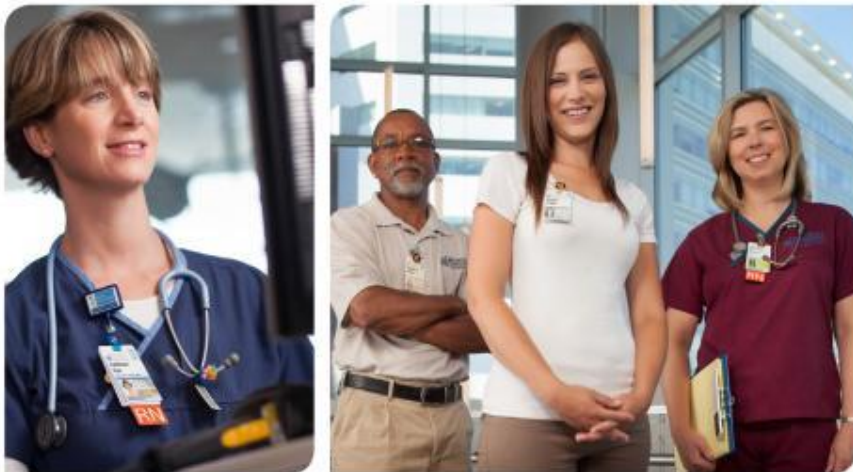




An Overview of Telepsychiatry and the Experience at the University of Virginia

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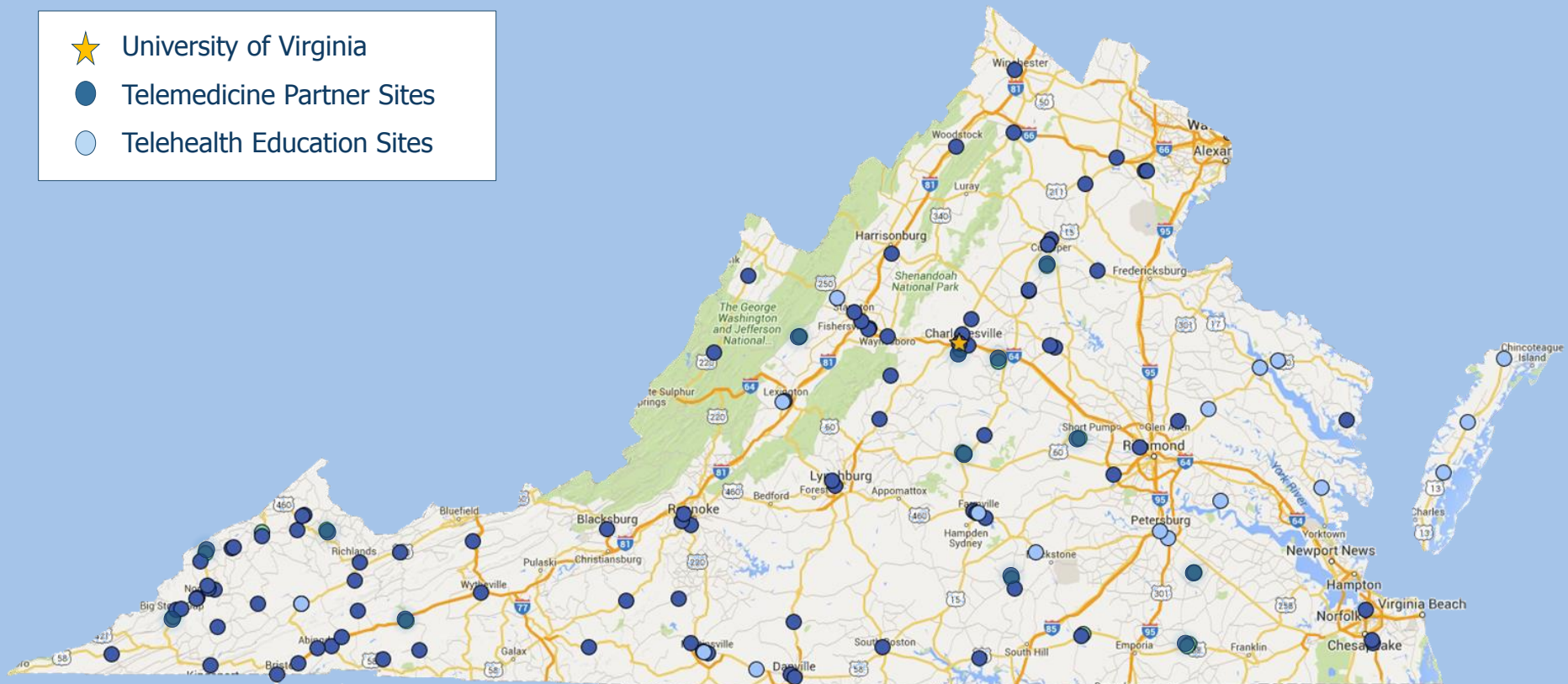


What Do We Know About Telepsychiatry?*

- It is given high marks for satisfaction by patients and rural practitioners, but less so by mental health professionals
- It is as reliable as in-person as to clinical evaluation, diagnosis, and use of rating scales.
- It is at least as effective as in-person treatment for depression and serious mental illness.
- It may provide a higher level of care than in-person encounters.

*References in accompanying manuscript

- ★ University of Virginia
- Telemedicine Partner Sites
- Telehealth Education Sites





Phases of Development

- Phase I: 1998-2002
Individual Psychiatrists
- Phase II: 2003-2007
Regularly Scheduled Service (2006 C&F Service begins)
- Phase III: 2008-2011
PGY IV Elective
- Phase IV: 2012-2016
Integrated into PGY III Training and use of APNPs,
expansion to EDs



Consultation Care Model

- The local clinic identifies the cases
- The patient is seen by us in consultation
- We make recommendations
- It is up to the local clinicians to act on these recommendations
- They may contact us if there are problems or non-response
- We may or may not see the patient again in follow-up as determined by the local clinician
- Ad Hoc education and coordination



Collaborative Care Model

- A local clinician is identified as the contact person and oversees the mental health care (Behavioral Health Consultant)
- They act as a bridge between local providers and UVA team.
- There is a collaborative sense of team work
- Frequent contact between UVA team and local BHC
- Team identification of patients and issues
- Formal opportunities for mutual education

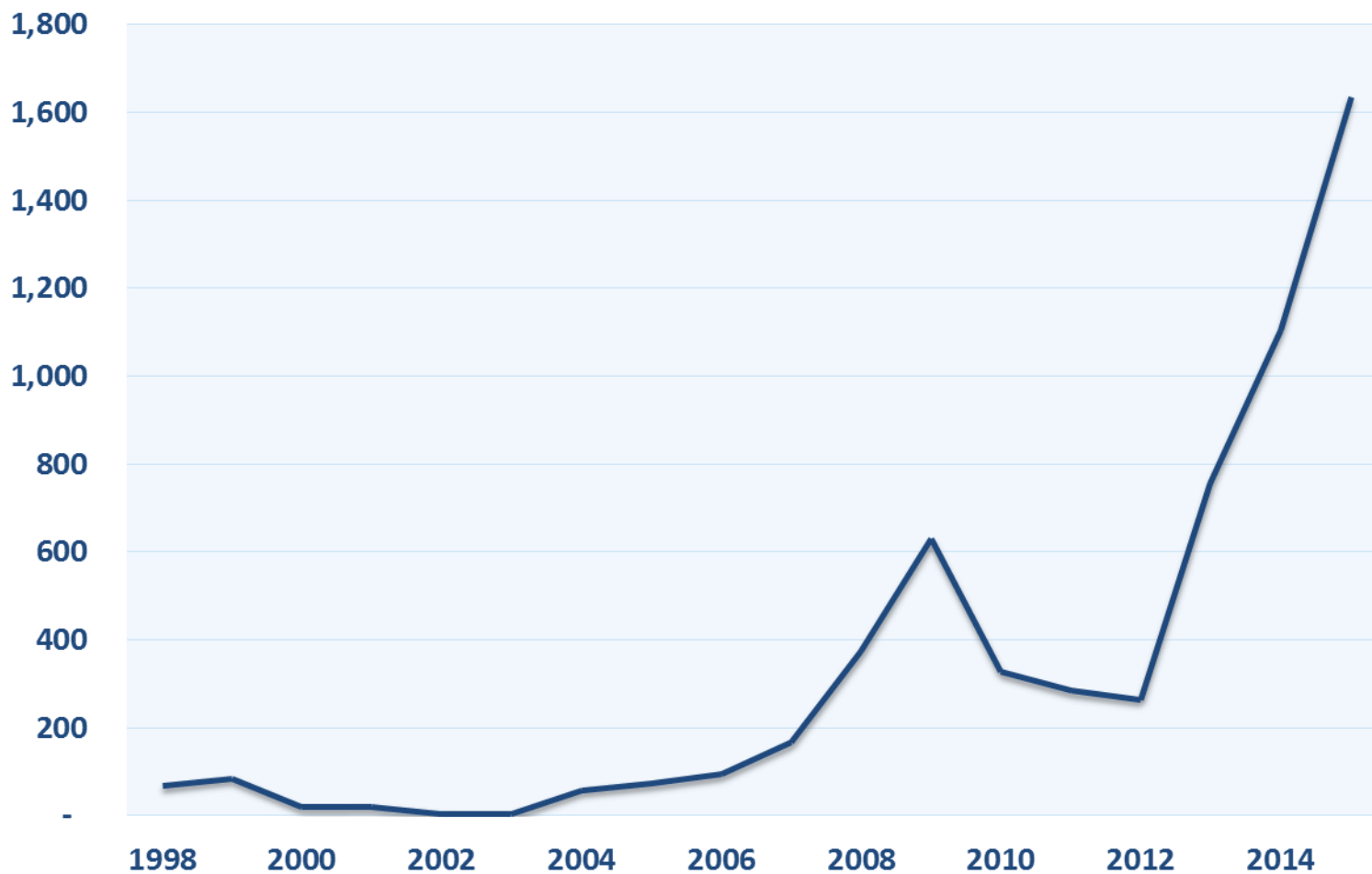


Phase II 2003-2007

- 145 Initial Contacts — 139 Follow-ups
- 103 Females, 42 Males
- Average Age
 - Females 42.8 years, ranging from 21 to 79
 - Males 41.8 years, ranging from 21 to 74
- Most are indigent with no insurance (85%)
- All but one is Caucasian

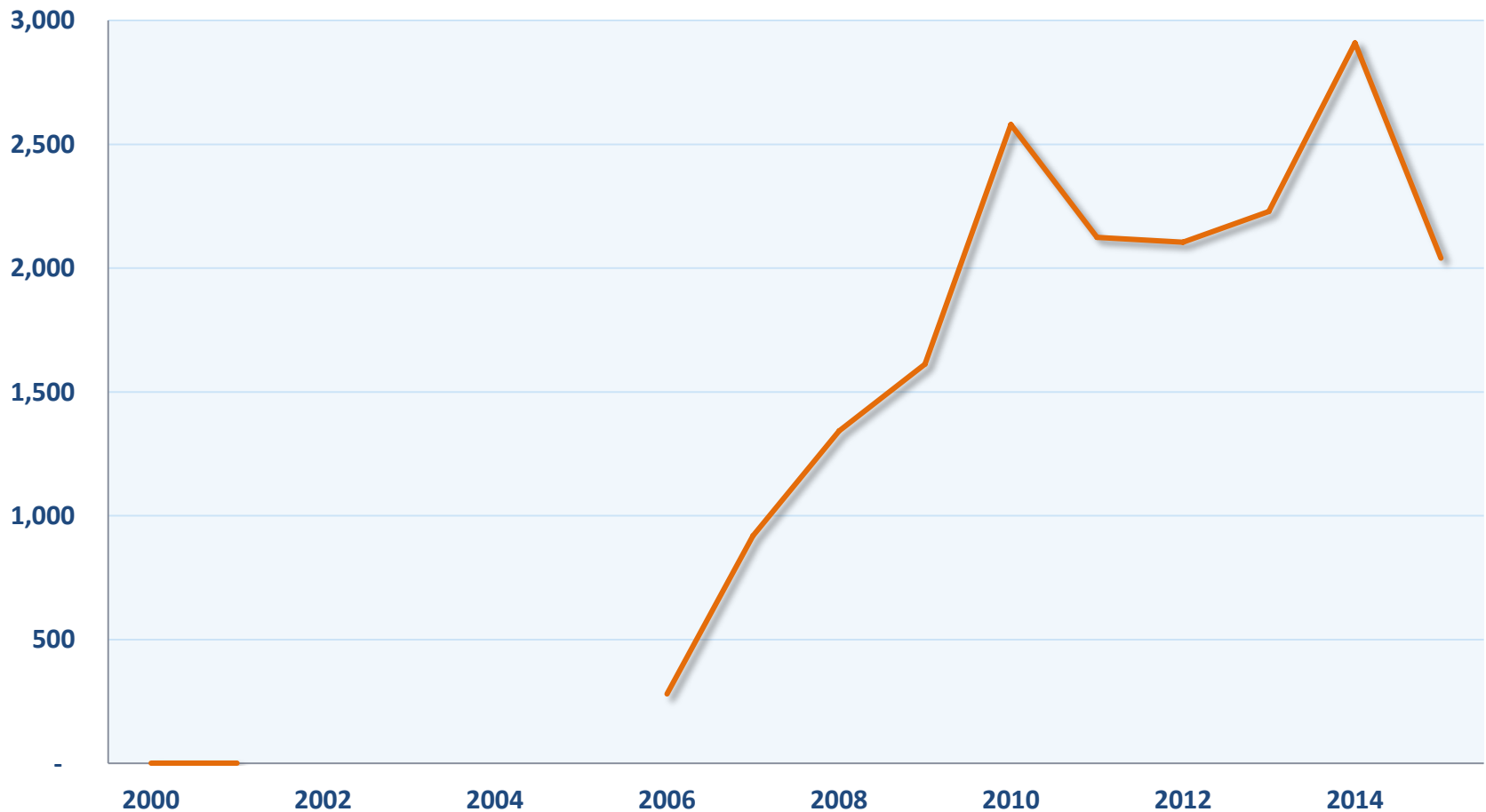


Adult Telepsychiatry Consultations





Child and Adolescent Telepsychiatry Consultations



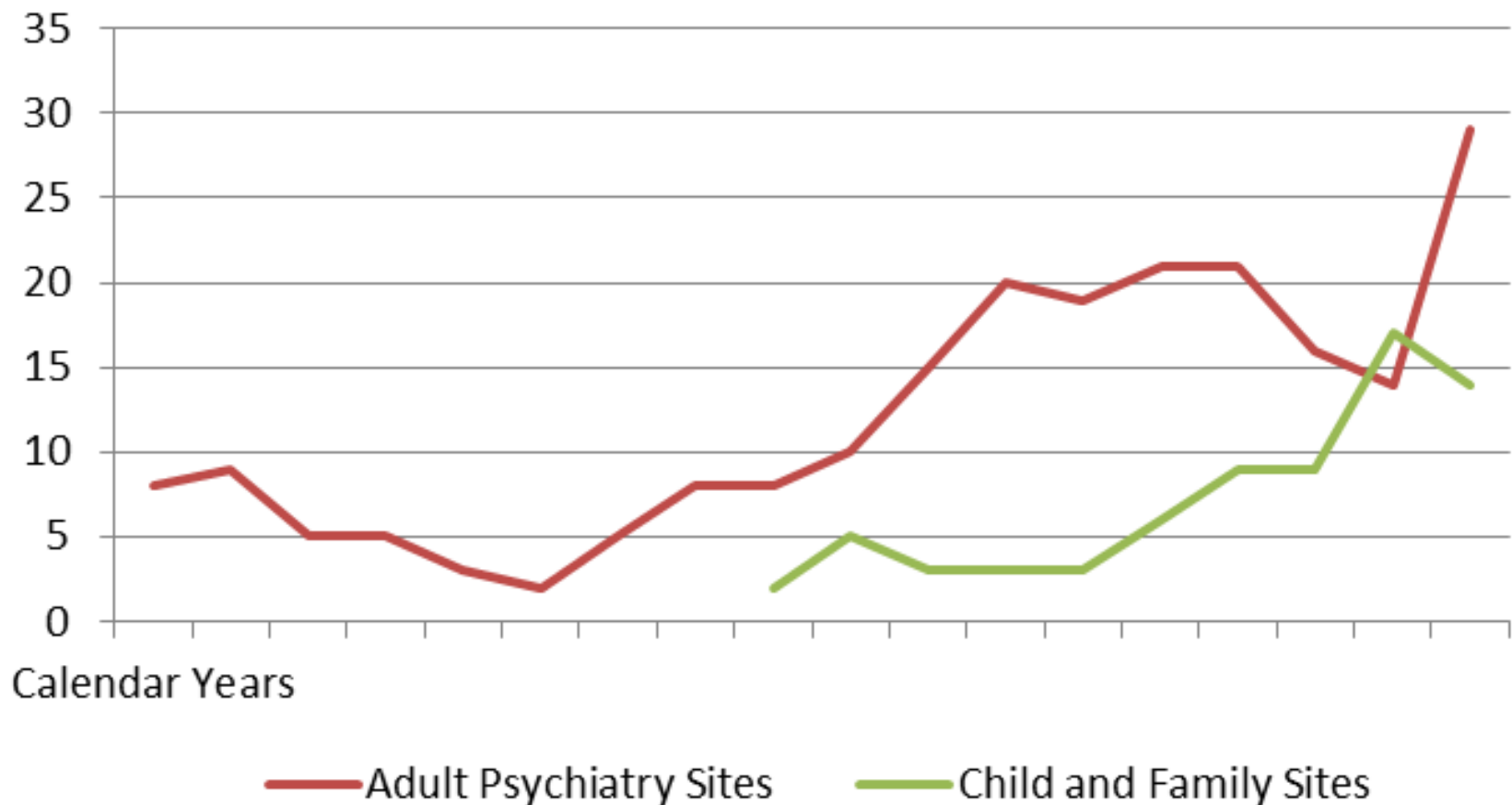


Emergency Department Consultations





Sites Per Calendar Year

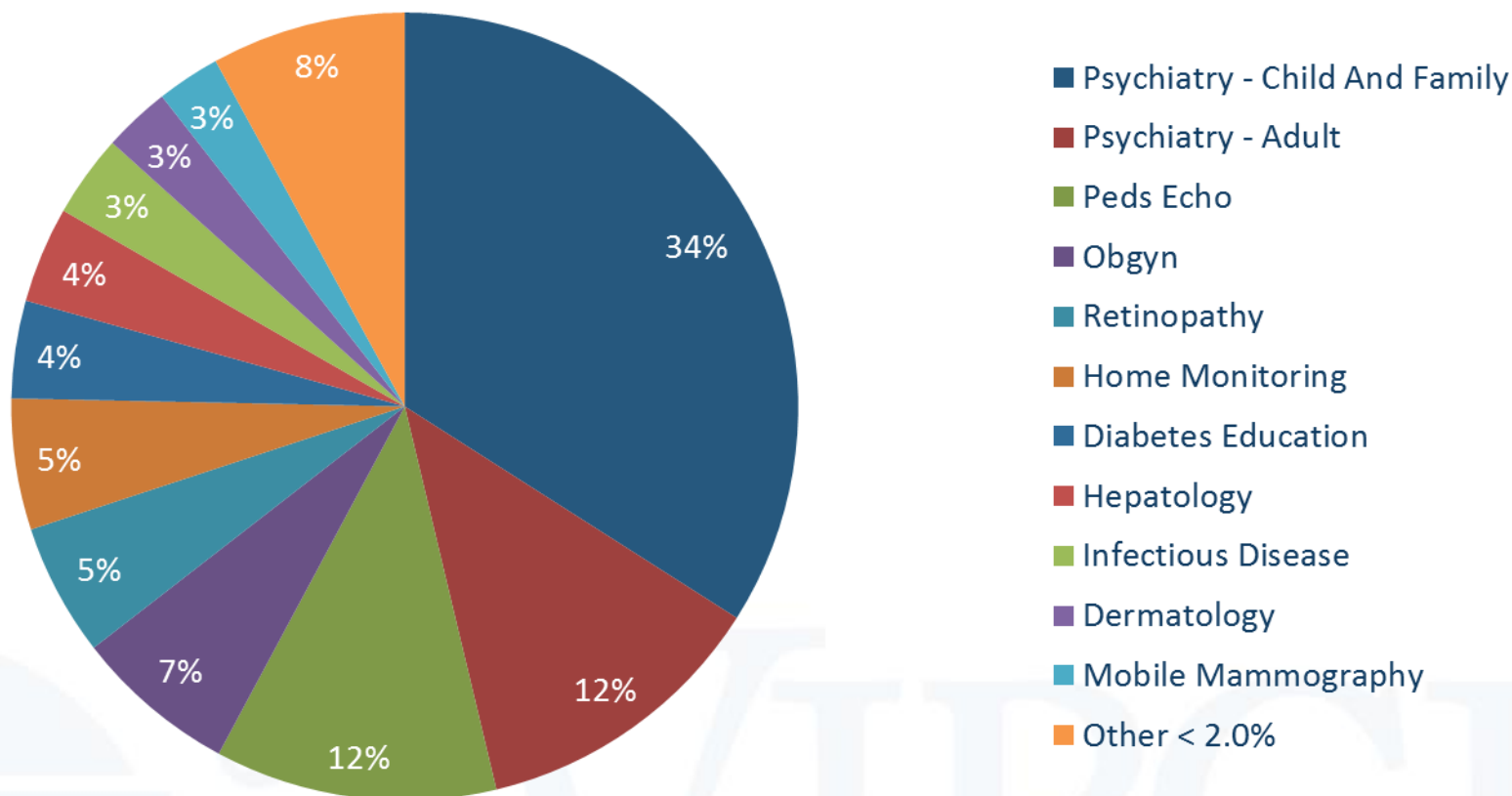




18 years of Telepsychiatry

• Child and Adolescent Encounters	19,069
• Adult Encounters	6,907
• Miles Saved	7,384,396

TMED Specialty Services 56,046 from FY1997 - FY2016





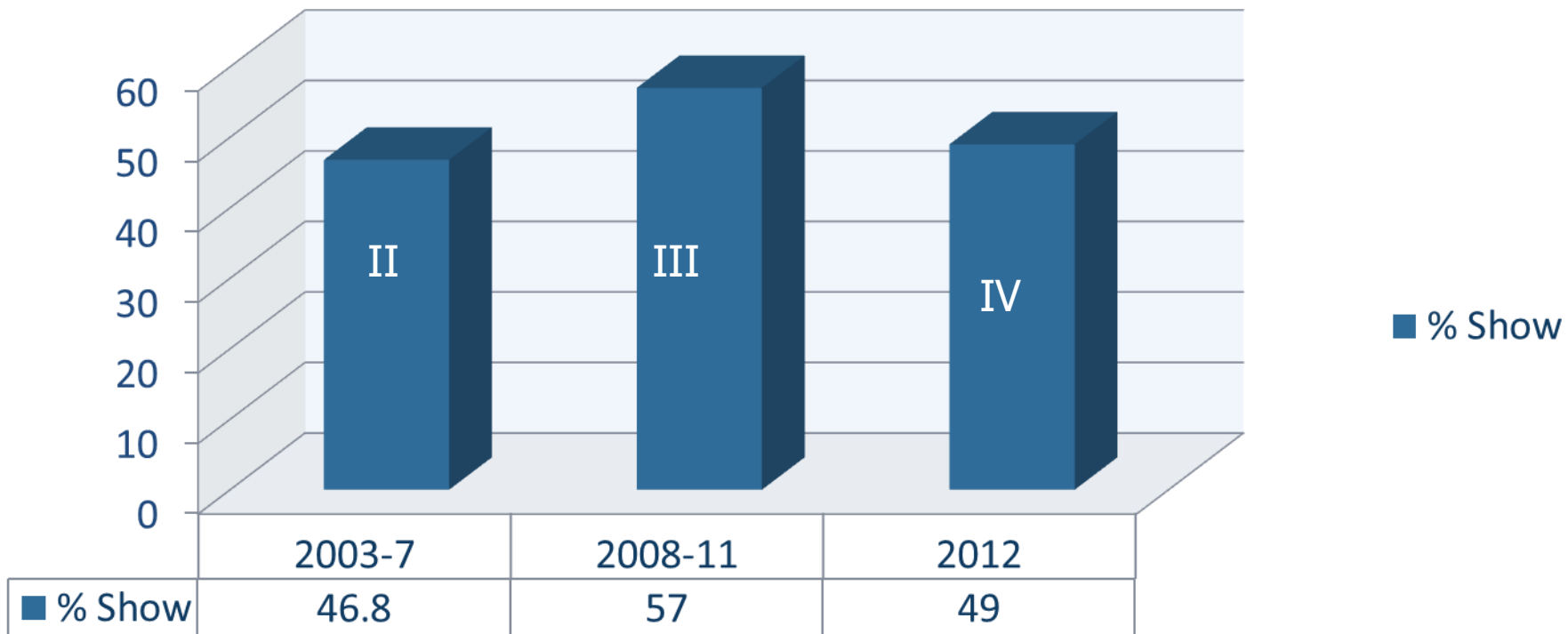
UVA Telepsychiatry Today

- UVA providers see on average 57 hours of patients per week.
- Patients are seen at 31 sites.



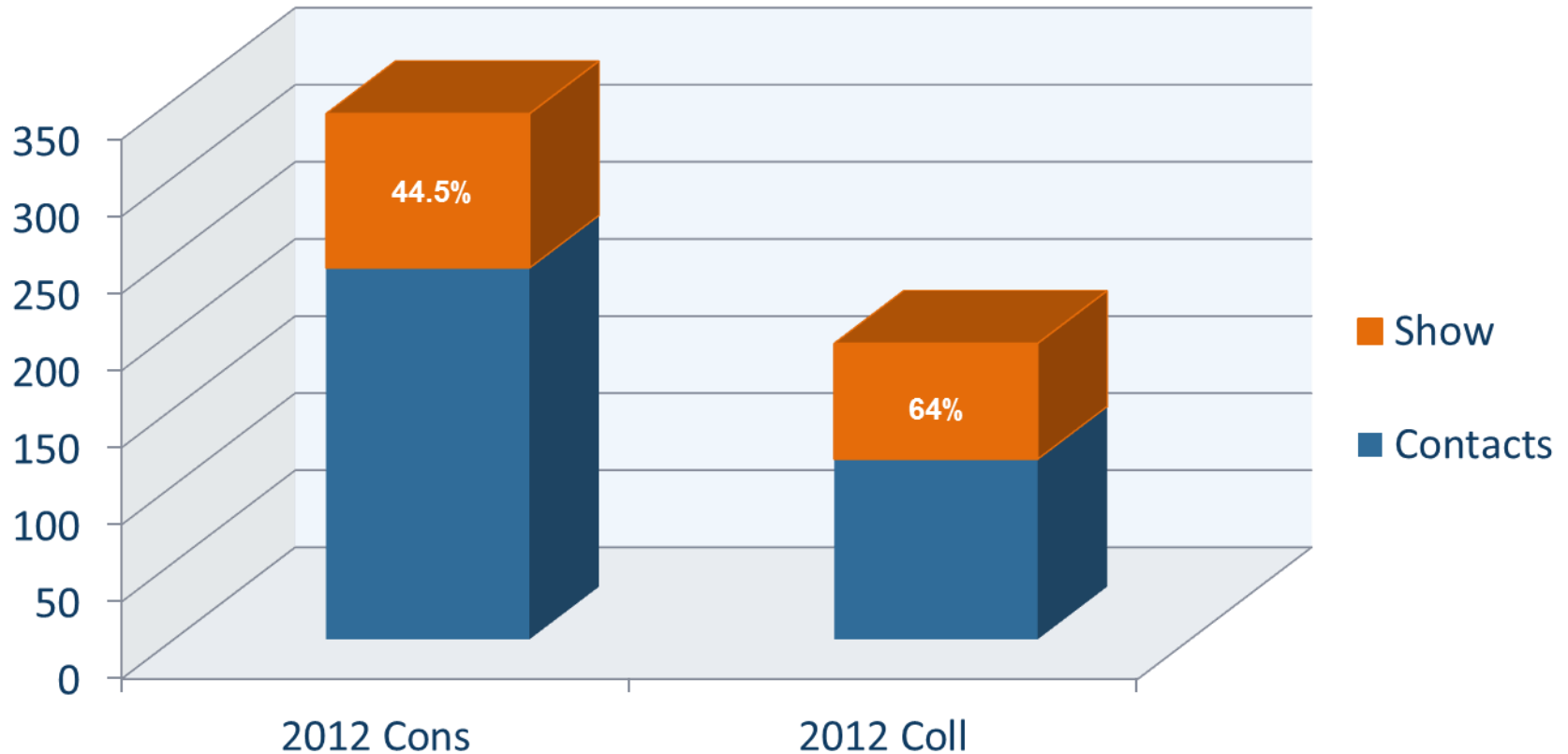
Percent Show Rate by Phase

% Show





2012 Consultation vs. Collaboration Contacts and Shows





Satisfaction with Telepsychiatry Experience



Satisfaction Survey

<ul style="list-style-type: none">• How anxious were you at the beginning of the appointment?	2.71
<ul style="list-style-type: none">• How anxious were you at the end of the appointment?	1.85
<ul style="list-style-type: none">• How satisfied were you with the telemedicine process?	3.57
<ul style="list-style-type: none">• How easy was it for you to make an appointment?	3.28

1=Not at all, 2=Somewhat, 3=Moderate, 4=Very Much



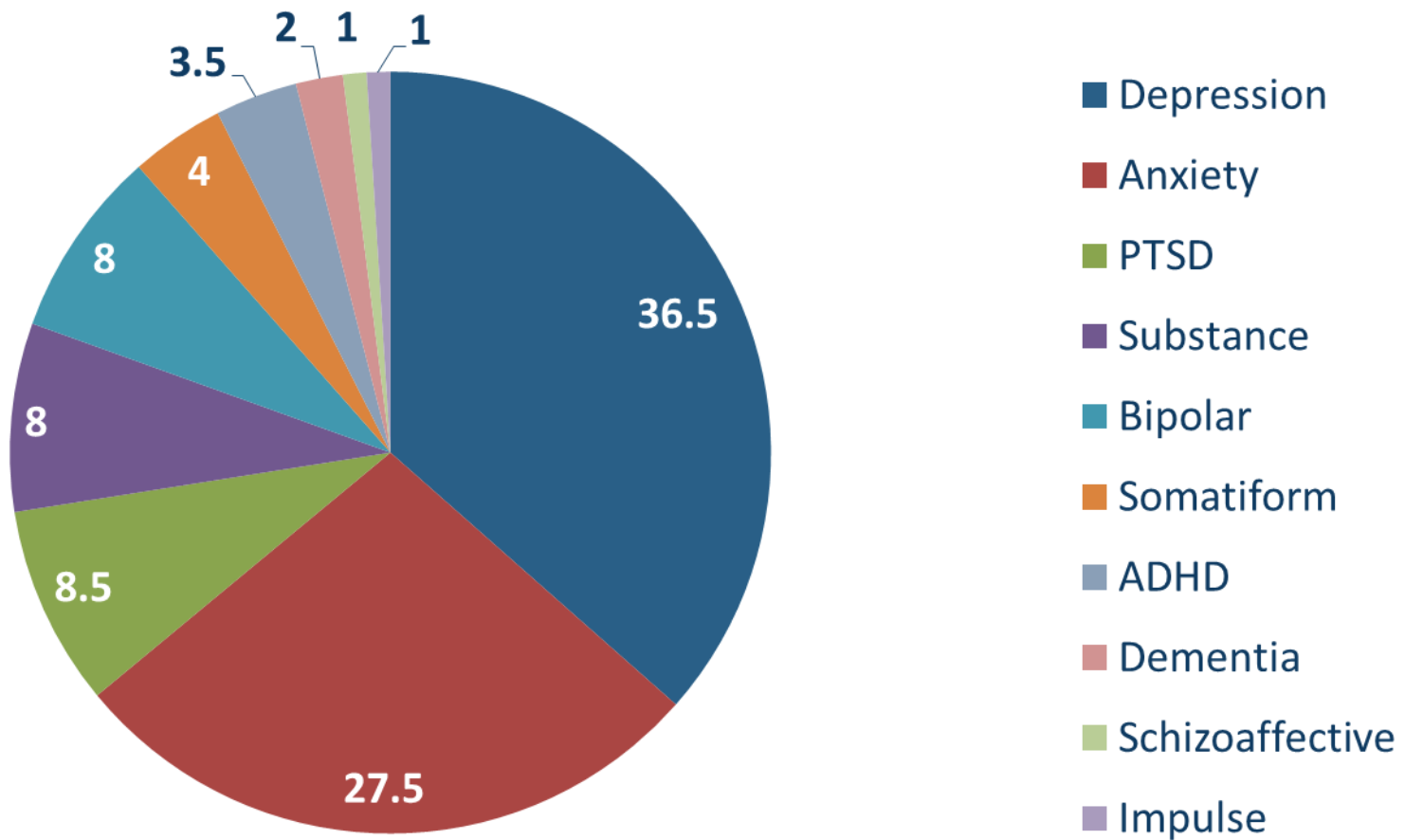
Satisfaction Survey

• How helpful is the UVA staff during this process?	4.0
• How likely are you to make another appointment with us?	3.92
• How helpful has this appointment been today?	3.64
• Are you likely to recommend this service to a friend/family member?	3.92

1=Not at all, 2=Somewhat, 3=Moderate, 4=Very Much



Percentage of Diagnoses



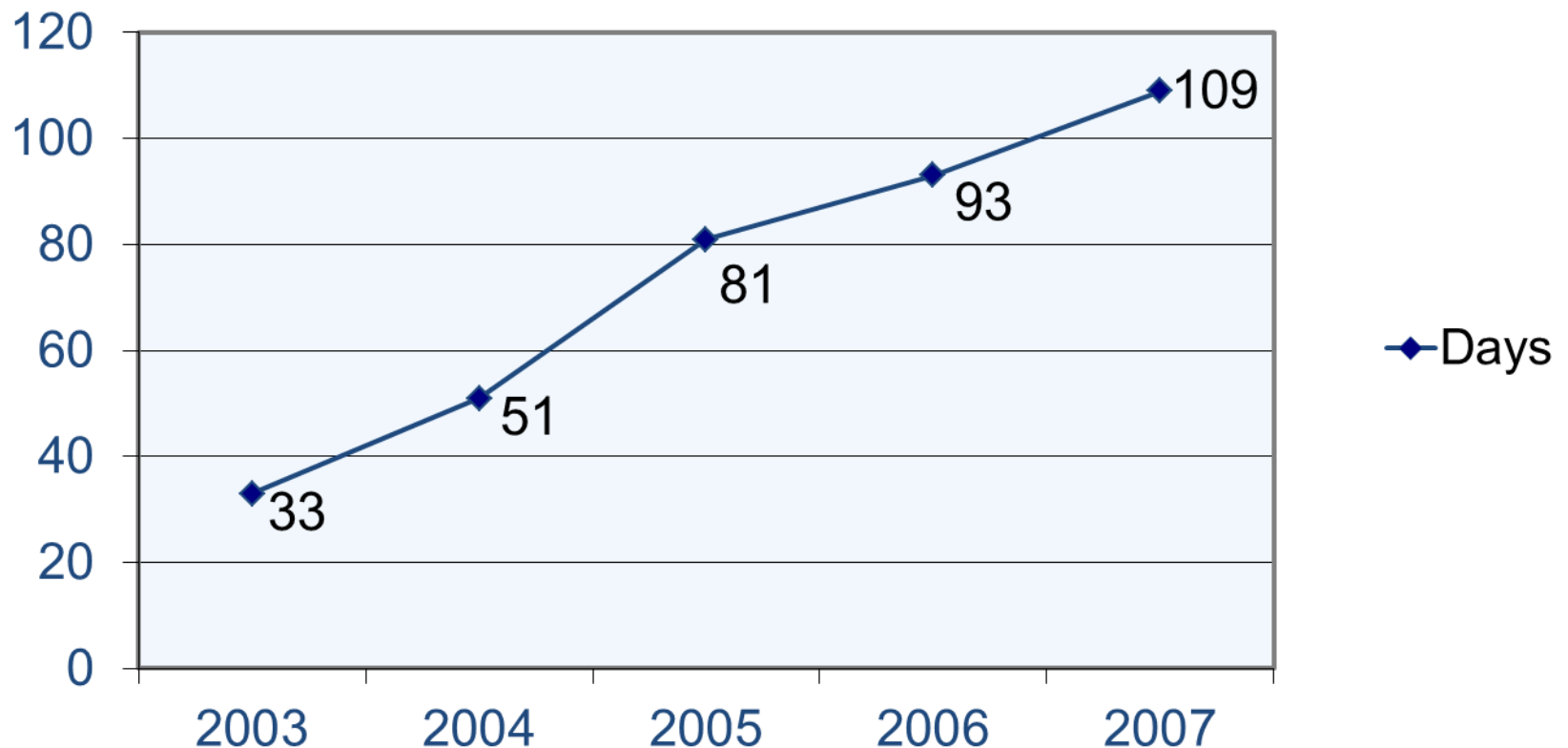


What are the problems?

- Long wait for follow-up.
- Low reimbursement
- Lack of psychiatric availability
- Decreased access to medications and therapy
- High “no show” rate
- Identification of cases for referral
- Stigma
- Structure may be confusing to the patient



Average Days to Follow-up Per Year





What Have We Learned?



Limitations of Telepsychiatry

- Admission
 - Lack of Inpatient Resources
 - Insurance coverage
 - Distance from UVA
- Complexity of Medications
 - Expensive
 - Local Providers unaccustomed to specific medicines, dosages, and combinations.



Limitations of Telepsychiatry

- Communication
 - Lack of interaction between local staff and psychiatry in Consultation Model
 - Telepsychiatry note off-site
 - Time lapse before note to local service
 - Provider's concern of writing Rxs without a note
 - Medical Chart not available to UVA
 - Are not always accurately aware of patient's other medications



Solutions

- Dedicated mental health scheduler in telemedicine
- Shift from Consultation to Collaboration Model
- Increased use of APNPs
- Division of Outreach – centralizing telepsychiatry efforts
- Development of local mental health networks



Clinical Issues

- These are complicated patients with minimal resources
- Simplify and streamline psychopharmacology
- Understand the cultural context
- Ask more directly and in detail about trauma
- Appreciate the situation from the perspective of the local provider



Conclusions

- Telepsychiatry is satisfying, effective, and cost efficient
- Collaborative Model has advantages over the traditional Consultation Model
- Increased investment is needed to increase mental health provider availability and support more effective Collaboration Model



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TELEPSYCHIATRY OVERVIEW

The Need for Telepsychiatry

Inadequately treated mental health disorders account for 27% of all disability in the US, but only 22% of Americans with mental health disorders receive specialty care, and only 12% from psychiatrists (Fortney, *et al.* 2015). In addition, rural communities are underserved in regard to mental health needs. “Frontier” areas, defined as areas with a population density less than six persons per square mile, may have even greater needs. Recent national data suggest that the prevalence of mental illness (affective and anxiety disorders) are the same in rural and urban populations. However, behavioral measures of mental illness – suicide rates, DUIs, delinquent and aggressive behavior—have higher rates in rural areas (Hartley, Britain, and Sulzbacher 2002). Most rural areas in the U.S. have fewer mental health services than the national average (Human and Wassem 1991). Rural residents have decreased access to specialty care compared to urban residents. This results in under treatment, poor outcomes and increased use of emergency care, hospitals, and placement in mental health institutions (Hilty, *et al.* 2000; Hilty, Yellowlees, and Nesbitt 2006). Treatment for depression is often substandard (Rost, Williams, Wherry, *et al.* 1995, and Rost, Zhang, Fortney 1998). A survey of 67 residents of rural Iowa revealed that 87% were dissatisfied with their local health care system (Rohland *et al.* 2000). There are many barriers to rural health care including distance, poverty, and lack of local medical resources (Ricketts 1999). Access to mental health care may be even more limited for the rural elderly. Barriers to health care for rural elderly include increasing number of elderly, cultural beliefs of their care being a family issue, out-migration of adult children, limited service access and reimbursement, decreased access to needed information for caregivers, geographically distant services, and transportation problems (Buckwalter, *et al.* 2002). Only 10% of elderly who need psychiatric service receive it and less than 25% of NH occupants with depression are actually diagnosed and less than half of these receive adequate treatment (Sumner 2001). Beyond poverty and structural aspects of the rural environment, culture may play a significant role in the manifestations of mental illness and the use of mental health services. “How rural persons interpret physical illness symptoms, seek confirmation of the presence and meaning of symptoms, and make decisions about who to go to for help is not well understood” (Fox J *et al.* 1995: 440). This is even more so for psychiatric symptoms. Barriers are not only practical and economic, but include a discontinuity between the beliefs of the population and of care givers (Hill 1988). One aspect of the influence of culture on mental illness is the presence and degree of stigma toward mental illness. Increased stigma against those with mental illness has been identified as a characteristic of rural culture (Hoyt, *et al.* 1997).

Primary care is an essential component of mental health care in the U.S., especially in rural areas that hold 25% of the population (Hilty, Yellowlees, and Nesbitt 2006; Office of Technology Assessment 1990). While it is estimated that two-thirds of patient in the U.S. with symptoms of mental illness do not receive treatment, of those that do 45% receive treatment from general practitioners and only 40% from mental health specialists (Hartley, Britain, and Sulzbacher 2002). Primary care physicians treat approximately 50% of Major Depressive Disorder, but the care is more often than not substandard (Pearson, Katz, Soucie, *et al.* 2003 and Rost, Zhang, Fortney 1998). Studies indicate that rural primary care physicians are only half as likely as urban primary care physicians to detect depression in their patients. For those patients in whom depression is recognized, treatment is often below the level recommended (Hartley, Britain, and Sulzbacher 2002). Only 25% of primary care practices have on-site mental health specialists (Williams Jr, Rost, Dietrich *et al.* 1999). This is probably even lower in rural areas.

Since mental health services in remote areas are inadequate, numerous models for the increased provision of mental health services have been put forward. Among others these include the

increased utilization of primary care health providers, mental health providers on-site in primary care practices, and telepsychiatry. Telepsychiatry is defined as “the use of electronic communication and information technologies to provide or support clinical psychiatric care at a distance” (Hilty, Luo, Morache, *et al.* 2002: 528). Telepsychiatry has been increasingly proposed as one possible solution to workforce problems (Frueh *et al.* 2000). Health care reform, motivated by rising health care costs and marked inefficiencies and inequalities in care, has resulted in a growing emphasis on the value of provided care, care integration, and increased access. Telepsychiatry has been shown to provide these benefits, especially in settings where access to care is limited, such as rural locations. Additionally, economic benefits occur locally as a result of telepsychiatry via increased local productivity through diminished mental health burdens. Savings also occur due to decreased travel costs and time off, while the cost of the technological infrastructure for telepsychiatry has greatly diminished as a result of technological advances (Waugh, Voyles, and Thomas 2015). Presently 77% of counties in the US have a severe psychiatric shortage and 50% of present psychiatrists in the US are over the age of 55 years. Public psychiatric services, especially in rural areas are having increasing harder times recruiting psychiatrists (Kornbluh 2014). Continued efforts to train psychiatrists to practice in rural settings with underserved populations continue to run into barriers of professional isolation, lack of referral sources, and travel distance. Telepsychiatry is a practical remedy for the provision of rural mental health care (Bonham, *et al.* 2014).

History of Telepsychiatry

Videoconferencing has been a part of psychiatric education since 1959 (Shore 2015). Telepsychiatry was experimented with in the 1960s in order to provide care and clinical supervision to remote sites and was found to be effective, although expensive given the technology of the time (Grady 2012). The first telepsychiatry care services occurred in 1968 and they became increasingly common in the 1990s (Shore 2015). With advances in technology in the 1980s and 1990s there was a reduction in cost. By the mid-2000s the continued advances in technology, the increased availability of Internet technology, and the increasing acceptance of technologically based intervention have resulted in a revolution in health care delivery (Grady 2012). Telepsychiatry has been greatly applied in rural areas where alternative access to care is limited (Grady 2012). Psychiatry’s marriage with technology promises to improve access, increase quality, and reduce costs of mental health care. In the 20th century western medicine has undergone industrialization, urbanization, and centralization. Technology has become indispensable to the practice of modern medicine, including digitalization of knowledge and communication. Psychiatry shares in this transformation (Shore 2015).

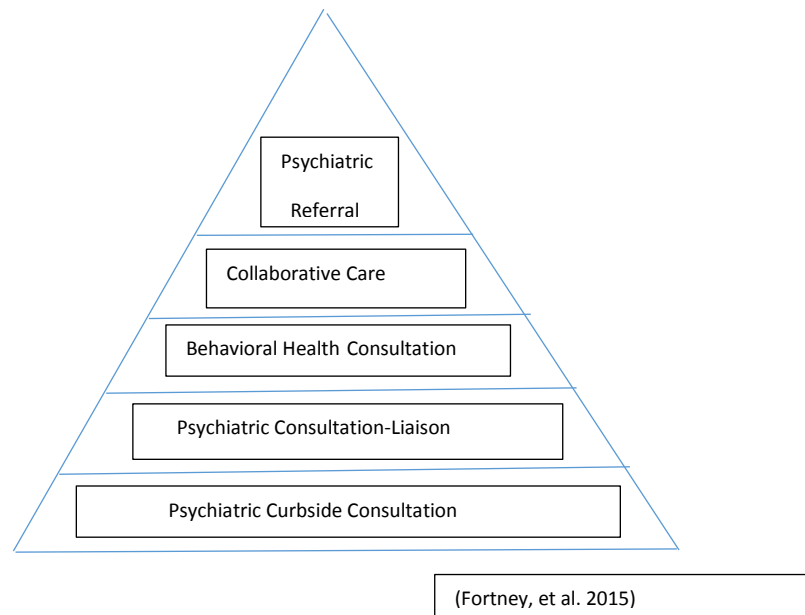
Adult psychiatric patients were first seen through the Telemedicine Service at UVA in 1998, but a regularly scheduled, active service did not begin until 2003. Since then telepsychiatry at UVA has continued to expand to serve more and more patients with limited access to specialty psychiatric care.

Settings for Telepsychiatry

Telepsychiatry has been used most in outpatient settings, correctional institutions, and emergency rooms, but is increasingly being utilized in inpatient, partial hospital, and home healthcare settings. Different settings for telepsychiatry require different models of care delivery (Kornbluh 2014). The increasing use of web-based telecommunication technology has made the effort more portable and flexible, allowing access in a wider array of settings, including home settings. These developments are consistent with the increased emphasis on patient-centered care as urged by the Institute of Medicine. Telepsychiatry also promotes integrated care, by increasing the provision of mental health care in primary care settings and decreasing the growing burden on primary care providers. Models for integration range from mental health care providers providing training and education to primary care providers in the recognition and treatment of mental illness, through “co-located” care in which mental

health care is offered on site in the primary care setting, to where mental health care is fully integrated into primary care. Newer technologies, such as store-and-forward, are beginning to be used in telepsychiatry. Telepsychiatry is being seen as a central component of psychiatric training (Shore 2015).

1. Rural Primary Care Settings. Telepsychiatry has been shown to improve access to psychiatric care in rural areas (Preston, Brown, and Hartley 1992 and Brown 1998). Telepsychiatry to rural primary care services can take many forms (Hilty, Luo, Morache, et al. 2002 and Hilty, *et al.* 2006). For patients, being seen in the office of their primary care provider decreases stigma and increases comfort. There are several models for delivery of psychiatric care within the primary care setting via telepsychiatry:



- a. Telepsychiatry referral model – this is the traditional psychiatric practice model in which a primary care provider refers a patient to a psychiatric service and the psychiatric specialist assume all responsibility for the patient’s psychiatric care. There may be varying degrees of communication with the primary care referral provider. This does not increase the capability of psychiatric services. (Fortney, *et al.* 2015).
- b. Telepsychiatry collaborative care model – this is a form of integrated care and requires a collaborative care manager. Care managers provide patient encounters between primary care and psychiatric appointments, provide psychoeducation, promote and monitor medication adherence, help manage side-effects, assess treatment response, and may provide brief psychotherapies. They may engage with the psychiatrist in case reviews and determination for need for referral, as well as pre-psychiatric session briefings. They may be present in the psychiatric session. Sessions usually occur in the primary care setting, but in special circumstances can occur at alternative sites, such as the patient’s home. Telephone or e-mail contact may also be maintained between the care manager and the psychiatrist. The care manager also acts as a go-between with the primary care provider. The primary care provider prescribes the psychotropic medications (Fortney, *et al.* 2015; Hilty, Luo, Morache, *et al.* 2002 and Hilty, *et al.* 2006). Surveys with primary care physicians favor the collaborative care model (Hilty, Luo, Morache, et al. 2002)

although having the mental health professional on site is the preferred more than any off-site options (Katon, Von Korff, Lin *et al.* 1995; Pincus 1987; Strathdee 1987; Bailey, Black, and Wilkins 1994).

Another example of a collaborative effort primarily to treat depression in the primary care setting is the development of remote depression care teams, which collaborate with the primary care provider via telemedicine. In this model stepped care is provided by a multifaceted and multitargeted depression management team. The team includes an off-site psychiatric consultant, depression nurse care manager, clinical pharmacist, and a supervising psychiatrist. In routine care the consulting and supervising psychiatrist could be the same person. The psychiatrist provides weekly face-to-face supervision with the depression nurse care manager and pharmacist. Initially symptom and medication monitoring is provided every 2 weeks during acute treatment and then every 4 weeks during continuation (Fortney, Pyne, Edlund *et al.* 2006). Such a model has also been shown to be effective in improving the outcome of those with anxiety disorders. Rollman, *et al.* (2005) in a study in which 191 primary care patients with either generalized anxiety disorder or panic disorder were randomized to care as usual versus telephone-based care management, by non-mental health professional. Compared to care as usual, the telephone based collaborative care intervention resulted in significantly reduced and anxiety and depressive symptoms, improved mental health-related quality of life, and improved employment patterns over the 12 months. In a meta-analysis of studies of collaborative care which involve at least a case manager, systematic comparison reveals that those in which the case manager had regular and planned supervision with a psychiatrist had more positive outcomes. The case managers having a specific mental health background was also important (Gilbody *et al.* 2006). Therefore, of the many strategies designed to improve the recognition and care of depression in primary care, collaborative models have been the most effective, but much is unknown about the details of such interventions, especially determinants of effectiveness (Gilbody *et al.* 2006). Other efforts such as the routine administration of simple questionnaires measuring depression and quality of life have no impact on the recognition, management, or outcome of depression. Simple educational strategies by themselves have no impact. Integrated quality improvement efforts involving clinician and patient education, nurse case management, and enhanced support from specialist psychiatric services that monitor drug concordance are cost effective in the short run. Services that provide telephone support, counseling, and medication monitoring are clinically effective and cost effective (Gilbody *et al.* 2003). Factors that tend to facilitate the integration of mental health services with primary care include an emphasis on teamwork and building relationships between providers from different disciplines. The integration needs to be supported by infrastructure and systems factors such as close physical proximity, joint medical records, and protocols for treating mental health problems.

- c. Telepsychiatry behavioral health consultant model – this is also a form of integrated care. In this model there is not a care manager, but the psychiatrist and the therapists are virtually present in the clinic at all times and there are not scheduled appointments with the mental health specialist, but there are “warm handovers” to the mental health specialist from the primary care provider in an open access manner. The mental health specialist then provides brief problem-focused

interventions and may prescribe initial psychotropic medications that may later be taken over by the primary care provider. (Fortney, *et al.* 2015).

- d. Telepsychiatry consultation-liaison model – This is not an integrated care model, but is the traditional model of telepsychiatry, in which the primary care providers decides whom to refer to the mental health specialist, the mental health specialists then conducts an evaluation of the patient via a televideo connection or this may be done asynchronously. The mental health specialist makes an assessment, formulates a treatment plan, and then communicates these to the primary care provider, who may or may not elect to follow the advice of the consultant. (Fortney, *et al.* 2015). This model is now also being augmented by the use of a Virtual Care Navigator (VCN), who takes the referral from the primary care provider, gathers all pertinent data, communicates with the patient, arranges the telepsychiatry appointment, passes all the data onto the psychiatrist, follows up with the patient after the consultation, makes sure they have filled their prescription, teaches them how to access the patient portal, maintains contact with the patient, and monitors follow-up appointments. This is all done electronically or by phone. They are highly rated by patients, and the use of VCNs has cut down on hospitalizations, unnecessary trips to EDs. (Johnston and Yellowlees 2016). A psychiatric consultation-liaison service is one effective means of providing increased access to mental health services in rural areas. It also provides support and education for primary care deliverers in rural areas (Hilty, Luo, Morache, *et al.* 2002).

Many services evolve from a consultation-liaison care model to a more collaborative model. In the development of a comprehensive mental health telecommunication system to severely isolated areas of Georgia, the Georgia State Telepsychiatry Program initially offered telepsychiatry on an as needed basis by specific clinicians. Coordinating this service logistically was difficult. They subsequently streamlined the service by hiring a fulltime telepsychiatrist, allowing continuous service at predictable, regularly scheduled times (“clinics”) at sites with greatest interest. It further developed a comprehensive operations manual and training program for remote sites. Each site has an assigned telemedicine coordinator. They now provide diagnostic assessments, ongoing psychotherapy, social service coordination, and pharmacological consultations to primary care providers. In an effort to improve collaboration the requesting clinician joints consult at end (Vought *et al.* 2000). A similar evolution occurred at the Rural and Remote Mental Health Service (RRMHS) in Southern Australia (Kavanagh and Hawker 2001). Studies that used a more fully integrated interdisciplinary treatment approach showed more robust effect sizes than those that simply used a multidisciplinary approach (Skultety and Zeiss 2006).

- e. Telepsychiatry curbside consultation model – this is not a form of integrated care. The primary care provider meets with the mental health specialist via televideo conferencing presents the case, providers clinical records, but the patient is not seen directly. The mental health specialist then makes recommendations to the primary care provider. (Fortney, *et al.* 2015).

There is increasing utilization of psychiatric resources as one moves up the pyramid. The peak of the pyramid, psychiatric referral, does not increase psychiatric capacity, while the lower models increase both psychiatric capacity and equity. Which patients are seen via which model will in part be determined by the complexity of their clinical needs and the

resources available. Treatment may occur in a step-wise manner in which their care, if not effective, gradually moves up the pyramid. (Fortney, *et al.* 2015).

At UVA most of our adult telepsychiatry efforts have been focused on rural Southwest Virginia. We primarily use the telepsychiatry consultation-liaison model and the telepsychiatry collaborative care model. The majority of these are seen in primary care facilities including FQHCs and PACE programs. We are gradually moving more and more toward a Collaborative Care Model with our sites. This depends on the presence of a local care manager of some sort though.

2. Institutionally based telepsychiatry. Institutions have been at the center of both the delivery and utilization of telepsychiatry services – university based psychiatric services providing both general and specialized psychiatric services, the Veterans Administration, the Department of Defense, forensic settings, community mental health settings, state psychiatric hospitals, large hospital systems and networks, entrepreneurial organizations (Caudill and Sager 2015). The VA system has been a leader in much of telepsychiatry (Shore 2015).

UVA has started providing telepsychiatry services as in-patient consultations in general hospitals, in forensic settings, and in substance use treatment facilities. We have also been providing telepsychiatric services to PACE programs in SW Va.

3. Clinical services involving children and adolescents. Clinical studies show that clinical services for children delivered via telepsychiatry are feasible, acceptable, applicable across developmental stages, and in the context of varied disorders are of comparable efficacy. Both psychopharmacological and psychotherapeutic interventions are effective. There is increased collaboration with the community. They can occur in several settings: outpatient, schools, and crisis centers. Multiple services can be provided: evaluations, medication management, ongoing management and therapy, evaluation of support services, staff continuing education, and consultation on general or specific contextual issues. Implementation is challenged by issues of privacy, adequacy of space, and infrastructural support (Gloff, *et al.* 2015). Each setting has specific ethical challenges. Rooms need to be large enough to accommodate the child and usually two other adults, giving the child room to move around and play, if appropriate. Seeing children in such situations requires special technological considerations: high bandwidth, zoom ability, and appropriate placement. Treatment can be enhanced by the use of various web-based technologies and social media. Rating scales and psychotherapy can be included (Gloff, *et al.* 2015).

At UVA we have been seeing children and adolescents, primarily at Community Service Boards since 2006. We are starting to become involved with child psychiatric services in school settings.

4. Forensic and Correctional institutions. The provision of psychiatric care to inmates of correctional facilities improves access to care and may improve living conditions and safety inside facilities. It has been estimated to save correctional facilities between \$12,000 and \$1 million. Savings in transportation costs of \$4 million. Public safety is improved by not having to transport inmates. Medical costs in general are seen to decrease as well. Such programs have been instituted in Arizona, California, Georgia, Kansas, Ohio, Texas, New Mexico, Michigan, and West Virginia. (Deslich, Thistlewaite, and Coustasse 2013). A comparison of parolees treated face-to-face versus via telepsychiatry showed no differences in medication adherence, psychological functioning, and satisfaction between the two populations. There was a marginally significant lower sense of therapeutic alliance among the telepsychiatry patients. (Farabee, Calhoun, and Veliz 2016). Young people can be evaluated and treated in correctional facilities or at home (Gloff, *et al.* 2015).

This year, UVA has begun providing psychiatric care to correctional facilities.

5. Emergency Departments. Child and adult psychiatric patients presenting to community hospital emergency departments can be successfully assessed via telepsychiatry with evidence that it decreases the time on the emergency room for patients by half, reduces recidivism and the need for involuntary commitments. (Davies and Flinn 2013). Emergency room psychiatric evaluations done via telepsychiatry compared to face-to-face evaluation were found to be equally in agreement with a separate and independent observer as to diagnosis, disposition, dangerousness, and suicidality. (Seidel and Kilgus 2014). Additional studies have shown the effectiveness of telepsychiatry in providing appropriate care of patients with mental health concerns in emergency departments. (Letvak and Rhew 2015). In New South Wales, Australia, the use of a mental health crisis and emergency access hotline can provide telepsychiatry emergency psychiatric assessment via local hospitals (Saurman, *et al.* 2014). Telepsychiatric evaluations in the emergency room of a rural hospital were found to significantly reduce time to treatment, length of stay, and door-to-consult time when compared to a similar number of assessments over a similar period of time before the institution of telepsychiatry evaluations. The evaluations were done by a mental health specialist. (Southard, Neufeld, and Laws 2014). Emergency department providers find the availability of psychiatric professionals via telepsychiatry to provide assessments and advice in managing psychiatric emergencies very helpful and it has changed their perspective and practice, gaining confidence in handling mental health conditions in the emergency department. (Saurman, Kirby, and Lyle 2015).

UVA telepsychiatry has been providing consultations to the Martha Jefferson/Sentara hospital since 2011.

6. Home centered care as part of concierge practices. (Yellowlees, Chan, and Parish 2015).

Telepsychiatry Providers

1. Psychiatrists. Much of telepsychiatry is provided by psychiatrists. There are training programs in which psychiatry residents are trained in and gain experience in telepsychiatry in order to meet the growing need for psychiatrists with telepsychiatry competence.
2. Hybrid doctor-patient relationship. In this setting there is a combination of face-to-face and video based psychiatric interactions between the psychiatrist and the patient, including telepsychiatry, but also the utilization of other web-based interventions, such as self-help apps and self-monitoring apps, often via Smartphone technology, allowing increased portability and decreased expense (Yellowlees, Chan, and Parish 2015). In between sessions an “avatar therapist” may be used (Yellowlees, Chan, and Parish 2015).
3. Advanced Practice Nurse Practitioner. Advanced practice nurse practitioners specializing in mental health care have also been utilized to provide telepsychiatric care. For instance, child psychiatry services, including psychiatric evaluation, medication management, and individual psychotherapy, delivered by an Advanced Practice Nurse Practitioner received a high level of patient satisfaction. (Ellington 2013).

Technological variations or augmentations of standard telepsychiatry services

1. Asynchronous Telepsychiatry in which the psychiatrist reviews a previously recorded interview with a patient using “store-and-forward” technology is shown to be feasible and efficient. Based on these interviews diagnoses were made, laboratory investigations and medication changes were made. Not to replace face-to-face, but to allow another alternative for rural practitioners (Science Daily 2010). Key advantages to asynchronous video consultations include increased time efficiency, by increased support of the medical

home model via increased involvement of the local provider and an enhanced relationship with the local provider. It has been used for consultation and in some instances to monitor chronic patients. (Yellowlees, Chan, and Parish 2015).).

2. Mobile Telemental Health is the use of mobile phones and other wireless devices in mental health practices. They have the advantage of portability, interactivity, just-in-time interventions, and low resource requirements. They can be used for treatment monitoring and adherence, appointment reminders, community mobilization, health promotion, health surveys and surveillance, patient monitoring, decision support systems, and patient recordkeeping. They are also now being used for the direct provision of services. Disadvantages and challenges include that although many people have used Smartphones to look up health related material, few have health care monitoring or other such applications. There is little research into the use of these devices and what research there is does not use newer, more sophisticated research techniques. These technologies can be used to supply and enhance psychotherapy. (Chan, *et al.* 2014)

Populations treated

1. Children and adolescents. There is a significant shortage of child and adolescent psychiatrists in this country. Local communities have increasingly turned to telepsychiatry to provide these services. For instance, a state-wide child psychiatry consultation service was established in Wyoming for high-needs children, which involved 1.5 to 2 hour child assessment, review of the case with foster care caseworkers, medication review, and review and consultation with local provider via telepsychiatry. This program resulted in a 42% reduction of psychotropic medication use in children under 5 years of age, a 52% reduction in the number of children using medication 150% above the FDA recommended dose, directed 60% of children being evaluated for long-term placement into alternative settings, with 1.82 to 1 return on investment for combined services. It also demonstrated consumer satisfaction. (Hilt, *et al.* 2015).
2. Geriatric Psychiatry Patients. There is also a shortage of qualified geriatric psychiatrist, especially in rural setting. Rural geriatric patients in 6 rural northwestern Ontario communities, Canada received psychiatric consultations via telepsychiatry from a university-affiliated geriatric psychiatry program in Toronto. Patients, family members, local staff and providers highly rated the program as positive and highly valued. Delivery of psychogeriatric care via telepsychiatry was seen to be effective in improving care and education of local providers in caring for these patients (Conn, *et al.* 2013).
3. Ethnic and minority populations. Telepsychiatry has been successfully used with American Indian, Hispanic, Asian and Pacific Islander populations. (Chan, Parish, and Yellowlees 2015). For instance, neurocognitive testing of elderly rural Latino adults by telepsychiatry was no different from that done face-to-face in results. (Vahia, *et al.* 2015). In addition, video interpreter services and computer based interpretation may become integral to working with culturally diverse populations (Yellowlees, Chan, and Parish 2015).
4. Deaf and Hard of Hearing populations. A pilot program providing psychotherapy for hearing impaired patients with mental illness found no difference in effectiveness or satisfaction between those receiving therapy on a face-to-face basis compared to those receiving it via telepsychiatry. (Crowe, *et al.* 2016).
5. The only contraindications to telepsychiatry are a patient that refuses treatment by this method and a person who is actively displaying violence toward self or others. (Yellowlees, Chan, and Parish 2015).

Conditions assessed and/or treated successfully via telepsychiatry

1. Children: Oppositional Defiant DO, ADHD, Mood DO, Learning Disability, Anxiety DO, Conduct DO, Attachment DO, Developmental Disability, Fetal Alcohol Syn., Personality DO, Psychotic DO, and Adjustment DO (Boydell, Volpe, and Pignatiello 2010). ADHD (Myers, Vander Stoep, and Lobdell, 2013). Telepsychiatry has been used successfully to provide psychotherapy for young people affected by multiple disorders: ADHD, eating disorders, panic disorder, agoraphobia, OCD, depression, PTSD, and adjustments disorders (Gloff *et al.* 2015).
2. Adults: Depression, Panic DO, PTSD, Eating DOs, and Schizophrenia (Garcia-Lizana and Muñoz-Mayorga 2010). Schizophrenia treatment is feasible and improves outcome (Kasckow, *et al.* 2014). Comparison of patients evaluated and treated in the VA system either face-to-face or via telepsychiatry showed that those seen via telepsychiatry were more likely to be diagnosed with PTSD, depression, and anxiety disorders and less likely to be diagnosed with alcohol use disorders, drug use, or psychosis, suggesting that patients and providers may be more comfortable treating the former via telepsychiatry than the later. (Grubbs, *et al.* 2015). Treatment of PTSD in veterans of Iraq and Afghanistan via telepsychiatry is as effective as face-to-face treatment, as had earlier been demonstrated with Vietnam vets. (Maieritsch, *et al.* 2016).
3. Geriatric: Dementia, Depression, Mild Cognitive Impairment (Conn, *et al.* 2013).

Patient reactions to Telepsychiatry

Telepsychiatry services are generally well accepted (Allen *et al.* 1996; Baer, Elford, and Cukor 1997; Blackmon *et al.* 1997; Callahan *et al.* 1998; Clarke 1997; Doze *et al.* 1999; Hawker *et al.* 1998; Hilty *et al.* 2000; McCloskey Armstrong 1997; Monnier, Knapp, and Frueh 2003; Ruskin 2000; Stevens *et al.* 1999). Satisfaction and acceptance have generally been shown to be high for telepsychiatry among many groups, including patients and referrers. It has been acceptable even to those with Schizophrenia, Paranoid Type. This is generally true in geriatric patients as well (Montani, Billaud, Tyrell *et al.* 1997; Jones and Ruskin 2001; Ruskin 2000; Bratton and Cody 2000). Patient satisfaction is high with telepsychiatry (Frueh *et al.* 2000, Yellowlees, Chan, and Parish 2015). There is generally a 95% satisfaction level (Frueh *et al.* 2000).

A study of psychiatry patients in Ontario, Canada showed that the vast majority of patients felt they were able to communicate well, found the consultation helpful, and would use it again (Campbell, O’Gorman, and Cernovsky 2015). In another study, 21 young people, age 7 to 18 years, seen in remote and rural Ontario Canada for a psychiatric consultation via telepsychiatry were interviewed immediately after and then again 4-6 weeks after the consultation. Despite initial discomfort with the procedure they quickly became comfortable with the interaction. There was an array of assessments and marked ambivalence as to the helpfulness of the interview itself. There were issues over control and confidentiality, since parents were often present. They were excited by and enjoyed the technological aspect of the consultation (Boydell, Volpe, and Pignatiello 2010).

Telepsychiatry delivered to elders is usually judged as satisfactory, but there are possible limitations – anxiety over use of new technology, emotional distance and impersonal aspect of care, and the tendency to be less candid and open over telecommunication (Buckwalter, *et al.* 2002). Telepsychiatry assessment has been shown to be acceptable and reliable in regard to those with depression, bipolar disorder, panic disorder, and alcohol dependence (Ruskin *et al.* 1998), OCD (Baer *et al.* 1995), and schizophrenia (Zarate *et al.* 1997). Furthermore, a survey of 67 residents of rural Iowa showed that two-thirds of the sample expressed a willingness to use telemedicine for mental health services (Rohland *et al.* 2000). Telepsychiatry is appealing to those groups with decreased access (Harley *et al.* 2002). Rohland, *et al.* (2001) have shown that telepsychiatry to be more convenient, easy,

providing more technical skills, more attention, and time, while in-person was seen as higher in self-reported outcome, helpfulness, eye contact, and overall satisfaction.

Although telepsychiatry is generally well accepted, not all reports are unanimous in reporting satisfaction (Bratton and Cody 2000). A gender difference may be emerging with female patients being more satisfied than male patients with telepsychiatry (Monnier, Knapp, and Frueh 2003). How satisfaction is impacted by age and the presence of disabilities is unclear. The presence of a clinician during the interview at the remote site raises questions of technological proficiency, efficiency, confidentiality, and reimbursement (Jones and Ruskin 2001). Psychiatrist satisfaction has not been studied very greatly (Hilty, Luo, Morache, *et al.* 2002). Doninger *et al.* (1986) report that psychiatrists were less satisfied with telepsychiatry compared with in-person interactions. Psychiatrists' concerns are about technical quality and subsequent impact on the physician-patient relationship. Studies show high primary care provider satisfaction (Hilty, Luo, Morache, *et al.* 2002). Studies of health professionals are mixed, with some showing satisfaction (Simpson 2001; Simpson *et al.* 2001; Kopel, Nunn, and Dossetor 2001; Hilty *et al.* 2000, and Harley *et al.* 2002) and others dissatisfaction (Jones *et al.* 2001; Simpson 2001; May *et al.* 2001, and May *et al.* 2000). Rural providers are more satisfied with telepsychiatry consultations than urban or suburban providers (Hilty, *et al.* 2004). On the other hand, satisfaction studies have been criticized (Mair and Whitten 2000) for methodological weaknesses. Furthermore, patients generally give high levels of satisfaction with most health care experiences (Hall and Dornan 1988).

On the other hand, improvements in technology allowing more fine detailed images and clearer and steadier quality have improved clinician satisfaction. Young people who are presently entering medical and psychiatric training are much more comfortable with the role of technology in modern lives and easily see the advantages of such technology in the delivery of health care (Yellowlees, Chan, and Parish 2015).

Effectiveness of Telepsychiatry

An earlier literature review of the effectiveness of telepsychiatry interventions concluded that there was insufficient data at this time to determine conclusively the effectiveness of this methodology, but they concluded that there was a trend for the collaborative model to show modest benefit (Garcia-Lizana and Muñoz-Mayorga 2010). They did state though that telepsychiatry appears to improve accessibility; promote patient education; produce savings in time, cost, and travel; reduce symptoms; result in patient satisfaction, and improve adherence. Overall it is feasible and effective (Garcia-Lizana and Muñoz-Mayorga 2010). More recent studies and reviews, however, conclude that diagnoses made by telepsychiatry are as valid as those made in face-to-face interactions. Clinical outcomes via telepsychiatry are as good, if not better, than face-to-face treatment (Yellowlees, Chan, and Parish 2015).

Studies comparing in-person with telepsychiatry have shown that diagnosis is equally reliable (Baer *et al.* 1995; Baigent *et al.* 1997; Ball *et al.* 1993; Bear *et al.* 1997; Brennan *et al.* 1998; Dongier *et al.* 1986; Elford *et al.* 2000; Frueh *et al.* 2000; Grob, *et al.* 2001; Jones *et al.* 2001; Kirkwood, Peck, and Bennie 2001; Malagodi and Smith 1999; Matsura, Hosaka, Yukiya, *et al.* 2000; Menon *et al.* 2001; Montani, Billaud, Couturier, *et al.* 1996; Montani *et al.* 1997; Revicki *et al.* 1997; Ruskin *et al.* 1998; Wittson, Affleck, and Johnson 1961; Yoshina *et al.* 2001; and Zarate *et al.* 1997). There is equally reliable use of clinical scales (Baer *et al.* 1995), high interrater reliability in child interviews (Elford *et al.* 2000), high interrater reliability of psychiatric diagnosis, and comparable reliability of schizophrenia diagnosis via various rating scales (Zarate *et al.* 1997), reliability of use of the Mini Mental Status Exam (Ball *et al.* 1993; Grob *et al.* 2001; and Jones *et al.* 2001), and reliability of neurologic examination (Craig *et al.* 1999). However, there may be technical limits to accuracy. Visual ratings may be less accurate than verbal ones (Jones *et al.* 2000). Hyler, Gangure, and Batchelder (2005) performed a systematic review

and meta-analysis of 14 studies comparing various psychiatric assessments between in-person and telepsychiatry, showing that in-person and telepsychiatry assessments were not different.

Telepsychiatry is seen as a reasonable alternative to in-person assessment when the latter is not available or practical. Therefore, the literature of telepsychiatry gives fairly solid evidence that clinical assessments are as reliable and valid as those done in-person (Frueh, *et al.* 2004).

In recent years a number of studies have shown telepsychiatry to be clinically effective in the delivery of care (Ball and McLaren 1995). Brown *et al.* (1999) showed similar outcomes between telepsychiatry and traditional care givers support groups. Zaylor (1999) found no difference between telepsychiatry and in-person in the treatment of depression and Schizoaffective DO. He also showed that with attendance for telepsychiatry was better than in-person and length of treatment was less with telepsychiatry. Telepsychiatry has been used to improve continuity of care of persons with serious mental illness discharged from inpatient services to remote communities (Smith 1998). There is also evidence for improved outcome measured in terms of symptom improvement (Kennedy and Yellowlees 2000), reduced transfers for emergencies (Hunkler *et al.* 2000), reduced appointment waiting time (Simpson *et al.* 2000), and reduced hospital admissions (Lyketos *et al.* 2001). In a crossover study at two rural sites providing one clinic per month via telepsychiatry, where previously on-site psychiatric consultation had occurred, on-site in-person services were compared with telepsychiatry. Overall there was little change in functioning, but it increased more with telepsychiatry than in-person. Thus telepsychiatry was at least equal to face-to-face (Rohland 2001). One study showed that remote treatment of depression was as effective as face-to-face treatment for both young and old patients (Ruskin 2000). Other studies have demonstrated positive clinical outcomes utilizing telepsychiatry (Zaylor, Whitten, and Kingsley 2000; Simpson 2001; Zaylor, Nelson, and Cook 2001; Rohland *et al.* 2000, and McLaren *et al.* 2002).

There are some differences though, for instance the assessment of those with substance abuse was shown to take significantly longer than face-to-face assessments (Jones *et al.* 2001). Cognitive evaluations of elderly patients using the Mini Mental Status Exam are significantly lower with telepsychiatry (Montani *et al.* 1996, 1997). Telecommunication equipment was shown to be unable to detect fine tremors (Malagodi and Smith 1999), but this is an older study. On the whole though, most studies of reliability give high interrater reliability and excellent diagnostic reliability (Hilty, *et al.* 2004).

The effectiveness of home health delivered via telecommunications is encouraging (Buckwalter, *et al.* 2002). In a retrospective chart review of 51 cases seen via telepsychiatry and 30 cases seen in-person, using a measure of functioning, there was a statistically significant greater improvement in functioning for those seen via telepsychiatry over those seen in-person. The rate of compliance with the medications and follow-up was also significantly better for those seen via telepsychiatry. Although retrospective and not randomized, the groups were well matched. The improved compliance may contribute to the better outcome in the telepsychiatry (Grady and Melcer 2005). In a study of 28 children who received either in-person psychotherapy or telepsychiatry psychotherapy, those receiving the telepsychiatry treatment had significantly greater depression improvement than the in-person group (Nelson, Barnard, and Cain 2003). In a more recent study 140 patients (de la Cuevas, *et al.* 2006) with depression were treated either in-person or via telepsychiatry by the same psychiatrists for 8 30-minute sessions. Although both groups showed significant improvement, there was no statistical difference in improvement between the two treatment groups. These results are similar to those of Ruskin *et al.* (2004). In a randomized study of 119 adults with depression who received 8 sessions of psychotherapy over 6-month period either in-person or through telepsychiatry, improvement of depression occurred for both groups and there was no difference in outcome. There was also no difference in adherence, dropout, or time-to-dropout rates between the two groups (Ruskin, *et al.* 2004). Research shows that primary care patients who received tele-health services received adequate doses of antidepressants and have higher rates of recovery from depression (Simon, VonKorff, Rutter *et al.* 2000).

Thus to date, studies examining psychiatric care, measuring patient satisfaction, symptom improvement, accessibility to care, and cost, have shown telepsychiatry to be as effective as face-to-face care (Kornbluh 2014). It has been demonstrated that psychiatric evaluations, medication management, and Cognitive Behavioral Therapy delivered via telepsychiatry are equivalent to face-to-face involvement. Group therapy may also be successfully delivered via telepsychiatry (Grady 2012).

Another review of telepsychiatry services asserts that clinical outcome studies support the conclusion that telepsychiatry is as good as face-to-face care in terms of diagnosis and treatment with outcomes of decreased hospitalization time, increased medication adherence, and increased symptom reduction (Hilty, *et al.* 2015). In child psychiatry there are a large number of studies showing acceptability, feasibility, and efficacy and that with some populations, such as Autism Spectrum patients, telepsychiatry is possibly better than face-to-face. There is less evidence with geriatric populations, but assessment, cognitive intervention, and outcomes are similar to face-to-face care (Hilty, *et al.* 2015). As a consequence, telepsychiatry is a cost-effective strategy to meet the needs of the rural elderly by overcoming such problems as “limited specialist availability, geographical separation between patient and specialist, and limited transportation” (Sumner 2001: 370). It has been shown to be effective with ethnically and culturally different populations, including Hispanic/Latino, Asian, Native American, and Eastern European populations (Hilty, *et al.* 2015). There is increasing evidence of effective psychotherapy via telepsychiatry, usually involving adults with depression, anxiety, and PTSD compared to face-to-face psychotherapy (Hilty, *et al.* 2015). Telepsychiatry is being increasingly augmented by other technology, such as Internet and other Web-based applications (Hilty, *et al.* 2015).

A review of over 100 studies comparing telepsychiatry with face-to-face assessment and treatment found overall comparability, satisfaction, and cost-satisfaction. Although there are concerns by clinicians over difficulty developing rapport, and over lack of confidentiality and limited capacity in emergency situations, there are no published reports of these adverse events (Hubley, *et al.* 2016).

Some recent examples of the effectiveness of telepsychiatry include a meta-analysis of telepsychology treatment studies of PTSD which determined that both internet and video-based treatments showed promise for patients with PTSD, especially on a short-term basis, but there was insufficient data to determine its efficacy compared to face-to-face treatment. Nor could the sustainability of the benefits be determined (Bolton and Dorstyn 2015). In another study the use of mobile health technologies with obese patients with severe mental illness helped to increase activity level and were satisfying and motivating (Naslund, *et al.* 2015). The diagnosis of Autism Spectrum Disorder in adolescents and young adults was equally accurate, effective, and satisfying in face-to-face and remote telepsychiatry settings (Schutte, *et al.* 2015). Telepsychiatry delivered pharmacological and psychotherapeutic treatment for ADHD was better than treatment as usual combined with a telepsychiatry consultation to the primary care provider (Rockhill 2015). In another study, a telehealth service model delivering psychopharmacology and psychotherapy for ADHD via telepsychiatry was more effective than standard care within a primary care setting augmented by a telepsychiatry consultation (Myers, *et al.* 2015). Preliminary studies suggest that telepsychology techniques were effective in promoting behavioral health care among people living with HIV/AIDS (Kempf, *et al.* 2015). Reviews of clinical studies show that telepsychiatry is an effective means of delivering cognitive behavioral therapy, virtual reality exposure therapy, and mobile therapy (Aboujaoude, Salame, and Naim 2015).

There is growing evidence that telepsychiatry encounters may actually deliver a **higher** standard of care than face-to-face encounters due to increased patient satisfaction, increased patient-focused care, increased ease of collaboration, and the clinical use of the “virtual space” that occurs in telepsychiatry. There is evidence that the empathic connection achieved in telepsychiatry is greater than that of face-to-face possibly because of the increased eye contact that occurs. There is also less patient anxiety and patients feel more in control with less of a power difference between the psychiatrist and the patient in telepsychiatry. It is more egalitarian. All these contribute to an increased level of patient

satisfaction. Telepsychiatry also allows better collaboration between the psychiatrist and the local providers, patient, and their family (Yellowlees, Chan, and Parish 2015). The presence of a “virtual space” in telepsychiatry may also contribute to a higher level of care, by enhancing a sense of security, allowing more direct feedback, therapeutic interaction with the local provider and patient (“good cop, bad cop”), and the provision of psychological space. This is especially true when working with children with behavioral disturbances, allowing more objective observation and empathic interaction at the same time. It is also important for patients, allowing increased intimacy. Research shows that people are more likely to be open and intimate via video connections than face-to-face (Yellowlees, Chan, and Parish 2015). Some have suggested that it gives the client an increased sense of control when they control the camera (Capner 2000). The fact that the patient is less likely to meet the care giver in the community allows increased openness and decreased embarrassment. It also allows for the possibility of meeting with experts not otherwise available or seeing a clinician where there is language and cultural commonality (Yellowlees, Chan, and Parish 2015). Psychiatric evaluations can be enhanced by the use of body monitoring devices, such as body movement devices that may help in the diagnosis of such conditions as mania or ADHD (Yellowlees, Chan, and Parish 2015).

Beyond its effectiveness in delivering clinical services, telepsychiatry has also been successfully used to conduct research. For instance, the Children’s Attention-Deficit/Hyperactivity Disorder (ADHD) Telemental Health Treatment Study (CATTS) involving 223 children and 150 primary care providers demonstrated that a randomized clinical trial could be successfully carried out via telepsychiatry, including recruitment, retention, intervention fidelity, and assessment completion (Myers, Vander Stoep, and Lobdell 2013). Telepsychiatry is also being used for the training of local, remote care providers. For example, telepsychiatry was successfully used to train rural providers in Cognitive Behavioral Therapy techniques and to supervise their care of adolescent patients (Jones 2015).

Ethical Issues

Ethical standards for telepsychiatry should not differ from those held in any other clinical psychiatric setting, patient comfort with telepsychiatry (i.e., informed consent) should be obtained, privacy and confidentiality need to be assured, boundaries need to be assured especially when either party is not in an office setting, working at a distance raises issues of continuity of care versus abandonment, and issues of equity in access to Internet are important (Sabin and Skimming 2015). The use of telepsychiatry does not alter the expected “standard of care” (Cash 2011). Informed consent is required. Having a clinician available at the remote site is helpful and can alleviate gaps in assessment (Cash 2011). For patients whose safety is at significant risk telepsychiatry care needs to be equivalent to any other type of care that can be delivered to the patient and should involve the primary care provider and ideally be held in the primary care providers offices, other services and resources in the area need to be considered, and other support persons should be involved (Freudenberg and Yellowlees 2014). Remote delivery of psychiatric care requires cultural and linguistic competence (Grady 2012). Given the increased contexts and modalities of clinical interaction and the increased intimacy that may occur, maintaining boundaries is even more critical (Yellowlees, Chan, and Parish 2015). Privacy is especially a concern in forensic and other institutionalized settings for telepsychiatry (Caudill and Sager 2015).

Challenges remaining

Challenges remaining to the implementation of telepsychiatry include a bias against telepsychiatry, especially among health system leaders; insufficient training; business environment challenges, such as lack of reimbursement or parity; licensing; and prescription policies, which all present barriers to the successful expansion and utilization of telepsychiatry. Technological issues are rarely a problem anymore (Chan, Parish, and Yellowlees 2015).

It is interesting that just 10 short years ago, telepsychiatrists were disparaging the fact that despite the many potential advantages of telepsychiatry it had failed to become a routine part of healthcare delivery, in part due to technological issues (Norman 2006). It was of concern that various financial, technological, administrative, political, and clinical factors impeded the establishment and maintenance of telemedicine programs (Werner and Anderson 1998, Chen et al 1999). Despite government support for telepsychiatry, it had not been widely accepted due to a “general lack of third-party reimbursement, state licensing requirements, inadequate telecommunication networks and insufficient standards for privacy and security” (Miller 2001: 1). The volume of teleconsultations was low even when available (Hassol *et al.* 1997). Many difficulties were seen as facing telehealth, including “the need for training and incentives, the fear of depersonalization, the potential loss of privacy, the various states of readiness, the problems of reimbursement, and the scarcity of models/frameworks to deal with these uncertainties” (Jennett *et al.* 2000: 368). Further challenges included “insufficient infrastructure and resources for programs, lack of funding, need for training, need for a technological culture shift, lack of standardized policies, scarcity of valid and reliable evaluation models/frameworks, and problems with technology” (Jennett *et al.* 2000: 368). Some telepsychiatry programs failed due to inadequate needs assessments, inadequate financial and other administrative support, or telemedicine did not match with the overall mission of the organization. Furthermore, inadequate consultant support, absence of a physician champion, and the large complexity of cases contributed to failures. Inadequate technical support was also an issue in failures (Hilty, Luo, Morache, et al. 2002).

Yet in the last 10 years many of these barriers and challenges have been overcome. Technology has proceeded at an incredible pace making access to specialty care all but universally possible. Parity laws and large degrees of government support have increased access. However, the failure to either develop or sustain telepsychiatry services now appears to more clearly rest on human rather than technological issues. The critical aspect of innovation is not invention, but pragmatic implementation (May, *et al.* 2001). Vought *et al.* (2000: 528) report that they perceived a resistance to the establishment of a telepsychiatry service by practitioners who had “been practicing for decades without available mental health care services and did not see a need to alter their practice patterns.” This too is a thing of the past. Telepsychiatry is becoming increasingly central to the practice of psychiatry on a day-to-day basis and remote practitioners are more accepting. The main barriers now are barriers that prevent access to any health care, such as being uninsured. While there are certainly areas in the country that lack access to specialty mental health care, issues of manpower are more critical than technological issues. Thus a major limitation is the availability of skilled clinicians to provide the services.

Several recent graduates from the UVA Department of Psychiatry residency training program have begun careers in telepsychiatry. Our residents training in telepsychiatry is a clear plus in their job hunt after graduation.

Results of Telepsychiatry

Hilty, *et al.* (2006) argue that there are a series of common denominators that mark successful services – mutual incentives for primary care and consultant physicians, commitment at all levels to pursue telemedicine and other alternative, systematic and multiple interventions that meet the specific needs of the site, systematic efforts at the primary care site to monitor patient flow and outcomes, and psychiatric consultants who are able to bridge the urban academic and rural primary care differences. The successful program both meets the needs of the primary care site while providing an efficient mode of consultation (Hilty, *et al.* 2006: 156). Factors that tend to facilitate the integration of mental health services with primary care include an emphasis on teamwork and building relationships between providers from different disciplines. The integration needs to be supported by infrastructure and systems factors such as close physical proximity, joint medical records, and protocols for treating mental

health problems. A long-term commitment to quality improvement and interdisciplinary training also facilitates integration (Kirchner *et al.* 2003).

Efforts to provide mental health care within the primary care setting may be seen as having an impact on three levels: the patient, the practice, and the community.

Patient Level – In examining the quality of doctor-patient communications in telemedicine it is helpful to separate the technical (diagnosis, treatment, etc.) aspects from the interpersonal components (acceptance and satisfaction). There is an assertion that doctor-patient communications are different via telecommunication, but there has been little effort to clarify what this difference is. Early on trust was thought to be negatively impacted in telecommunication, which might combine with the general decrease in public trust for the medical system (Miller 2001). Miller (2001) reviewed 38 articles that examined communication between health care providers and patients. Studies were of three types: surveys of provider and community attitudes, post-encounter surveys of participants in a medical consultation, and qualitative analyses of medical encounters including participant and non-participant observation, in-depth interviews, case reports, archived resources and content analysis. All of type 1 was rural. Not just psychiatric consultations were included, although they were a large proportion. Communication findings were grouped into 23 categories. Overall results were highly positive in favor of telecommunication. In all but two categories (non-verbal behavior and lack of touch) positive results outnumbered negative results. The categories with the most positive results over negative were general communicative efficacy, patient and provider comfort, patient-provider relations, anxiety/nervousness, miscellaneous affect, audio quality and video quality. The majority of finding from post-encounter surveys were positive of patients (93%), consultants (72%), and local providers (100%). However, fewer qualitative studies (58%) were favorable. Qualitative studies are seen as supplying insights not able to be rated as positive or negative. Although post-encounter surveys overwhelmingly supported positive communication via telemedicine, qualitative studies also supported telecommunication, just not as strongly. Patients were far more satisfied than specialists (Miller 2001). Cukor *et al.* (1998) argue that the clinical information is primarily via the audio, while the video segment provides a social presence or context for the audio. Older qualitative studies revealed problems with the nature of doctor-patient communications via telepsychiatry (Cukor *et al.* 1998, Manchanda and McLaren 1998, May *et al.* 2000). Difficulties assessing non-verbal communication may impact assessment of affect (Wootton *et al.* 2003) and the ability to be supportive (Ghosh *et al.* 1997).

However, evidence increasingly confirms that the ability to form a clinical alliance over teleconferencing is equal to that of in-person (Manchanda *et al.* 1998, Stevens *et al.* 1999). Given the evidence cited above about the potentially higher level of care provided via telepsychiatry compared to in-person psychiatry, most fears of lack of connection and trust between the patient and the telepsychiatrist have been laid to rest. Attempts to actually assess therapeutic alliance have shown successful development of a relationship in telepsychiatric psychotherapy (Manchanda and McLaren 1997). Others have argued that telepsychiatry interactions actually enhance assessment, because they eliminate potentially distracting elements (McLaren *et al.* 1996 and Savenstedt *et al.* 2005). Some have suggested that patients may find telepsychiatry less threatening than in-person (Kavanagh and Yellowlees 1995) and are consequently less inhibited (McLaren *et al.* 1995 and Onor and Misan 2005).

Effect on Practice – Research shows that the presence of a connection with mental health specialty care providers changes the nature of the primary care practice. Hilty, Yellowlees, and Nesbitt (2006) report the findings on 400 consecutive referrals to a telepsychiatry service by individual primary care providers from rural clinics over time. Data was gathered over 6 ½ years. They conclude that the use of the telepsychiatry service by the primary care providers changed over time. Initially referrals were more for diagnostic issues, but later were more related to treatment planning. Satisfaction improved with time (Hilty, Yellowlees, and Nesbitt 2006). Telepsychiatry consultations provide educational benefits for primary care providers (Harrison *et al.* 1996, Maheu *et al.* 2001, and Hsiung

2002), thus the primary care providers confidence treating mental health concerns increased with contact. Referrals for mental health specialty care are often based on the combination of the primary care providers' confidence in being able to manage and the patient's access to specialty care (Norman 2006).

Effect on Community – The rural primary care providers' perception of increased ability over time to treat more patients has benefits for the community. Communities benefit from telepsychiatry by retaining patients in the community, decreased cost of transfer, higher quality of care, opportunities for staff education, greater recruitment and accreditation (Hilty, *et al.* 2004). This may also impact on other practitioners in the community. A general improvement in the mental health of the community may affect such indirect measures as suicide rates, DUIs, and the frequency of delinquent and aggressive behavior.

Cost

Cost effectiveness is a concern in assessing the impact of treatment. "Determining cost effectiveness should consider factors of cost, quality, and access for providers, patients, payers, and society" (Goins, Kategile, and Dudley 2001: 58). Determining the cost of an intervention is very complicated. Cost factors include: "the type of service provided, the total usage of the telemedicine service, travel costs to patients, type of equipment involved, the differing costs of different types of services by providers, the acuity level of patients, and the refusal rate of patient" (Goins, Kategile, and Dudley 2001: 58). When calculating cost both direct and indirect costs for the patients, clinics, providers, and society should be included. Direct costs include equipment, installation of lines, other supplies, and rental of lines, salary and wages, administrative expenses, data transmission costs, fees for service, and maintenance and upgrade of equipment (Hilty, *et al.* 2004). Cost analysis of telemedicine should include start-up costs and staff training costs (Bose *et al.* 2001 and Jones *et al.* 2001). In calculating the cost of health care in rural areas indirect costs such as transportation and loss of productivity for care providers, as well as the cost of non-treatment must be included.

The treatment of mental health issues decreases the overall utilization of the medical system and thus overall cost. Furthermore, the cost of telepsychiatry services is decreasing (Sumner 2001). Studies show that telepsychiatry is less costly for patients, reducing travel cost and time and loss of work (Bose *et al.* 2001 and Jones *et al.* 2001). There is already a cost advantage of treating depression in primary care settings. The cost effectiveness of telepsychiatry interventions has been studied, but these studies are often incomplete. Trott and Blignault (1998) show that the cost of telepsychiatry was significantly less than conventional services but the study did not take into account the cost of maintaining and upgrading equipment. There are studies of telepsychiatry being cost effective (Hailey *et al.* 1999; Alessi *et al.* 1999; Doze *et al.* 1999). Hyler and Gangure (2003) review telepsychiatry studies that analyze cost. They located 12 such studies. Seven of the studies determine that telepsychiatry is economically viable, while only one determined that it was not worth the cost. The analysis is quite limited though, because of the small number of studies, their methodological weaknesses, the lack of explicitly defined sources of funding, the lack of consistent presentation of costs, and the non-comparability of factors across studies. Most of the studies did not address issues of outcome or efficacy. Some of the studies that analyzed the break-even point compared to in-person care show that the higher the volume the less costly is telepsychiatry. Their conclusion was that telepsychiatry is cost effective in certain situations (Hyler and Gangure 2003). Advances in technology have made the technology cost of telepsychiatry, one of the major costs, increasingly small. At present telepsychiatry programs are not only effective, but are sustainable given funding support and technological advancements (Lauckner and Whitten 2015).

Conclusions

1. Telepsychiatry and other technological ly based efforts to provide and enhance mental health treatment are effective, reliable, and cost effective.
2. Telepsychiatry represents a powerful means of providing needed mental health care to not only remote and resource poor areas, such as rural sites, but are increasingly being used even in urban areas to make treatment more available where other barriers, such as lack of mobility, language and cultural differences, and decreased local availability of providers occur.
3. Provision of mental health care via telemedicine improves patient health and well-being, local providers' effectiveness and ability to provide holistic care, and community and population health.
4. Technological issues are much less of a barrier to the development of telepsychiatry programs. Rather, lack of reimbursement, lack of insurance, lack of institutional support, and lack of an adequate supply of providers are more critical.

Centers for telepsychiatry: University of California, Davis; University of Kentucky; University of Washington; University of Arizona; University of Arkansas; Duke University; Harvard; University of Colorado; and the University of Louisville.

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