Broadband as a Social Determinant of Health

Kira Griswold
Institute for e-Health Policy
HIMSS, Government Relations Team

May 9, 2018

To: HIMSS Staff, Membership and Partners
From: Kira Griswold
HIMSS, State Government Affairs Intern
Date: May 9, 2019
Re: Broadband as a Social Determinant of Health

Issue for Analysis:
Rural communities in the United States are at a higher risk for poor health outcomes due to health determinants including increased prevalence of poverty, clinician workforce shortages and a lack of available specialists, among other challenges. Healthcare providers can use telehealth technologies with connection to a reliable internet network to provide care to patients through audio or video modalities. Disparate broadband availability in rural and frontier areas of the US creates a digital-divide among constituents. Failure to adopt telehealth technology plays a role in perpetuating the discrepancy of care for rural and frontier communities.

Recommendations:

- **Expand grant-funding for academic research on the benefits of telehealth and telemedicine on patient health status in Medicaid and Medicare.**

  Minimal research exists to support the effectiveness of integrating telehealth technologies in patient-care. This failure to cite specific advantages of these technologies for positive health outcomes prevents physician engagement as well as federal reimbursements for care. Likewise, healthcare is a fast-paced, high-intensity field and physicians require demonstrated effectiveness to sideline time with patients to adopt new programming. Without conclusive evidence of the benefit of these programs, funding and implementation perpetuates discrepancy in care.

- **Improved critical analysis of on-going rural broadband funding programs and initiatives at the federal, state, local and private level.**

  The Federal Communications Commission through programs like Rural Health Care Program and Connect America Fund support deployment of broadband infrastructure and telehealth technology for eligible health care providers. These programs are effective but slow infrastructure development and rising costs due to the rate of inflation increase funding needs. Many stakeholders are engaging with the FCC to suggest improvements that address these concerns. Survey of the current Federal initiatives should be reviewed by valuable stakeholders ensure effectiveness of programming funds and goals.

- **Encourage public-private partnerships to increase dialogue on accountability and catalyze action to deploy broadband infrastructure.**

  Private companies and the federal and state governments have stalled to deploy broadband infrastructure in rural communities. Low population density, difficult terrain, and other reasons have created obstacles in developing infrastructure that have stalled deployment. This insecure market prevents private network's development. It is crucial that meetings between these stakeholders take place to catalyze the conversation on infrastructure deployment. Increased communication can bridge the accountability concerns and streamline development through education and conversation.

Background

In the United States, citizens hailing from rural communities are subject to a disproportionately higher health risk than their counterparts in urban and suburban areas of the country. Those that live in rural communities are typically older, with a median age around 51 years compared to a non-rural age of 45 years. Chronic diseases like heart disease or cancer, among others, also affect rural communities at higher rates than non-metropolitan areas (Schadelbauer, 2017). To add to the existing problem, a growing workforce shortage prevents care. Approximately 15% of Americans live in rural areas of the country whereas only 10% of physicians practice in rural areas (Schadelbauer, 2017). Workforce shortage leads to clinician-burnout as providers attempt to mitigate care across large areas. Many healthcare groups have initiated a response to this shortcoming of care and look to address this disparity with non-traditional healthcare approaches.

The demand for specialists in rural settings is unparalleled. Approximately 77% of 2050 rural US counties are designated health professional shortage areas (About Rural Health Care, n.d.). The perfect storm of decreased healthcare professionals and increased risk can put a burden on hospitals or even force closures when costs are too high to bear. Reaching the limited population of professionals challenges communities that are already afflicted with higher incidence of poverty, lack of public transportation methods and an overall lack of confidence in care. These challenges to healthcare are consequential to the overall health outcomes of these communities. A multitude of gaps in patient-care create space for a failing health system.

Telehealth Technology to Reach Patients in Rural Communities

Healthcare officials are calling on non-traditional technology to improve the connection between patients and care-providers. Some of these means include telemedicine, telehealth and connected care. Telemedicine is defined as the "remote delivery of health care services and clinical information using telecommunications technology" whereas telehealth is broader and encompasses provider training, administrative meeting and continuing medical education (About Telemedicine, n.d.; Telehealth Use in Rural Healthcare Introduction -- Rural Health Information Hub, 2017). Connected care refers to the communication between the patient home and clinic. Currently, these technologies are used to bridge the gap in physical distance between providers and patients, in some instances specialists located out of the area. Live video, store and forward, remote patient monitoring, mobile health (mHealth) and electronic consults are some of the modalities covered by Medicaid as of March 2018 (Underwood, 2018). Many in-home services are still not covered and therefore require patients to be in a clinic setting. For patients that cannot afford to take off work, or pay for long transportation, or are too ill to be transported, these services can mean the difference between receiving care or neglecting to address their health concerns.

But the benefits of implementing telehealth technology encompass more than patient health. In a report published in March of 2017 by the NTCA -- The Rural Broadband Association, it was estimated that telehealth could save hospitals an average of $81,000 annually (Bloomfield, 2017). Patients in rural areas could save approximately $24,000 a year, a significant sum for a demographic that sees an average household income of $45,295 (Hertz, 2017). Potential benefits of telehealth include opportunity costs like transportation to distant treatment as well as lost wages from missed work time and hospital spending on specialists not seeing a full schedule of patients. Telehealth applications are valuable beyond improving patient health and are a means to reduce burden and costs to physicians.

Currently, limited research exists that highlights the effectiveness of telehealth technologies to reach patients at a long-distances. This gap in reliable citation of specific advantages for positive health outcomes

delays physician interest and implementation as well as federal reimbursements for care. Rural community members are a large percentage of the population that receives Federal healthcare benefits and this stall in data can directly impact health outcomes when care strategies are neglected for reimbursement. It is recommended that Federal and State funding for research grants increase to address this gap in substantiated information. Implementation of this technology to address challenges in providing care requires citation of effectiveness from reliable institutions.

As an example of the value of telehealth, communities in Alaska and other frontier areas of the US are already taking part in the adoption of telehealth technologies. The terrain and decreased population density in Alaskan communities presents unique challenges to healthcare interactions. Most rural healthcare facilities are not manned by a physician and are staffed with a nurse or health aid. One of the primary means of physician care is through real time data like video conferencing and thus connected care is heavily relied on for behavioral health throughout Alaska (Underwood, 2018). The Alaskan government recognizes the utility of telehealth and that a neglect to adopt non-traditional approaches would leave many constituents without any care. Alaska provides an important case study for the effectiveness of connected care and telehealth that can and should be applied to in-need rural communities in the continental US.

There are many challenges to adopting a telehealth platform for care-providers and other stakeholders. Some of these challenges include privacy issues, limited standardization of use, lack of a reliable network, and limited reimbursement coverage. For the purpose of the presented recommendations, this paper will highlight some of the current challenges and obstacles to broadband deployment in rural areas of the US.

Broadband Infrastructure Deployment to Address Digital-Divide

Broadband is a term to refer to high-speed internet access like wireless, satellite, fiber networks or other means (Types of Broadband Connections, 2014). While telehealth is projected to make physical boundaries increasingly obsolete, this “wireless” technology actually requires a wired network into communities via broadband. Broadband needed to support telehealth and telemedicine cannot exist without supportive infrastructure. There are a variety of characteristics to each of the networks but all require physical structure to reach consumers and businesses. Fixed terrestrial access to broadband is complex and presents multifaceted challenges to deployment for healthcare utility. Thus, infrastructure is the foundation of broadband service and therefore absolutely necessary to deploy in order to reach patients with telehealth technologies.

Deploying these networks is no small feat, especially if these rural areas include rough terrain, decreased population density or populations unable to afford expensive utilities. In 2016, 10% of the American population (34 million) lacked access to a network that would make telehealth viable. Of this group, 39% were from non-metropolitan areas (AAFP Urges FCC to Focus on Rural Telehealth, 2018). With only 53% of rural Americans having access to 25Mbps of bandwidth (for comparison, internet speed necessary for telecommuting), a distinct gap in availability of broadband in rural communities persists (Broadband Speed Guide, 2018; About Rural Health Care, n.d.).

The Federal Communications Commission (FCC) 2018 Broadband Deployment Report, notes as of 2016, 24 million Americans lack fixed terrestrial broadband at speeds of 25Mbps. This speed is the benchmark for the definition of broadband service. Approximately 31% of Americans in rural areas and 35% of Americans in Tribal lands lack access to this network compared to only 2.1 percent in urban areas (2018 Broadband

Deployment Report, 2018). Regardless if high-performing telehealth technologies are available to consumers, a lack of a reliable network absolves this progress.

Development of infrastructure for broadband service has stalled for many reasons. One of these reasons is that private companies are less interested in developing networks in communities where there is a lack of revenue per square mile (Smith, 2015). Grant funding and support from the federal and state government is also limited as some feel this is a matter for private commercialization. Private companies, states and the federal government are hesitant to take accountability for infrastructure funding and development. Thus it is recommended that private-public partnerships be developed to open dialogue (Gray, 2018). Engaging stakeholders can help to encourage reflection on the existing infrastructure gaps and the action required to address the digital divide. Colin Underwood, a HIMSS Chapter Advocate from Alaska has provided that "The Federal Government ... had no idea about the innovation and growth this industry would bring about." Implementation of working groups to address innovation deployment can stimulate development of solutions.

To address this gap in service, in 2016 the Federal Communications Commission (FCC) has implemented Rural Health Care Program (RHCP) and the Connect America Fund (CAF) as of 2014. These programs fund rural broadband infrastructure development through grants as well as competitive bidding (Mattey, 2018). This funding opportunity drives markets into typically low density communities with a high service cost. Additional plans to deploy more broadband will be carried out in the coming years with an expected completion date of 2020.

The American Academy of Family Physicians (AAFP) with other stakeholders in 2018 have called on the FCC to improve RHCP by increasing the budget to match inflation rates and ensure money is "rolled over" from one year to the next to account for slow development of technology infrastructure. To this same goal, improved critical analysis of existing programs by stakeholders is necessary to review FCC and other federal organization's methods in addressing broadband deployment. It is recommended that private and public sector groups critique federal, state and local broadband deployment programs. Ubiquitous service to all communities in the United States is a towering goal with a long timeline to deployment. The FCC's funding programs are extremely valuable to the communities in which they service.

Conclusion

Telemedicine and telehealth are desired by care providers and patients in a vast array of clinical settings. Rob Havasy, HIMSS Senior Director of Health Information Systems and Subject Matter Expert on rural health and telehealth, has noted that the clinicians in rural hospitals play an important role in deciding that there is a need for specialists that is not matched in the hospital system or community at-large. To this end, broadband is a necessary stepping stone to achieve this service and connect communities. It is important to note that many in-home telemedicine/health services are currently not reimbursed by Federal Medicaid and Medicare. States have individual regulations that can permit differences in reimbursement from federal regulations. As previously stated, reliable data and longitudinal research initiatives are integral to understanding the benefits of this technology.

It is crucial that communities "off the grid" take advantage of telehealth in order to close the gap between healthcare providers. Network platforms that allow patients to connect remotely with doctors improves healthcare outcomes and ultimately decreases burden on clinicians. Rural community members without access to a reliable internet network are subject to increased poor health outcomes for a variety of reasons. To match

this need for care, it is necessary to drastically improve broadband infrastructure nationally. If telehealth is to make an impact on patient health, broadband and network must be accessible. Neglect to support this infrastructure results in little to no health improvement for those most at risk in rural and frontier areas of the United States.

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