A Developmental Model for Rural Telepsychiatry

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Telepsychiatry represents a promising means to increase access to care for rural American Indian communities. This article describes rural telepsychiatry clinics operated by the American Indian and Alaska Native Programs at the University of Colorado Health Sciences Center through a partnership with the Department of Veterans Affairs, the Indian Health Service, and local tribal health services that target American Indian veterans with posttraumatic stress disorder. A six-stage model for developing such services is presented. The model consists of needs identification, infrastructure survey, partnership organization, structure configuration, pilot implementation, and solidification. This article traces program development, presents challenges in implementing these services, and offers potential solutions. The model can guide the development of telepsychiatry services for American Indians specifically and rural populations in general. (*Psychiatric Services* 56:976–980, 2005)

Treating mental illness is a significant challenge for rural American Indian communities. Their geographic isolation, dispersed nature, and comparatively fewer resources increase disparities in the mental health of this population (1–3). In the past decade a growing number of telemedicine applications have targeted rural populations (4–6). Telepsychiatry employs real-time interactive videoconferencing to link users at separate locations. The relatively limited body of literature in telepsychiatry has recognized this modality's potential to provide rural and underserved populations as well as those that are difficult to gain access to with direct patient care, consultation, and education (7,8). The isolation, poverty, and lack of relevant services (1) in rural American Indian communities combine to render telepsychiatry an attractive means of increasing access to care. Given this promise, the scarcity of relevant telepsychiatry programs and the absence of a dialogue in the literature on this matter are surprising.

In the 1990s the University of Colorado Health Sciences Center's American Indian and Alaska Native Programs (AIANP), in affiliation with the Department of Veterans Affairs (VA), fielded the American Indian Vietnam Veterans Project, which examined the prevalence of posttraumatic stress disorder and comorbid psychiatric conditions among American Indian Vietnam veterans in multiple reservations across the West. The rates of posttraumatic stress disorder (31 percent current and 59 percent lifetime) and alcohol use disorder (72 percent current and 84 percent lifetime) (9) that were found in this group were much higher than those of their white counterparts (10). Other researchers have demonstrated that limits in access to care, such as rural location, represent a critical barrier to the receipt of mental health services among American Indian veterans (11).

In 2001 the AIANP began a series of telepsychiatric clinics to provide ongoing care to American Indian veterans with posttraumatic stress disorder. The clinics arose because of the untested efficacy of telepsychiatry in these communities and because of past research documenting disparities in the prevalence and treatment of posttraumatic stress disorder among American Indian veterans (9,10,12). In addition to providing telepsychiatric care, we anticipated that these clinics, if successful, would suggest effective methods for developing and implementing rural telepsychiatry. These methods could then be translated into a model to guide others. This article presents the model that has emerged from our efforts.

Telepsychiatry clinics

The AIANP telepsychiatry service for American Indian veterans with posttraumatic stress disorder currently consists of five distinct clinics, each in a different phase of development, serving separate Northern Plains American Indian communities. This article focuses on the first three of these clinics. The first clinic was begun on the Rosebud Sioux tribe reservation, a large rural reservation in South Dakota. The nearest VA facility in Hot Springs is four hours away by car, representing a Herculean commitment by a veteran to obtain treatment. The seeds of the clinic began with an educational program offered

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by Denver-based AIANP clinicians to veterans from the Rosebud reservation and their spouses. The groups were held via teleconference in a designated room at the Rosebud tribal veterans program. These sessions helped to illustrate the needs of the veterans, limitations of the videoconferencing technology, and potential requirements of an envisioned clinical service. The educational program stimulated broad discussions between the AIANP and the multiple entities working with veterans from the Rosebud reservation. These discussions led to the formation of a partnership of the AIANP, and the Denver VA, the Hot Springs VA, the Rosebud Indian Health Service Hospital, and the Rosebud Veterans Center to create the Rosebud posttraumatic stress disorder telepsychiatry clinic.

Since April 2002 this program has provided a weekly five-hour telepsychiatry clinic for veterans from the Rosebud reservation with posttraumatic stress disorder. The designated room at the tribal veterans program allows patients to be connected by real-time videoconferencing with an AIANP psychiatrist based in Denver who provides medication management, case management, and individual and group psychotherapy. The group focuses on education, supportive therapy, and posttraumatic stress disorder skills training. The VA provides the electronic medical record, mail order pharmacy, credentials, and coordination of ongoing care within the VA. The Rosebud Indian Health Service hospital functions as onsite backup and a referral service for the clinic. The AIANP serves as the key liaison with the tribal programs, facilitates communication among the partners, provides the clinic psychiatrist and program administrator, and supports the telehealth outreach worker. The telehealth outreach worker, a University of Colorado Health Sciences Center employee based at the Rosebud reservation, is a tribal member and a veteran. This employee functions as the clinic's onsite coordinator, maintains the schedule, provides outreach to patients, and resolves technology problems. A more detailed description of clinic formation, implementation, and patient satisfaction is presented elsewhere (13,14).

The Sheridan VA serves the third largest reservation in the United States. The Wind River reservation encompasses 2.2 million acres in Central Wyoming and has more than 10,000 enrolled members between its two tribes, the Eastern Shoshone and Northern Arapaho. The Sheridan VA, a four-hour drive from the reservation, has established an outreach clinic in Riverton, Wyoming, which borders the reservation. The Riverton outreach clinic previously offered telepsychiatry services to veterans in the area, but it was not heavily used by American Indian veterans. The AIANP worked with the interested parties to create the Wind River telepsychiatry service. This extension of the VA's Riverton clinic follows the Rosebud model in providing posttraumatic stress disorder treatment to American Indian veterans. The clinic includes two telehealth outreach workers, one tribal veteran from each of the two tribes. The clinic has seen patients since October 2003. In addition to telepsychiatry care for posttraumatic stress disorder, this clinic coordinates with a local traditional healers program initiated by the Sheridan VA.

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The Hot Springs VA has been interested in expanding telepsychiatry services to veterans of the Standing Rock reservation in south central North Dakota and north central South Dakota. The VA health care system administers a program that provides vocational rehabilitation services to veterans of the Standing Rock reservation. In addition, the program offers alcohol and mental health treatment through onsite counselors and monthly visits by a psychiatric outreach team from the nearest VA facility, which is three hours away. The AIANP is currently working with the Black Hills VA Health Care System, which includes the Hot Springs VA, to establish a telepsychiatry service for American Indian veterans with posttraumatic stress disorder that is modeled after the Rosebud and Wind River clinics. The clinic will offer evaluation, therapy, and medication management at the vocational rehabilitation facility. Several organizational meetings have been held among the invested parties, equipment has been acquired, and a video connection is being established.

These three programs are among the few telepsychiatric clinics currently available to reservation communities and are the only such programs targeting American Indian veterans. Consequently, they represent a unique opportunity to examine the development and implementation process. Each of the clinics has similar goals, exists within the VA system, and serves rural Northern Plains American Indian reservations. Each is distinctive in the organizations involved, location, technological infrastructure, and availability of local resources. Despite such differences, the shared environment and programmatic structure allowed the AIANP to use similar methods in the development of these clinics.

Clinic interactions

During its first 36 months the Rosebud clinic totaled 452 telehealth clinic interactions, comprising 38 new

evaluations and patient intakes, 282 individual sessions (roughly 50 percent therapy and case management and 50 percent medication management), and 164 group sessions, totaling 623 patient encounters. The group had four active members with consistent group attendance (median attendance of two and mean±SD attendance of 2±1). During Wind River's first 18 months of operations the clinic had 314 telehealth interactions, consisting of 38 new evaluations and patient intakes, 245 individual sessions (roughly 50 percent therapy and case management and 50 percent medication management), and 54 group sessions, totaling 437 patient encounters. The group had five active members with consistent group attendance (median attendance of three and mean attendance of 3±1). These clinical interactions were the result of a multistaged planning process that can inform the development of rural telepsychiatry clinics. This model is discussed below.

Model

Stage 1: needs identification

The AIANP telepsychiatry services began by identifying the target population. Rural American Indians are underserved; preexisting health data had already identified the mental health concerns of these veterans (9–11,15). In Rosebud a dialogue between the AIANP and the Rosebud tribe clarified the latter's desire to increase access to posttraumatic stress disorder treatment for their veterans. The community also expressed a willingness to support the trial of innovative care delivery. The AIANP next initiated discussions with the Rosebud tribe, the Rosebud Indian Health Service, and the Hot Springs VA to define specific services to be offered via telehealth on the basis of needs and feasibility of delivery. The success of the Rosebud clinic and the wish to increase services to American Indian veterans convinced officials of the Sheridan and Hot Springs VAs to approach the AIANP to adopt the Rosebud model to create telepsychiatry clinics in the Wind River and Standing Rock communities.

Stage 2: infrastructure survey

The next stage, which paralleled needs identification, was to assess the existing technological, organizational, and programmatic infrastructure. A thorough inventory of existing services allowed strategic planning on how to best integrate and use resources and bridge gaps between organizations. For example, among the three clinics, only the Rosebud site had a direct telehealth connection immediately available. At Wind River an indirect telehealth connection was used through the regional VA and University of Colorado Health Sciences Center telehealth networks until a direct connection could be established. The indirect connection used existing networks and equipment. No videoconferencing capacity existed at the Standing Rock clinic, but existing videoconferencing connections at a nearby tribal college expedited a telehealth connection.

Equally important as the knowledge of available technology was information about the existing organizations and services available to American Indian veterans in each community. We identified these through community visits and discussion with the involved organizations, including the VA, the Indian Health Service, tribal health services, state and local health services, and regional veterans centers. Veterans in the different communities were often eligible to receive mental health and support services from multiple organizations. Individual discussions with each organization about veterans' use and availability of care and barriers to care further identified treatment needs and laid foundations for future partnerships.

Stage 3: partnership organization

A critical stage in service development was determining the potential involvement and interaction of the local organizations with the telepsychiatry clinics. For each AIANP telepsychiatry clinic, we sought dialogue, approval, and support of the local tribe, and we held discussions with all agencies that provided services that were relevant to veterans. Several choices existed for the structuring of these services: increasing the capacity for telepsychiatric consultations in an existing clinic, creating a telepsychiatry clinic within an existing local mental health service, and creating an independent telepsychiatry clinic. The model chosen was different in each of the communities and was based on the availability of programs to commit resources and to support a telepsychiatry service.

The Rosebud clinic was created as an independent clinic operated by the AIANP in partnership with organizations serving tribal veterans. At Wind River a new telepsychiatry clinic was created by adding staff to the existing VA mental health services at Riverton. The Standing Rock model will provide clinical services and consultations for the existing VA mental health clinics at the vocational rehabilitation program. At this stage, methods were developed to coordinate care with local organizations that worked with tribal veterans but were not directly affiliated with the AIANP telepsychiatry clinics.

Stage 4: structure configuration

The next stage was to create the clinic structure. Before this happened we needed to delineate the roles and responsibilities of the interested parties. Before implementation the AIANP crafted protocols consisting of a written manual of procedures, organizational role responsibilities, and duties of individual staff. Sharing the draft protocols elicited input from the organizations and individuals involved in the clinics, thereby reinforcing their support of the telepsychiatry clinic. For example, staff from the VA, the Indian Health Service, the AIANP, and tribal veteran's center worked on the Rosebud protocol. All parties approved the final protocol before implementation.

Stage 5: pilot implementation

Each AIANP telepsychiatry clinic had agreed on a "start-up" or "pilot" period. During this time patient and staff feedback and other quality-assurance data (for example, patient satisfaction measures) were gathered to assess whether the service was achieving its goals. The procedures and protocols were changed according to the needs of the service to in-

crease long-term success and sustainability. For Rosebud the pilot period lasted six months, sustained by a VA pilot telehealth program grant, although it took a year to complete stages 1 through 4. During stage 5 we modified the clinic structure and procedures on the basis of frequent staff and patient feedback. In general, patient satisfaction was relatively high (13).

Stage 6: solidification

In this stage routines were established and the telepsychiatry service became integrated into existing organizations and services. At this point the clinic became functional and sustainable and was achieving its desired goals. Adaptation is part of an ongoing developmental process, as opposed to a creative process. Among the AIANP clinics the Rosebud and Wind River clinics have reached stage 6, and Standing Rock is at stage 4. In addition, by using the model presented here, two additional telepsychiatry clinics have been developed with Montana's VA system to provide services to tribes in Montana. The Montana clinics are currently in stages 4 through 5.

Challenges to implementation

In our experience, the timeline for this process has varied and depended on numerous factors—most important, the participation of the local organizations. The Rosebud Clinic took two years to reach stage 6, with one year to complete stages 4 through 5. The Wind River clinic required ten months to reach stage 5, with three months to complete stages 4 through 5. Standing Rock took one year to reach stages 3 through 4. The AIANP discovered several issues that were central to successfully negotiating specific stages of development. The issues concern presentation of the potential service (stages 1 through 3), dealing with resource constraints (stages 2 through 4), and working with multiple organizational systems (stages 3 through 6).

At times the AIANP met with healthy skepticism and anxiety within organizations about the feasibility of the clinics and their impact on existing services. These problems were dealt with through careful consideration of the concerns raised, accommodation of these concerns when possible, and education of involved personnel. When these methods failed to alleviate organizational anxiety, advocates were identified within the organization to facilitate acceptance of the clinics. In addition, obtaining tribal support through the use of liaisons (telehealth outreach workers and field staff of the University of Colorado Health Sciences Center) facilitated acceptance by other organizations.

The rural nature of the telepsychiatry clinics raised the issue of the appropriate level of care that could be provided with limited resources at the clinic sites. For example, outpatient psychiatric clinics at the Denver VA have 24-hour emergency psychiatric backup, a fully stocked outpatient pharmacy, onsite psychiatric and medical inpatient services, and substance abuse treatment. The three AIANP clinics have few, if any, of these resources. Therefore, one concern was that this patient population—veterans with often severe posttraumatic stress disorder and multiple comorbid psychiatric and medical conditions—could not be adequately treated with this modality. The counterargument was that limited mental health care is better than no care at all. The lack of resources made multiorganizational collaboration critical to designing and implementing the clinics. Whereas no single organization offered all these services in a community, the services became available by combining the resources of the VA, the Indian Health Service, the veterans center, the state, and the tribal organizations.

Although providing a telepsychiatry service with multiple organizational partners conferred many benefits, it also presented challenges. The services had to comply with multiple sets of bureaucratic rules and regulations, involve additional personnel, and seek multiple approvals for implementation and changes. Because the AIANP telepsychiatry clinics were small, once they were established they tended to remain beneath the notice of their partner organizations. To remain unobtrusive, without disappearing within the organization, several techniques were used to facilitate ongoing communication. One tool was an e-mail update about the status of each clinic on a biweekly to monthly basis. These e-mails reported clinic statistics (for example, number of patients seen and types of visits) and provided information on administrative issues. In addition, the AIANP clinic administrator and clinician regularly visited clinic sites and partner organizations. These techniques were very useful in developing and maintaining the clinics.

Discussion

The multistage model underpinning the development of the AIANP's posttraumatic stress disorder telepsychiatry clinics informs the process of creating and maintaining telepsychiatry services in rural American Indian communities. It may also prove useful to persons working to establish telepsychiatry for other rural populations. Although the initial use of telemedicine dates to a half-century ago, its adoption has been slow and uneven (16). Many telemedicine programs face significant impediments to successful implementation (17), particularly those in rural and mental health settings. The details of any potential clinic will vary by community, services, and population, but the stages of this model suggest important guiding principles in rural telepsychiatry and telemedicine.

This model draws from and has several parallels to Rogers's seminal work (18). He describes the diffusion of a new innovation within an organization, positing two major activities with five stages. Although the model presented here reflects similar developmental phases, it differs from Rogers's model in several important ways: our model deals with the diffusion of an innovation across multiple organizations, it offers a prospective guide to successful clinic creation in addition to process description, and it is specific to rural telepsychiatry clinics.

A limitation of our model is its failure to address economic factors involved in rural telepsychiatry. Cost studies are missing in telepsychiatry

specifically and telemedicine in general. A recent meta-analysis of research on economic outcomes of telemedicine was thwarted by the inadequate design and execution of the studies examined (19). The studies lacked detailed descriptive data, longitudinal data collection, and uniformity of cost analyses. The review concluded that, on the basis of current research, no conclusions could be drawn about the cost-effectiveness of telemedicine (19). Economic factors associated with the AIANP telepsychiatry clinics have not yet been thoroughly examined. The clinics are supported by a mix of grants and payments by partner organizations. Cost-analysis research that is currently under way to understand the economic outcomes associated with the clinics may lead to an economic dimension for future presentation.

One interesting aspect of rural telepsychiatry clinics not discussed in the literature is the potential of increased economic burden. Although the AIANP clinics provide care for an underserved population, they may actually increase costs for the partner organizations by bringing into the system patients who previously were unable to gain access to treatment. Through telepsychiatry these new patients will increase service demand on the partner organizations.

Conclusions

Our hope is that the model presented here will serve as a road map for planning and creating other rural telepsychiatry clinics. As the AIANP and others gain more experience, undoubtedly this model will be elaborated on and tested to further understand the pitfalls and promises of telepsychiatry in rural America. Through this process, telepsychiatry will begin to fulfill its overdue promise to improve the mental health of American Indians and rural populations. ♦

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References

1. Dixon M, Roubideaux Y: Promises to Keep: Public Health Policy for American Indians and Alaska Natives in the 21st Century. Washington, DC, American Public Health Association, 2001
2. Nelson SH, McCoy GF, Stretter M, et al: An overview of mental health services for American Indian and Alaska Natives in the 1990s. Hospital and Community Psychiatry 43:257–261, 1992
3. Mental Health: Culture, Race, and Ethnicity: A Supplement to Mental Health: A Report of the Surgeon General. Rockville, Md, Center for Mental Health Services, 2001
4. Liebson E: Telepsychiatry: thirty-five years' experience. Medscape Mental Health 2, 1997
5. Preston J, Brown FW, Hartley B: Using telemedicine to improve health care in distant areas. Hospital and Community Psychiatry 43:25–31, 1992
6. Stamm B: Clinical applications of telehealth in mental health care. Professional Psychology, Research, and Practice 29:1–7, 1998
7. Frueh BC, Deitsch SE, Santos AB, et al: Procedural and methodological issues in telepsychiatry and program development. Psychiatric Services 51:1522-1527, 2000
8. Baer L, Roderick E, Cukor P: Telepsychiatry at forty: what have we learned? Harvard Review of Psychiatry 5:7–17, 1997
9. Matsunaga Vietnam Veterans Project: Final Report: Vol 1. National Center for Post-Traumatic Stress Disorder and National Center for American Indian and Alaska Native Mental Health Research, 1997
10. Beals J, Manson S, Shore JH, et al: The prevalence of posttraumatic stress disorder among American Indian Vietnam veterans: disparities and context. Journal of Traumatic Stress 15:89–97, 2002
11. Westermeyer J, Canive J, Thuras P, et al: Perceived barriers to VA mental health care among upper Midwest American Indian veterans: description and associations. Medical Care 40:62–72, 2002
12. Gurley D, Novins D, Jones M, et al: Comparative use of biomedical services and traditional healing options by American Indian veterans. Psychiatric Services 52:68–74, 2001
13. Shore JH, Manson SM: Telepsychiatric care of American Indian veterans with post-traumatic stress disorder: bridging gaps in geography, organizations, and culture. Telemedicine Journal 10(suppl 2):64–69, 2004
14. Shore JH, Manson SM: The American Indian Veteran and post-traumatic stress disorder: a telehealth assessment and formulation. Culture, Medicine, and Psychiatry 18: 231–243, 2004
15. Gurley D, Novins DK, Jones MC, et al: Comparative use of biomedical services and traditional healing options by American Indian veterans. Psychiatric Services 52:68–74, 2001
16. Grigsby J, Rigby M, Hiemstra A, et al: The diffusion of telemedicine. Telemedicine Journal 8:79–94, 2002
17. Proceedings C: Success and failures in telehealth-2, in Success and Failures in Telehealth-2. Brisbane, Australia, Royal Society of Medicine Press, 2002
18. Rogers EM: Diffusion of Innovations. New York, Simon and Schuster, Inc, 1995
19. Whitten P, Kingsley C, Grigsby J: Results of a meta-analysis of cost-benefit research: is this a question worth asking? Journal of Telemedicine and Telecare 6:S4–S6, 2000