

Advancing Treatment of Depression and Other Mood Disorders Through Innovative Models of Telepsychiatry

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Rapid changes in health care technology are advancing mental health care. Telepsychiatry, in the form of live interactive videoconferencing, has demonstrated its ability to improve access to high-quality mental health care, specifically in the treatment of patients with depression and mood disorders. This article reviews the advances in telepsychiatry in the treatment of depression and mood disorders. Telepsychiatry is significantly reconfiguring the structures and models of psychiatric care delivery. Such changes include direct-to-home services, blending telepsychiatry

with other technologies, and using a team-based care approach. This article also examines the evolving and innovative models of care, synthesizes literature and lessons learned about telehealth, and considers current and future pragmatic implications for the treatment of depression and mood disorders in various clinical settings. Telepsychiatry has an important and expanding role in addressing the individual and societal psychiatric burdens of depression and mood disorders.

Focus 2020; 18:169–174; doi: 10.1176/appi.focus.20190039

Twenty-first century technological advances in health care, driven in part by consumer demand with commercial applications, are making great strides in improving mental health care. The burden of mental illness, particularly from mood disorders, remains significant and has a large impact, including lost work productivity, individual functional impairment, and mortality related to suicide (1, 2). Technology continues to transform society, including the practice of medicine generally and psychiatry specifically. Telepsychiatry, in the form of live interactive videoconferencing, has been available for more than 60 years and has demonstrated its ability to improve access to mental health care as well as the quality of care. Its contributions to changes in the structures and models of psychiatric care are enabling the reconfiguration of psychiatric care delivery (3).

The aim of this article is to review the progression of telepsychiatry in the context of treating depression and other mood disorders. This review focuses on evolving and innovative models of telepsychiatric care and the current and future implications on depression and mood disorder treatment. Here, we synthesize the literature and lessons learned from the field to provide pragmatic recommendations on the development and implementation of services and their effective use in clinical settings.

DEFINITIONS

A review article found more than 104 different words used to describe technology in health care (4). In the field of psychiatry,

common terms include *telepsychiatry*, *telebehavioral health*, *tele-mental health*, and *e-mental health* to describe either the general or the specific use of technology in the context of psychiatric care. In this article, we use the term *telepsychiatry* to discuss any form of videoconferencing used to deliver mental health care. We reference other widely deployed technologies used in conjunction with videoconferencing, such as electronic health records, mobile phones, patient portals, and other technologies. Both synchronous (occurring at the same time for all users) and asynchronous (where images and video are captured and stored to be reviewed and consulted later) videoconferencing are discussed. The review centers on telepsychiatry for depression and other mood disorders, drawing from relevant examples of telepsychiatry's use in other conditions.

EVOLUTION AND EMPIRICAL EVIDENCE FOR TELEPSYCHIATRY

The first documented uses of telepsychiatry occurred in the late 1950s and encompassed education, individual psychotherapy, and group psychotherapy. Although technologies and the ability to connect over distances have improved, the early experiences and descriptions in the literature capture many of the themes that are common today, including safety, privacy, and efficacy. Telepsychiatry's use was initiated through a series of demonstration grants and feasibility projects that were not sustained beyond their pilot stage

because of issues of cost, resources, and reimbursement (5). Early programs showed success, but it took the birth of the Internet and the decreasing cost of microprocessor technology in the 1990s before the development of ongoing sustained telepsychiatry services could occur in large institutions such as prisons, health care systems, and federal agencies. The early 2000s witnessed more frequent adaptation by health care organizations, albeit with widespread but sporadic distribution. The past decade experienced the next revolution, as videoconferencing became ubiquitous, accessible, and mobile. This has allowed the delivery of telepsychiatry services directly to patients in their environments, including homes, communities, and places of work (5, 6).

Telepsychiatry started when clinical treatments and interventions shown to be effective in person were adapted to videoconferencing. In the past decade, videoconferencing has blended with other health care technologies (e.g., patient portals, electronic health records, medical apps) to innovate new clinical workflows, treatments, models of care, locations of care, and configurations of treatment teams (6). It is in this current phase of innovation that telepsychiatry is fulfilling its potential to transform psychiatric treatment.

Telepsychiatry is an evidence-based form of practice (7–9), and the literature covers more than a half-century of telepsychiatry publications. The literature began with case reports, program reports, and feasibility studies. These progressed to patient-provider satisfaction studies, and, finally, randomized controlled trials (RCTs). A recent large review of the empirical evidence on the use of telemedicine for mental health disorders reviewed 22 controlled studies (with sample sizes ranging from 100 to 3,000). Many of the studies examined the treatment of mood and anxiety disorders (7). The review concluded that the telepsychiatry research far exceeds comparable telemedicine research for other conditions in terms of methodological rigor and sample size. Telemedicine was found to be effective, and often there were no differences between in-person and telemedicine treatment arms (7). By some counts, there have been more than 50 clinical guidelines published on the use of telepsychiatry. The most recent guidelines emerged from a collaboration between the American Psychiatric Association and the American Telemedicine Association (10).

A review of key outcomes in telepsychiatry in 2016 identified 32 RCTs, with seven trials specific to treatment outcomes for depression. Telepsychiatry was as good as or superior to care as usual, with the strongest data favoring telepsychiatry in the treatment of depression (11). A more recent systematic review of 33 articles (including 14 RCTs) of videoconferencing used for psychotherapy revealed no statistical differences in most studies between in-person and videoconferencing groups receiving the same intervention. Berryhill et al. concluded that telepsychiatry is a promising method for delivering mental health services (12). There is also a growing literature supporting the efficacy of other technologies in the treatment of depression, such as Web-based administration of cognitive-behavioral therapy (13).

EVOLVING MODELS OF TELEPSYCHIATRIC CARE

As discussed previously, telepsychiatry services began in large health care institutions and organizations, with services provided from a hospital or clinic location to another hospital or clinic, replicating services and treatments that would be available in person. Beginning in the mid-2000s, innovations in both treatment configuration and delivery began to emerge from the field of telepsychiatry. Many of these innovative services focused on team-based methods of care, merging teams from different locations into hybrid teams composed of in-person and patient site and virtual or remote team members. Many of these models changed not only the point of access to care for the patient but also the timing of when and where care was received, bringing care closer to the patient's environment and decreasing delays in receiving care (6).

TEAM-BASED MODELS OF CARE

The most robust example of team-based telepsychiatric care is in integrated care settings. Integrated care, where behavioral health care is integrated into a primary care setting, began in the 1990s and subsequently developed an impressive evidence base supporting its efficacy. Advantages to an integrated model include increasing access to behavioral health, improving patient outcomes, and reducing overall costs to the health care system (14, 15). Several national evidence-based models of integrated care have been deployed (16–18). Many of these models are disease specific, including several targeted at depression using a stepped-care approach, in which the intensity of treatment is increased to address progressively severe symptoms. Telepsychiatry has increasingly become a key component of successful integrated care services, with several examples of telepsychiatry being synthesized into either existing integrated care models or integrated care models specifically designed around telepsychiatry (19–21). This improves care efficiency by allowing psychiatrists to virtually integrate into several primary care practices from their home clinic.

There are several examples of such integration efforts. Fortney and colleagues piloted a U.S. Department of Veterans Affairs stepped-care approach to antidepressant management. Patients who screened positive for depression received telepsychiatric consultation for antidepressant management, with additional supports from off-site pharmacy and care management (22). Colorado Access developed an integrated care telepsychiatric model targeting a perinatal population. All patients of a large OB-GYN and family practice perinatal service received screening for depression. Patients who screened positive for depression or whose provider identified a behavioral health issue received an initial assessment from a full-time, virtually embedded social worker. Brief interventions, therapy, and case management were provided, with referrals to higher levels of care as clinically warranted. Patients in need of psychiatric

medication received these services through their primary provider, with collaborative consultation from a telepsychiatrist who also provided supervision of the social worker (23).

Leveraging videoconferencing into integrated care services has provided several advantages to these care systems. The most obvious advantage is improving access to scarce psychiatric resources, a particular challenge for smaller clinics where their need is only for a fraction of a psychiatrist's time. In a clinic needing only a half-day each week of mental health services, recruiting and retaining psychiatric providers can be very difficult. Telepsychiatry allows a psychiatrist to serve multiple clinics simultaneously. In addition, paired with sophisticated scheduling, a clinic can offer just-in-time treatment. Studies show that referrals to behavioral health that are farther away from the point in time of initial contact are less likely to be completed (24). Integrated care telepsychiatry can, therefore, not only increase access for patients but also improve clinical efficiency and patient engagement.

Another example of telepsychiatric innovation for integrated care is asynchronous telepsychiatry (ATP) consultation. ATP uses a video recording of a semistructured psychiatric patient interview conducted by a trained interviewer in a primary care clinic (25). This recording, along with medical information, is forwarded electronically to a psychiatrist who reviews the material and develops an assessment and treatment plan. This plan then is sent back to the primary care team, who can execute the recommendations. In addition, the psychiatrist can be available for continued consultation on the case as needed. In a series of initial studies, this type of "store-and-forward" telepsychiatry was shown to be reliable, feasible, and effective in providing psychiatric support using a stepped-care approach (25).

Team-based telepsychiatry has been implemented in a wide variety of settings, including inpatient hospitals, emergency rooms, and forensic and jail settings, as well as residential substance treatment settings, all with positive effect (26–28). A recent study examined the University of Colorado Centers for American Indian and Alaska Native Health's (CAIANH's) use of team-based telepsychiatry at a residential substance abuse treatment center serving the Alaska Native community in Anchorage, Alaska. One hundred three patients who received telepsychiatry services were compared with a control group who did not receive such services. Depression was the most frequent comorbid diagnosis. Although the telepsychiatry group showed significantly higher rates of treatment complexity, including trauma and ongoing legal issues, the telepsychiatry group stayed in treatment longer, had fewer discharges against medical advice, and were more likely to complete treatment (29).

DIRECT-TO-PATIENT TELEPSYCHIATRY

The increasing use of mobile videoconferencing across technology platforms, including smartphones, tablets, kiosks,

and other in-home monitoring devices, has given rise to direct-to-patient videoconferencing in unsupervised clinical settings—most often, the patient's home or workplace. Individual practitioners as well as large institutions and organizations are currently providing care to clinically unsupervised settings using telepsychiatry. Several case reports and studies address best practices for managing clinical care in these settings. Several larger RCTs for depression and other psychiatric disorders have found equal effectiveness, patient satisfaction, and patient safety compared with in-person care (30–32). An RCT of home-based telebehavioral health therapy for depression demonstrated patient satisfaction, feasibility, and generally similar reductions in depressive symptoms, with a slight benefit of in-person care over in-home telebehavioral health on some clinical outcomes (31). Case illustrations and several recent clinical telepsychiatry guidelines provide direction for the successful management of suicidal patients requiring emergency treatment, using direct in-home telehealth (10, 20, 30). In clinically unsupervised settings, providers should consider using a patient support person (PSP) as indicated. A PSP is a family member or close support, whom the patient has identified and given prior consent, who can be contacted in the event of an emergency to assist the patient and provide logistical management of crises or emergencies (10).

INTEGRATION WITH OTHER TECHNOLOGIES

Videoconferencing has always depended on other technologies to facilitate its use. In the early days of telepsychiatry, e-mail, fax, and phone were critical for managing scheduling, sharing medical records and information, and providing backup systems of communication when technical problems arose. Increasingly, videoconferencing is being blended into other technology platforms in medicine such as electronic health records, patient portals, and medical apps (33). The synergies created by the amalgamation of these technologies can enhance patient-provider communication (e.g., real-time on-demand videoconferencing sessions within a patient portal) or combine treatment modalities, thus creating further augmented or even new models of care. As an example, Web-assisted cognitive-behavioral therapy for depression can increase patient convenience and privacy by allowing sessions to occur in the patient's home environment; it could be further improved through asynchronous videoconferencing clips shared between therapist and patient (34).

Other emerging technologies may soon augment videoconferencing. The use of facial emotional recognition software and voice recognition programs could overlay videoconferencing to help guide clinical assessments (35). Geographical information systems could trigger on-demand patient support and interventions based on proximity, such as the identification of a patient at high risk for suicide entering a gun shop (36). On a more immediate and practical level, screen-sharing functions of current videoconferencing programs allow psychiatrists to educate patients by using

TABLE 1. Considerations for telepsychiatry in depression and mood disorder treatment

Issue	Recommendations
Assessing and working with depression or internalizing disorder	Establish strong rapport; encourage patient conversation; have a low threshold for direct inquiry into affect; attend to safety issues
Patients exhibiting avoidance or isolation	Leverage videoconferencing for initial engagement; encourage in-person therapy groups; alternate between videoconferencing and in-person individual sessions; build social connecting activities into the treatment plan; involve patient's social network in treatment
Psychiatric leadership for team-based care	Attend to the team composition and culture; develop clear team communication processes; have a robust, egalitarian, and supportive leadership style; cultivate relationships among team members
Care in unsupervised settings (e.g., home, workplace)	Set clear expectations of session boundaries, behaviors and roles; have proactive management of the clinical session processes
Keeping pace with technology innovations in practice	Have a strategic timing for adoption of technologies; stay abreast of evidence; seek training and mentorship

educational video clips, medication information, and other digital resources.

CHALLENGES, LESSONS, AND OPPORTUNITIES IN THE CLINICAL USE OF TELEPSYCHIATRY

Psychiatrists should know the strengths, limitations, and challenges in treating patients over videoconferencing, particularly patients with mood disorders. Table 1 summarizes these issues. Although telepsychiatry has a strong evidence base, use of this tool should be carefully considered. As reviewed previously, general outcomes do not differ between in-person treatment and telepsychiatric treatment. There is some evidence that internalizing psychiatric disorders (i.e., disorders that rely on patient self-report of symptoms and traits versus those that rely on assessments of behavior) may be more challenging to evaluate and manage (9, 20, 37). Clinicians need to adapt their clinical styles and processes to videoconferencing, being particularly attentive to patients with mood disorders. Good clinical practice includes working to establish strong rapport, making sure to encourage patient conversation, and having a low threshold for direct inquiry into a patient's affect if any uncertainty exists. Attention to safety issues is critical, drawing from the numerous guidelines and practices already established.

One area of concern raised among clinicians is whether telepsychiatry, especially home-based telepsychiatry, increases avoidance in patients struggling with isolation, engagement, and social avoidance issues. Do patients with depression and anxiety who could benefit from leaving the home for treatment lose a measure of behavioral engagement and activation when treated by direct in-home videoconferencing? This question remains unaddressed in the literature but merits further investigation. Until such questions are clearly answered, providers working with patients who struggle

with avoidance and isolation can leverage videoconferencing for initial engagement but encourage participation in in-person therapy groups. Further strategies might involve alternating treatment settings between videoconferencing and in-person individual sessions and directly building socially connecting activities into the treatment plan. Involving the patient with members of a social network of patients can bring a more robust approach to treatment and mobilize additional resources beyond the patient-provider dyad (6).

There are a host of administrative and clinical

lessons learned that have relevance for patients with depression or other mood disorders. For a telepsychiatry service to be successful, important administrative details must be addressed, including billing and funding of services; legal and regulatory issues; and workflow, procedures, and protocols. There are a number of guides and resources in this area, including the American Psychiatric Association's online telepsychiatry toolkit, which provides overviews and resource linkages in these key areas (38). Given that telepsychiatry is most often a team-based administrative undertaking, it requires delineation of clear roles, responsibilities, team communication, and team processes (6).

Psychiatrists are uniquely positioned to provide important leadership roles in managing virtual teams delivering telepsychiatric care. A recent article suggested best practices in this growing area, labeling it as "tele-teaming." Recommendations include the following: attend to the team composition and culture, including balance between virtually located team members and those located at the patient site; develop clear team communication processes while nurturing an iterative approach to refining and improving these; and use a robust, egalitarian, and supportive leadership style while attending to and cultivating all relationships among team members, regardless of whether they are part of the virtual or in-person patient site (6).

For clinically unsupervised environments, setting clear expectations around the doctor-patient relationship, its boundaries, and the treatment process places psychiatrists in a proactive management stance regarding clinical interactions (39). Psychiatrists should not be intimidated by the physical distance or virtual separation inherent in a video session and must never abdicate the control and responsibility for the clinical session simply because they are not in the same room with the patient. This may require more

active management of the clinical session than when in the same room with a patient.

Finally, individual practitioners with busy practices may benefit from adopting what has been referred to as the “middle caribou position”—that is, not being out at the leading edge or trailing end of technological transformation when it comes to incorporating innovative models of telepsychiatry into their practices (40). It may be best for practitioners to wait until there is a critical mass of evidence and clinical practice experience to support these new models, as well as diligently becoming familiar with them by seeking out others who have experience for mentorship and support.

CONCLUSIONS

Telepsychiatry is becoming an essential tool in psychiatric care that will be hard for practitioners to ignore. The philosopher and media theorist Marshall McLuhan has been credited with saying, “We become what we behold. We shape our tools, and thereafter our tools shape us.” Psychiatrists in the field of telepsychiatry will need to continue to learn how to maximize the benefits of telepsychiatry in its immediacy of care while preserving the important elements in the patient-provider relationship. Psychiatry as a field will need to universally integrate technology and telepsychiatry into training; individual practitioners will need to stay abreast of technological developments and adapt to evolving models of telepsychiatric care. Telepsychiatry will have an important and expanding role to play in addressing the individual and societal psychiatric burdens of depression and other mood disorders.

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Dr. Shore is chief medical officer of AccessCare, a provider of telemental health services, and has received royalties from Springer Publishing and from American Psychiatric Association Publishing. Dr. Mishkind reports serving on an advisory board for MetaPro. The other authors report no financial relationships with commercial interests.

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