The Use of Telemedicine to Provide Consultation–Liaison Service to the Primary Care Setting

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Primary care medicine is crucial to mental health care delivery in the United States, serving as the main point of contact for more than half of those suffering from mental disorders.¹ For example, depression is serious in terms of morbidity and mortality, and it has been shown to increase the use and costs of services.² Telemedicine technology is one strategy to improve the accessibility of mental health care, particularly in areas underserved by physicians,³ including the inner city.⁴ Telecommunications technology may be used to link specialists at academic health centers with health care professionals in rural areas for the treatment of patients and for continuing education. The format most applicable to psychiatry is live, two-way audio, two-way video transmission (interactive television).

The literature contains few reports on the use of telemedicine to link academic medical systems to rural settings. One report from 1965 described telemedicine as a means to improve patient care, education and training, and collaboration between public institutions.⁵ A recent report discussed the administration and implementation of telemedicine technology for medical training.⁶ No reports are available regarding the use of telemedicine to implement consultation–liaison psychiatry service in the primary care setting.

CONCEPTUAL MODELS OF CONSULTATION–LIAISON PSYCHIATRY INTERVENTIONS

Several models of psychiatric consultation to the primary care setting have been described.⁷⁻⁹ These models are on a continuum where the critical variable is the amount of direct contact that the consultant has with the patient. These models include (1) the traditional referral or replacement model where the psychiatrist is the principal provider of mental health services and there is limited communication between the primary care physician (PCP) and the psychiatrist; (2) the consultation care model where the PCP is the principal provider of mental health services and occasionally communicates with the psychiatrist; and (3) the collaborative care model or liaison–attachment model where mental health services are provided jointly by the PCP and the psychiatrist, including frequent communication between providers.

Psychiatrists in Great Britain have examined the use of these models of psychiatric consultation to primary care. All three models are used in Great Britain, with the slight majority of psychiatrists functioning in the traditional referral

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model, followed by the collaborative care model, and finally the consultation model. Strathdee and Bailey et al. have also surveyed general practitioners and psychiatrists on the practice patterns of psychiatric consultation in ambulatory clinic settings in Great Britain. Younger psychiatrists were more likely to be involved in some form of consultation to PCPs as compared with older psychiatrists. Approximately one-third of consulting psychiatrists were involved in some formal educational activity at the primary care site, including lectures, case-based discussions or conferences, and informal process groups for staff to discuss problems. The majority of PCPs favored the collaborative care model. There was nearly unanimous support from PCPs and psychiatrists that the consultation process was improved by physically locating the psychiatrist in the primary care clinic setting.

PATIENT, PHYSICIAN, AND SYSTEM FACTORS AFFECTING CONSULTATION

A number of factors affect the nature and the effectiveness of psychiatric consultation to a primary care clinic, including the location of the consulting psychiatrist, the predominant primary care practice in the clinic, the continued presence of the consulting psychiatrist, and fiscal issues.

A psychiatrist who provides consultation in the primary care clinic is usually well received by patients and PCPs. Many patients are more comfortable seeing a psychiatrist in the familiar surroundings of their primary care clinic than going to a freestanding psychiatric clinic, which can be stigmatizing. In particular, patients who are resistant to psychological explanations for their problems or symptoms may be more likely to accept referrals to see psychiatrists in their medical clinics. Referring physicians also benefit from the close proximity of a consulting psychiatrist in many ways: opportunities for follow-up are greatly enhanced; face-to-face communication is possible; and joint sessions with patients can be arranged. “Curbside consultations,” which are informal discussions about patients (eg, medication selections or changes), commonly occur. Consulting psychiatrists benefit by witnessing firsthand the workings of the clinic, the practice styles of the referring physicians, and the needs of the parties involved. A disadvantage for these psychiatrists is that they must leave their practice and travel to medical clinics.

Psychiatrists providing consultation in freestanding psychiatric clinics or separate offices are challenged to establish effective lines of communication with PCPs to offset the absence of face-to-face communication, and, if they have never worked in such a clinic, they may not understand the needs of the parties involved. Advantages of separate locations for psychiatric consultation include a greater sense of confidentiality for the patient (eg, separate charts for the PCP and the psychiatrist), less time spent by the consulting psychiatrist traveling and learning new administrative systems, and office space that is more appropriate to psychiatric interviews.

The predominant primary care practice of the consultees in the clinic often affects the choice of consultation model used by the consulting psychiatrist. Family practice physicians and general practitioners are generally more comfortable with the collaborative care or consultation care models in which the PCP plays a significant role in the provision of mental health services. Physicians in internal medicine and pediatrics are often more comfortable with a traditional referral model.

The continued presence of the consulting psychiatrist has an important effect on psychiatric consultation to PCPs. Rapid turnover in the position of consulting psychiatrist derails the cumulative process of developing relationships with PCPs, which result in effective collaboration for patient care. Good liaison work requires the slow, incremental process of building relationships, confidence, and trust with PCPs over time. Consulting psychiatrists also need time to learn about the clinic culture and how to best meet the needs of the referring PCPs and staff.

Fiscal issues significantly affect psychiatric consultation to primary care clinics. The absence of effective reimbursement mechanisms for psychiatric consultation may eventually defeat even the best organized and planned consultation effort. Fiscal accountability also drives the consulting psychiatrist to develop more cost-effective use of time, to adapt interviewing skills and diagnostic methods to the primary care setting, and to offer brief treatments (eg, time-limited
psychotherapy) that are practical for this setting and favored by referring physicians. Finally, managed care systems are often reluctant to reimburse educational elements of consultation that are important for collaborative care.

USE OF TELEMEDICINE FOR PSYCHIATRIC CONSULTATION-LIAISON SERVICE

Telemedicine was first used for psychiatric consultation in the 1950s and 1960s to help the Nebraska Psychiatric Institute provide education, patient care, and consultation to a variety of sites. In the 1960s, it was also used to connect academic centers with urban populations. During the past several decades, academic health systems consisted solely of the medical center, which provided care mainly to urban and suburban populations and to rural patients who traveled to the medical center. Increasingly, university health systems are growing by joining rural practice groups with the academic medical center, forming a health system that assumes responsibility for capitated patients in urban, suburban, and rural areas.

The University of California Davis Health System uses telemedicine to link the medical center with 16 of its primary care clinics, which are between 5 and 120 miles away. Seventeen medical specialties provide consultation via regular clinics and ad hoc arrangements. The Telemedicine Program (a medical director and 8 staff members) centralizes administrative, technical, and fiscal aspects of patient care, education, and research. Telepsychiatric consultation is generally provided in weekly to monthly 3-hour blocks to 6 clinics using the consultation and collaborative care models. The Department of Psychiatry has a telemedicine unit in the outpatient clinic. Telemedicine has helped the Department provide high-quality, cost-effective consultation-liaison psychiatric services to medical clinics in this capitated, academic health system.

Telemedicine facilitates psychiatric consultation using the consultation model or the collaborative care model. It increases access to care for many patients, both by providing a psychiatrist to underserved areas and by allowing patients to receive care in their clinic, where they may be more comfortable seeing a psychiatrist than going to a freestanding psychiatric clinic. One patient remarked, "I felt less anxious seeing you with it [telemedicine] than seeing you in person." Many patients have commented that it was "embarrassing" to go to the outpatient psychiatry clinic because they were "not crazy."

PCPs benefit from telemedicine because the consultations occur "in" their clinic, with opportunities for face-to-face communication by video, including curbside consultations that occur spontaneously between scheduled telemedicine appointments. If necessary, a joint session among the consultant, the PCP, and the patient can be arranged. In this model, the PCP introduces the patient to the telepsychiatrist, stops by for the final 5 minutes of the consultation to learn about the patient's treatment plan, or both. In uncontrolled assessments, patient satisfaction is enhanced by this intervention; one patient remarked, "I'm glad my doctors are working together and are on the same page." PCPs have also voiced appreciation for watching part of the interview, having the opportunity to ask questions of psychiatrists, and being able to discuss treatment plans. Using telemedicine, psychiatric consultants can provide care from their office "to" the primary care clinic without having to travel, which makes this service more fluent with regular practice. In each of these ways, telemedicine consultation is a great improvement over care provided by the traditional referral model.

The most important disadvantage of telemedicine consultation is that psychiatrists and PCPs do not develop a relationship by working "side by side" in the primary care clinic, although joint sessions are possible. The importance of this cannot be overstated, as referrals are usually made on the basis of the professional relationship. In addition, if psychiatrists are "present" only by telemedicine, they may not fully understand the complexities of primary care practice. Finally, patients and PCPs may be uncomfortable with telemedicine or technology in general, which could reduce the number of referrals, adherence to appointments, or both.

CASE EXAMPLE

A 56-year-old Mexican-American woman was being treated by her PCP in Chico, California, for
depression following the sudden death, 9 months previously, of her husband of 30 years. She presented to her PCP with tearfulness and a host of somatic complaints. The PCP diagnosed major depression and started paroxetine hydrochloride 10 mg. The PCP was concerned that, despite 4 months of treatment, the patient’s depression had persisted and she had not complied with the recommendation to increase the dose of paroxetine hydrochloride to 20 mg at night. The PCP wanted to refer her to a psychiatrist, but none in the area spoke Spanish or was Mexican-American. The patient resisted seeing a psychiatrist in the community because she felt she was “not crazy.” The head of telepsychiatry at the University of California Davis was contacted and arranged a telepsychiatric interview with a Mexican-American, bilingual psychiatrist in the Department of Psychiatry of the University of California Davis.

The 90-minute psychiatric evaluation was conducted by telemedicine, which linked the psychiatrist in the Department of Psychiatry of the University of California Davis in Sacramento with the Primary Care Clinic of the University of California Davis in Chico, California (60 miles away). The interview was conducted in Spanish, and began with the patient’s bilingual, Caucasian PCP introducing the psychiatrist to the patient. The patient stated that, since her husband’s death, she had fatigue, arthralgias, and vaginal and rectal pain. She had also experienced sadness, loneliness, worthlessness, excessive guilt, decreased interest, decreased concentration, insomnia, and weight loss. She denied active suicidal ideation, but sometimes wished she could join her husband.

The patient reported no prior contact with a mental health professional. Her social history revealed that she had no formal education, had worked in California as a migrant field worker for 33 years, spoke only Spanish, and did not drive. She referred to each of her many medications by color, stating that they “all helped very much,” but that she did not know which one was for depression. When asked about adherence to the medication, she complimented her PCP and validated the plan, but then asked anxiously, “Is there any problem taking so many medications together, especially when you increase the doses?” She had not asked about this before because she felt that, as a matter of respect, her physician’s orders should not be openly questioned.

The PCP returned to the room for the last 10 minutes of the session. The psychiatrist informed the PCP of the patient’s concerns as well as of her confusion about her various pills. The PCP reviewed the indication for each pill with the patient. She was assured that her questions were appropriate and that the combination was safe. The patient agreed to schedule a follow-up telepsychiatry appointment to discuss the loss of her husband, which would allow the psychiatrist to assess adherence to, and the efficacy of, the antidepressant medication.

After the interview, the patient acknowledged that talking with a psychiatrist had not been as difficult as she had imagined. Although unaccustomed to the technology, she was comfortable during the session, talking and even crying freely. She commented on her appreciation of the opportunity to “open up,” despite the fact that the psychiatrist was present only through a monitor.

At follow-up 1 month later, the patient reported daily compliance with 20 mg of paroxetine hydrochloride since her last visit, but still endorsed several depressive symptoms. The PCP came in for the last 5 minutes of the session and the psychiatrist discussed increasing the dose of paroxetine hydrochloride to 30 mg/d. The patient agreed. The PCP agreed to continue to monitor the antidepressant and to contact the psychiatrist if further questions or problems arose.

Two months later, the PCP reported that the patient was much less depressed and free of somatic complaints for the first time since her husband’s death. The frequency of her medical visits had decreased from one to two times per month during a 1-year period to only a single visit in the 2 months since the consultation. She also remained compliant with the medication.

**SATISFACTION WITH TELEMEDICINE**

Patient satisfaction with telemedicine has been assessed in uncontrolled studies. One study found no difference in patient satisfaction
between telemedicine and usual care. The Eastern Montana Telemedicine Network reported patient satisfaction on many parameters in a study of 236 patients. The patients stated that it was no harder to ask a question via telepsychiatric care, that they would use it again, and that they were very satisfied with the care; approximately 50% stated that they preferred telemedicine to meeting in person. In a recent study of telepsychiatric care of children, children reported that they were able to talk about anything with the consultant and that their care was as good as in-person care; both the 9 children and the 46 parents were very satisfied with the visit. In these studies, there was no option for in-person care or in-person care was contingent on significant travel.

In one of our own studies, patient satisfaction with psychiatric telemedicine care was compared with patient satisfaction with other specialty care via telemedicine. Data were collected on 31 mental health visits and 59 other specialty (cardiology, dermatology, orthopedics, and otolaryngology) visits via telemedicine. As an alternative, in-person care was contingent on the patient’s traveling 15 to 45 miles from these clinics to the medical center. The primary diagnosis for the patients receiving mental health services was adjustment disorder with depressed mood, major depression, or panic disorder.

Telemedicine two-way interactive sessions were conducted with the following technology: dial-up integrated service digital network (ISDN) lines at 128 kilobytes per second (kbps); PictureTel Live (PictureTel Corp., Andover, MA) 100 color monitors; and Canon VCC-1 (Canon, Santa Clara, CA) cameras with local pan-tilt-zoom control and remote camera control. Respondents positively rated their ability to speak freely when using telemedicine, their preference for using telemedicine on subsequent visits, and their experience with the telemedicine physician. On t test analysis, no significant difference was found between patients’ rating of telepsychiatric care versus other specialty care via telemedicine.

We conducted another study to compare in-person psychiatric care with telepsychiatric care in terms of patients’ preference for care, adherence to appointments, and satisfaction. All patients received care at their primary care clinic, choosing between in-person care and telepsychiatric care. Telemedicine two-way interactive sessions were conducted with the same equipment described above, but with transmission at a rate of 384 kbps. This level of transmission yields television-like quality, without audio and visual delays characteristic of 128-kbps transmission.

A total of 42 patients made 118 visits consisting of a 60-minute evaluation (24 visits) or a 20-minute follow-up appointment (94 visits). The primary diagnosis for these patients was major depression, adjustment disorder with depressed mood, or panic disorder. For initial evaluations, 71% (17 of 24) chose in-person care and 29% (7 of 24) chose telepsychiatric care. For follow-up appointments, 65% (61 of 94) chose in-person care and 35% (33 of 94) chose telepsychiatric care (Table 1). The appointment adherence rate was 71% (12 of 17) for in-person evaluations and 86% (6 of 7) for telepsychiatric evaluations. The appointment adherence rate was 87% (53 of 61) for in-person follow-up appointments and 79% (26 of 33) for telepsychiatric follow-up appointments (chi-square df = 1, P > .30).

Patient preference for care was also tabulated by following the sequence of visits. Five of 8 patients who had in-person evaluations selected an in-person follow-up visit, whereas 5 of 7 patients who had telepsychiatric evaluations selected a telepsychiatric follow-up visit (Table 2). Of patients who completed a follow-up visit and were scheduled for another follow-up visit, 29 of 43 (67%) who had an in-person follow-up visit chose the same follow-up care and 15 of 29 (52%) who had a telepsychiatric follow-up visit chose the same follow-up care (Table 3).
Patient satisfaction data were collected on 22 in-person visits and 31 visits via telemedicine. The in-person and telemedicine groups were compared on several indices (Table 4). On a 5-point Likert scale, respondents rated their ability to speak freely with their psychiatrist in person (4.8) and via telemedicine (4.6) ($t = 1.48; P > .05$). Patients rated their preference for having subsequent in-person care (4.7) and subsequent telepsychiatric care (4.9) ($t = 1.39; P = .01$). Overall, patients reported an equally positive experience with the psychiatrist in person (4.6) and via telemedicine (4.6) ($t = 0.14; P = .62$).

This study shows that patients preferred in-person psychiatric care more often than telepsychiatric care. When patients chose the care, patient satisfaction was equivalent for in-person psychiatric care and telepsychiatric care on direct (satisfaction survey) and indirect (adherence rate with appointments) measures. This study, however, has several limitations. Patients' willingness to try telemedicine may have affected satisfaction (ie, patients who chose telemedicine care were bound to rate it highly). In addition, the sample size was small, satisfaction was not assessed in detail, and the results of this population may not be generalizable to other populations.

In contrast to other studies, this study suggests that patients may have reservations about the use of telemedicine technology. Our study is the only report in the literature that offered patients in-person care without the burden of significant travel; our study eliminated travel as a variable that could affect satisfaction. Our data, however, are consistent with a survey of a rural population, whereby more than two-thirds of patients expected a less satisfactory physician–patient interaction via telemedicine than via a traditional patient–physician encounter. Several hypotheses may explain patients' reservations: care via telemedicine does not fit patients' overall concept of seeing a physician; care via telemedicine may symbolize patients' concerns about, or lack of familiarity with, technology in general; and/or there are other subtle interactions that patients value in the physician–patient relationship that are not possible via telemedicine (eg, the significance of a handshake).

Future studies of telepsychiatry will more fully assess patient satisfaction and will begin to explore the satisfaction of PCPs and telemedicine consultants with the consultation and collaborative care models. Trials with a randomized design can more rigorously assess satisfaction. Multicenter trials can yield larger sample sizes to assess the potentially subtle effects of age, socio-
economic class, gender, ethnicity, and state-dependent factors (eg, acute depression) on satisfaction.

**SUMMARY**

Telemedicine is one strategy to improve the accessibility of mental health care in the primary care setting, including primary care clinics linked to academic medical centers. Successful applications of telemedicine will be facilitated by an awareness of consultation models, as well as of patient, physician, and system factors that affect psychiatric consultation–liaison service to the primary care setting. In preliminary studies, patient satisfaction with telepsychiatric care is comparable to patient satisfaction with in-person psychiatric care and other specialty care via telemedicine. Controlled trials are needed to further assess patient and provider satisfaction, as well as variables that affect satisfaction.

**REFERENCES**