



Reaching Rural Health Equity

The importance of connectivity to the possibility of Healthcare Reform in rural America

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The Abstract	<p>While many are debating the impact of the Patient Protection and Affordable Care Act (PPACA) of 2010 on the US healthcare industry, almost ten percent of the US who live in rural America will not get desperately needed healthcare options simply because they live where there is limited or no broadband. Those most affected are low income, geographically isolated and poorly educated. The infrastructure needed to reach this rural segment was deemed not economically feasible by telecommunications carriers. The new National Broadband Map clearly shows us that we have failed to expand beyond basic telephone service to the poorest counties in rural America. Coincidentally, these remote populations also have the highest percentages of chronic disease in the Developed World.</p> <p>If this were about checking your Facebook account or keeping up with friends on Twitter, we might stop here. But what we are really dealing with are millions of Americans and their access to quality healthcare. The shortage of doctors in the US, 150,000 in 15 years, is even more acute in remote rural areas. And, while the number of Primary Physicians per 1,000 people is already dire in many rural counties, the distance between these 1,000 people is an even better rationale for deploying the richest and most robust telemedicine applications and latest in-vivo medical sensors for Medical Homes.</p> <p>If we are to deliver on the merits of Healthcare Reform everywhere in America, we must provide the most advanced "connectivity" to our rural areas. This is the original intent of the Universal Fund; not just supplying cost parity with urban markets to address the consumer digital divide. The need to fully integrate healthcare services and deploy integrated medical solutions is best way to address our massive disparities in American health equity.</p>

The Argument

As a result of the Patient Protection and Affordable Care Act (PPACA) of 2010, it is expected that there will be widespread consolidation of the healthcare providers in most markets. In larger urban markets, there may be many contenders for the formation of the Accountable Care Organizations (ACOs) that will serve them. In rural America, smaller healthcare providers must come together to meet the minimum 5,000 beneficiary limits to qualify for participation in the savings and incentives afforded an ACO. This means connecting hospitals, physicians groups, clinics, data and remote patients to a highly secure centralized network capable of near real-time transmission of Big Data -very large and rich media files such as MRIs, CTs, digital radiography, sonogram, nuclear and high resolution images to permit physician's to remotely access, manipulate and diagnose...and an enormous volume of Small Data - dynamic sensor data and monitors specific to individual wellness. PPACA simply assumes that the connectivity exists; but what if it does not?

After the Telecommunications Act of 1996, deregulation of telecommunications has sharply diminished the likelihood of providing the latest generation of connectivity to rural populations in favor of letting the economics of the market determine solutions¹. Today, few rural healthcare providers have access to networks with even 1Mbps upload speeds. The lack of adequate network infrastructure and the increasing costs of technology are certain to deny rural healthcare providers the benefits that they could get from integrated delivery of services. As a result, physicians will leave and sustainable community providers will become fewer and fewer as the distance between rural communities and health equity will continue to widen.

The FCC is uniquely positioned to provide the needed leadership to address this inter-state challenge. The rapid convergence of healthcare technologies and the need for extremely fast broadband connections has made it difficult for the FCC, within the bounds of its legislated mission, to react and redirect the use of Universal Service Funds and amend regulations of telecommunication services that were originally designed only for consumer voice communication. In remote rural areas, PPACA mandated integrated healthcare providers will become some of the largest enterprise users of connectivity for the communities they serve. The ancillary benefits of expanded broadband to these communities are virtually limitless. If we are to achieve the goals established in the National Broadband Plan, particularly as they relate to healthcare, it is time to build the our cutting-edge broadband infrastructure from the middle of America out. Rural America needs the leadership of the FCC, HHS, FTC, NTIA and the White House to work together and make it happen.

The Implications

The implications are clear. Rural America has no effective healthcare safety net and will not develop one under PPACA unless there are significant upgrades to the nation's backhaul infrastructure. Supplying thousands of physician's with iPads that cannot effectively

¹ Digital Development in Rural Areas, Edward J. Malecki, ©2003, Journal of Rural Studies

The Next Steps

interact with their patient base is a technological dead-end. These physicians will still have to get in their car, with their iPads, and travel hundreds of miles to remote clinics and community centers similar to the horse and buggy rotations of doctors more than a century ago. The argument for at least 1Gbps upstream in the nation's heartland is supported by the needs of the poor, sick, disabled and elderly who cannot drive an hour and a half to existing healthcare nor do they have the option to choose a "connected" Medical Home. And, these markets need complete coverage with seamless heterogeneous networks that serve both First Responders as quickly and completely as hospital staff. Accidents still rank as the highest cause of death in these markets where the use of heavy equipment for agriculture, mining and manufacturing is common. And, cyclones of fury continuously force everyone to be vigilant and prepared.

It is ironic that as the technology leader in the Developed World, the United States has not already fully deployed the telemedicine technologies that are so tantalizingly already in use in the Developing World, like Sub-Saharan Africa and India. More disturbing is that the technological innovations developed by our own military to support the medical needs of our troops in remote regions of Afghanistan, cannot be deployed over our own rural networks.

This means without change, the existing healthcare system in rural America will become even less sustainable. Disproportionate Share Hospital payments to sole community providers evaporate in 2014 costing them millions in revenue. The time to invest in alternative solutions is slipping away. The rural safety net will continue to unravel as doctors retire and the percentage of the elderly and sick increase. We, as Americans, cannot afford to let this happen.

To see the future, we only need to look at the deployment of telemedicine and personnel data sensors over networks in Operation Enduring Freedom in Afghanistan. Peak requirements for a brigade sized unit spread over 100 square miles (roughly the coverage area of rural healthcare providers) are 100 -150Mbps for Situational Awareness, Voice, Data, other and 600Mbps for real-time personnel sensor data². The lessons learned are simple: increase the efficiency of network routing, use more effective software applications structures and compression techniques, expand the capacity of data links and deploy dynamic spectrum management.

To meet today's needs of rural healthcare providers, especially First Responders and EMS, we need to build the most robust and reliable 100Gbps broadband infrastructure in the most remote areas by funding rural ACOs, and their partners, to provide a true national broadband safety net. We can strengthen America's connectivity resilience and allow rural America to reach their Health Equity.

² Broadening the Army's Bandwidth, Rand Arroyo Center, October 2010

