

# Use of Telepsychiatry to Improve Care for People With Mental Illness in Rural North Carolina

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(See the commentary by Schwartz and Britton on pages 216-218.)

**Telehealth improves access to medical services, especially for people living in rural areas. In North Carolina, the advantages of telepsychiatry also go beyond improving access. This article describes a diverse program of telehealth and telepsychiatric service delivery and discusses its advantages and disadvantages.**

**M**any states have extreme disparities in population density and resource distribution, with substantial health and human service resources in urban centers and a relative scarcity of services in rural areas. Such disparities are particularly apparent in the area of mental health services [1]. North Carolina is no exception. Telepsychiatry (also known as “e-mental health”), one of the largest medical specialties available through telehealth technology [2, 3], can be employed to overcome these problems. Indeed, a growing body of literature now suggests that the use of telepsychiatry to provide mental health services has the potential to mitigate workforce shortages in remote and underserved areas [4].

While the term “telemedicine” has been variously defined [5], live, interactive, 2-way audio-video communication known as “videoconferencing” is the modality most applicable to medicine and has become synonymous with telemedicine and telepsychiatry. The East Carolina University (ECU) telemedicine program has been in operation since 1992, making it one of the longest-running clinical telemedicine operations in the world. The ECU Telemedicine Center provides clinical telehealth services and support, conducts telehealth research, consults and oversees new and existing statewide telehealth networks, and educates mental health professionals and the public on the usefulness of telehealth. Currently, ECU’s telemedicine network links to various sites across the state, delivering direct patient care from physicians on the ECU medical campus. The Telemedicine Center provides support for clinical telemedicine transactions, including scheduling, network operations, troubleshooting, training, and administrative assistance, to sites receiving medical services from ECU physicians and other local health care professionals.

The support services of the Telemedicine Center allowed

the development and expansion of a network of telepsychiatric services. The most recent additions to our telepsychiatry network include sites in 13 eastern North Carolina counties (ie, Northampton, Gates, Hertford, Bertie, Edgecombe, Nash, Wilson, Pitt, Greene, Beaufort, Craven, Pamlico, and Jones counties). For this project, 3 full-time-equivalent psychiatrists provide services to patients, coordination of mobile crisis teams, and consultation to other clinical professionals through videoconferencing and face-to-face services (Figure 1, available only in the online edition of the NCMJ).

Telepsychiatry sites include pediatric practices, private mental health service professionals, mental health agencies, developmental disability service professionals, local management entities, a state psychiatric hospital, private family medicine professionals, and residential schools for hearing or visually impaired students. These services and programs originate from the ECU Psychiatry Outpatient Clinic, the ECU Telemedicine Center, The Brody School of Medicine (BSOM), and University Health Systems.

## The Promise of Telepsychiatry

**Direct benefits.** Telepsychiatry can make a significant impact on the delivery of mental health services, particularly to individuals with less access (Table 1). Services pro-

**FIGURE 1.**  
East Carolina University (ECU) Network of Clinical Psychiatric Sites in Eastern North Carolina

This figure is available in its entirety in the online edition of the NCMJ.

Note. AHEC, Area Health Education Centers; BSOM, Brody School of Medicine; EC BH, East Carolina Behavioral Health; UHS, University Health Systems.

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**TABLE 1.**  
**Benefits and Outcomes of Teleconsultation Services at East Carolina University**

Benefit or outcome
High patient satisfaction
Improved patient convenience
Reduced travel
Less time away from work and school
Decreased waiting time for specialist referrals
Improved patient compliance with therapy
Higher attendance rates for telehealth visits
Lower frequency of missed appointments for telehealth visits (7%-10% of scheduled appointments), compared with traditional outpatient clinic (35%-42%)
Improved continuity of care
Referring physician remains informed of the patient's condition
Faster receipt of consultant's findings

vided via telepsychiatry have been shown to be comparably effective to those delivered in person [4]. Patient access is improved and satisfaction is high with telepsychiatric services and telemedicine in general [6, 7]. Other benefits include reduction of stigma associated with mental health services [8]; reduced professional isolation and improved recruiting and retention of mental health professionals in underserved or rural areas [9-12]; reduced geographic and socioeconomic health disparities, through improved access to mental health services; improved convenience and, consequently, greater likelihood of compliance with therapy, through reduced traveling; improved education of mental health professionals; and improved coordination of care across the mental health system.

**Indirect benefits.** Telehealth has several indirect benefits. First, telehealth technologies can streamline the implementation of training efforts. Training can originate from a variety of locations, inside or outside the state, and can eliminate the need for trainers to travel to multiple sites or to concentrate trainees in a single location. Telehealth-facilitated training would allow broad access by the staff from mental health agencies, local management entities, hospitals, and private mental health professionals while minimizing travel costs. The subject matter is conveyed consistently from site to site, and questions and comments from the participants can be shared simultaneously with all connected sites.

Second, the service needs of inpatients with mental health conditions, developmental disabilities, and/or substance abuse issues are usually met by facility staff. However, inpatients often have comorbidities or other health conditions. It is often problematic, costly, and inefficient to provide other clinical services in a timely manner, either on-site or by transport. Specialty consultation services can be provided via telemedicine. For example, the ECU BSOM currently provides specialty medical services for 2 state facilities. In addition, ECU psychiatrists

use these connections to consult with inpatient treatment teams regarding selected patients.

Third, other state institutions, such as correctional facilities and special needs schools, require mental health and other health services. The ECU BSOM has provided telehealth services for the Eastern North Carolina School for the Deaf for nearly 5 years, offering consultation and primary care delivery via a connection to the school's infirmary during normal office hours. Other clinical services have included child and adolescent psychiatry and dermatology. This has proven to be cost-effective and educationally beneficial because it allowed students who otherwise would have returned home to remain at the school and spend more time in the classroom. Although this type of service is geared toward a special population, it could be extended to many other institutions.

Fourth, public health departments and private mental health professionals serving rural areas could improve access to their services by using telepsychiatry as a vehicle to extend services to underserved locales. Telehealth networks could also provide clinical coverage or oversight by psychiatrists from major academic medical centers or other sites.

Fifth, law enforcement officials are commonly responsible for the safety and care of individuals in crisis, who are often transported to distant emergency departments where clinicians have little or no information on the individuals en route. Similarly, law enforcement officials must transport individuals in custody who have developed medical or psychiatric symptoms. Telepsychiatry could help clinicians in emergency departments better prepare for patients en route and could give law enforcement personnel access to information that could help them provide secure transportation. Information related to changing mental status, attitudes, and cultural beliefs, as well as to potential drug and alcohol involvement, could also help improve safety and efficiency among emergency department staff and law enforcement officials.

Sixth, students in K-12 schools, community colleges, and universities could benefit from telepsychiatric services. Fortunately, much of the high-speed networking and videoconferencing infrastructure is already in place in many states and could be used to provide student access to mental health services. However, these capabilities use a platform accessible by the public (ie, the Internet), and additional security measures would need to be implemented.

Seventh, there is a great need to improve the quality of and access to mental health services in nursing homes, hospice, and other extended care facilities. The mental health conditions of residents in these settings are often misdiagnosed or underdiagnosed. Nursing staff are increasingly overburdened and inadequately trained to deal with mental health issues. Telepsychiatric services could improve the quality and efficiency of mental health services in these settings.

Eighth, many of the patients seen in primary care settings have mental disorders. Although primary care physicians are the principal gatekeepers for accessing the health care system, they often have limited mental health training and difficulty referring patients for mental health services [13]. To improve access to child and adolescent psychiatric care, improve the quality of mental health care, reduce wait times for the initial psychiatric visit, and keep the child and family served within the pediatric practice, we began providing telepsychiatric consultations to a large pediatric practice. After 3.5 years and 185 telepsychiatric consultations, less than 3% of the consultations were problematic and required management in the ECU psychiatry clinic because of an acute crisis. In addition, preschool assessments have to be limited because they often require a clinician [14]. Despite these unusual problems, we have generally observed an enhanced ability to facilitate appropriate primary care diagnosis and care of mental health disorders, as well as referral to specialists, when appropriate. Additional primary care applications for telepsychiatry include training, mentoring, consultation, and care coordination.

## Recommendations

We offer the following recommendations for the long-term development of telepsychiatry in rural and underserved regions of North Carolina. First, the state should foster telepsychiatry demonstration projects showing innovations that improve service delivery, costs, efficiency, efficacy, and effectiveness and maximize the possibilities of new technologies.

Second, the state should aggressively pursue teletraining, leveraging existing resources to the greatest practical extent. Extensive high-speed networking and videoconferencing resources may already be in place. Additional videoconferencing resources may be available through public and private institutions of higher education, Area Health Education Centers offices, and public health systems.

Third, agencies providing care to people with mental illness should consider forming regional consortia, to pool resources and expertise, and working with professional societies and telepsychiatry programs, to develop guidelines and best practices. These consortia should identify technology infrastructure needs and then implement a plan to meet these needs. There are many federal programs that can assist with infrastructure, including the Federal Communications Commission Universal Services Fund (for communications subsidies) and the US Department of Agriculture/Rural Utility Service's Telemedicine and Distance Learning grant and loan program (for equipment purchases).

Fourth, the North Carolina Division of Mental Health, Developmental Disabilities and Substance Abuse Services (DMHDDSAS) should develop a plan to mitigate barriers to using telepsychiatry, starting with those that have been identified [15, 16]. Professional societies and other North Carolina-based and national telepsychiatric programs can

be of help in developing guidelines and best practices for telepsychiatry.

Fifth, because grant applications that include multi-institutional collaboration have advantages in today's increasingly competitive research funding environment, the DMHDDSAS and other agencies should promote research projects that include collaboration between research and clinical settings, bringing together researchers from different institutions to develop a set of key data elements to build a telepsychiatric research database for studies on health care use and health outcomes.

Finally, because awareness of and attitudes about telepsychiatry are influential factors in the success of these programs, the DMHDDSAS should reach out to potential constituencies, including users and consumers, to promote telepsychiatric concepts, technologies, and practices.

## Conclusion

Although empirical evidence on the effectiveness of telepsychiatry has some methodological limitations, findings suggest that telepsychiatric services are comparable to those delivered face to face, and there are no data to suggest that these services are harmful to psychiatric patients, whether they are children or adults. Services provided via telepsychiatry are acceptable and, sometimes, even preferable to individuals in both outpatient and facility-based settings. Telepsychiatry appears to be a viable option for providing psychiatric care to groups that are currently underserved. The evolution of the future care system must begin with the existing system of service delivery and with recognition of what telepsychiatry can achieve. The purpose and fit of telepsychiatric services in the wider care system—not the technology—should drive its introduction. This will require a better evaluation of telepsychiatry's impact at the system-wide level. **NCMJ**

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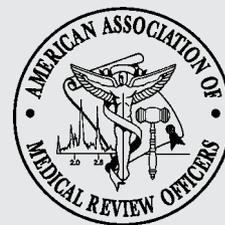
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