School-based Telemental Health Services: Reaching Underserved Populations
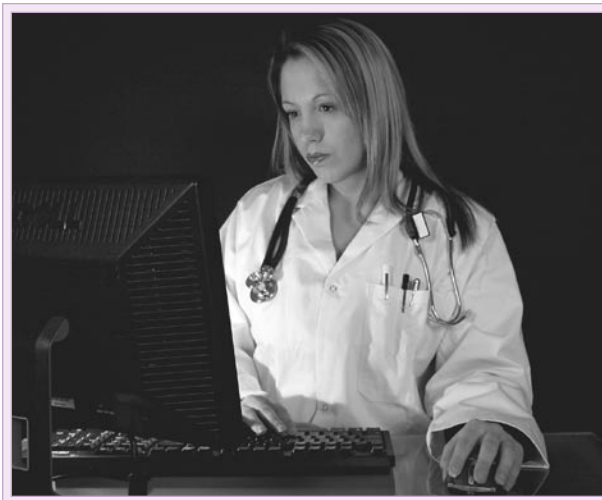
Kansas is an ideal state for mental health using telemedicine because of how service providers and recipients are distributed across the state. Half the population and a majority of specialists live in two urban areas, while the rest are thinly scattered across rural areas. Telemedicine has advantages for rural families, including decreased travel expenses, decreased time lost from work and family, and increased comfort level due to staying in familiar surroundings.

As defined by the American Telemedicine Association, telemedicine is "medical information exchanged from one site to another via electronic communications to improve patients' health status." Kansas became the first state in the nation to utilize school-based telemedicine in 1998 with its TeleKidcare program. In this program, videoconferencing bridges the distance between the school's health office and health professionals at the state's largest teaching hospital, University of Kansas Medical Center. The program has grown from four schools to over 20 urban and rural schools statewide.

Overview

TeleKidcare originally provided ambulatory and mental health services using interactive televideo, allowing the child, family, and school nurse to see, hear, and interact with the University of Kansas Medical Center specialists in real-time. Since 1998, there have been over 3,500 TeleKidcare consults.

Over the last nine years, TeleKidcare has evolved into primarily a mental health services model. Telemental health has been used across urban and rural areas with both adults and children. Settings for tele-

mental health services have included schools, community mental health centers, hospitals, primary care offices, military sites, reservations, correctional facilities, and homes.[4,10] Given these diverse settings, a full spectrum of mental health difficulties has been evaluated and treated via televideo.

Diagnostic efficacy and clinical efficacy over televideo have been found generally equivalent to in-person care, but many research questions remain across diagnoses and settings.[3] School-based telemedicine specifically has resulted in decreased absences[6] and high satisfaction across patients, providers, and presenters;[11,8] and has been shown to be cost-effective.[1]

Ongoing studies are evaluating the accuracy of diagnosis in the TeleKidcare mental health clinic and developmental disabilities clinic.[9] In one of the few treatment outcome studies, Nelson et al.[7] found similar rates of depression remission across 28 children randomized to televideo or face-to-face cognitive behavioral therapy (CBT). While these results are promising, the small number of participants makes it hard to generalize results across different technologies, sites, and mental health conditions.

TeleKidcare Clinic

TeleKidcare's innovation is linking together the provider, the parent/guardian, and personnel from the school, each of whom has a different kind of knowledge about the child. The school-identified telemedicine presenter is most often the school nurse, who serves as the bridge between the telemental health provider and the family. The close communication with the school team assists the telemedicine providers in diagnosis and treatment. In the traditional clinic setting, the family is typically interviewed by the behavioral provider and then the school is contacted. Connecting with the school can be a prolonged process of phone tag and waiting for questionnaires to be returned. The school-based telemedicine conference brings multiple informants together at one time. This allows providers to get a holistic view of the child's strengths and difficulties and allows family and school participants to better understand each others' concerns. The school personnel are in a unique position to describe daily behaviors over time and identify changes over time. They can describe learning difficulties and peer relations in addition to the psychiatric concern. The team evaluation results in a more unified and feasible treatment approach and the parent remains an active participant throughout the entire process.

Telemedicine has transformed the role of school nurse in mental health. She (all TeleKidcare nurses have been female to date) orients the family to both the mental health evaluation process and the technology. She organizes the consultation, arranging for all participants to attend, including teachers, school psychologists, coun-

selors, and others. After the consultation, she assists the family and the school with implementing medication, behavioral, and referral recommendations. With these expanded roles, the TeleKidcare nurses request and require ongoing training in both technology and mental health services competencies.

The technology is the essential tool that allows this innovative team to "meet" in the child's own school. Therefore, administrative buy-in and appropriate physical facilities are critical to successful school-based telemedicine. The cost of the videoconferencing system ranges from $4,000-$9,000, including costs for videoconferencing equipment, monitor, cart, line installation, and other related costs. In addition, the school pays ongoing costs associated with the high-speed internet connection or ISDN lines. The equipment is user friendly and reliable; technical assistance was required on less than 5% of TeleKidcare consultations.

Table 1 presents TeleKidcare demographics information from 155 patients served within the first seven months of the 2006-2007 school-year. The mean age was 11 years, with 70% of patients from elementary school, 15% from junior high school, and 15% from high school. The overrepresentation of boys is consistent with face-to-face behavioral clinics. While behavioral difficulties are the initial concern in three quarters of the consultations, the telemedicine providers find that many families bring concerns about "internalizing" behavior ranging from anxiety or adjustment reactions to full depression.

The treatment delivery method itself poses few difficulties for families. Children adapt quickly to the technology and often enjoy seeing themselves and even making faces on screen. Families report little difficulty seeing or hearing over the system. The length, content, and relationship within telemental health sessions appear similar to those of traditional sessions. Some differences exist, such as the inability to shake the parent's hand or pat the child on the shoulder for a positive behavior. In the past, families also had to become accustomed to the slight delay in the audio component and adjust the conversation patterns accordingly, although higher speed transmission via televideo makes this less of a concern. Videoconferencing at times adds benefits to the therapeutic process. For example, it may encourage parents to take a more active role as a partner in their child's treatment.

Implementation issues to consider when using psychotherapy over televideo include the following:

1. Introduction to the technology. The behavioral provider and the rural presenter (in this case the school nurse) need to feel comfortable with the technology and practice, ideally shadowing another provider or presenter before initiating services. Information about the technology is reviewed at the first visit and the family is encouraged to practice moving the camera, adjusting the volume, and so on. The child is given a basic description of the technology, such as, "Only you can see me in Kansas City and I can see you at your school using special phone lines. It's not like regular TV." The introduction also includes a backup plan in case of technology difficulties (usually the telephone), as well as a safety plan should any concerns arise during the evaluation. For non-English speaking telemedicine participants, a medical interpreter assists with this introductory description and throughout the session as needed.

2. Confidentiality. Reasonable pre-

TABLE 1. CONSULTS BY GENDER AND RACE 09/2006 - 03/2007	
Gender	%
Female	40
Male	60
Ethnicity	%
African American	20
Caucasian	55
Hispanic	20
Other Ethnicity	5

cautions need to be taken to limit what is overheard from the room and to provide secure data transmission. As Elford and colleagues[2] point out, the "main risk to securing is not line-tapping but eavesdropping at one or other end of the video-link." Precautions also include having a defined waiting area for family members as the child or parent takes turns talking with the care team. Confidentiality related to video transmission is addressed by using dedicated connections or by using video encryption.

3. Materials. Duplicate copies of materials (book, toys, etc.) for both sides of the consult may be necessary in order to create a "shared virtual physical context."[5] Faxes also help create this shared environment by exchanging handouts and child's drawings from the sessions.

4. Room layout. This includes basics such as the ability for both the parent and the child to be viewed from the video screen and for each to have a place to wait while the other talks with the therapist. Space is often at a premium in schools but is a prerequisite to successful telemental health services. The space needs to be large enough to accommodate family and school participants as well as to ensure confidential communications. Good lighting is important to insure that facial expressions can be seen in detail. It is also helpful to remove distractions from the room.

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New Advances

TeleKidcare clinics continue to evolve based on ongoing assessment of community and school needs. Two new TeleKidcare clinics began in 2006-2007, the ADHD telemedicine clinic and the TeleHelp Clinic, focused on depressive symptoms. The clinics focus on two of the most common presenting concerns in telemedicine and traditional behavioral health settings. The clinics are unique in offering team-based evaluation and treatment. The TeleHelp clinic provides a psychologist and a child psychiatrist and the ADHD telemedicine clinic provides a developmental pediatrician and psychologist. These interdisciplinary teams make joint medication and behavioral recommendations. Children who have been served to date reflect the complexities within underserved populations, with many psychosocial contributors and high comorbidity. The joint clinics have been overwhelmingly popular because the team approach has led to quicker improvement in both academic and home functioning.

School-based telemental health services have enormous potential to be a part of addressing the health care crisis and the burden of suffering. Advances in reimbursement, including Medicaid coverage in Kansas, have increased telemedicine's potential reach and sustainability. To date, TeleKidcare has focused on the elementary school population, but is beginning to expand to middle and high school as returning TeleKidcare students have themselves moved through the educational system. Two other telemental health programs, focusing on younger children, have been developed. They include telepsychiatry services to a large daycare program in Missouri and developmental disabilities services with preschoolers.

Faster and more accessible technologies may make TeleKidcare and similar programs feasible in every school. These programs must not only strive for better technologies, but also continue to build long-term relationships among medical providers, school personnel, families, funding agencies, and community members. Continued evaluation must also be included to quantify telemental health's impact on emotional, behavioral, and developmental concerns in the school setting.

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