

# Using Technology in the Delivery of Mental Health and Substance Abuse Treatment in Rural Communities: A Review

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## Abstract

*Rural communities face tremendous challenges in accessing mental health and substance abuse treatment services. Some of the most promising advancements in the delivery of rural health care services have been in the area of telecommunication technology. These applications have the potential to reduce the disparities in the delivery of substance abuse and mental health services between urban and rural communities. The purpose of this inquiry was to explore the advances and uses of telecommunications technology, and related issues, in the delivery of mental health and substance abuse treatment services within rural areas. A review of the academic literature and other relevant works was conducted and the content was organized into four major themes: (a) advantages of telehealth and applications to rural practice, (b) barriers to implementation in rural practice, (c) utilization in rural areas, and (d) areas for further research.*

## Introduction

The prevalence of substance abuse and mental illness varies greatly based on race, gender, age, and life experiences. Moreover, literature establishes that additional disparities exist between social classes, geographic locations, and cultural variations.<sup>1</sup> In many rural areas, the provision of adequate mental health and substance abuse services is compounded by geographic isolation, low socioeconomic status of the population, and a high incidence of unique cultural groups that face language and cultural barriers to treatment. Rural treatment programs face ever increasing difficulty in recruiting and retaining qualified professionals and staff due to the economic climate. The ongoing shortage of service

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providers further inhibits the provision of adequate services, and as the population ages, demand continues to increase. One of the most promising advancements in rural health care has been the proliferation of telecommunication technology. The use of video conferencing, telerobotics, picture phones, interactive video, and virtual reality has provided a new way to increase access to specialty services that might not otherwise be available to the rural population.

The passage of the Telecommunication Act of 1996 helped pave the way for the use of technology as a treatment modality by removing certain economic and legal barriers to its use. The federal government currently commits millions of taxpayer dollars each year to promote the use of telecommunications in healthcare. In support of these efforts, the Rural Health Care Program of the Universal Service Fund has also aided these communities by allowing rural areas to receive the technology needed for telecommunication at a rate comparable to urban areas. As a result, the use of telecommunication technology to provide care in rural areas is on the rise. Telehealth is being successfully implemented in numerous geographic locations to treat a variety of illnesses and addictions.<sup>2-11</sup> The purpose of this paper is to explore the advances made and current uses of telecommunication technology in the provision of mental health and substance abuse services within rural settings. It reflects a review of academic literature and relevant unpublished works. Additionally, a summary of terminology noted in the literature is included as a guide for the reader.

## **Terminology**

Telehealth is used to provide health care, health information, and health education across a distance through the use of telecommunication technology and specially adapted equipment. It allows physicians, nurses, and other healthcare personnel to assess, diagnose, and treat patients without requiring that both individuals be physically located in the same place. This capacity is particularly advantageous to rural communities as access to specialty healthcare can be difficult but readily improved through the use of telecommunication.

The terms telehealth, telemedicine, telemental health, telepsychiatry, and telecommunication technology are sometimes used interchangeably. In this document, the word telehealth will be used to refer to health technology in general. More specific terms, such as telepsychiatry or telemental health, will be used referring to these specialty services available via telecommunication devices.

Telecommunication technology currently includes a range of devices, including but not limited to: voice modalities, such as telephone and radio, picture phones and teleconferencing, fax and emails, data imaging computers, interactive video and virtual reality, and telerobotic methods.

## **Methods**

A review of literature spanning the years 1996 through 2012 was conducted to identify relevant studies and central works examining or exploring the use of telehealth in a variety of rural health settings, in particular, those pertaining to the treatment of mental health and substance abuse. The year 1996 was selected as the starting point since legislation surrounding reimbursement for telehealth services emerged during this time period. *PubMed* and *Google Scholar* were the bibliographic databases queried. *PubMed* was elected as one of the databases to be queried as it houses one of the most comprehensive bodies of literature on a wide array of health concerns. *Google Scholar* was chosen as the second database to examine because its content is more expansive than most other bibliographic databases.

The theoretical framework employed was inductive in nature. Themes were inductively identified based on the literature collected during the review. Selection criteria for literature included the following parameters: publication in English; immediately available online; emphasis on telemental health, telepsychiatry, or telehealth to provide services for substance abuse disorders; application to rural practice either nationally or internationally; and date of publication (between 1996 and 2012). Key words employed in the search were telehealth, telemedicine, telepsychiatry,

telemental health, telecommunications technology, rural health, rural health services, rural mental health services, rural substance abuse treatment, and rural health clinicians. Medical Subject Headings (MeSH) and string searches were used to retrieve the most relevant articles. Approximately 240 non-duplicated abstracts were identified.

## Findings

Of the approximate 240 articles identified, 38 met the selection criteria. These items were reviewed for content and applicability. Additional literature has been included to brief the reader on findings and developments not specific to rural areas but of importance to the field of telehealth. Numerous broad topics emerged, and after re-organization and further analysis of the information, content was organized into four major themes: (a) advantages of telehealth and applications to rural practice, (b) barriers to implementation in rural practice, (c) utilization in rural areas, and (d) areas for further research.

### **Theme no. 1: advantages of telehealth and application to rural practice**

The shortage of care providers is one of the primary barriers to adequate mental health and substance abuse services for many rural communities. In a 2007 position statement, the American Telemedicine Association (ATA) described several ways in which telehealth technology could potentially relieve this shortage by bringing the patient and the provider together with a virtual visit via video conferencing.<sup>12</sup> The technology could further alleviate the problem by enabling providers to store and forward digital images and clinical data, afford a way to monitor a patient's condition in the home setting, enhancing staff training, supplying on-the-spot interactive technical assistance during surgeries and other medical procedures (including inaccessible locations such as ships and remote locations), and serving individuals who are incarcerated or institutionalized. Literature establishes that telehealth can successfully be implemented for overcoming barriers to adequate services in rural and geographically isolated locations. The benefits of telehealth to the client include reduced travel time and cost, reduced separation of families, and a reduced number of missed appointments.<sup>13,14</sup> Moreover, the literature supports that rurally located patients express satisfaction with services and a willingness to reuse services.<sup>15,16</sup> The benefits of telehealth for the rurally located provider include enhanced training, a reduction in isolation, and increased opportunities for collaboration.<sup>15,17,18</sup>

### **Theme no. 2: barriers to implementation in rural practice**

While the rapid evolution of technology has increased the capacity to offer mental health and substance abuse services in rural areas, funding and reimbursement mechanisms have not been as swift in their development. As a result, financial sustainability has been one of the primary barriers to expansion of telehealth services in rural areas.<sup>19,20</sup> This challenge is often compounded by startup costs for purchasing equipment and ongoing costs to maintain it.<sup>19,20</sup>

The Balanced Budget Act of 1997 presented the first authorization for using Medicare funds for Telemedicine.<sup>21</sup> The act allowed for fee splitting, limited CPT code (current procedural terminology) reimbursement, and limited eligible providers. Additional allowances came through the Benefits Improvement and Protection Act of 2000.<sup>22</sup> Reimbursement was initially allowed only in primary care Health Professional Shortage Areas and not in Metropolitan Statistical Areas. However, the Medicare Patient and Physician Improvement Act of 2008 expanded coverage to include sites such as skilled nursing facilities, hospital-based dialysis centers, and community mental health centers.<sup>23</sup> In addition, Medicare eligible practitioners were able to receive

reimbursement. Services covered include consultations, inpatient and outpatient visits, individual psychotherapy, and pharmacologic management.

The Medicare Telehealth Enhancement Act of 2008 expanded services again by eliminating geographic restrictions based on rural designation, including underserved urban and suburban areas, and adding home health and other treatment providers.<sup>24</sup> The federal government does not mandate reimbursement for telehealth under Medicaid; however, it does allow for reimbursement if certain parameters are met.<sup>25</sup> The public health insurance program is state-administered, thus reimbursement for telehealth services is optional. Currently, as many as 35 states provide some form of reimbursement for such services and 13 of these have expanded this benefit to care rendered by psychologists. In some areas, the practitioner providing the service must be licensed in the state where the patient is located.<sup>26</sup> Notably, a few states have established laws for private insurance companies prohibiting the exclusion and allowing for the reimbursement of telehealth services. While reimbursement for telehealth services has been implemented through Medicaid, Medicare, and some private insurance companies, reimbursement is less than that of services provided in face-to-face encounters.<sup>6,27</sup> Literature indicates that although clinics face financial barriers, clients often save money through use of telehealth services due to a reduction in travel.<sup>6,28</sup>

Reimbursement problems are also a key impediment to rural communities looking to expand mental health and substance abuse services through telehealth.<sup>6,27,29</sup> In order for funding to increase, insurers, policymakers, local champions, key stake holders, and funding agencies alike need to be convinced that telehealth is not only a valid alternative to face-to-face encounters, but that it also yields equitable results. More randomized controlled studies have been conducted to demonstrate the validity and equality of services.<sup>30</sup>

Other barriers to implementation include the space needed to house technological equipment on both the provider and client end, as well as startup and purchasing costs of equipment.<sup>19,20</sup> Providers frequently feel undertrained to provide the service and use the equipment. Training on optimizing audio and video quality, the technical aspects of using equipment, and clear clinical policies regarding specific procedures and services are necessary for successful use.<sup>31</sup> While the above obstacles are often present initially, over time providers demonstrate increasing satisfaction and comfort using telehealth to provide services. In addition to the aforementioned issues, variability in technology, licensure requirements and time zone differences, can also be prohibitive to use.<sup>10</sup>

Despite the financial barriers and with support of the Patient Protection and Affordable Care Act of 2010 and an unlimited growing market, expansion in telehealth is occurring and companies, with a vested interest, such as Verizon®, are taking note.<sup>14,32</sup>

### **Theme no. 3: utilization in rural areas**

*Utility* Telehealth is gaining mainstream status among practitioners in rural areas, and literature indicates that both patients and practitioners view it as an acceptable substitution for in-person treatment.<sup>15,33,34</sup> The driving forces behind the rapid proliferation of telehealth include new innovations in technology, a growing evidence base, increasing levels of consumer acceptance, vendor interest, and the emerging regulatory framework promoting its use. As early as 1998, the use of telemental health in rural and remote areas had expanded to include pre-admission and discharge planning, case management, evaluations, family visits, psychotherapy, court commitment hearings, and family support groups and to enhance provider training, clinical supervision, and provision of medical services to deployed personnel.<sup>18,35</sup> Larger-scale telemental health initiatives have been initiated to provide services in rural areas such as Hawaii, Texas, Maryland, Alabama, India, and Australia.<sup>4,8-11</sup> The University of Hawaii Rural Health Collaboration (UHRHC) is one such example, and initial evidence suggests that it is a promising development to increase access to health services and reduce disparities.<sup>8</sup>

*Provider use and provider training* Telehealth has also demonstrated promising results as a mode of training primary care providers. It has been shown to increase access to peer consultation, enhance provider skills and knowledge, reduce isolation from academic input, and increase practitioners confidence and competence in managing psychiatric patients.<sup>15,17</sup> Studies have indicated that the use of telemental health modalities by rural practitioners evolves through recurrent use. Over time, rural practitioners become significantly more likely to consult peers and to seek help with new and current treatment plans. Collaboration increases as relationships with other practitioners are established via telecommunication.<sup>17</sup> Overall, the literature establishes that staff response to telehealth training and services is positive.<sup>15,18</sup>

*Adult psychiatric care* The delivery of psychiatric services through telecommunication routes is also on the rise in both urban and rural areas. Telepsychiatry, in particular video teleconferencing (VTC), is used to treat a variety of disorders and is capable of allowing providers to reliably assess, diagnose, and treat many mental health and substance abuse concerns from a distance.<sup>12,33,36</sup> It is important to note that while several studies have shown psychiatry via VTC to be comparable to face-to-face interventions, other modes of telepsychiatry have not been proven.<sup>37</sup> For rural communities, the benefits of telepsychiatry are multifactorial and include improved functioning, a reduction in hospital referrals, improved convenience, decreased number of missed appointments, a reduction in travel time as well as time spent waiting for specialty services, reduced level of stigma, and enhanced access to treatment.<sup>9,38–40</sup>

Though a more novel application, emergency telepsychiatry in rural practice is also demonstrating promising results. The Burke Mental Health Emergency Center (MHEC) is the first freestanding rural comprehensive psychiatric emergency program in which services are performed entirely by telepsychiatrists. Analysis of admissions to the Burke Center's locked unit demonstrated a 70% reduction in hospital referrals, as well as reduced hospital stays to an average of 3.9 hours.<sup>9</sup>

*Pediatric telemental health and psychiatric care* The use of telepsychiatry and telemental health for children is not as widespread as in adults, but it is growing. In general, telehealth is gaining popularity in pediatric and adolescent services and has been implemented in various areas including treatment of depression, anxiety, substance abuse, ADHD, eating disorders, and general mental health promotion with high parent, provider, and patient satisfaction.<sup>20,41–44</sup> Studies specific to rural areas have concluded that the use of telepsychiatry can improve rural health care for pediatric clients and that the quality of clinical interactions appears comparable to face-to-face meetings.<sup>5,42,45,46</sup> Moreover, telehealth modalities minimize family disruption, provide a shorter waiting time for treatment, are favored by families over traveling long distances to receive care, and may be the preferred treatment over face-to-face interviews.<sup>5,41</sup> Determinants of satisfaction with services include an established physician–client relationship and high quality audio and video transmission.<sup>47,48</sup> Overall, the quality of care of rurally located pediatric patients needing mental health services is improved through telehealth, reduces the burden on families, and may be preferred by some children over face-to-face interviews.<sup>5,49</sup> The primary barrier to using telepsychiatry for children in rural areas is the absence of reimbursement for such services.<sup>5</sup> Other problems in the use of this technology for rurally located children include the cost of implementation, complexity of hardware, difficulty assessing non-verbal communication, and that it may take longer to establish rapport with some children.<sup>50–53</sup>

*Substance abuse treatment* Telehealth is playing a larger role in the provision of substance abuse treatment.<sup>54–58</sup> Research supports that the use of telehealth in the delivery of substance abuse services is effective, produces higher completion rates to traditional services, and that clients may prefer telehealth sessions because of its convenience and perceived increase in confidentiality.<sup>54–56,59,60</sup> Although the literature specific to rural areas is notably sparse, the limited extant research suggests that telephone and

web-based interventions are being used to enhance programs and may in some instances enhance abstinence and self-awareness in addicted individuals.<sup>4,27</sup>

*Post traumatic stress disorder* Although preliminary research clearly established that a variety of telemental health modalities were feasible, reliable, and satisfactory for general clinical assessments and care, less is known about the clinical application and effectiveness of this approach in the assessment or treatment of PTSD.<sup>61,62</sup> The application of telemental health in PTSD assessment and treatment remains a controversial issue.<sup>28,36</sup> Yet, over the past 10 years the body of literature related to PTSD and telemental health has yielded positive results.<sup>63-65</sup> It has been applied successfully in psycho-education, screening, and clinical therapy groups.<sup>63-65</sup> The Veterans Administration (VA) has implemented telehealth modalities and reports that PTSD treatment is comparable to services provided face-to-face. In addition, veterans, clinic staff, and remote clinicians all viewed VTC treatment as helpful.<sup>63,64</sup> Literature specific to rural areas is aligned with these findings and supports that the approach has also successfully been used to treat culturally unique groups such as Native American Indian Veterans with PTSD.<sup>7,66</sup>

*Cross-cultural applications* Literature over the past 15 years indicates that therapies for mental health and substance abuse, offered via telehealth, are acceptable across cultural lines. The approach is a viable method to increase culturally competent services in rural areas for specialty populations such as Native American Indian Veterans, Chinese Americans, and Latin Americans.<sup>3,67-69</sup> These modalities have proven themselves in terms of client and provider acceptance, reliability of assessment data, and feasibility.<sup>3,67-69</sup> Nonetheless, more research is needed in order to develop culturally aligned evidence-based practices and mental health promotion interventions for individual populations. Studies have indicated that the success of a program is often influenced by utilizing individuals from the specialty population to assist in running the clinic and acting as liaisons with staff located elsewhere.<sup>66</sup> The incorporation of culturally aligned teachings and perceptions into sessions conducted via telehealth increases viability and consumer acceptance. One example of this is the facilitation of Native American talking circles using telehealth modalities.<sup>70</sup>

### **Areas for further research**

The body of knowledge related to telehealth is undoubtedly expanding, but there are major areas that remain under-examined. For instance, a limited number of randomized controlled research studies are represented in the literature, in spite of the growth in telemental health services within rural and non-rural communities.<sup>63,71,72</sup> Furthermore, there are few published works on the use of telehealth to provide or enhance substance abuse services in rural areas.

The ATA report has also identified deficits in research, among them the effectiveness of assessment of patients in acute psychiatric units, consultative psychiatry, and the provision of services to geriatric patients in nursing facilities.<sup>73</sup> In 2011, researchers stressed the lack of data showing the efficacy of child and adolescent telemental health services and the importance of generating good process and outcome data, as these are critical to the development of evidence-based practice standards.<sup>74</sup>

## **Implications for Behavioral Health**

A combination of geographic isolation, disparities between social classes, unique cultural groups, lack of funding, and low socioeconomic status makes adequate provision of mental health and substance abuse services a significant challenge in rural communities. The body of literature examined in this review illustrates that telemedicine has been successfully used to enhance a

variety of clinical services and educational initiatives in rural communities, and serves as a viable mode to increase access to specialty professional services in remote areas in a convenient and economical way. Nonetheless, more research is warranted to determine the quality and clinical effectiveness of the services provided using this technology.

Preliminary research and the limited number of controlled studies identified demonstrate promise in providing training, technical assistance, evaluation, and treatment using distance technology. The military, in particular, is using telemental health and telepsychiatry in a variety of ways. Yet, significant barriers to fully realizing telemental health services in rural communities persist. Several states have yet to resolve credentialing and licensure issues. Requiring that practitioners be licensed in the same state as patients being served is an added financial burden that inhibits the use of telecommunication services in many areas.

Furthermore, technology requirements raise additional financial and infrastructure problems. The equipment is often expensive and on-going transmission costs and professional services are prohibitive to some rural communities. For many rural areas, phones remain a primary method of transmission. The quality and type of phone system vary and are frequently not compatible with the technology needs of high speed computers and videoconferencing. Additionally, the funding and reimbursement of services are inconsistent among states. Although federal legislation has aided in the promotion of technology, private insurance and Medicare or Medicaid disallow or limit reimbursement for many of the telecommunication services rendered.

The discord between federal and state expectations goes beyond funding; there are also ethical elements at play. The Health Insurance Portability and Accountability Act (HIPAA) and confidentiality concerns are not completely resolved. More work is required to ensure that care provided via distance is conducted in a manner that protects client information.

Several key ingredients to the success of a telemental health or substance abuse program were identified. Strong leadership; flexibility to adapt to the evolving needs of the community; adequate coordination with multidisciplinary teams; adequate and ongoing training for providers, champions, and key stakeholders who buy into the solution and dedicate themselves to political advocacy; and continuous assessment of community needs are critical to ensuring success.<sup>9,10</sup>

Telehealth can play a considerable role in reducing health disparities for those residing in rural communities. The technology allows for increased access to specialized mental health services, technical information, and training that may not be locally available. If funding and reimbursement issues can be properly addressed, telehealth holds great promise for the future of rural communities.

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