for services provided in person;
- A physician-patient relationship may be established through Telemedicine;
- A physician or physician assistant is responsible for the quality and safety of the equipment and used to provide services through Telemedicine; and
- The same patient confidentiality and record-keeping requirements applicable to in-person services are applicable to services provided through Telemedicine.
- The rule prohibits physicians and physician's assistants from providing treatment recommendations, including issuing a prescription, through Telemedicine unless the following has occurred:
 - A documented patient evaluation, including history and physical examination to establish the diagnosis for which any legend drug is prescribed;
 - A discussion between the physician or the physician assistant and the patient regarding treatment options and the risks and benefits of treatment; and
 - Contemporaneous medical records are maintained.

The rule also prohibits prescribing controlled substances through telemedicine except for the treatment of psychiatric disorders. Even so, the new rule does not preclude physicians from ordering controlled substances through the use of Telemedicine for patients hospitalized in a facility licensed pursuant to 395, F.S.79. Although the rule provides some regulation of Telehealth in this state, it applies only to Florida-licensed physicians and physician assistants. The rule does not authorize out-of-state physicians or any other type of health care practitioner to provide services via Telehealth.

Forty three percent of Florida health insurers cover some form of Telehealth services. However, that coverage is usually very limited. Unlike the majority of other states, Florida does not have any statutory requirements that coverage and reimbursement for Telehealth services be covered the same way as face-to-face services. The surveyed health plans indicated that the greatest barriers to covering and reimbursing for services provided using Telehealth include government regulation, concerns with liability, costs of the still evolving technology, and a need to significantly change payment and reimbursement guidelines. This includes issues of interstate practice since each state is responsible for licensing the health care practitioners that provide services in its state.

3. Telehealth Barriers

There are several barriers which impede the use of Telehealth in Florida. These barriers include:

- Lack of a standard definition for Telehealth;
- Lack of standard regulations for the practice of Telehealth;
- Licensure requirements which prohibit cross-state practice; and
- Restrictions on the location where Telehealth services may be provided.
- Inadequate access to care is one of the primary obstacles to obtaining quality health care.

Cost is another barrier to obtaining quality health care; to include, the cost of travel to and from the health care facility, as well as related loss of wages from work absences. The absence of a uniform regulatory structure governing the use of Telehealth is another barrier as it placed the burden upon individual professionals to determine what is appropriate and invites health professional licensing boards to fill the regulatory gap. This can lead to inconsistent regulation of Telehealth amongst the varying health care professions and impede the use of Telehealth.

Florida prohibits a health care professional from using Telehealth to provide health care services unless the professional is licensed in the state where the patient is located. Requiring health care professionals to obtain multiple state licenses to provide health care services through Telehealth is burdensome and can inhibit the use of Telehealth across state borders. Florida currently has no statutory framework for regulating health care services provided via Telehealth. However, the Board of Medicine has shared rules establishing standards for Telemedicine practice. Even amongst states with Telehealth statutory regulations, no two states regulate Telehealth in exactly the same manner. This leaves room and space for inconsistencies.

Location Restrictions are restrictions which limit the use of Telehealth to certain designated areas within the state. Limitations on the specific location where Telehealth services may be provided is also another restriction that is a barrier.

4. Existing Florida Telehealth Efforts

The Telehealth Advisory Council's final report contained the following recommendations to establish a clear and consistent definition for Telehealth, including the following elements:

- Telehealth can be used for providing health care and public health services;
- Health care practitioners treating Florida patients must be licensed in Florida or supervised by a Florida-licensed health care practitioner;
- Health care practitioners must practice act within the scope of their practice;
- Telehealth may occur between health care practitioners or a health care practitioner and a patient;
- There must be no limitations on geographic location or place of service;
- Require Florida-licensed health insurance plans to provide coverage for health services provided via Telehealth, if coverage is available for the same service if provided in-person;
- Require Florida-licensed health insurance plans to provide reimbursement parity⁹³ for covered services provided via Telehealth;
- Amend the Medicaid fee-for-service rule for Telehealth to include coverage of store-and-forward and remote patient monitoring in addition to the currently-reimbursed synchronous or live transmission modality;
- Authorize Medicaid managed care plans to incorporate Telehealth for the purpose of meeting network adequacy;
- Enact laws to authorize participation in multistate health care practitioner licensure compacts, if the eligibility requirements for licensure are equal to or more stringent than existing Florida requirements; and
- Authorize the establishment of a patient-practitioner relationship through Telehealth, including for the purposes of prescribing and care coordination.

H. Texas

1. Regulation

The current regulatory landscape for Telemedicine in Texas is evolving in response to a changing environment at the state and federal levels. In 2017, the Texas Legislature passed a number of significant Telemedicine bills, including legislation that resolved a long-standing dispute over direct-to-consumer Telemedicine services.

- SB 1107 made a major change in the way the Texas Medical Board will be regulating Telemedicine services that result in a prescription. It states that a practitioner-patient relationship, which is needed for a valid prescription, can be established using either audio-visual interaction or store and forward technology. The standard of care must still be met, and the practitioner must use clinical information relevant to the encounter. The bill also

- requires fully insured plans to publish their policies and payment practices for Telemedicine and Telehealth on their websites. In addition, the bill clarifies that if a physician who chooses to use Telemedicine for a contracted service to a contracted patient, a fully insured plan cannot deny the claim just because Telemedicine was used instead of a face to face visit.
- HB 1697 established a grant program through the Texas Health and Human Services Commission to assist rural hospitals in purchasing teleNICU equipment. No appropriation was made for the program, but THHSC and stakeholders have worked to support a pilot site during the interim. Funding for the program is included in the agency's budget for the upcoming biennium.
 - SB 922 required THHSC to ensure that Medicaid reimbursement is provided for Telehealth services provided through a school district or charter school by a health professional, even if the health professional is not the patient's primary care provider. The bill defines "health professional" as a social worker, occupational therapist, or speech-language pathologist; a licensed professional counselor; or a licensed specialist in school psychology. The district or charter school must be an enrolled Medicaid provider to be eligible for reimbursement.
 - SB 1633 allowed pharmacies to establish remote dispensing sites, defined as a location licensed as a Telepharmacy that is authorized by a Class A provider pharmacy through a Telepharmacy system to store and dispense prescription drugs and devices. The remote dispensing sites cannot dispense controlled substances and may not be located within 25 miles by road of an existing Class A pharmacy.

The 2019 Texas Legislature considered several bills related to additional expansions of Telemedicine, Telehealth and remote patient monitoring. The following bills were passed in the 2019 session:

- SB 670 made various modifications to the current laws. It requires the Health and Human Services Commission (HHSC) to implement a system to reimburse Medicaid providers that provide Telemedicine or Telehealth services. HHSC must encourage health providers and facilities to participate as Telemedicine or Telehealth service providers but may not require a service be provided to a patient through Telemedicine or Telehealth. It also requires HHSC to ensure that Medicaid reimbursement for a Telemedicine service is provided to a physician, even if the physician is not the patient's primary care provider under certain circumstances. Lastly, it requires HHSC to mandate reimbursement for Telemedicine services at the same rate as Medicaid reimburses a comparable in-person medical service.
- HB 3345 requires a health benefit plan to provide coverage for Telemedicine or Telehealth services on the same basis that the plan provided coverage for an in-person service or procedure.

While progress is being measured, the THIN expert report acknowledged that certain obstacles to widespread acceptance and success remain. For example, the Texas Department of Insurance (TDI) regulations cover only a small proportion of Texans. While providers would prefer the relevant state regulatory agency to handle payment and policy enforcement, most Texans are not covered by TDI-regulated health plans. By law, TDI does not regulate Medicare or self-funded (ERISA) plans, leaving just 17% of the population under the regulatory purview of TDI. Therefore, an ERISA plan may only offer service through a Telemedicine vendor and only for limited purposes such as non-urgent primary care. These plans do not have to meet the requirement of guiding legislation (SB 1107 from the legislative session in 2017), which states that a health benefit plan may not exclude from coverage a covered health care service or procedure delivered by a preferred or contracted health professional to a covered patient as a Telemedicine medical service or a Telehealth service solely because the covered health care service or procedure is not provided through an in-person consultation.

Information on Telemedicine is still hard to find on health plan websites. State law requires that health plan web site "display in a conspicuous manner" information on their Telemedicine policies and payment practices (not including contracted rates). As of September 2018, many plans had not complied

with this requirement. THIN is seeking clarification on the need to write such information for providers, members, or both. The long-term hope is to promote the use of Telemedicine in Texas through the availability of information tailored to both health plan members and physicians.

Telemedicine can be used to enhance network adequacy. Network adequacy standards aim to ensure that each health plan's provider network is sufficient to provide reasonable access to care for its members. Texas' standards establish maximum travel distances to access care. In rural areas, provider shortages can limit a plan's ability to meet these standards. Incorporating Telemedicine in areas with inadequate physician availability could increase access in rural areas. However, such efforts should be done in a manner that complements, rather than replaces, local resources, while maintaining the standard of care.

The benefits of tele-mentoring services such as Project ECHO cannot be fully realized without a financing mechanism. Tele-mentoring equips providers, including primary care physicians in rural areas, with the expertise needed to appropriately treat high-need patients in their communities. Texas has not yet followed states like New Mexico, Oregon, and Colorado that have developed Medicaid Programs to finance Project ECHO.

Some home Telemedicine encounters still require facilitation. For people with physical disabilities or limitations, getting to doctor's visits can be extremely difficult, even if the office is nearby. When the office is far away, as it so often is for the rural disabled, the burden of travel for health care can be physically and emotionally overwhelming. Even though many of these patients are eligible to have their transportation costs covered, the experience of being transported, and waiting to see the provider, can cause significant discomfort and distress. For such patients, seeing their provider via a Telemedicine visit offers tremendous value. However, assistance in facilitating the Telemedicine encounter may still be needed. While site fees can help cover costs for this facilitation in settings such as nursing homes, private homes are not eligible for them. Changing the rules to cover a health professional's home visit for Telemedicine facilitation would not only improve the patient's care experience, but also lower cost to the state.

2. Infrastructure Requirements

The Texas Legislature created the Texas Health Improvement Network (THIN) in 2015 to address urgent health care challenges and improve the health care system. The THIN advisory council addressed the topic of Telemedicine adoption in the fall of 2018 through a series of expert panels and a report of their findings. The report contained the following recommendations related to infrastructure:

Infrastructure needs vary substantially by setting. Telemedicine settings include hospitals, clinics, provider offices, schools, skilled nursing facilities, and private homes. Each Telemedicine setting (whether an originating or distant site) requires both connectivity and equipment, though differences in the type and acuity of the care delivered will require varying levels of technology and support. This variety results in different entities specializing in specific areas they wish to address through this medium. For example, the state is particularly involved in supporting rural hospitals, as these hospitals are often the only source of certain kinds of care, such as trauma care. To reach the full potential of this technology, however, other settings must also have the necessary infrastructure, including homes of older adults (to support aging in place), and clinics or independent provider offices in rural and frontier communities that are far from a hospital.

Broadband is not one-size-fits-all. Broadband comes in many forms and speeds. Mobile broadband forms play an important role for Telemedicine, especially in rural areas and applications used by emergency responders and mobile clinics. Telemedicine applications vary in the speed they require and the lag time that can be tolerated. Applications such as behavioral health sessions via videoconferencing can operate at speeds of 25 Mbps. A remote surgery operation requires speeds of 1 gigabit or greater with identical upload/download times and zero latency or delay in the transmission.

While there is no need to “gold-plate” broadband infrastructure for many Telemedicine applications, differences in broadband needs must be considered when evaluating the appropriateness of Telemedicine in various settings. Redundancy of access to broadband is important in all settings, so that patient care is not interrupted.

Lack of accurate geographic broadband availability data and coordination between state and federal universal service programs, aimed at expanding broadband, creates inefficiencies and fragmentation. A variety of state and federal programs administer funding mechanisms that target Internet service availability in unserved areas, including universal funds. Lack of coordination between these different programs can diminish their effectiveness and the efficiency with which they pursue their shared goal of wider access to Internet service. Proper coordination is needed to avoid having different programs supporting service availability in the same area and to ensure that support goes to areas without broadband service and without the likelihood of receiving it in the foreseeable future. The lack of geographic data on what type of services are available where and under what circumstances makes such coordination difficult.

Although broadband is increasingly available, pockets without access remain. As of 2016, 93.4% of Texans live in areas with access to fixed broadband. This overall rate obscures the geographic disparity, as 27.7% of the rural population in Texas does not have access to fixed broadband, compared to 2.4% of the urban population. Mobile LTE at 5Mbps/1Mbps is nearly universally available, but many Telemedicine applications require faster speeds. Mobile technologies are rapidly improving, however, and may offer the best solution for many persistent broadband gaps.

In the 2019 session of the Texas Legislature, bills were passed that related to broadband, including a bill to accelerate the provision of broadband in rural areas through collocation with existing electricity distribution pathways and a bill to establish a governor’s broadband council to improve coordination and collaboration.

Lack of broadband adoption is a barrier to Telehealth. The existence of broadband infrastructure in a geographic area does not ensure that all settings are connected to that infrastructure. This issue is particularly true in the home setting. In 2016, the overall adoption rate in Texas was 41.4% for fixed broadband and 80.5% for broadband of any type. Barriers to adoption are often financial. Among households with annual incomes below \$25,000, just 58% had broadband subscriptions of any type. Additional barriers may include discomfort with or low perceived value of technology.

Equipment and software must be interoperable and there are limits as to use of equipment - equipment owned by one provider cannot be used to enable access for other providers. Providers must also make sure that any equipment they purchase meets industry standards and can be used to connect to multiple Telemedicine platforms. Hospitals and clinics can avoid start-up costs by using equipment loaned by an academic health science center or other organization. However, in this situation, the equipment can only be used to connect with providers from the organization that owns the equipment. To be able to use the equipment for different provider groups, the hospital or clinic would need to incur the start-up costs to own the equipment themselves.

HIPAA - Privacy issues and HIPAA compliance must be addressed. Imaging technologies such as Facetime are easy to use, but security must always be taken into consideration. Telemedicine is still medicine, and as such all HIPAA requirements still apply. While many applications and vendors market themselves as HIPAA compliant, this is not always accurate, and the legal and regulatory obligations still rest with the HIPAA-covered entity.

3. Regulatory and Other Barriers to Adoption of Telehealth

Despite its high potential to improve access to care and reduce costs, Telemedicine still faces a number of barriers to widespread implementation. In assembling the THIN expert report on Telemedicine, the following obstacles were identified:

a. **Reimbursement challenges, both real and perceived, undermine adoption**

Physicians and other providers, especially in rural areas, are still unsure they will be reimbursed for services they provide. In an era when 4 in 10 rural hospitals in Texas are operating on negative margins, evidence of reimbursement practices is largely anecdotal, causing uncertainty in potential practitioners and patients. Because reimbursement policy varies tremendously across payors and standardization is still a distant goal, advocates are pushing for a degree of alignment and predictability to reduce doubt and accelerate adoption.

b. **Access to technical support staff is often extremely limited.**

Successful Telemedicine delivery requires some degree of technical support, particularly during the start-up phase. Rural implementation is slowed by the fact that small hospitals, provider offices, and rural communities typically lack a technical workforce, have limited ability to train or retain technical staff, and may not have enough demand for full-time technical staff.

- The complexities of interstate credentialing and privileging are slowing Telemedicine adoption.
- Credentialing and privileging practitioners to provide services in person or via Telemedicine takes an amount of time and money that can discourage hospitals.
- The same quality measures should be applied to both in-person and virtual visits

Texas law requires that a physician providing a Telemedicine service is subject to the standard of care that would apply to the provision of the same service in an in-person setting. Therefore, quality measures should be the same for in-person and virtual visits. However, as Telemedicine's unique impacts continually emerge, measuring its efficacy is an evolving science. A leading option for a standardized approach to measurement are the National Quality Forum's measures of Telemedicine quality and outcomes, including access, cost, cost-effectiveness, and patient/physician experiences.

c. **The payor mix in rural areas and Medicare limitations pose challenges for Telemedicine.**

An older overall population in rural areas means a greater proportion of Medicare patients for rural health care systems. Currently, the Medicare Telemedicine benefit is extremely limited, even for those patients who count as rural. For Telemedicine to truly flourish, Medicare's approach to Telemedicine needs significant reform.

d. **Coverage**

Medicaid Telemedicine usage is growing but remains a relatively small percentage of total Medicaid spending. From State Fiscal Year 2016 to 2017, use of Telemedicine grew 20%. Most visits are for behavioral health, such as psychiatric evaluation, medication management and psychotherapy. Other services include acute care disease management, follow-up care for chronic conditions such as diabetes, or specialist consultations for emergency or inpatient care. Medicaid reimburses the distant site (where the treating doctor is) and certain patient sites (when a qualified health professional is there to assist with the exam).

e. **Education of rural providers.**

Networks are being built to make Telemedicine service more accessible in rural areas. For example, the University of Texas (UT) Virtual Health Network has invested in building a statewide Telemedicine network that connects to UT medical schools. Similar collaborative networks exist across the country, including long-standing efforts in Alaska, California, Colorado, Georgia, Indiana, Kentucky, Montana and Utah.

Since their inception in 2006, the National and Regional Telehealth Resource Centers funded through HRSA's Federal Office of Rural Health Policy, under the Office for Advancement of Telehealth, have provided technical assistance and resources for Telehealth planning and implementation, including adaptation of workflows, to thousands of health systems and providers across the U.S. However, additional resources for outreach and education to providers in rural locations are needed in order to incorporate Telemedicine services into their practices. Texas A&M University recently received federal grant funding promote more wide-spread integration of Telehealth.

There are also several medical education models which leverage technology to support rural hospitals that will include digital health topics, and Texas Tech University increase programmatic reach and impact. For example, Project ECHO now has received a Health Resources and Services Administration grant 273 partner locations across the globe, with over 70 focus areas including some of the nation's most prevalent health issues, such as substance use disorders, chronic pain/opioid management, and mental health.³⁸ With a focus on enhancing the knowledge and capacity of primary care providers in rural and underserved areas, the ECHO model uses live videoconferencing to establish a Telehealth resource center that supports Telemedicine adoption in Texas and Louisiana.

The center facilitates case-based learning, where specialists, including multi-disciplinary teams, provide real-time education and resources to assist with diagnosis and treatment of common, yet complex health issues faced in the primary care environment. The ECHO model is also being implemented at the regional level. For example the Northern New England Project ECHO Network leverages resources and expertise across three states (Maine, New Hampshire and Vermont), including Quality Improvement Organizations, Area Health Education Centers (AHECs), Universities, the Regional Telehealth Resource Center and other partners, to facilitate sharing of scarce regional resources, and further extend the reach and sustainability of the program.³⁹ While the technology is simple to use, it requires adequate bandwidth for video-conferencing, which remains a limitation in some rural and underserved communities.

4. Telehealth and Disaster Planning, Response, and Recovery

In 2017, while the floodwaters of Hurricane Harvey kept affected Texans out of their homes and communities, Telemedicine emerged as a critical asset in the fight to maintain public health. When Texas Governor Greg Abbott temporarily suspended all necessary statutes and rules which were preventing licensed health-care providers employed by a hospital and in good standing in another state to practice in Texas, it expanded the ability of Telemedicine assets to play a role in disaster response operations.

Telemedicine providers rushed to help Harvey evacuees, offering consults for those living away from their regular doctors (One provider did 1,000 free consults with evacuees). Dallas-based pediatric physicians also provided consults for children in Houston shelters via Telemedicine.

5. Availability of distance medicine providers

Rural health clinics have expressed interest in serving as a patient presenter site, but they have had trouble with connecting to distance medicine doctors, in large part because there are not enough doctors practicing Telemedicine. The TexLa Telehealth Resource Center at Texas Tech University Health Science Center is a federally funded program designed to provide technical assistance and resources to new and existing Telehealth programs throughout Texas and Louisiana. The TexLa Telehealth Resource Center keeps an informal list of distance medicine doctors, but it is limited in scope.

6. Current Texas Telehealth Efforts

As the Texas population continues growing on the way to 40 million in 2040, the challenges of providing essential services are expanding rapidly as well. With nursing and physician shortages causing

³⁸ Project ECHO®: <https://echo.unm.edu/>

³⁹ Northern New England Project ECHO Network: <https://mainequalitycounts.org/initiatives-resources/echo>

care crises in locations across the state, Texas needs health care solutions that scale without breaking the state budget. While the Lone Star State was once ranked 49th out of 50 states in terms of Telemedicine utilization, the passage of Senate Bill 1107 in 2017 normalized Telemedicine and tele-pharmacy solutions.

While Telemedicine had already been improving medical care in the Texas prison system and bringing psychological counseling to underpopulated areas of Texas, the bill in question has led to a statewide embrace of Telemedicine and the growth of associated companies. The state's universities have also emerged as innovators, with examples of their efforts including Texas Tech's tool designed to help stop school shooters.

I. Wisconsin

1. Provider Shortages and Reimbursement Constraints

As provider shortages worsen in many areas of Wisconsin, it is simply impossible to extend the physical presence of a physician. For instance, 55 of 72 Wisconsin counties have a psychiatrist shortage and 15% of Wisconsin's psychiatrists are 65 or older. Psychiatry is a professional pathway that takes 12 years to complete, so many psychiatrists will retire before the supply can be replenished.

Seventy-two percent (72%) of Wisconsin's hospitals and health systems have implemented one or more forms of telemetry but find themselves expending more workforce resources due to originating site regulations developed for technologies that have since advanced. Telehealth technology has progressed to be easy enough to be safely accessed for many types of care from homes, schools, community centers or churches, if rules and reimbursement allowed.

2. Telehealth and Telehealth Medicaid Waiver Pilot Experiences

The experiences of the many Telemedicine-related DSRIP (Medicaid waiver) projects in Wisconsin can provide invaluable information for other Telemedicine initiatives. Approximately 80 projects focused on Telemedicine were funded during the first six years of the Medicaid waiver. Much can be learned from the experiences of these pilot projects as the state continues its pursuit of solutions that leverage technology to improve access and increase affordability of care.

3. Wisconsin Medical Telecommunications Equipment Program

The Medical Telecommunications Equipment Program is a grant program under the Universal Service Fund that enables non-profit medical clinics or public health agencies to apply for funding to purchase medical telecommunications equipment. On a fiscal year basis, up to \$500,000 may be available to purchase medical telecommunications equipment that will promote technologically advanced medical services, enhance access to medical care in rural or underserved areas of the state or to underserved populations or to persons with disabilities.⁴⁰

J. Maryland - EXAMMED Telehealth Technology and MedPed

MedPeds, a multi-provider primary care practice in suburban Maryland is using ExamMed technology to improve patient engagement and the continuum of care. Based on the practice's history of embracing technology and implementing ExamMed, MedPeds was the recipient of the 2013 HIMSS Davies Award Winner National Practice of the Year.⁴¹

MedPeds promotes Telemedicine services to its established patients by emphasizing the convenience of the service for busy patients who often don't have time to come to the office. The practice leverages ExamMed for a variety of purposes including:

⁴⁰ [Wis. Admin. Code § PSC 160.115 \(last visited August 29, 2019\).](#)

⁴¹ <http://www.medpeds.net/>; <https://www.exammed.com> (last visited August 29, 2019).

- After-Hour Urgent Care Visits: Available to established patients under age 65
- Mental Health Visits: For established patients under age 50 and for prescription management.
- Follow up Visits: Diabetes, high cholesterol, hypertension, hyperthyroidism.
- Lactation Consultation: Nursing mothers can pre-arrange a visit with a lactation consultant.
- Group Visits: Diabetes and weight management.
- Population Management: By care coordinator for chronic conditions for ACO.
- Well Child Exams: If one parent unable to make the office visit, ability to join the visit virtually through ExamMed.
- Hospital Transition of Care: Effective and efficient follow up to reduce readmission rates.
- High Risk patient monitoring. Has led to measurable results and improved care.⁴²

K. Georgia - EXANMED Telehealth Technology and the Kaufmann Clinic

According to Robert S. Kaufmann, MD FACP of the Kaufman Clinic, Telemedicine is the solution both patients and providers need. Treating patients with the highest quality of care is a fundamental goal of every physician and providers seek innovative alternatives to meet patient needs. Physicians increasingly see Telemedicine as a viable solution. The average family doctor cares for 2,300 patients with visits varying from acute conditions to chronic diseases. The Kaufmann Clinic incorporates Telemedicine into its practice through ExamMed Telemedicine technology and has been able to improve patient care and increase overall practice revenue. Patients also report an increase in satisfaction with their care and enjoy the convenience. ExamMed provides product support, best practices, training, and guidance Below are the benefits:

- Optimize practice capabilities - Physicians examine a select number of patients in office due to administrative time, severity of cases, and space limitations. Telemedicine drives an increase in the number of patients seen daily. Seeing less acute patients virtually enables greater efficiency and effectiveness. Remote visits and also in-clinic visits are optimized.
- Improve patient outcomes - Work and personal schedules can inhibit patients from seeking care through in-office visits, especially for follow-ups, lab result reviews, and medication management. Telemedicine makes it easy and convenient for patient engagement with their treatment plan and receive stronger clinical outcomes.
- Provide convenient care for patients - Instead of spending time driving to an appointment, and waiting in the reception area, patients can see their doctor from their home or office. Common acute illnesses, including cough, runny nose, sore throat, sinus pressure, pink eye, and urinary pain can be diagnosed and treated with virtual care.⁴³

⁴² <https://www.himss.org/file/1159336/download?token=MarHOtXP>

⁴³ <http://www.kaufmanninternalmedicine.com/>; <https://electronichealthreporter.com/telemedicine-is-the-solution-both-patients-and-providers-need/#more-16977> (last visited August 29, 2019).

APPENDIX B – Glossary of Terms

Telemedicine

Telemedicine can be defined as using telecommunications technologies to support the delivery of all kinds of medical, diagnostic and treatment-related services usually by doctors. For example, this includes conducting diagnostic tests, closely monitoring a patient's progress after treatment or therapy and facilitating access to specialists that are not located in the same place as the patient.

Modalities for Telemedicine

Four main modalities generally used:⁴⁴

- Interactive audio-video technology (a.k.a. live video);
- Store-and-forward technology;
- Remote patient monitoring technology;
- Mobile health technology.

Interactive (two-way) Audio-Video Technology

Live Video (synchronous)⁴⁵ is two-way interaction between a person (patient, caregiver, or provider) and a provider using audiovisual telecommunications technology. This type of service is also referred to as “real-time” and may serve as a substitute for an in-person encounter when it is not available. CCHP’s micro-documentary series video, Telehealth Saves Lives, illustrates an instance where live video Telehealth can be a lifesaving technology. Live video can be used for consultative, diagnostic, and treatment services.

- Video devices can include videoconferencing units, peripheral cameras, videoscopes, or web cameras. Display devices include computer monitors, plasma/LED TV, LCD projectors, and even tablet computers.
- Video conferencing can provide cost-effective access to care for patients who are institutionalized or incarcerated.
- Video conferencing has historically been the most common application of Telemedicine/Telehealth care, and is an effective health care and consultation tool for a variety of applications, including: Emergency Room / Intensive Care Unit support
- Video conferencing connects emergency providers with medical specialists who otherwise would not be available for consults;
- Remote ICU monitoring programs at hospitals provide 24-hour backup, supervision, and support to ICU medical staffs by utilizing a combination of real-time video to observe patients, interactive video communications with on-site ICU providers, and digital patient monitoring equipment.

Consults

- Primary care providers can consult with medical specialists who are not available locally;
- Providers can discuss patient cases, regardless of location, and without the need for travel;
- Medical specialists can examine patients in remote locations when distance is a barrier, as is

⁴⁴ <https://www.cchpca.org/about/about-telehealth>

⁴⁵ <https://www.cchpca.org/about/about-telehealth/live-video-synchronous>

- the case when patients live in rural and underserved urban areas. This includes situations where the physician needs to directly observe the patient;
- Psychiatric consults can effectively be provided through live video for individuals who do not have local access, or who may otherwise be reluctant to keep appointments in-person at a psychiatric provider's office;
 - Patients with limited mobility can receive medical consultations at home, or in their local primary care provider's office;
 - Language translators can provide video interpretation services to multiple locations, a cost-effective expansion of these programs.

Health Education

- Video conferencing allows health care professionals to conduct continuing education programs with attendees in multiple locations;
- Patients can use these technologies to take disease management courses or receive other important health information.

Store-and-Forward Technology⁴⁶

Store-and-forward technologies allow for the electronic transmission of medical information, such as digital images, documents, and pre-recorded videos through secure email communication. Transmission of recorded health history (for example, pre-recorded videos and digital images such as x-rays and photos) through a secure electronic communications system to a practitioner, usually a specialist, who uses the information to evaluate the case or render a service outside of a real-time or live interaction. As compared to a real-time visit, this service provides access to data after it has been collected and involve communication tools such as secure email.

This information can include X-rays, MRIs, photos, patient data, and even video-exam clips. Store-and-forward communications primarily take place among medical professionals to aid in diagnoses and medical consultations when live video or face-to-face contact is not necessary. Because these consultations do not require the specialist, the primary care provider and the patient to be available simultaneously, the need for coordinating schedules is removed, and the efficiency of the health care services is increased.

These technologies provide important benefits to patients and providers. Some of these benefits include:

- Patients can get timely specialty care without needing to travel beyond the location of their primary care providers;
- Wait times for specialty care are lessened, especially in areas with shortages of medical specialists;
- Primary care providers and medical specialists can review patient cases, regardless of their respective locations;
- Medical specialists can review patient cases when it is convenient for them;
- The Store and Forward process can overcome language and cultural barriers.

Store-and-forward technologies are most commonly used in radiology, pathology, dermatology,

⁴⁶ <https://www.cchpca.org/about/about-telehealth/store-and-forward-asynchronous>

and ophthalmology:

- In radiology, physicians at small rural hospitals can forward X-rays or MRI's to specialists at major medical centers for review;
- In dermatology, primary care providers can take digital photos of their patients' skin conditions and forward the images to dermatologists for review and determination of treatment if needed;
- In ophthalmology, eye screenings for diabetic retinopathy, a disease that is a major cause of blindness among individuals with diabetes, can be captured digitally by retinal cameras and transmitted to a specialist for review.
These screenings are particularly effective in preventing vision loss or blindness.

It is important to note that store-and-forward services are not always reimbursable by private insurers, and Medicaid policies on this issue vary from state to state. To see firsthand how store and forward would work in a clinic setting please watch this video.

Remote Patient Monitoring (RPM) Technology⁴⁷

Remote patient monitoring (RPM) uses digital technologies to collect medical and other forms of health data from individuals in one location and electronically transmit that information securely to health care providers in a different location for assessment and recommendations. This type of service allows a provider to continue to track healthcare data for a patient once released to home or a care facility, reducing readmission rates.

Monitoring programs can collect a wide range of health data from the point of care, such as vital signs, weight, blood pressure, blood sugar, blood oxygen levels, heart rate, and electrocardiograms. This data is then transmitted to health professionals in facilities such as monitoring centers in primary care settings, hospitals and intensive care units, skilled nursing facilities, and centralized off-site case management programs. Health professionals monitor these patients remotely and act on the information received as part of the treatment plan.

Monitoring programs can also help keep people healthy, allow older and disabled individuals to live at home longer and avoid having to move into skilled nursing facilities. RPM can also serve to reduce the number of hospitalizations, readmissions, and lengths of stay in hospitals—all of which help improve quality of life and contain costs.

For more research articles on remote patient monitoring, see CCHP's RPM research catalogue or watch CCHP's Telehealth and Quality of Care video. More detailed information on the benefits of RPM and care for the aging population can be obtained from: Center on Technology and Aging and The Oregon Center for Aging and Technology.

Mobile Health Technology(mHealth)⁴⁸

Mobile health or mHealth, a relatively new and rapidly evolving aspect of technology-enabled health care, is the provision of health care services and personal health data via mobile devices, such as cell phones, tablet computers, and PDAs. mHealth often includes use of a dedicated application software

⁴⁷ <https://www.cchpca.org/about/about-telehealth/remote-patient-monitoring-rpm>

⁴⁸ <https://www.cchpca.org/about/about-telehealth/mobile-health-mhealth>

(apps), which are downloaded onto devices. Applications can range from targeted text messages that promote healthy behavior to wide-scale alerts about disease outbreaks, to name a few examples. South Central Telehealth Resource Center's video on mHealth exemplifies many of the most popular forms and uses of mHealth mobile applications.

Given its recent emergence into this field, policies governing the use of this technology are continually being shaped. The Food and Drug Administration (FDA), the Federal Trade Commission (FTC), the Federal Communication Commission (FCC) and the Department of Health and Human Services (HHS) all have some jurisdiction and will be establishing federal policies for this newest Telehealth modality. The TRC Consortium created a factsheet outlining some basic information regarding mHealth and FDA regulation.

Not Telemedicine - Other Technology

Does not include audio-only telephone, text-only email, or facsimile transmission.

Telehealth

Telehealth is like Telemedicine but includes a wider variety of remote healthcare services beyond the doctor-patient relationship. It often involves services provided by nurses, pharmacists or social workers, for example, who help with patient health education, social support and medication adherence, and troubleshooting health issues for patients and their caregivers.

Telecare

Telecare generally refers to technology that allows consumers to stay safe and independent in their own homes. For example, telecare may include consumer-oriented health and fitness apps, sensors and tools that connect consumers with family members or other caregivers, exercise tracking tools, digital medication reminder systems or early warning and detection technologies.