

Practice Parameter for Telepsychiatry With Children and Adolescents

ABSTRACT

This practice parameter discusses the use of telepsychiatry to provide services to children and adolescents. The parameter defines terms and reviews the status of telepsychiatry as a mode of health service delivery. Because many of the issues addressed are unique to telepsychiatry, the parameter presents principles for establishing a telepsychiatry service and optimizing clinical practice within that service. The principles presented are based on existing scientific evidence and clinical consensus. Telepsychiatry is still evolving, and this parameter represents a first approach to determining “best practices.” The parameter emphasizes the integration of telepsychiatry within other practice parameters of the American Academy of Child and Adolescent Psychiatry. *J. Am. Acad. Child Adolesc. Psychiatry*, 2008;47:(12) 1468–1483. **Key Words:** telepsychiatry, telemental health, telemedicine, e-health, practice parameter.

Technology has made it possible to increase access to health care using interactive televideo (ITV) communications. This technology allows clinicians and patients at different locations to interact in real time as though they were in the same room. This mode of health care

delivery, termed *telemedicine*, has been applied to psychiatry. As psychiatry relies predominantly on conversation and observational skills, telepsychiatry provides a reasonable alternative to an office visit for patients who cannot readily access care.^{1,2} Thus,

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The AACAP practice parameters are developed by the AACAP WGQI in accordance with American Medical Association policy. Parameter development is an iterative process between the primary author(s), the WGQI, topic experts, and representatives from multiple constituent groups, including the AACAP membership, relevant AACAP components, the AACAP Assembly of Regional Organizations, and the AACAP Council. Details of the parameter development process can be accessed on the AACAP Web site. Responsibility for parameter content and review rests with the author(s), the WGQI, the WGQI Consensus Group, and the AACAP Council.

The AACAP develops both patient-oriented and clinician-oriented practice parameters. Patient-oriented parameters provide recommendations to guide clinicians toward best treatment practices. Recommendations are based on empirical evidence (when available) and clinical consensus (when not) and are graded according to the strength of the empirical and clinical support. Clinician-oriented parameters provide clinicians with the information (stated as principles) needed to develop practice-based skills. Although empirical evidence may be available to support certain principles, principles are primarily based on expert opinion derived from clinical experience. This parameter is a clinician-oriented parameter.

The primary intended audience for AACAP practice parameters is child and adolescent psychiatrists; however, the information contained therein may also be useful for other mental health clinicians.

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telepsychiatry has the potential to address the workforce shortage in child and adolescent psychiatry and improve access to care for children living in rural or impoverished areas. It also offers the opportunity to bring mental health services to youths in a variety of settings such as schools, day care facilities, and detention centers. In addition, telepsychiatry can be combined with other electronic and computer-based technologies to provide innovative approaches to treatment.

Although technical, interpersonal, and financial barriers still prevent telepsychiatry from being fully integrated into routine practice,³ the overall advantages have led to a rapid expansion of programs across the country.⁴ Therefore, there is a need to identify “best practices” for telepsychiatric care. This parameter is the first attempt to develop such guidelines with children and adolescents and is intentionally flexible for adaptation to both current and future technology and resources. Because telepsychiatry is a fast-evolving field, periodic updates may be needed.

This parameter addresses the use of telepsychiatry for the provision of care that is usually delivered in person. Although a telepsychiatry service may incorporate various applications of e-health such as online interactive instruction, treatment monitoring, and e-mail correspondence, these technologies are not specifically addressed in this parameter. Likewise, other uses of televideo technology, including in-home monitoring and store and forward consultation, are not covered here.

This parameter is targeted to child and adolescent psychiatrists, but it should be helpful for other mental health professionals. The guidelines are applicable to the evaluation and treatment of youths from preschool to 18 years of age with most psychiatric disorders.

Throughout this parameter, the terms *youth* and *young people* refer to mixed samples of children and adolescents. When either of these groups alone is intended, the terms *preschoolers*, *toddlers*, *children*, and *adolescents* are used. The term *parents* refers to the youth’s primary caretakers regardless of whether they are biological parents, adoptive parents, or legal guardians. Finally, this document presumes familiarity with child development, the principles of psychiatric diagnosis, and evidence-based treatment.

METHODOLOGY

The list of references for this practice parameter was developed in several ways. First, *Medline* and *Psycholo-*

gical Abstracts searches were conducted in June 2004 and updated regularly over the ensuing months until publication. These searches used the following terms: *telemedicine*, *telepsychiatry*, *telemental health*, *telehealth*, *interactive videoteleconferencing*, and *teleconferencing*. The addition of the terms *child and adolescent* and *psychiatry*, individually or in combination, did not yield more articles. Several published authors were specifically researched because of their authorship of book chapters, citations in publications, or presentations at national meetings. Overall, the search covered 1986–2007 and yielded 438 articles, which were reviewed. Second, we searched known Web sites addressing telemedicine and telepsychiatry such as the Telemedicine Information Exchange (tie.telemed.org). Third, we queried coworkers and members of the special interest group of the American Telemedicine Association (ATA) regarding source material. Fourth, we consulted with telemedicine clinicians at various centers nationally and internationally.

DEFINITIONS

- *E-health* refers to health services provided from a clinician to a patient or the lay public through any electronic medium, including the Internet, telephone, or facsimile transmission.
- *ITV communication* refers to the interaction of two or more individuals in real time to share information through electronic media.
- *Telemedicine* refers to the use of ITV for the provision of medical care that is usually delivered in person.
- *Telepsychiatry* is a specific term designating psychiatric applications of telemedicine.
- *Telemental health* and *mental telehealth* are broader terms that include all mental health applications including telepsychiatry.
- “*Patient site*” (*patient’s location*) and “*provider site*” (*telepsychiatrist’s location*) are used here to refer to the participants at each end of the ITV link. Multiple other terms have been used elsewhere. For example, The Centers for Medicare and Medicaid⁵ uses the terms *originating site* for the patient location and *distant site* for the provider location during the telemedicine service; other common designations include *spoke*, *hub*, and *remote sites*.
- *Bandwidth* refers to the amount of data that can travel through a communications network in a fixed period of time. Bandwidth is often expressed in

units of kilobits per second (kbit/s). The higher the bandwidth, the greater amount of data that can be transmitted. Standard telephones, which only transmit audio signals, are low-bandwidth devices, whereas cable television and telecommunications lines that transmit audio and video signals simultaneously are high-bandwidth devices. Most health care applications use bandwidths at or above 384 kbit/s, often referred to as “virtually live” or “80% television quality.”

- *Telecommunication technology* refers to the technical methods, or protocols, used to establish an ITV connection. Brief definitions are provided below. More information can be found at the Web site for the Telemedicine Information Exchange (tie.telemed.org).
 - *Plain old telephone service* (POTS) is the analog, public-switched, telephone network with bandwidth of 64 kbit/s in common use throughout the world. POTS is used with videophones in residential settings to provide home telehealth applications.
 - *Integrated Service Digital Network* (ISDN), in concept, refers to the integration of analog (voice) and digital (video and other data) data over the same network. In practice, ISDN refers to an international set of standards for switched digital dial-up telephone service that simultaneously provides both audio and video signals in low- to high-speed, secure, point-to-point transmission. There are multiple ways of configuring ISDN systems. One system is basic rate interface, which carries two channels, each having a capacity of 64 kbit/s, resulting in a total capacity of 128 kbit/s. As ITV requires at least one channel for audio signals and one for video signals, the minimum bandwidth required for ITV is 128 kbit/s. Bonding or combining channels is common; for example, six channels provide 384 kbit/s (64 kbit/s × 6 channels) for high-quality videoconferencing. This basic service meets the needs of most individual users and is appropriate to most clinical applications. Another system is primary rate interface (PRI), which carries 24 channels, resulting in high-speed service at 1536 kbit/s. PRI delivers much greater capacity but entails much greater cost. ISDN may be thought of as a technological bridge between the current telephone system and an upgraded broadband network.
 - *T1 line and T3 line* are generic terms for any of several digitally multiplexed telecommunications systems that provide high-speed, secure, point-to-point transmission. A T1 line consists of twenty-four 64kbit/s channels producing bandwidth capacity of 1.54 Mbit/s. A T3 line has bandwidth capacity of 45 Mbit/s. As a comparison, a 24-channel T1 line is equivalent to an ISDN PRI line. Most telephone companies allow the purchase or leasing of only some of these individual channels. These so-called fractional T1 lines carry a fraction of the system’s bandwidth capacity at a correspondingly lower cost. T1 lines are the most commonly used digital transmission service in the United States.
 - *Internet protocol* (IP) refers to a technology that transmits digital data over the public network, connecting the specific IP addresses of two electronic devices such as computers or tele-video systems. Most of today’s videoconferencing devices have the capability to use IP technology, reducing costly line charges. Because IP does not use a secure point-to-point connection, encryption is needed to ensure confidentiality. With increasing availability of encryption protocols to ensure compliance with the Health Insurance Portability and Accountability Act (HIPAA), IP will likely become the preferred technology for telepsychiatry.
- *Frame and frame rate* indicates the rate of display of video signals. A video signal is composed of multiple still images or frames. Their rate of display is determined by the bandwidth and quality of the camera and monitor. Each second of broadcast-quality video used in most telepsychiatry work has 25 to 30 frames per second. A lower rate produces a flickering image due to pixilation and may be inadequate for some assessments such as affective expression or abnormal movements.
- *Resolution* refers to the quality of the visual and auditory signals conveyed through the monitor. The higher the

resolution, the better the synchronization of conversation between the provider and patient and the less the pixilation of the visual image.

For more information regarding technology, see *www.atmeda.org*, Urness,⁶ and Simmons et al.⁷

HISTORICAL OVERVIEW

The earliest documentation of telemedicine was from the University of Nebraska, where, in the 1950s, a two-way closed-circuit television system was used for educational and medical purposes, mainly in psychiatry.⁸ In 1973, the term *telepsychiatry* was first used to describe consultation services provided from Massachusetts General Hospital to a medical site in Boston.⁹ Shortly thereafter, telepsychiatry was reported with children and adolescents when a child guidance clinic in New York City was connected to Mount Sinai School of Medicine.¹⁰ After this initial report, there was little activity until the 1990s, when technological improvements led to rapid growth of telemedicine.

It is difficult to determine the number of telepsychiatry programs serving children and adolescents, but estimates of the total number of telepsychiatry programs in the United States are possible from several sources. Many, although an unknown number, of these programs include child and adolescent services. A survey in 1995 noted that there were at least 50 telepsychiatry programs in the United States.¹¹ Reimbursement records from 2003 indicate that 23 to 27 states reported the availability of telepsychiatry to Medicaid patients.^{4,12,13} In a 2004 survey of telemedicine programs, 88 programs responded and indicated that mental health services were the most common clinical specialty, provided by 49% of the programs.¹⁴ In 2005, 116 telemedicine programs were identified, and variably 38 programs^{4,15} to 64 programs¹⁶ reported reimbursement by private payers, including for telepsychiatry services. Many descriptions of national^{17–19} and international^{6,20–23} programs have been published. There are likely many others, as programs in the Veterans Health Administration,²⁴ military,²⁵ and community agencies are often not reported.

Initially, telepsychiatry programs were developed by major medical centers to provide specialty services to rural communities. Subsequent programs have focused

on other advantages such as the provision of subspecialty services, high-intensity services, crisis intervention, and management of chronic illnesses to any underserved population. Child and adolescent psychiatry programs are now sited in multiple diverse settings such as pediatric clinics,²⁶ community mental health centers,²⁷ urban day care facilities,²⁷ rural schools,^{28,29} corrections,³⁰ and private practice.³¹ Telepsychiatry has been used with youths of minority ethnicity, such as African Americans,²⁷ Hispanics,²⁹ Hawaiians,²⁸ Native Americans,³² and Alaska Natives (Tina Lee, M.D., personal communication, October 2007).

There is a small but growing literature examining telepsychiatry with children and adolescents. In one randomized investigation of 23 youths evaluated through both telepsychiatry and face-to-face, 96% of the diagnoses and treatment recommendations were comparable across the two modalities, with comparable family satisfaction.^{33,34} In another trial, 28 depressed children were randomized to telepsychiatry or face-to-face cognitive-behavioral therapy, with comparable improvements.³⁵ A retrospective assessment of 3-month outcomes with a convenience sample of 41 youths found improvements in the Affect and Oppositional Domains of the Child Behavior Checklist.³⁶ Functional behavioral analysis of developmentally impaired young children in their classrooms has been successfully conducted through televideo, with subsequent effective classroom interventions.³⁷ In a descriptive study, 159 youths referred to telepsychiatry were clinically and demographically equivalent to those referred to in-person psychiatric care, suggesting that telepsychiatry is referred for a representative sample of youth and that the same disorders can be diagnosed and treated with either.²⁶ Most clinical reports have focused on individual cases or case series.^{32,37,38} A single study has reported the implementation of pharmacotherapy.³⁰ That descriptive study was conducted with a selected population, adolescents incarcerated in a minimal security facility. Most studies have measured satisfaction^{26,30,33,34,39–42} and have found that families⁴³ and providers⁴⁴ are satisfied with telepsychiatry. Although satisfaction does not equate to efficacy, it does imply successful treatment and informs future directions.⁴⁵ Other reports have described successes and challenges of program implementation.^{17,30,44,46–48}

Although outcome studies with youths are limited, there is a larger literature on the teletreatment of adults

generally^{21,49–51} and for specific disorders such as chronic pain,⁵² including cancer-related pain,⁵³ panic disorder,⁵⁴ posttraumatic stress disorder,⁵⁵ depression,^{56–59} schizophrenia,⁶⁰ and alcoholism.⁶¹ Two randomized studies provide preliminary scientific evidence for the efficacy of teletreatment. In a study of 130 adults with various diagnoses, individuals treated through telepsychiatry and those treated face-to-face showed comparable improvements over 6 months.⁵¹ In another 6-month trial, depressed veterans in telepsychiatry or usual care showed comparable clinical improvements and compliance with their care.⁵⁹ Finally, a meta-analysis of 14 studies with 500 patients found no differences between telepsychiatry and in-person care.⁶²

The published work on telepsychiatry with adults and with youths has demonstrated that telepsychiatry increases access to psychiatric care and provides a beginning evidence base supporting its efficacy. However, as noted, there have been only a few clinical trials demonstrating that telepsychiatry produces results that are equal to those obtained in usual in-person psychiatric care (i.e., equivalency trials), and there are no randomized clinical trials demonstrating that telepsychiatry produces outcomes that are superior to care rendered by local physicians and therapists. Telepsychiatry's greatest value lies in demonstrating that it can provide evidence-based care that produces outcomes superior to those that patients can receive through usual community care.

Information resources are now available, including a professional organization, the ATA; dedicated journals such as *Telemedicine Journal and e-Health* and the *Journal of Telemedicine and Telecare*; and published books.^{63–66}

DEVELOPMENTAL AND CLINICAL CONSIDERATIONS

Applications of telepsychiatry have been described across developmental groups and most diagnostic categories. School-aged children comprise the modal treatment group, similar to usual outpatient care.^{26,35,42–44,46,48} Children as young as 3 years have been evaluated and treated.^{26,33} Autistic or other developmentally impaired children may not be able to provide their own perspectives, but their parents' history, school records, and telepsychiatrist's observations can readily facilitate treatment planning. Children who are uncooperative pose challenges, but they can be treated with assistance at the patient site. Decisions regarding the appropriateness of telepsychiatry for a particular youth

should take into account the youth's developmental level, parents' preferences, clinical supports at the patient site, and the telepsychiatrist's resourcefulness. Some interventions might be possible in a community with a well-developed system of care but not possible in a community that lacks resources to follow up the telepsychiatrist's recommendations.⁶⁷ The skill set needed to practice telepsychiatry includes familiarity with the equipment and ability to troubleshoot minor difficulties, development of a clinical style that maximizes communication through this medium (also known as "videoconferencing etiquette"; see principle 11), and ability to be creative in adapting the technology to clinical need. The only known contraindication is the lack of consent for treatment using televideo technology.

ESTABLISHING A TELEPSYCHIATRY SERVICE

Principle 1. The Need for Child and Adolescent Psychiatric Services and Whether Telepsychiatry Is an Option for Meeting That Need Should Be Determined.

Before providing any clinical services, potential telepsychiatrists should determine whether a telepsychiatry service is needed, feasible, and sustainable. It is critical to consider how telepsychiatry services will be integrated with and use existing local community services and resources.^{24,68} The first step in this process is to review existing mental health services. For example, child mental health services may be nonexistent or may be lacking in certain areas such as pharmacotherapy or evidence-based psychotherapy. It is also important to determine whether the local system of care can support the telepsychiatrist's recommendations.⁶⁷

Once the need for services has been defined, advantages and disadvantages of providing these services through telepsychiatry should be considered for both patient and provider. Commonly stated advantages for the patient site include the ability to obtain services from an expert and to obtain more total and predictable hours of consultation, possibly at lower cost, and to avoid families' traveling long distances in rural areas, or leaving their neighborhood in urban areas, or leaving self-contained sites such as residential facilities. The patient site may also access continuing education and supervision for its staff. Another advantage is the ability to readily involve other community professionals in the youth's session (e.g., teachers, therapists, case managers). The telepsychiatrist can foster relationships with these professionals by establishing virtual office hours to discuss

specific topics of interest to the staff. Some ITV systems allow for the involvement of multiple sites. For example, the telepsychiatrist at the provider site, the family at the patient site, and the teacher at a school can “meet” without the need to travel.

Advantages for the provider site include establishing regional programs or responding to mandates to serve the youths in naturalistic settings, such as school or day care facilities, or in difficult-to-staff settings such as correctional facilities. Individual psychiatrists may appreciate the opportunity to reach new and diverse populations while avoiding absences from home. Also, the telepsychiatrist may bring further expert consultation from colleagues at the provider site to the patient site.

Disadvantages should also be considered. For families living in rural areas, even the distance to the patient site for a 30 to 90-minute clinical appointment can be a deterrent. There may also be local resistance to new approaches. For the telepsychiatrist, it may be challenging to establish relationships with professionals and staff at the patient site if they never meet. This issue can be addressed by having potential partners communicate via teleconferencing, which will demonstrate the capability to establish good working relationships through this medium, or by arranging for the telepsychiatrist to make an initial visit or intermittent visits to the patient site. Virtual “ribbon-cutting” ceremonies with local leaders may help to elicit community support. Designation of a local “champion” for the telepsychiatry service helps to unite the provider and patient sites in a common mission.

Principle 2. The Sustainability of the Telepsychiatry Service Should Be Determined.

Sustainability of telepsychiatry should be considered in the larger context of each site’s stakeholders⁶⁹ rather than by a simple measure of cost-effectiveness. For example, although the provision of telepsychiatry may incur additional costs (described below) typically not reimbursed by payers, and appearing less cost-effective, the benefits of increased predictable access to child psychiatry services may offset or justify these costs. One potential direct benefit of telepsychiatry is a savings in the time and expense of travel. Thus, the costs of a telepsychiatry service should be contrasted to that of bringing a child psychiatrist to the clinical service site or that of bringing the patient to the psychiatrist’s office. A

potential indirect benefit of telepsychiatry would be a savings to the local community, resulting from lower use of crisis or correctional services. Therefore, participating sites should consider both the direct and indirect benefits and liabilities in deciding whether to invest in telepsychiatry.

Sustainability will be affected by costs beyond those incurred in usual practice, including costs of the technology and other infrastructure, additional staffing, and payment mechanisms. Most obvious is the cost of ITV equipment at both sites and the line charges. Specialists in information technology will be needed to determine which systems are most appropriate for the intended application, or potential telepsychiatrists can contact ITV vendors that advertise on the ATA Web site (www.atmeda.org).

Sustainability most directly relates to reimbursement. Adequate reimbursement must cover the costs of purchasing equipment, its upkeep, line charges, technical support, space for the equipment and clinical sessions, additional staff, and professional fees. Funding comes from three main sources: grants, contracts, and third-party payers. Grant funding is helpful during start-up, especially if it covers equipment purchase, but will not sustain a service. Contracts that reimburse a set rate for the psychiatrist’s time and cover the ancillary costs (e.g., line charges, office management) seem to be the most cost-effective and predictable for the provider.

Third-party payment, or fee-for-service, is generally comparable to traditional care but will likely not cover videoconferencing costs or infrastructure. Factors to consider include which CPT codes are covered, reimbursement rates, and any restrictions placed on the provider or the site. Billing codes are the same as for usual care, with a decimal code added to specify telepsychiatry. The Centers for Medicare and Medicaid Services addresses coverage⁵ and billing⁷⁰ for telemedicine services, which vary by state (www.cms.hhs.gov/Manuals/IOM/list.asp). The ATA’s Web site (www.atmeda.org) provides information about reimbursement. It is helpful to prepare a statement of “intent to bill” to open discussions with third-party payers.

Principle 3. The Patient Population, the Model of Health Service Delivery, and Services to Be Offered Should Be Determined.

Patient Population: Inclusion and Exclusion Criteria. After establishing that the telepsychiatry service is

needed, acceptable, and sustainable, the services to be delivered must be determined. Patient inclusion and exclusion criteria should be based on needs of the referring clinicians, judgment of the telepsychiatrist, and resources at the patient site, including the site's ability to attend to acutely suicidal⁷¹ or agitated patients.^{63,66} Ideally, the telepsychiatrist would have appropriate on-site backup to safely conduct an evaluation,²⁴ but this will depend on the youth's existing system of care.^{67,72} At a minimum, protocols should address the management of emergencies, criteria for hospitalization, use of crisis services, and the telepsychiatrist's role within the continuum of services.⁷³

Based on the needs assessment, inclusion criteria may be broad or restrictive, such as all patients at a mental health center, youths in selected medical practices, or youths attending a participating school. Exclusionary criteria might include youths without guardians present, patients without collaborating physicians, or patients requiring medical monitoring that is unavailable on-site. No absolute exclusionary criteria have been established.

Model of Health Service Delivery. With the patient population identified, the model of service delivery should be determined.⁷⁴⁻⁷⁶ Several models have been described that address both consultation services and direct ongoing care. Consultation models include consultee-centered consultation in which the referring physician participates in the session, prescribes, and maintains continuity of care; and client-centered consultation in which the youths and parent(s) but not clinicians participate.

Models for ongoing care include direct care provided by a telepsychiatrist, ongoing care coordinated by a midlevel professional in conjunction with a psychiatrist, and comprehensive services involving a team of clinicians.

Consultation versus ongoing care. Most programs focus on consultation rather than on ongoing care.^{17,77} Consultee-centered consultation^{76,78} empowers the referring clinician and allows immediate implementation of recommendations, but in the United States, it will not usually be feasible for the referring clinician to attend the consultation. This model is being used in other countries such as Canada.⁷⁶ Patient-centered consultation allows more confidential assessment, is more convenient for the referring clinician, and, therefore, may optimize access.

Ongoing telepsychiatric care is generally most helpful to referring clinicians. The most frequently requested services are assessment and pharmacotherapy.^{17,26,27,30,44} Other services should be addressed during the needs assessment and will be determined in part by expertise at the provider site. In both consultative and ongoing models, additional services locally⁶⁷ or at the provider site⁷⁵ may be needed to support the telepsychiatrist's recommendations. Thus, telepsychiatry may serve as an impetus to develop or improve systems of care. Ideally, patients' needs would dictate the model, but composition of the telepsychiatry treatment team might be the determinant.⁶⁷

Clinical Services Offered. New assessments. A core issue is whether new patients will be evaluated over televideo or in person. There is no absolute contraindication to or indication for the initial evaluation to be in person versus televideo,^{24,66} and a requirement for in-person assessment would dilute the value of telepsychiatry. However, the quality of the technology may influence this decision because low-bandwidth televideo may not be sufficient for complex assessments.^{79,80}

Urgent and emergency care. Telecrisis services are highly valuable to communities but require considerable coordination at both sites and great flexibility by the provider site.^{24,81,82} If the needs assessment concludes that crisis telecare should be offered, then staffing should be addressed. One approach is to use protocol-driven interventions delivered by nurses, with backup from a telepsychiatrist.⁷⁶ If emergent or urgent care is provided, backup safety systems should be clearly identified.⁷¹ However, it may be most reasonable to optimally implement noncrisis services before introducing crisis services.⁸³

Disaster planning. Telepsychiatry offers one means for safely reaching victims and first responders⁸⁴ and thus might be considered as part of a comprehensive response system. More work in this area is needed.

Principle 4. The Infrastructure Needed to Support the Services Provided Should Be Determined.

Infrastructural needs will vary with location of the clinic, the model of care, services provided, and the population served. For example, if the clinic is located in a nonmedical setting such as a school or shelter, new procedures may be needed to ensure HIPAA compliance and facilitate the monitoring of patient care.^{17,63,66} Within any clinical setting, medical records will be

needed. If the records are not electronic and duplicate records are kept at each site, space and staff will be needed to appropriately maintain the records. Other clinic support activities that might require additional resources include obtaining consents, registering and scheduling patients, fielding calls from families, and solving equipment problems.

Telepsychiatrist-supported activities relate primarily to the model of care. Infrastructure needs may be minimal if only consultee-centered consultation is provided. However, if ongoing care and pharmacotherapy are offered, more infrastructure support will be needed, ranging from minimum support if the patient site can rely on coordination with local providers to considerable support if personnel are needed to assist the telepsychiatrist with activities such as obtaining vital signs, communicating with other clinicians, coordinating laboratory results and prescriptions, and collaborating in managing crises.

Principle 5. Legal and Regulatory Issues Should Be Determined.

Telepsychiatry must address regulatory issues at the local, state, and national level. If the patient site and provider site are in different states or countries, both sets of regulations will apply. Most states require that the telepsychiatrist is licensed in both the state where the telepsychiatrist is located and the state where the patient receives services. Specific state laws should be checked. Although arguments have been made for instituting regional geographic licensure, there are no imminent plans for national licensure for telemedicine.⁸⁵ State laws may prohibit telepsychiatrists in different states from participation in the civil commitment process. Procedural guidelines for reporting child endangerment and prescribing controlled substances may also vary across state lines.

Regulatory issues related to confidentiality, records management, and ethical standards will depend on where the patient site is located. Hospital-based clinics will be accustomed to maintaining charts and abiding by HIPAA regulations, but school-based and other nonmedical clinics will require guidelines to ensure security of private medical information according to HIPAA rules. If the telepsychiatry service is located at a medical institution, the standards of the Joint Commission will apply. Two medical staff standards address telemedicine. One requires the medical staff to recommend the clinical services to be provided by telemedicine/telepsychiatry, and the other re-

quires the telemedicine provider to be credentialed at the patient site. Practitioners are encouraged to contact representatives from telemedicine departments, information technology, health information management systems, and information security for help with relevant issues. Individual practitioners without these resources may contact the ATA or a telemedicine department at a nearby medical center.

Principle 6. Management Strategies for the Telepsychiatry Service Should Be Established.

It is helpful to have a “clinical champion” at the patient site. Typically, such a “champion” is an administrator, nurse manager, or physician who takes responsibility for the telepsychiatry service, advocates for its success, and acts as a liaison with the provider site. It is also important to outline administrative and clinical strategies.^{19,24}

Administrative Strategies. Protocols are needed to coordinate equipment and services, schedule patients, maintain records across sites, liaise with referring clinicians and pharmacies, help obtain needed laboratory monitoring, and train staff. Protocols should provide contingency plans for issues such as canceled appointments or closing of clinics. Perhaps most importantly, protocols should identify specific steps to deal with equipment failure. It is important for the staff at each site to know their respective steps during equipment failure so that both sites are not simultaneously calling one another (and getting busy signals) or paging the technical staff. If possible, it is helpful to have alternative methods available for completing the clinical session, such as a POTS system or conference telephone setup in the examination room.

Another issue is the availability of the patient’s medical information. An electronic medical record allowing both sites to access current clinical information may be ideal, but it is not essential to the successful implementation of a telepsychiatry service. In the absence of an electronic medical record, other procedures to provide reciprocal access to clinical information for both sites should be developed. Protocols should also establish procedures for handling issues that arise between sessions such as refilling prescriptions, reporting side effects, or obtaining urgent care. These protocols will vary according to the availability of the telepsychiatrist, the community resources, and the role of telepsychiatry within the community’s system of care. For example, the management of suicidal patients may

rely on the local system of on-call staff or may include urgent sessions with the telepsychiatrist.

Protocols are also needed to ensure training and education regarding the technology. Technical training involves operations of the ITV systems and minor troubleshooting. There are no established criteria for training, but assistance may be available from a university's telemedicine department or equipment vendors. Generally, new telepsychiatrists observe a number of sessions before conducting sessions alone. Staff at both sites should demonstrate competency. A technical expert is generally on-call at one or both sites.

Clinical Issues. The structure of clinical services should be determined, especially the roles and responsibilities of each staff member at the patient site who will meet the patient and help facilitate the virtual visit. For example, a clinical staff may be needed in the examination room to operate equipment, help with disruptive children, and maintain safety. An important role for the staff can be to provide the telepsychiatrist with a perspective of the family's social, cultural, and ecological milieu.^{73,86,87} The staff can also provide feedback that helps the telepsychiatrist to appreciate the effect of culture on the patient-provider relationship.⁸⁸ Thus, staff may help the telepsychiatrist to provide culturally competent care.^{72,89,90}

One concept is that of a "presenter," often a nurse or therapist at the patient site who can present clinical information and may remain with the patient throughout most, or all, of the encounter. Another option is to have the staff join the session toward the end to assist with treatment planning. Depending on their clinical expertise, such clinicians may provide an invaluable service as an extender of the psychiatrist's reach. Duties may include obtaining vital signs and patient education and coordinating care. Different parts of the evaluation and treatment can be performed locally by the staff at the patient site or through teleconferencing at the provider site, depending on the resources available. It is essential to have a written protocol that specifies who performs what function in the process of intake, evaluation, and treatment to clarify roles and identify process issues quickly when they arise.

Principle 7. Appropriate Equipment and Technological Specifications Should Be Determined.

Televideo conferencing equipment typically includes monitors, cameras, microphones, speakers, and compu-

ters with hardware and software to facilitate televideo conferencing. Multiple technologies of varying costs are available to establish an ITV connection between sites, including analog telephone lines, digital point-to-point connections, and the Internet or a combination of these technologies. Analog telephone systems, referred to as POTS, are inexpensive and portable and therefore amenable to in-home videophones, although this technology may be largely replaced by computer-based videophones. Digital systems, such as ISDN and T1, are more expensive but provide higher resolution and a secure point-to-point connection. An Internet connection provides rapid transmission, high resolution, and lower costs, but unless the connection is private, encryption is required to protect confidentiality.

Ideally, services would be delivered with the highest resolution to approximate an in-person visit, but this may be financially prohibitive. Transmission at 128 kbit/s has shown good diagnostic ability²³ without interfering with patient-physician rapport,⁹¹ but transmission at 384 to 768 kbit/s may provide more reliable and accurate diagnoses.⁶² High bandwidth may be more relevant to selected applications, such as detection of dysmorphology, movement disorders, internalizing pathology, negative symptoms, or relatedness.^{23,66} Lower resolution may be adequate for administering questionnaires, when another clinician is present at the patient site to detect nuances of the youth's presentation, or for delivering selected treatments. Because of rapid changes in telecommunications and the decreasing costs of both the technology and transmission lines, it is important to consider the most current options when choosing equipment and the method of transmission. The ATA's Web site (www.atmeda.org) has further information on technology and vendors.

Principle 8. Quality and Clinical Outcome Indicators Should Be Developed.

Establishing an evidence base and quality improvement guidelines will ensure best practices and inform future guidelines.

Satisfaction Ratings. Most telepsychiatry programs measure the satisfaction of families, referrers, and providers, which has been consistently high.^{26,30,34,41-44,46,48} Although not a measure of efficacy, satisfaction indicates acceptability of telepsychiatry and helps to direct program development.⁴⁵ Satisfaction ratings typically cover technical and clinical aspects of care. Technical items address video

quality, sound quality, and privacy. Clinical aspects include the patient's ability to understand and have confidence in the provider, whether the family would return and whether telepsychiatry is comparable to an in-person appointment. Adolescents' own satisfaction should be included.³¹ It is also helpful to know whether the referring clinician perceives greater ease in patient management and improved patient functioning as a result of telepsychiatry.

Clinical Outcome Indicators. Clinical outcome indicators can provide preliminary efficacy data.^{79,80} Such indicators may include broadband scales,⁹² disorder-specific scales,⁹³⁻⁹⁷ and functional assessments.⁹⁸ Consideration should be given to outcomes for children with special needs, who pose particular challenges.⁹⁹⁻¹⁰² Quality use indicators should be specific to the patient's community and stakeholders in the youth's system of care, such as treating clinicians, schools, therapists, funding agencies, community representatives,^{86,103} and families.¹⁰⁴

OPTIMIZING A CLINICAL TELEPSYCHIATRY PRACTICE

Principle 9. Rapport, Confidence, and Collaboration With Staff at the Patient Site Should Be Fostered.

Staff at the patient site will represent the telepsychiatry service to families and the youth's system of care.⁸⁶ It is important for these staff and the telepsychiatrist to have confidence in each other, even if they never meet in person. The telepsychiatrist must decide whether collaboration can be accomplished over ITV or whether initial or intermittent on-site contact is needed.

One method for fostering rapport with professionals at the patient site is to schedule additional ITV time before or after seeing patients to discuss the cases, invite input, and explain rationale. The telepsychiatrist could foster relationships by establishing virtual office hours to discuss specific topics of interest to the staff, to provide education, or to provide supervision. Some ITV systems allow for the involvement of multiple sites.

Principle 10. Informed Consent and Assent Procedures Should Be Established.

Families should be informed during scheduling that their appointment will be via telepsychiatry so that parents can prepare their children with an age-appropriate explanation. If possible, it may be helpful for the youths to see the equipment and its operation before the formal session.

Informed consent should consist of the parent and the patient (over the age of majority) having a basic

understanding of and agreeing to the specific use of telepsychiatry in the provision of psychiatric treatment. There is no consensus about whether a separate consent form is needed or if telepsychiatry is covered by the general consent for treatment.

Principle 11. The Physical Setting Should Be Arranged, and the Virtual Relationship Should Be Established to Produce an Optimal Clinical Encounter.

The quality of the clinical encounter depends on the arrangement of the space at both sites and factors affecting the virtual relationship.^{24,105,106}

Physical Location and Arrangement. The appearance of a telepsychiatry room should be similar to that of a typical office. The background color of the office affects transmission. Some telepsychiatrists recommend a light-blue background screen to optimize transmission,^{24,66,106} but if such a screen blocks families' view of the office, it might seem sterile. The room at the patient site should provide appropriate privacy and be large enough to include the youth and a parent, as well as one or two other individuals such as a second parent or an invited professional (e.g., a therapist, teacher). It is important that the room be large enough to evaluate children's motor skills, play, and ability to separate.^{79,80} Sufficient space should exist between the chairs and camera so that if the child plays on the floor, the telepsychiatrist can continue to observe the child while conversing with the parent. A table may provide a surface for the child to draw or play while the parent relates the history, but it should not interfere with communication or viewing the youth's motor skills. The location of the room is important because the microphones are sensitive to extraneous noises such as exhaust fans, voices in the hallway, or traffic noise outside.²⁴ Microphone placement should consider the acoustics of the room; microphones should not be placed near the speakers because an echo will occur.

Lighting is crucial.^{24,106} Incandescent lighting provides a more natural appearance. Overhead lighting will cast shadows that may have an impact on the mental status examination. Lighting that emanates from behind the camera, similar to a vanity table, is preferable. The visual image is also affected by clothing. Pastel colors optimize visual transmission, whereas white coats, dark colors, or very bright colors affect contrast. Patterns, particularly horizontal stripes, distort the image. Brims of hats cast shadows that interfere with assessing

aspects of the mental status, such as eye contact or relatedness. Such technical issues must be balanced with clinical issues. For example, asking a youth with psychotic symptoms to remove a hat may make him/her uncomfortable.

Camera placement poses a problem that is not easily resolved. The camera is typically mounted above the monitor, causing individuals to appear to be looking downward. Conversely, a camera placed below the monitor will make the individual seem to be looking upward. These views might falsely convey difficulties in relatedness or impede rapport. Therefore, the telepsychiatrist should alternate his/her gaze from camera to monitor to provide sufficient eye contact to convey optimal relatedness to the family. To address this shortcoming clinically, telepsychiatrists should query parents about the child's relatedness.^{79,80} Two technological approaches address this issue. If a laptop is used, placing the camera slightly behind the laptop just above the center of the screen can approximate the appearance of direct eye contact.²⁴ A new technology termed *telepresence* places a camera in the middle of a monitor surrounded by a series of reflecting surfaces to refocus gaze and better approximate eye contact. This new technology also approximates a three-dimensional image that provides participants a more lifelike in-person experience. This technology should become more financially feasible for clinical settings over the next few years.

Virtual Relationship and Videoconferencing Etiquette.

The virtual relationship depends on screen presence which, in turn, depends on the telepsychiatrist's size on the monitor, gestures, verbalizations, and rapport conveyed through the monitor.^{17,24,105,106} The image of a newscaster is a good model. A comfortable viewing distance from the monitor with the camera set to show the therapist from the waist up is generally best. If the therapist is taking notes or referring to other papers, it is useful for patients and families to be able to see these activities rather than wonder what the therapist is doing with his/her hands. It is important to arrange the monitor and camera at both sites to achieve the semblance of direct eye-to-eye contact.

In general, communication is more deliberate and animated to overcome impediments to perception that might occur over the telemonitor.²⁴ Hand gestures should be at the mid-chest level and be broader than in usual practice to ensure that the youth accurately detects the telepsychiatrist's communications.²⁴ Motor gestures

should not be too rapid, or they will produce pixilation of the image. The lower the bandwidth, the greater will be the pixilation.

Verbalizations must be more deliberate than in person because the slight delay of the visual and auditory signal compromises the fluidity of conversation, particularly at lower bandwidth.^{24,91,107} When working with youths with cognitive limitations^{99,100} or differing cultural backgrounds, it might be difficult to distinguish clinically relevant issues from these technical limitations. Thus, it is important to adjust communication to optimally ascertain a patient's status.

Rapport in telepsychiatry is established within a space that does not physically exist,^{108,109} and participants do not have access to all of the surrounding stimuli nor to the nuances of the others' presentation. Although it is generally agreed that gathering history and making diagnoses can be reliably achieved through telepsychiatry, little attention has been paid to how this lack of physical presence affects the relationship. Emerging information suggests that a more casual clinical style will optimize rapport.^{24,105,106} If children want to know about the process or where the telepsychiatrist is located, these questions can be answered directly to demystify the experience.

Rapport building can be facilitated by showing the youths how to use the remote control to manipulate the cameras. The youths may then obtain a "close-up" of his/her parents, or of the telepsychiatrist, or scan the telepsychiatrist's room to make it appear more "real" and to be assured that no one else is present. A second "icebreaker" is to demonstrate the "picture-in-picture" box in the corner of the screen. Although picture-in-picture is helpful in monitoring the interviewer's presentation and for the patient to see what the interviewer sees, it can become a distraction for both patients and clinicians and can interfere with direct interaction. If a youth is distressed by this feature, it is easily turned off. Hyperactive, oppositional, or developmentally challenged youths may need their parents' assistance in using the equipment.^{99,100,110,111}

Coordinating the technology, using the computer, and taking notes can all interfere with the virtual relationship. However, skills can be developed to minimize these effects. For example, if a midlevel professional, such as a nurse practitioner or physician's assistant, is available, he/she can help with these tasks. Also, telepsychiatrists can monitor their videoconferencing etiquette

through the “picture-in-picture” feature. The size of the image, background lighting, rate of movements, verbalizations, eye contact, and other factors affecting the screen image and relationship can be corrected, as needed.

Principle 12. It Should Be Determined Whether the Youth Can Be Interviewed Alone; If Not, Potential Alternative Means to Conduct a Mental Status Examination Should Be Identified.

The AACAP Practice Parameters for the Psychiatric Assessment of Children and Adolescents⁷⁹ recommends that some time is spent interviewing the youth alone. How to incorporate this recommendation has not been studied, but successful individual therapy with youths has been described.^{25,32,35,38} In general, older children with good impulse control, adequate verbal skills, and the ability to separate are amenable to interview alone. Younger, developmentally impaired, or impulsive youths need a modified approach determined in conjunction with the parents and child.

The recommendation for a traditional play session with younger children⁷⁹ may be challenging. One approach includes observing the child interacting with a staff member in either a free-form or structured play session. Some limited direct play with the child may be possible over the telemonitor. For example, while parents provide history, children often enjoy drawing pictures and sharing them with the telepsychiatrist. Typically, children hold the picture up to the monitor and need redirection to hold it in front of the camera. The telepsychiatrist may also receive the picture electronically, via faxing or a document reader. The telepsychiatrist can then build on the child’s actions by exploring the themes present in the pictures. Similarly, the child and telepsychiatrist can develop a play scenario or story together. Puppets are easy to use and can facilitate play over the telemonitor. Recording such sessions for later review may be helpful to appreciate fully all that has transpired.

The AACAP Practice Parameters for the Psychiatric Assessment of Infants and Toddlers⁸⁰ recommends multidisciplinary sources of information regarding the child’s functioning in multiple settings. Given the child’s developmental status, the parameter recommends direct observation of the child during his/her interactions with parents and preferably with an unfamiliar adult. Another recommendation of the parameter is for the psychiatrist to have direct interaction with the

child. This interaction can be accomplished while the child remains in a room with a parent and/or a staff person because the parameter does not require the psychiatrist to interact with the child alone. These recommendations are possible to achieve through telepsychiatry. Some preschoolers can be engaged over the monitor, for example, by asking them to point to body parts, to demonstrate skills such as counting, or to talk about their pets. However, because it may be difficult to appreciate the very young child’s level of attunement, pleasure in the interaction, or spontaneity in play, it is helpful to have an adult present with the child to provide input regarding these components of the child’s mental status. Decisions about how best to obtain data regarding the very young child’s functioning should be individual.

Principle 13. Procedures for Prescribing Medications Should Be Established.

Pharmacotherapy should comply with existing practice parameters.¹¹² In the absence of national guidelines, three methods have been used for prescribing medications through telepsychiatry. In one method, the telepsychiatrist consults with the referring primary care physician (PCP), who then prescribes. The telepsychiatrist empowers the prescribing PCP and provides some education. This approach is most convenient for the patient and the telepsychiatrist. In a second method, the telepsychiatrist works with a midlevel professional at the patient site to provide frontline care, including writing prescriptions. This method is most common at mental health centers. It is convenient for the patient, the PCP, and the telepsychiatrist, but its use will depend on state regulations regarding midlevel professionals and the agency’s ability to free up the midlevel professional to participate in the sessions. In a third model, the telepsychiatrist directly prescribes. In this scenario, clear procedures should be established and communicated regarding the method for obtaining initial prescriptions and refills. Dispensing sample medications will depend on storage, regulations, and staff at the patient site, as well as the type of facility where the patient site is located. Telepsychiatry sites located in nonmedical or nonmental health sites such as schools or shelters may not be able to provide this service. Stimulant medications will need special procedures (American Academy of Child and Adolescent Psychiatry, unpublished practice parameter, 2008).¹¹¹

Regardless of the model used, it is important to establish the specific telephone numbers for parents and pharmacies to call for refills and related questions. Calls may go to a clinician at the patient site, directly to the telepsychiatrist, or to a triage center. It is worth noting that families and pharmacists are likely to call the telephone number printed on the prescription and thus on the bottle, even if they are provided a different contact number. Clarification of procedures is important to avoid confusion and mistakes.

Principle 14. Families Should Be Informed About Procedures for Care Between Telepsychiatry Sessions, Including Procedures for Emergency or Urgent Care.

Families receiving ongoing care through telepsychiatry will need guidelines about access to care between visits. If a program offers nonscheduled care, the telepsychiatrist and staff at the patient site should inform families of the availability of such services and how to access them. Both sites will need to develop protocols to deal with such interim care. Some clinicians recommend e-mail correspondence between sessions. This might be especially helpful for private information sharing with adolescents¹¹² or for facilitating care between sessions when clinical contact is not needed.¹¹³ One example is medication adjustment or other interventions after receipt of laboratory values.

Many telepsychiatry programs will not have the flexibility to offer interim care, and this should be noted during initial negotiations. Such limitations underscore the importance of the initial needs assessment and of integrating telepsychiatry into the youth's system of care so that other components can be accessed according to the youth's need and family resources.^{72,73} Protocols for alternative interim care should be clearly shared with all involved to limit the occurrence of avoidable emergencies, confusion for families, and burden for clinicians.

PARAMETER LIMITATIONS

AACAP practice parameters are developed to assist clinicians in psychiatric decision making. These parameters are not intended to define the standard of care, nor should they be deemed inclusive of all proper methods of care or exclusive of other methods of care directed at obtaining the desired results. The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all the circumstances presented by

the patient and his/her family, the diagnostic and treatment options available, and available resources.

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REFERENCES

References marked with an asterisk () are particularly recommended.*

1. Hersh WR, Hickam DH, Severance SM, Dana TL, Pyle Krages K, Helfand M. Diagnosis, access and outcomes: update of a systematic review of telemedicine services. *J Telemed Telecare*. 2006;12(suppl 2):S3-S31.
2. Hyler SE, Gangure DP. Technological advances in psychiatry. *Prim Psychiatry*. 2002;9(9):24-28.
3. Wagnild G, Leenknecht C, Zauher J. Psychiatrists' satisfaction with telepsychiatry. *Telemed J E Health*. 2006;12(5):546-551.
4. Brown NA. State Medicaid and private payer reimbursement for telemedicine: an overview. *J Telemed Telecare*. 2006;12(suppl):32-36.
5. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual, publication #100-02, Ch. 15, # 270: Telehealth Services. Centers for Medicare and Medicaid Services Web site. Published 2006. <http://www.cms.hhs.gov/Manuals/IOM/list.asp>. Accessed August 13, 2007.
6. Urness DA. Telepsychiatry. *Canadian Psychiatric Association Clinical Guidelines and Position Papers*. Canadian Psychiatric Association Web site. Published 2006. http://www.cpa-apc.org/Publications/Position_Papers/telepsychiatry.asp. Accessed August 6, 2007.
7. Simmons SC, West VL, Chimiak WJ. Telecommunications and videoconferencing for psychiatry. In: Wootton R, Yellowlees P, McLaren P, eds. *Telepsychiatry and E-Mental Health*. London, England: Royal Society of Medicine Press; 2003.
8. Wittson CI, Benschoter R. Two-way television: helping the medical center reach out. *Am J Psychiatry*. 1972;129(5):624-627.
9. Dwyer T. Telepsychiatry: psychiatric consultation by interactive television. *Am J Psychiatry*. 1973;130(8):865-869.
10. Straker N, Mostyn P, Marshall C. The use of two-way TV in bringing mental health services to the inner city. *Am J Psychiatry*. 1976;133(10):1202-1205.
11. Brown FW. A survey of telepsychiatry in the USA. *J Telemed Telecare*. 1995;1(1):19-21.
12. Centers for Medicare and Medicaid Services. Medicaid and Telemedicine, 2004. Centers for Medicare and Medicaid Services Web site. http://www.cms.hhs.gov/Telemedicine/03_StateProfiles.asp. Accessed February 26, 2007.
13. Center for Telemedicine Law and Office for the Advancement of Telehealth. Telemedicine Reimbursement Report. <http://www/hrsa.gov/telehealth/pubs/reimbursement.htm>. Published 2007. Accessed February 26, 2007.
14. Grigsby B. *Telemedicine Research Center Report on US Telemedicine Activity With an Overview of Non-US Activity*. Kingston: Civic Research Institute; 2004.
15. AMD Telemedicine. Private payer reimbursement information directory. AMD Telemedicine Web site. http://www.amdtelemedicine.com/private_payer/about_survey.cfm. Accessed February 26, 2007.
- *16. Whitten P, Buis L. Private payer reimbursement for telemedicine services in the United States. *Telemed J E Health*. 2007;13(1):15-23.
- *17. Cruz M, Krupinski EA, Lopez AM, Weinstein RS. A review of the first five years of the University of Arizona telepsychiatry programme. *J Telemed Telecare*. 2005;11(5):234-239.
18. Hilty DM, Marks SL, Urness D, Yellowlees PM, Nesbitt TS. Clinical

- and educational telepsychiatry applications: a review. *Can J Psychiatry*. 2004;49(1):12–23.
19. Whitten P, Kuwahara E. A multi-phase telepsychiatry programme in Michigan: organizational factors affecting utilization and user perceptions. *J Telemed Telecare*. 2004;10(5):254–40.
 20. De Las Cuevas C, Artiles J, De La Fuente J, Serrano P. Telepsychiatry in the Canary Islands: user acceptance and satisfaction. *J Telemed Telecare*. 2003;9(4):221–224.
 21. Kennedy C, Yellowlees P. The effectiveness of telepsychiatry measured using the Health of the Nation Outcome Scale and the Mental Health Inventory. *J Telemed Telecare*. 2003;9(1):12–26.
 22. Urness D, Hailey D, Delday L, Callanan T, Orlik H. The status of telepsychiatry services in Canada: a national survey. *J Telemed Telecare*. 2004;10(3):160–164.
 23. Yoshino A, Shigemura J, Kobayashi Y, et al. Telepsychiatry: assessment of televideo psychiatric interview reliability with present and next-generation internet infrastructures. *Acta Psychiatr Scand*. 2001;104(3):223–226.
 - *24. Godleski L, Darkins A, Lehmann L. *Telemental Health Toolkit*. Chapel Hill: Field Work Group of the Veterans Health Administration; 2003.
 25. Cozza S, Prasanna S, Chun RS, Benedek DM. Tele-mental health: use of VTC and other computer-based applications at a MEDCEN. Presentation at: Behavioral Sciences Short Course; May 2001; Bethesda.
 - *26. Myers KM, Sulzbacher S, Melzer SM. Telepsychiatry with children and adolescents: are patients comparable to those evaluated in usual outpatient care? *Telem J E Health*. 2004;10(3):278–285.
 27. Cain S, Spaulding R. Telepsychiatry: lessons from two models of care. Clinical Perspectives. Presented at: 53rd Annual Meeting of the American Academy of Child and Adolescent Psychiatry; October 2006; San Diego. Abstract 5172:1.17-2.
 28. Alicata D, Saltman D, Ulrich D. Child and adolescent telepsychiatry in rural Hawaii. Clinical Perspectives. Presented at: 53rd Annual Meeting of the American Academy of Child and Adolescent Psychiatry; October 2006; San Diego. Abstract 5172:1.17-2.
 29. Harper RA. Telepsychiatry consultation to schools and mobile clinics in rural Texas. Clinical Perspectives. Presented at: 53rd Annual Meeting of the American Academy of Child and Adolescent Psychiatry; October 2006; San Diego. Abstract 5172:1.17-2.
 30. Myers K, Valentine J, Melzer SM, Morgenthaler R. Telepsychiatry with incarcerated youth. *J Adolesc Health*. 2006;38(6):643–648.
 31. Glueck D. Chief Executive Officer, Adapt Psychiatric Services, PLLC, 888-411-9745 X 1515; www.adaptpsych.us. Accessed January 20, 2008.
 32. Savin D, Garry MT, Zuccaro P, Novins D. Telepsychiatry for treating rural American Indian youth. *J Am Acad Child Adolesc Psychiatry*. 2006;45(4):484–488.
 - *33. Elford R, White H, Bowering R, et al. A randomized, controlled trial of child psychiatric assessments conducted using videoconferencing. *J Telemed Telecare*. 2000;6(2):73–82.
 34. Elford R, White H, St John K, Maddigan B, Ghandi M, Bowering R. A prospective satisfaction study and cost analysis of a pilot child telepsychiatry service in Newfoundland. *J Telemed Telecare*. 2001;7(2):73–81.
 - *35. Nelson EL, Barnard M, Cain S. Treating childhood depression over videoconferencing. *Telem J E Health*. 2003;9(1):49–55.
 36. Yellowlees PM, Hilty DM, Marks SL, Neufeld J, Bourgeois JA. A retrospective analysis of a child and adolescent eMental Health program. *J Am Acad Child Adolesc Psychiatry*. 2008;47(1):103–107.
 37. Barretto A, Wacker DP, Harding J, Lee J, Berg WK. Using telemedicine to conduct behavioral assessments. *J Appl Behav Anal*. 2006;39(3):333–340.
 38. Alessi N. Telepsychiatric care of a depressed adolescent. *J Am Acad Child Adolesc Psychiatry*. 2002;41(8):894–895.
 39. Goldfield GS, Boachie A. Delivery of family therapy in the treatment of anorexia nervosa using telehealth. *Telem J E Health*. 2003;9(1):111–114.
 40. Dossetor DR, Nunn KP, Fairley M, Eggleton D. A child and adolescent psychiatric outreach service for rural New South Wales: a telemedicine pilot study. *J Paediatr Child Health*. 1999;35(6):525–529.
 41. Kopel H, Nunn K, Dossetor D. Evaluating satisfaction with a child and adolescent psychological telemedicine outreach service. *J Telemed Telecare*. 2001;7(suppl 2):35–40.
 - *42. Pesamaa L, Ebeling H, Kuusimäki ML, Winblad I, Isohanni M, Moilanen I. Videoconferencing in child and adolescent telepsychiatry: a systematic review of the literature. *J Telemed Telecare*. 2004;10(4):187–192.
 43. Myers KM, Valentine JM, Melzer SM. Child and adolescent telepsychiatry: utilization and satisfaction. *Telem J E Health*. 2008;14(2):131–137.
 44. Myers KM, Valentine JM, Melzer SM. Feasibility, acceptability, and sustainability of telepsychiatry for children and adolescents. *Psychiatr Serv*. 2007;58(11):1493–1496.
 45. Williams TL, May CR, Esmail A. Limitations of patient satisfaction studies in telehealthcare: a systematic review of the literature. *Telem J E Health*. 2001;7(4):293–316.
 - *46. Broder E, Manson E, Boydell K, Teshima J. Use of telepsychiatry for child psychiatric issues: first 500 cases. *CPA Bull*. 2004;36(3):11–15.
 47. Gelber H. The experience in Victoria with telepsychiatry for the child and adolescent mental health service. *J Telemed Telecare*. 2001;7(Suppl 2):32–34.
 48. Hockey AD, Yellowlees PM, Murphy S. Evaluation of a pilot second-opinion child telepsychiatry service. *J Telemed Telecare*. 2004;10(suppl 1):48–50.
 49. Capner M. Videoconferencing in the provision of psychological services at a distance. *J Telemed Telecare*. 2000;6(6):311–319.
 50. Day SX, Schneider PL. Psychotherapy using distance technology: a comparison of face-to-face, video, and audio treatment. *J Couns Psychol*. 2002;49(4):499–503.
 - *51. De Las Cuevas C, Arredondo MT, Cabrera MF, Sulzbacher H, Meise U. Randomized clinical trial of telepsychiatry through videoconference versus face-to-face conventional psychiatric treatment. *Telem J E Health*. 2006;12(3):341–350.
 52. Appel PR, Bleiberg J, Noiseux J. Self-regulation training for chronic pain: can it be done effectively by telemedicine? *Telem J E Health*. 2002;8(4):361–368.
 53. Shepherd L, Goldstein D, Whitford H, Thewes B, Brummell V, Hicks M. The utility of videoconferencing to provide innovative delivery of psychological treatment for rural cancer patients: results of a pilot study. *J Pain Symptom Manage*. 2006;32(5):453–461.
 54. Bouchard S, Paquin B, Payeur R, et al. Delivering cognitive-behavior therapy for panic disorder with agoraphobia in videoconference. *Telem J E Health*. 2004;10(1):13–25.
 55. Deitsch SE, Frueh BC, Santos AB. Telepsychiatry for post-traumatic stress disorder. *J Telemed Telecare*. 2000;6(3):184–186.
 56. Griffiths L, Bignault I, Yellowlees P. Telemedicine as a means of delivering cognitive-behavioral therapy to rural and remote mental health clients. *J Telemed Telecare*. 2006;12(3):136–140.
 57. Mohr DC, Likosky W, Bertagnolli A, et al. Telephone-administered cognitive-behavioral therapy for the treatment of depressive symptoms in multiple sclerosis. *J Consult Clin Psychol*. 2000;68(2):356–361.
 58. Patten SB. Prevention of depressive symptoms through the use of distance technologies. *Psychiatr Serv*. 2003;54(3):396–398.
 - *59. Ruskin PE, Silver-Aylala M, Kling MA, et al. Treatment outcomes in depression: comparison of remote treatment through telepsychiatry to in-person treatment. *Am J Psychiatry*. 2004;161(8):1471–1476.
 60. Chae YM, Park HJ, Cho JG, Hong GD, Cheon KA. The reliability and acceptability of telemedicine for patients with schizophrenia in Korea. *J Telemed Telecare*. 2000;6(2):83–90.
 61. Frueh BC, Henderson S, Myrick H. Telehealth service delivery for persons with alcoholism. *J Telemed Telecare*. 2005;11(7):372–375.
 - *62. Hyler SE, Gangure DP, Batchelder ST. Can telepsychiatry replace in-person psychiatric assessments? A review and meta-analysis of comparison studies. *CNS Spectr*. 2005;10(5):403–413.
 - *63. Darkins A, Cary MA. *Telemedicine and Telehealth: Principles, Policies, Performance, and Pitfalls*. New York: Springer Publishing Company; 2000.

- *64. Maheu MM, Whitten P, Allen A. *E-Health, Telehealth, and Telemedicine: A Guide to Startup and Success*. Hoboken: Wiley; 2001.
- *65. Wootton R, Batch J. *Telepediatrics: Telemedicine and Child Health*. London, England: Royal Society of Medicine Press; 2005.
- *66. Wootton R, Yellowlees P, McLaren P, eds. *Telepsychiatry and E-Mental Health*. London, England: Royal Society of Medicine Press; 2003.
67. Greenberg N, Boydell KM, Volpe T. Pediatric telepsychiatry in Ontario: caregiver and service provider perspectives. *J Behav Health Serv Res*. 2006;33(1):105–111.
- *68. Shore JH, Manson SM. A developmental model for rural telepsychiatry. *Psychiatr Serv*. 2005;56(8):976–980.
- *69. Whitten PS, Mair FS, Haycox A, May CR, Williams TL, Hellmich S. Systematic review of cost effectiveness studies of telemedicine interventions. *BMJ*. 2002;324(7351):1434–1437.
- *70. Centers for Medicare and Medicaid Services. Medicare Claims Processing Manual, publication 100-04, Ch. 12, 190. Centers for Medicare and Medicaid Services Web site. <http://www.cms.hhs.gov/Manuals/IOM/list.asp>. Published 2006. Accessed August 13, 2007.
71. American Academy of Child and Adolescent Psychiatry. Practice parameter for the assessment and treatment of children and adolescents with suicidal behavior. *J Am Acad Child Adolesc Psychiatry*. 2001; 40(suppl 7):24S–51S.
72. American Academy of Child and Adolescent Psychiatry. Practice parameter on child and adolescent mental health care in community systems of care. *J Am Acad Child Adolesc Psychiatry*. 2007;46(2): 284–299.
73. Pumariega AJ, Winters NC. *Handbook of Community-Based Systems of Care: The New Child and Adolescent Community Psychiatry*. New York: Jossey Bass; 2003.
74. Cornish PA, Church E, Callanan T, Bethune C, Robbins C, Miller R. Rural interdisciplinary mental health team building via satellite: a demonstration project. *Telemed J E Health*. 2003;9(1):63–71.
75. Hilty DM, Yellowlees PM, Cobb HC, Bourgeois JA, Neufeld JD, Nesbitt TS. Models of telepsychiatric consultation-liaison service to rural primary care. *Psychosomatics*. 2006;47(2):152–157.
76. Pignatiello A, Teshima J, Broder E, Boydell K, Orlick H. Beyond our walls: multi-dimensional perspectives of a paediatric telepsychiatry program. Presentation at: Joint Annual Meeting of the American Academy of Child and Adolescent Psychiatry and the Canadian Academy of Child and Adolescent Psychiatry; October 2005; Toronto, Ontario.
77. Hilty DM, Servis ME, Nesbitt TS, Hales RE. The use of telemedicine to provide consultation-liaison service to the primary care setting. *Psychiatr Ann*. 1999;29(7):421–427.
78. Lambert NM, Sandoval J, Hylander I, eds. *Consultee-Centered Consultation: Improving the Quality of Professional Services in Schools and Community Organizations*. Mahwah: Lawrence Erlbaum Association; 2004.
79. American Academy of Child and Adolescent Psychiatry. Practice parameters for the psychiatric assessment of children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 1997;36(suppl 10):4S–20S.
80. American Academy of Child and Adolescent Psychiatry. Practice parameters for the psychiatric assessment of infants and toddlers (0–36 months). *J Am Acad Child Adolesc Psychiatry*. 1997; 36(suppl 10):21S–36S.
81. Sorvaniemi M, Santamaki O. Telepsychiatry in emergency consultations. *J Telemed Telecare*. 2002;8(3):183–184.
82. Sorvaniemi M, Ojanen E, Santamaki O. Telepsychiatry in emergency consultations: a follow-up study of sixty patients. *Telemed J E Health*. 2005;11(4):439–441.
83. Moehr JR, Schaafsma J, Anglin C, Pantazi SV, Grimm NA, Anglin S. Success factors for telehealth: a case study. *Int J Med Inform*. 2006; 75(10–11):755–763.
- *84. Simmons SC, Murphy TA, Blannarovich A, Workman FT, Rosenthal DA, Carbone M. Telehealth technologies and applications for terrorism response: a report of the 2002 coastal North Carolina domestic preparedness training exercise. *J Am Med Inform Assoc*. 2003;10(2): 166–176.
85. Cwiek MA, Rafiq A, Qamar A, Tobey C, Merrell R. Telemedicine licensure in the United States: the need for a cooperative regional approach. *Telemed J E Health*. 2007;13(2):141–147.
86. Boydell KM, Greenberg N, Volpe T. Designing a framework for the evaluation of paediatric telepsychiatry: a participatory approach. *J Telemed Telecare*. 2004;10(3):165–169.
87. Pumariega AJ, Winters NC. Trends and shifting ecologies: part II. *Child Adolesc Psychiatr Clin N Am*. 2003;12(4):779–793.
- *88. Shore JH, Savin DM, Novins D, Manson SM. Cultural aspects of telepsychiatry. *J Telemed Telecare*. 2006;12(3):116–121.
89. Pumariega AJ. Cultural competence in systems of care for children's mental health. In: Pumariega AJ, Winters NC, eds. *Handbook of Community-Based Systems of Care: The New Child and Adolescent Community Psychiatry*. New York: Jossey Bass; 2003.
90. US Department of Health and Human Services. *National Standards for Culturally and Linguistically Appropriate Services in Health Care: Final Report*. Washington: Office of Minority Health; 2001.
91. Manning TR, Goetz ET, Street RL. Signal delay effects on rapport in telepsychiatry. *Cyberpsychol Behav*. 2000;3(2):119–127.
92. Myers KM, Collett BR. Rating scales. In: Cheng K, Myers KM, eds. *Child and Adolescent Psychiatry: The Essentials*. Philadelphia: Lippincott Williams & Wilkins; 2005:17–40.
93. Collett BR, Ohan JL, Myers KM. Ten-year review of rating scales, V: scales assessing attention-deficit hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2004;43(10):1189–1190.
94. Collett BR, Ohan JL, Myers KM. Ten-year review of rating scales, VI: scales assessing externalizing behaviors. *J Am Acad Child Adolesc Psychiatry*. 2003;42(10):1143–1170.
95. Myers K, Winters N. Ten-year review of rating scales, II: scales for internalizing disorders. *J Am Acad Child Adolesc Psychiatry*. 2002; 41(6):634–659.
96. Ohan J, Myers K, Collett B. Ten-year review of rating scales, IV: scales assessing trauma and its effects. *J Am Acad Child Adolesc Psychiatry*. 2002;41(12):1401–1422.
97. Winters NC, Myers K, Proud L. Ten-year review of rating scales, III: scales for suicidality, cognitive style, and self-esteem. *J Am Acad Child Adolesc Psychiatry*. 2002;41(10):1150–1181.
98. Winters NC, Collett BR, Myers KM. Ten-year review of rating scales, VII: scales assessing functional impairment. *J Am Acad Child Adolesc Psychiatry*. 2005;44(4):309–338.
99. American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of children, adolescents, and adults with mental retardation and comorbid mental disorders. *J Am Acad Child Adolesc Psychiatry*. 1999;38 (suppl 12):5S–31S.
100. American Academy of Child and Adolescent Psychiatry. Practice parameter for the assessment and treatment of children and adolescents with autism and other pervasive developmental disorders. *J Am Acad Child Adolesc Psychiatry*. In press.
101. Karp WB, Grigsby RK, McSwiggan-Hardin M, et al. Use of telemedicine for children with special health care needs. *Pediatrics*. 2000; 105(4):843–847.
102. Miller TW, Elliott B, Long K, Mazenac C, Moder M. Telehealth home health applications for adults with developmental disabilities. *Telemed J E Health*. 2006;12(2):137–145.
103. Friesen BJ, Winters NC. The role of outcomes in systems of care: quality improvement and program evaluation. In: Pumariega AJ, Winters NC, eds. *Handbook of Community-Based Systems of Care: The New Child and Adolescent Community Psychiatry*. New York: Jossey Bass; 2003.
104. Vander Stoep A, Green L, Jones RA, Huffine C. A family empowerment model of change. In: Hernandez M, Hodges S, eds. *Developing Outcome Strategies in Children's Mental Health*. Baltimore: Brookes Publishing; 2001.
105. Miller EA. Telepsychiatry and doctor-patient communication: an analysis of the empirical literature. In: Wootton R, Yellowlees P, McClaren P, eds. *Telepsychiatry and E-Mental Health*. London, England: Royal Society of Medicine Press; 2003.

106. Onor ML, Misan S. The clinical interview and the doctor-patient relationship in telemedicine. *Telemed J E Health*. 2005;11(1):102-105.
- *107. Hilty DM, Nesbitt TS, Marks SL, et al. Effects of telepsychiatry on the doctor-patient relationship: communication, satisfaction, and relevant issues. *Prim Psychiatry*. 2002;9:29-34.
108. Turner JW. Telepsychiatry as a case study of presence: do you know what you are missing? *J Comp Med Comm*. 2001;6(4). doi:10.1111/j.1083-6101.2001.tb00132.x.
109. Werner P. Willingness to use telemedicine for psychiatric care. *Telemed J E Health*. 2004;10(3):286-292.
110. American Academy of Child and Adolescent Psychiatry. Practice parameter for the assessment and treatment of children and adolescents with oppositional defiant disorder. *J Am Acad Child Adolesc Psychiatry*. 2007;46(1):121-141.
111. American Academy of Child and Adolescent Psychiatry. Practice parameter for the assessment and treatment of children and adolescents with attention deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894-921.
112. Paperny D. Communicating with your teen patients by e-mail: it's easy. Presented at: Annual Meeting of the Society of Adolescent Medicine; 2006; Boston.
113. Hilty DM, Yellowlees PM, Cobb HC, Neufeld JD, Bourgeois JA. Use of secure e-mail and telephone: psychiatric consultations to accelerate rural health service delivery. *Telemed J E Health*. 2006;12(4):490-495.