

Telehealth and Achieving the Quadruple Aim in Rural communities: a Vision for the 21st Century

Tiffany Shockley*

Faculty of Health Science, Queens
University of Charlotte, USA

*Corresponding author:
Tiffany Shockley

✉ profshockley@yahoo.com

Tel: +07042662140

Faculty of Health Science, Queens University
of Charlotte, USA.

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Abstract

In this commentary, I examine the issues faced by rural communities in the 21st century as they relate to the use of telehealth in the context of achieving the Quadruple Aim for the betterment of providers and rural populations. Rural communities face unique challenges resulting in some of the worst health outcomes in America and these challenges are expected to be exacerbated in 21st century due to changes in our climate. Coupled with these challenges are the changes and impediments associated with current healthcare ecosystems and infrastructures. In this commentary I assert that these changes and challenges require healthcare leaders to be less reactive and more adaptive in the development and implementation of telehealth solutions.

Keywords: Telehealth; Quadruple aim; Healthcare services; Rural populations

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Introduction

Access to adequate healthcare services for rural populations can be looked upon as a Public Health crisis which is expected to worsen over the coming years as access continues to wane due to healthcare facility closures, lack of transportation and healthcare workforce shortages [1,2]. Healthcare workforce shortages are prevalent throughout rural America. The 2014 National Center for Health Workforce Analysis report, Distribution of U.S. Health Care Providers Residing in Rural and Urban Areas, found a greater representation of workers with less education and training living in rural areas and highlights data showing less than 8% of all physicians and surgeons choose to practice in rural settings [3].

Presently, rural populations experience premature deaths from the five leading causes of death in America which includes heart disease and stroke and experience higher rates of diabetes than those in urban centers [4]. According to World Health Organization, rural communities across the globe will experience excess deaths by the tens of thousands beginning in 2030 due to record breaking temperatures [4]. High heat temperatures will lead to the worsening of health conditions such as heart disease diabetes and obesity, which are highly prevalent in American rural communities [5]. In order address the needs of patients, healthcare practitioners, and the key tenets of the Quadruple Aim, a new way of delivering care is required and with the timeline presented by WHO, healthcare leaders need to act now.

Telehealth and the quadruple aim

“Telehealth is defined as the use of electronic information and telecommunication technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration. Technologies include video conferencing, the internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications” [5].

Telehealth presents unique opportunities to connect providers with patients and to improve patient and provider relationships. These improved relationships can be linked to the 4th arm of the Triple Aim more recently referred to as the Quadruple Aim. The fourth aim examines the importance of provider satisfaction concurrently with Centers for Medicare and Medicaid (CMS) quality metric of patient satisfaction [6].

The Quadruple Aim is a concept that furthers the Institute of Healthcare improvements (IHI) Triple Aim which consists of 3 principles -improving the experience of care, improving the health of populations, and reducing per capita costs of health care [7]. Healthcare leaders and policy makers will need to quickly adopt new technological interventions like telehealth to help meet the CMS Meaningful measures initiatives and the Health and Human Services (HHS) Healthy People 2020 goals of achieving health equity, reducing health disparities, and reducing premature deaths in a systematic way which will lead to healthier healthcare ecosystems and improved population health [8].

The proposed fourth arm of the IHI triple aim chiefly focuses on

the satisfaction of healthcare workers [8]. Currently, healthcare facilities are incentivized by CMS to provide high quality care and a key metric of this is patient satisfaction [9]. This measure leaves out the health and well-being of those very individuals who are providing direct and indirect patient care. Talley and John highlighted the notion that caregiving was an emerging public issue and that the health and well-being of care givers should be considered an important part of the healthcare ecosystem because care givers are an integral part of patient care [10]. Good care delivery can only happen when healthcare care organizations acknowledge that there is a symbiotic relationship between care delivery, healthcare workers and caregiver's health and wellbeing.

The World Health Organization defines health as a *state of complete physical, mental and social well-being and not merely the absence of disease or infirmity* [11]. Telehealth is an emerging technology that can help to address the physical, mental, and social well-being of rural populations, caregivers and providers. Telehealth has many forms which includes but are not limited to computers, mobile phones and wearable devices. Making healthcare and information easier to access can help alleviate some of the stress associated with current healthcare barriers which prevent or limit access. (you can supply an example here)???

According to the Centers for Disease Control and Prevention, telehealth could be a transformative public health tool because of its ability to reach rural populations by increasing access to much needed care [12].

Telehealth and rural challenges

Members of rural communities tend to have lower life expectancies and are generally sicker than urban populations [13]. Research conducted by Caldwell, Ford, Wallace et al discovered that rural status alone and independent of socio-economic status created substantial barriers in the use of healthcare services [14]. Telehealth helps to move us toward healthcare equity by closing care gaps that have been created by current care models which often provide care in siloed formats making care access and coordination challenging particularly for those who have other barriers to entry like limited access to transportation. Adopting telehealth helps to reduce transportation costs, reduce fossil fuel emissions, alleviate time lost at work, increases access to specialists who do not need to be in the same physical space as patients and promotes follow up care which can reduce hospital readmission rates which are another key quality metric devised by CMS. Telehealth can foster more personal encounters because with telehealth care can be delivered where the patient is whether it be at home or work. Rural care givers can also access care that they need to prevent burnout or access information and improve health literacy which could allow them to be more effective at the care that they deliver.

Telehealth can provide both synchronous and asynchronous care. Current care models deliver healthcare in a fragmented way. Technology can help to pull together all facets of healthcare delivery and provide ecosystems that work in a seamless and

systematic way. For example, through telehealth a patient can have a simultaneous consult with various specialist making it easier for them to work interprofessional to create care plans that serve patients in a more wholistic manner.

Telehealth can be used with a wide range of healthcare specialties and subspecialties ranging from surgical follow ups to mental health counseling. Hartley asserted that in order to adequately address disparities, *"interventions must address 3 key elements—activated patients, prepared practitioners, and community resources"* [14]. Each of these key elements can be addressed in rural populations with telehealth.

Telehealth can also help healthcare providers by increasing their ability to develop improved relationships with patients which could lead to better patient compliance and improve patient outcomes. This can potentially alleviate the stress of dealing with patients who delay treatment. Patients who delay treatment often end up with higher care expenditures due to potentially preventable conditions and reduced satisfaction. This reduced satisfaction also extends to providers who can become frustrated by non-compliant patients.

Future implications

With 15% of the American population living in rural areas the future of these populations is in peril as these populations are suffering from harm as more and more people move into urban centers. Telehealth can aid in closing the gap of healthcare disparities that currently exist between urban and rural populations. Telehealth implementation now can help to get ahead of anticipated healthcare problems associated with changes in weather patterns.

Increasing patient access to care can potentially change the trajectory of healthcare ecosystems which could lead to a whole new care delivery model that is inclusive and adaptive to the need of patients who are otherwise left out which will continue to increase healthcare costs and lead to excess morbidity and mortality.

Going forward the aims of both the Quadruple Aim, Healthy People 2020 and CMS's Meaningful Measures initiatives can be met with the use of telehealth. This could have a profound impact on healthcare systems because of reduced costs and increased quality. If properly implemented, telehealth has the potential to help populations that struggle to access care due to barriers associated with access and other social determinants of health. Telehealth can potentially increase patient compliance by increasing patient autonomy by allowing them to receive care in the comfort of their own homes. Subsequently, by increasing patient autonomy providers can help increase the health literacy of rural populations which can lead to improved patient outcomes. Leveraging telehealth will provide a higher level of access and new ways for patients and providers to participate in the care system resulting increased satisfaction for patients and providers. Telemedicine while evolving and changing the current landscape of healthcare, it can in a way take us back to a time when home visits were a part of normal practice.

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