

TITLE: Telehealth Services for the Treatment of Psychiatric Issues: Clinical Effectiveness, Safety, And Guidelines

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CONTEXT AND POLICY ISSUES

Telepsychiatry is defined as the use of information and communication technologies to provide psychiatry services from a distance.¹⁻⁴ Mainstream telepsychiatry seems to be primarily videoteleconference-based.¹⁻⁶ However, telepsychiatry services have also been provided using standard telephones with or without some type of voice-recording technology, and written information via the internet.⁵ Telepsychiatry has been performed at several sites including hospitals, emergency rooms, community mental health centers, clinics, physician offices, nursing homes, assisted living facilities, prisons, schools, and patients' homes.^{1,2,5,6} Care provided through telepsychiatry includes pre-hospitalization assessment, in-hospital care, assessment post-hospital follow-up care, scheduled and urgent outpatient visits, medication management, psychotherapy, consultation, and psychological testing. Telepsychiatry interviews may be conducted between physicians in consultation, between a physician and another health care provider (mental health care practitioner), or between mental health practitioners and a patient who requires or uses mental health care.^{1,2,4}

Telepsychiatry is advantageous in situations where patients lack access to clinicians who would be able to treat their mental health most effectively.⁵ It serves to address barriers to care such as living in isolated or rural areas with a shortage of psychiatrists or other mental health professionals, as well as in situations where a clinician fluent in the patient's native language is unavailable. Thus, telepsychiatry allows professionals to widen their reach to patients in a cost-effective manner, ameliorating the disparities in specialty care without any known absolute exclusion criteria or contraindications for any specific psychiatric diagnoses, treatments, or populations.^{4,5,7} Disadvantages of telepsychiatry include the fact that some areas do not have the necessary telecommunication connectivity, and diagnostic assessment may be liable to variations according to technical issues including devices characteristics, bandwidth and resolution, and even room setup where the patient receives the care.^{1,3,4}

Although many studies and reviews have been published on telepsychiatry and telemental health care, the area of telemedicine is generally relatively new and still evolving along with advancements in information and communication technology. The aim of this report is to provide

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a summary of current guidelines and evidence of clinical effectiveness and safety of telepsychiatry services to facilitate decision to leverage telehealth/telemedicine in emergency and non-emergency psychiatric situations.

RESEARCH QUESTIONS

1. What is the clinical effectiveness and safety of using telehealth services in both emergency and non-emergency psychiatric situations?
2. What are the evidence-based guidelines associated with the use of telehealth services in both emergency and non-emergency psychiatric situations?

KEY FINDINGS

There is evidence supporting the effectiveness and feasibility of a videoconference-based telepsychiatry service, and its use can offer increased access to specialty mental health care for residents of rural or remote areas. Factors that influence the effectiveness of telemental health care include connectivity between sites as well as the bandwidth and resolution employed to provide the service. Diagnostic assessment conducted through videoconferencing-based telepsychiatry requires high to medium bandwidth and resolution to identify non-verbal behaviors such as tics, dysmorphia, or abnormalities in affect. The included guidelines recommend that emergency protocols and procedures specific to each of the telepsychiatry services being provided and environments of care should be developed before the actual care is given.

METHODS

Literature Search Strategy

A limited literature search was conducted on key resources including PubMed, PsychINFO, The Cochrane Library (2014, Issue 12), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and December 10, 2014.

Selection Criteria and Methods

One researcher screened retrieved citations and abstracts to select titles for full-text article review. Full-text publications deemed to meet the selection criteria outlined in Table 1 were included in this review.

Table 1: Selection Criteria	
Population	Adults and youth with acute or chronic mental health distress or issues
Intervention	Telehealth or telemedicine (in both emergency situations and in non-emergency situations) for assessment and/or consultation
Comparator	<ul style="list-style-type: none"> • Patients seen in hospital

Outcomes	<ul style="list-style-type: none"> • Clinical effectiveness (patient benefits and harms) • Guidelines
Study Designs	Health Technology Assessments (HTA)/ Systematic review (SR)/Meta-analysis (MA); Randomized controlled trials (RCTs); and Guidelines.

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria in Table 1. Studies were also excluded if they were published before 2010, if they were non-systematic reviews, and if they were duplicate publications of an already selected study or if they were included in one of the selected systematic reviews (SR).

Critical Appraisal of Individual Studies

The SRs were appraised for quality using the AMSTAR tool,⁸ while the randomized controlled trials (RCTs) and clinical practice guidelines (CPGs) were appraised using the SIGN-50 methodology checklist for RCTs⁹ and the new Appraisal of Guidelines for Research and Evaluation (AGREE II) instruments, respectively.¹⁰ Instead of calculated numerical scores, the strengths and limitations of individual studies and guidelines were summarized and presented narratively.

SUMMARY OF EVIDENCE

Quantity of Research Available

The literature search yielded 397 citations of which 44 potentially relevant studies were selected upon screening of titles and abstracts. Grey literature searching identified additional three references bringing the total pool of potential papers to 47 of which seven were selected for inclusion in this report. Of these, two were SRs,^{2,11} two were RCTs,^{5,6} and three were CPGs.^{1,3,4} The excluded articles did not meet the inclusion criteria listed in Table 1. The PRISMA flow chart in Appendix 1 outlines the selection process. Additional references of potential interest are provided in Appendix 2.

Summary of Study Characteristics

Characteristics of included studies have been provided in Appendix 3.

Country of origin

One of the SRs² included 10 individual systematic reviews involving a total of 216 primary studies from multiple countries including the USA and Canada, of which 43 were RCTs. The other SR¹¹ included nine studies including six RCTs, and one each of case study and dependent group, and independent group studies, with seven from USA and one each from Spain and Germany. The two included RCTs^{5,6} were conducted in the USA. One of the included CPGs¹ is from South Africa while the remaining two^{3,4} are from the USA.

Study setting

Study settings for studies included in one of the SRs² were described as Mental Health Services with one described as Mental Health Services and Forensics. The other SR¹¹ included studies that delivered telemental healthcare to clinically unsupervised settings specified as patients' homes or remote locations. The setting for one of the RCTs⁵ was a community health center which served low-income uninsured and underinsured individuals. The health center has a dedicated telemedicine network connected to a University and utilized for chronic disease education and support. The setting for the other RCT⁶ was a Veteran Affairs (VA) clinic.

None of the CPGs²⁻⁴ specified settings.

Patient population

One SR² described its population of interest ($n > 5,153$) as "mental health care users or patients." The number of patients informing the evidence was not stated for three studies (an evidence based guideline, a utilization document, and a cost document) included in this SR.² The other SR¹¹ included a patients ($n=1822$) involved in cognitive-behavioral therapy (CBT), depression home monitoring, administration of psychological tests, and tracking of alcohol consumption. Specific information about participants' demographics and details of their disease conditions were not provided in any of the SRs included in this report.

In one of the RCTs,⁵ 167 adult Hispanic patients diagnosed with major depression were selected following recruitment from a community health center through annual registration, advertisements/signs, and provider referral between June 2008 and October 2009. The mean (SD) age of patients in the study was 43.2 (11.9) for those assigned to receive treatment as usual (TAU) and 42.8 (12.0) for those who received psychiatry services through a video webcam (WEB). Most of the participants in this project were women (88%), and the majority rated their health as good or better, although a third of participants had been hospitalized at one point for a medical problem. Most of the participants had not received mental health treatment previously.

Participants in a second RCT⁶ were male combat veterans ($n=125$) with post-traumatic stress disorder (PTSD) diagnosed per the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV). Nearly one half (46.6%) were Caucasian and the mean (SD) age of the total sample was 55.3 (12.5) years. Current/Lifetime comorbid psychiatric disorders among the participants were reported as major depressive disorder (52%/64%), anxiety disorder (19.2%/22.4%) and substance use disorder (17.6%/76.8%).

All the CPG²⁻⁴ seem to be applicable to all mental health patients without an absolute exclusion criteria defined for any patient population.

Interventions and comparators

In one SR,² telepsychiatry, defined as live synchronous videoconference-based clinical psychiatry using either ISDN or IP connections, was the intervention. Most of the studies in the other SR¹¹ used standard telephones to deliver treatment, with a few using some type of voice-recording technology and one that used a written form of therapy via the internet. Specific safety plans used in the studies included exclusion criteria and specific symptom monitoring tools such as the Patient Health Questionnaire (PHQ) administered with interactive voice-recording home

monitors during treatment protocols. Exclusion criteria employed screening plans to exclude participants with a high potential of becoming at risk, such as those who were concerned that the presence of family members might hinder the free disclosure of information and trauma patients who felt that discussing the condition over the phone might be too overwhelming and difficult. Information from on-treatment safety instruments helped care managers to ascertain participants' safety and alert the study clinicians with recommendations to avert adverse outcomes.

In one RCT,⁵ eligible patients were randomly assigned to receive WEB or TAU in a primary care setting, with an equal chance of selection for each approach. Randomization was achieved using a computer-generated list, and assignment was concealed to both the recruiter and the patient until after informed consent and eligibility screening procedures. It was not feasible to maintain concealment beyond this point because patients had to be informed about treatment conditions, including timelines for research follow-up, and schedules for telepsychiatry sessions for those in the WEB group. Patients in the WEB group received monthly telepsychiatry service for 6 months at the health center provided by a psychiatrist using an online virtual meeting program. Patients in the TAU group received their care from their providers who could refer patients to one of several in-house mental health specialists if needed. WEB patients could also access the mental health specialist if such an event was considered appropriate by the psychiatrist. It was clear from the context that psychiatrists differed from service providers; however, details were not given to clarify the distinction between the two.

In the second RCT,⁶ patients were randomly assigned through block randomization to one of two treatment modalities of the cognitive processing therapy-cognitive version (CPT-C): either via videoteleconferencing (VTC) or in-person. Treatment sessions occurred twice weekly over a 6-week period and involved twelve 90-minute group CPT-C protocol sessions delivered twice weekly by a therapist and co-therapist pair at the local VA clinics of the participants. Participants were also given a CPT-C workbook with didactic information and homework assignments. All sessions were audiotaped and reviewed weekly by the treatment supervisor to monitor competence and adherence to treatment protocol.

The CPGs apply to telemental health (TMH) services provided through videoconferencing-based technologies including mobile devices such as smartphones, laptops and tablets.

Outcome Measures

For one of the included SRs,² outcomes of interest were evidence of effectiveness (defined as reliability of assessment, reliability of treatment, and improvement in outcomes), and feasibility as measured by utilization, satisfaction, cost, cultural acceptance, and integration into health systems. The outcome of interest in the other SR¹¹ was safety of telemental healthcare delivered to clinically unsupervised settings, although the authors reported that the goal of most of the included studies was to investigate the efficacy of specific therapies or validity of assessments conducted via a particular telemodality compared to in-person analogs.¹¹

Outcome measures of interest in one RCT⁵ were feasibility and acceptability of telepsychiatry. Feasibility was assessed using depression outcomes, functional days (unproductive or days lost), and whether WEB and TAU patients differed in their appointment keeping. Acceptability was assessed by comparing appointment keeping for primary care versus telepsychiatry, patients' perceived working alliance with their provider, visit satisfaction, and antidepressant use. Symptoms of depression were monitored using the Personal Health Questionnaire 9 (PHQ-

9), a reliable and valid measure of depression severity,⁵ which uses DSM-IV criteria for depression. Patient-reported impairment caused by their psychiatric condition was rated using the Sheehan's Disability Scale (SDS) consisting of three main domains on a scale of 0 (not at all) to 10 (extremely). The nine-item Visit Specific Satisfaction Questionnaire (VSQ-9) was used to assess patient–doctor communication while the Working Alliance Inventory Short Form was used to assess the patient-clinician/provider working relationship during the specific clinic visit.

In the other RCT,⁶ PTSD severity was the primary clinical outcome and it was measured with the Clinician Administered PTSD Scale (CAPS) at baseline and all follow-up assessments. It was determined *a priori* that if the upper limit of the 95% confidence interval (CI) for the differences in the intervention effects was less than the preset 10% non-inferiority margin, then VTC was non-inferior to in-person treatment. Satisfaction with services in both conditions was assessed using the Charlesto Psychiatry Outpatient Satisfaction Scale-VA, a 16-item measure adapted to evaluate satisfaction among veterans treated within VA clinics. Satisfaction with the VTC modality was also assessed using the Telemedicine Satisfaction and Acceptance Scale, which is an 11-item tool used to measure the experiences and comfort of participants' receiving treatment through a digital communication medium. Other measured outcomes included participants' beliefs about treatment credibility and expected outcomes assessed using a 4-item Treatment Expectancy Questionnaire, and therapeutic alliance assessed post-treatment using an abbreviated version of the Group Therapy Alliance Scale.

Outcomes of interest of the CPGs relate to effectiveness and safety for all mental health conditions.

Summary of Critical Appraisal

Appendix 4 provides a summary of critical appraisal of the included studies.

The objectives of the SRs were clearly stated and inclusion and exclusion criteria provided were well-defined. One SR,² described as “a systematic review of systematic reviews”, included ten SRs covering effectiveness of videoconference telepsychiatry, which were independently screened and assessed for methodological quality by two reviewers following a systematic search of citations from 2000 to 2011 using multiple databases, the Cochrane Controlled Trial Registry, unpublished abstracts through NEXUS and internet search engines, as well as grey literature such as published reports, theses, and conference proceedings; with disagreements resolved by consensus. The computed quality score (QS) of each of the reviews included in this SR² were reported as ≥ 22 on revised assessment of multiple reviews (R-AMSTAR) rating in which 44 represents the highest quality. The included studies were also assessed for publication bias. The authors excluded non-systematic reviews, overviews, clinical trials and reviews of non-clinical investigations, citing “the large number of systematic reviews in the current telepsychiatry literature and one systematic review of systematic reviews of telemedicine” as the reason.²

The other systematic review¹¹ was based on comprehensive literature review, however the selection criteria and the number of investigators who made the selection were not provided. Furthermore, it was not indicated whether the included studies were assessed for publication bias. Therefore it is unknown whether some bias may have been introduced due to the manner of selection which could influence the study findings. In addition, the quality of the included studies was not provided and there is no explicit link between the findings and the quality of the

studies. However, the authors caution that their conclusions are based on limited studies indicating that they may have limited applicability.

One of the included RCTs⁶ was well-done without major quality issues that could affect the reported findings. The study design was clearly described and the implementation was rigorously controlled through random assignment of participants, using a predefined non-inferiority margin, provision of a sample size calculation, and careful monitoring of therapist fidelity and follow-up assessment up to 6 months. The other⁵ did not indicate whether a sample size calculation was performed to determine ability of the study to detect important clinical outcome differences between the treatment arms. Both RCTs had generalizability limitations with one of them involving only male combat veterans with PTSD,⁶ and the other including only low-income Hispanics.

All the practice guidelines^{1,3,4} included in this report focused on video-based mental health services. Thus it is not known how their recommendations will apply to non-video based TMH modalities. One of the practice guidelines¹ was based on the American Telemedicine Association (ATA) practice guideline,⁴ with adaptations to meet the needs of a particular province in South Africa. Therefore, while majority of its recommendations are a duplication of the ATA guideline, the generalizability of the added recommendations to other locations including Canada is unknown. On itself, the ATA practice guideline⁴ included in this report has some quality issues such as lack of procedure for evidence identification and selection, grading of evidence, and absence of a clear link between evidence and its requirements, recommendations, and actions. However, the authors cite Evidence-Based Practice for Telemental Health,³ another ATA document included in this report which addresses these issues as a complementary guideline. All the guidelines adequately cover clinical, technical, and administrative issues and provide important information for the effective and safe practice of telepsychiatry.

Summary of Findings

Further details on summary findings have been provided in Appendix 5

What is the clinical effectiveness and safety of using telehealth services in both emergency and non-emergency psychiatric situations?

Key findings of one of the SRs² were that telepsychiatry is a reliable means of conducting assessments in situations where it is difficult or impractical to arrange face to face assessments and there is evidence to support the use of videoconferencing to conduct neuropsychological tests. Furthermore, telepsychiatry provided the additional benefit of enabling more than one professional opinion, though this was not an intended goal. However, the SR² reported that very few studies have reviewed the effectiveness of telepsychiatry in improving the outcomes for patients or clients. Therefore, although positive outcomes have been reported for the management of depression, post-traumatic stress disorder, bulimia nervosa and psychosis, the evidence was not enough to support strong conclusions about effectiveness. In this SR², one of its included studies found that videoconferencing (VC) telepsychiatry programs had low utilization (average 16 consultations, range 4.7 - 34 per program per month) with few client sites while another of the included studies of the feasibility measures of telepsychiatry concluded that telepsychiatry could be cost-effective in selected settings and financially viable if used beyond the break-even point in relation to the cost of providing face to face services. According to the authors of the SR², studies in Canada have indicated that the cost of 396 VC consultations a

year or seven consultations per week were the same as a travelling psychiatrist to provide face to face consultations, and setup and operating costs could be reduced substantially by using the equipment for other clinical, administrative and educational services.

The second SR¹¹ found that the use of PHQ with either voice-recording or web-based remote access monitors was a feasible method of detecting potentially depressed patients and those with increased symptom severity during treatment who may need intervention to avert adverse safety outcomes while receiving telemental healthcare.

One RCT⁵ found no differences in acceptability to patients between telepsychiatry services provided by WEB or TAU as measured by completed appointments. However, patients who used the WEB option were significantly more likely than those in the TAU group to use antidepressant medication, and reported a significantly higher working alliance and more satisfaction with their with the psychiatrist compared with TAU patients.⁵ Although WEB and TAU patients showed similar treatment gains for depression and did not differ in the number of unproductive or lost days at work or the proportion of primary care or mental healthcare appointments that were completed, the investigators could not strongly conclude feasibility of telepsychiatry because their expectation based on the working hypothesis was that the WEB option would produce superior outcomes. Therefore, they advise that this observed similarity ought to be considered against the fact that there was enhancement in the in-person mental health services model of primary care after the project was first proposed, and it is probable that without the enhancement the WEB group would have superior feasibility outcomes than the TAU group. Additionally, it was mentioned that a longer monitoring period than the six months used in the study may show a more sustained treatment gain among the WEB patients given the already known higher relapse rates among primary care patients who generally receive low-intensity pharmacotherapy and inconsistent follow-up.

In the other RCT,⁶ both the VTC and in-person treatment conditions resulted in significant reductions in symptoms as measured by CAPS scores at each follow-up time point. At least 50% of the participants reported significant clinical reductions in PTSD symptoms during the study. At the end of the treatment, 29.0% of those who completed CAPS assessment no longer met criteria for current PTSD. CAPS scores at 3-month and 6-month follow-up indicated that 29.8% and 26.4% of participants did not meet criteria for current PTSD.⁶ The difference in clinical outcomes between the two modalities was not statistically significant, and non-inferiority of VTC to in-person treatment was concluded because the upper limits of 95% CIs did not exceed the predetermined 10% margin at any of the three follow-up time points. High levels of therapeutic alliance and satisfaction with the services were achieved, and participants reported moderate level of confidence in treatment credibility and expectancies of treatment outcomes. No differences were found between the treatment conditions with regards to these outcomes. Participants in the VTC arm reported high levels of satisfaction with the modality as determined by mean (SD) score of 46.9 (6.7) out of 54 possible on the Telemedicine Satisfaction and Acceptance Scale. No adverse events were observed for any participants.

What are the evidence-based guidelines associated with the use of telehealth services in both emergency and non-emergency psychiatric situations?

The literature search produced three guidelines all of which provided guidance for VC-based telemental health services.^{1,3,4} Some of the clinical aspects covered by the guidelines include issues about location (setting) and identification of patients and professionals rendering the TMH service. Other points addressed included telepsychiatry interviews, the physical

environment and collaboration with patient's treatment team. The guidelines also provide technical recommendations with respect to device characteristics, connectivity, and suitable bandwidth and resolutions for various processes in TMH care. Furthermore, the guidelines provide administrative recommendations addressing issues such as the qualification and training of professionals, documentation and record keeping.

Many of the guideline recommendations related to telepsychiatry services in supervised settings in the presence of trained medical personnel to mitigate adverse outcomes and effectively handle emergencies. All the guidelines indicated that telemental health services provided to patients in unsupervised settings such as patients' homes must be approached cautiously, diligently selecting patients to avoid adverse outcomes and adopting contingency measures to ensure patient safety and handle emergencies. Preparation includes requesting the contact information of a family or community member who could be called upon for support in the case of emergency. Appendix 6 provides recommended standard operating procedures for various aspects of telepsychiatry from one of the included CPGs.²

Limitations

The study selection for this report was limited to SR, RCTs, and CPGs. Though these study types represent the highest standards, the possibility of losing important information available in other study designs cannot be overlooked. To mitigate such potential loss, a list of some additional references of potential interest has been included in Appendix 2.

One of the SRs² stated that though its included systematic reviews assessed for quality of their included studies, grading of the evidence was not evident in their recommendations. Furthermore, 10 RCTs were common in all of the systematic reviews that were included, and there was no detail provided on how they differed from each other, except that two of the SR were reported to have included information from a further eight moderate quality controlled studies.

In the other SR¹¹ limited data and a paucity of peer-reviewed studies on safety of telemedicine to clinically unsupervised settings were identified as a limitations. Also the methodological quality of the included studies was reported to be deficient and it was unclear whether safety procedures were pre-specified or adopted in the course of the studies. Furthermore, available data were insufficient to evaluate potential differences in safety between the various TMH technologies employed.

A major limitation of the included RCTs^{5,6} is that they were restrictive in their included populations making it unclear how generalizable their findings will be in other populations. For example, one study⁵ was conducted in low-income Hispanic patients with depression, while the other study⁶ involved only male combat veterans.

The practice guidelines²⁻⁴ are limited by considerable overlap because they have a common source, with one of them² being an adaptation of another⁴ while the third³ is mainly a complementary document providing evidentiary support and procedural details of the original.⁴ In addition, since the adapted guideline focused on the needs of patients in a specific geographical location, it is unknown how applicable its additional recommendations will be outside that region.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

Evidence from the studies included in this report indicates that telepsychiatry is effective and produces reliable TMH service outcomes that are similar to mental healthcare provided in-person (i.e. face-to-face). In terms of safety, one SR² found no safety concerns while another SR focusing on safety of telepsychiatry found insufficient evidence to draw strong conclusions. Thus telepsychiatry may be comparably effective and safe; and may be a feasible alternative for making telemental health services available in resource constrained settings. Safety concerns, especially in clinically unsupervised settings, can be effectively managed using exclusionary criteria when considering patient appropriateness, and employing monitoring tools to identify patients whose symptoms deteriorate while receiving treatment so that interventions could be applied to forestall adverse outcomes. Developing and ensuring that both patients and staff at the point of care are familiar with emergency protocols and procedures specific to each of the telepsychiatry services and environments in which care is provided, and that staff have had appropriate training on the procedures and techniques promote effective management of emergency situations when providing telemental healthcare services.

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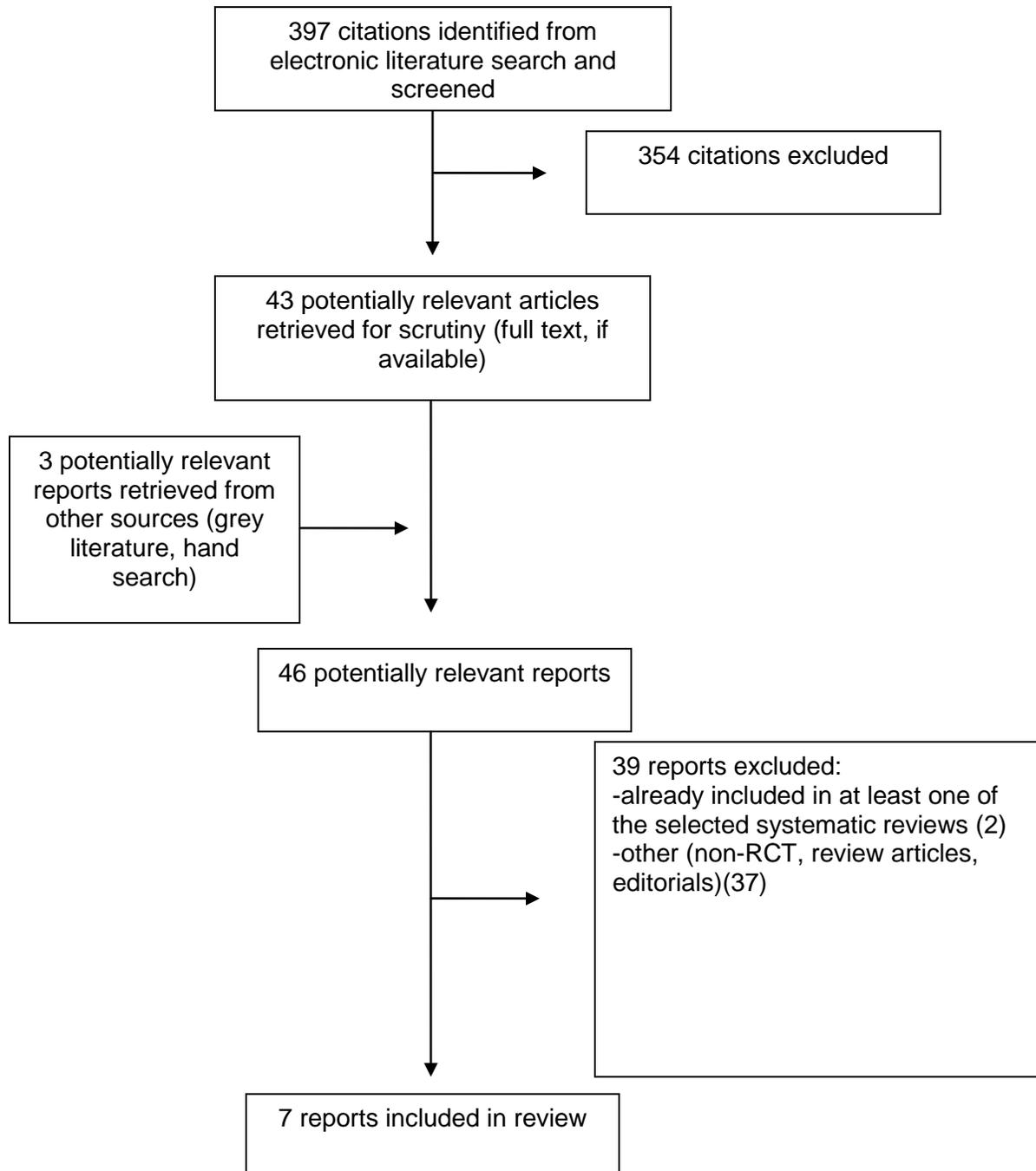
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11. Luxton DD, Sirotin AP, Mishkind MC. Safety of telemental healthcare delivered to clinically unsupervised settings: a systematic review. *Telemed J E Health*. 2010 Jul;16(6):705-11.

Appendix 1: Selection of Included Studies



Appendix 2: Additional references of potential interest

Systematic reviews – included in a selected systematic review

Garcia-Lizana F, Munoz-Mayorga I. What about telepsychiatry? A systematic review. Prim Care Companion J Clin Psychiatry. 2010;12(2). Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2911004>
[PubMed: PM20694116](#)

Overviews and non-systematic reviews

Hilty DM, Ferrer DC, Parish MB, Johnston B, Callahan EJ, Yellowlees PM. The effectiveness of telemental health: a 2013 review. Telemed J E Health. 2013 Jun;19(6):444-54. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3662387>
[PubMed: PM23697504](#)

Sharp IR, Kobak KA, Osman DA. The use of videoconferencing with patients with psychosis: a review of the literature. Ann Gen Psychiatry. 2011;10(1):14. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3101132> [PubMed: PM21501496](#)

Shore JH. Telepsychiatry: videoconferencing in the delivery of psychiatric care. Am J Psychiatry. 2013 Mar;170(3):256-62. [PubMed: PM23450286](#)

Non-controlled studies

Balasinorwala VP, Shah NB, Chatterjee SD, Kale VP, Matcheswalla YA. Asynchronous telepsychiatry in maharashtra, India: study of feasibility and referral pattern. Indian J Psychol Med. 2014 Jul;36(3):299-301. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4100417> [PubMed: PM25035555](#)

Saurman E, Lyle D, Perkins D, Roberts R. Successful provision of emergency mental health care to rural and remote New South Wales: an evaluation of the Mental Health Emergency Care-Rural Access Program. Aust Health Rev. 2014 Feb;38(1):58-64. [PubMed: PM24331157](#)

Stain HJ, Payne K, Thienel R, Michie P, Carr V, Kelly B. The feasibility of videoconferencing for neuropsychological assessments of rural youth experiencing early psychosis. J Telemed Telecare. 2011;17(6):328-31. [PubMed: PM21844174](#)

Other studies

Yellowlees PM, Odor A, Parish MB, Iosif AM, Haught K, Hilty D. A feasibility study of the use of asynchronous telepsychiatry for psychiatric consultations. Psychiatr Serv. 2010 Aug;61(8):838-40. [PubMed: PM20675845](#)

Deen TL, Godleski L, Fortney JC. A description of telemental health services provided by the Veterans Health Administration in 2006-2010. Psychiatr Serv. 2012;63(11):1131-3. OVID PsycINFO Update Code 20130304 (PsycINFO)

Appendix 3: Characteristics of included studies

Table 2: Characteristics of Systematic Reviews and Randomized Controlled Trials

First Author, Publication year, Country	Study Design	Population	Intervention	Comparator	Outcome Measure
Chippis, ² 2014 South Africa	SR	Mental health care users or patients	Psychiatric consultations provided by both face to face and VC	NA	Reliability, improved outcomes. use, satisfaction, acceptability and cost
Luxton, ¹¹ 2010 USA	SR	Mental health patients in unsupervised settings/locations.	Telemental health	NA	Safety
Morland, ⁶ 2014	RCT (non-inferiority design)	125 veterans with PTSD, mean (SD) age 55.3 (12.5) years	CPT-C via VTC	CPT-C in-person	Post-treatment PTSD severity, as measured by the CAPS
Chong, ⁵ 2012 USA	RCT	167 Hispanic major depression patients with mean (SD) age of between 42.8 (12.0) and 43.2 (11.9) years recruited from a community health center	Psychiatric services through a video Webcam (WEB)	TAU	1. Acceptability–Appointment keeping, perceived working alliance with provider, satisfaction and antidepressant use. 2. Feasibility–depression outcomes, functional days, and appointment keeping

CAPS = Clinician Administered PTSD Scale; CPT-C = cognitive processing therapy-cognitive only; TMH= telemental health; PTSD= posttraumatic stress disorder; RCT = randomized controlled trial; PG = practice guidelines; SD = standard deviation; SR = systematic review; VC = videoconferencing; VTC = videoteleconferencing; TAU = treatment as usual

Table 3: Characteristics of Practice Guidelines

Objectives			Methodology			
Intended users/ Target population	Intervention and Practice Considered	Major Outcomes Considered	Evidence collection, Selection and Synthesis	Evidence Quality and Strength	Recommendations development and Evaluation	Guideline Validation
Chipps,¹ 2012 Practice guidelines for videoconference-based telepsychiatry in South Africa						
All health care and health professionals, including doctors, allied health workers, educators, and nurses; involved in the practice of mental health.	The practice of psychiatry over distance using information and communication technologies.	Improved access to ameliorate disparity in specialty care, for an effective, safe, coherent, and sustainable care.	Evidence was collected from literature including international guidelines available from 1997 to 2011 by an expert review committee. Limits and filters for literature search were not specified however, all the provided references were in English language.	Details of how the quality of evidence from the literature was graded was not provided, although, according to the authors, available evidence was reviewed, and assessed on technical and clinical appropriateness, policy and ethical issues, and the guidelines were based on the Practice Guidelines for VC-Based TMH of the ATA, adapted to meet local circumstances.	The authors defined the following keywords to guide the usage of recommendations in the guidelines: Shall – indicates that it is required whenever feasible and practical under local conditions. Should – indicates an optimal recommended action that is particularly suitable, without mentioning or excluding others. May – indicates additional points that could be considered to further optimize the telepsychiatry care process.	A standardized validation test was not described. However, the following processes were followed: 1. Consultation by the expert review committee with psychiatrists in the public sector in KwaZulu-Natal in 2008 and 2009; 2. Presentation of the guidelines to the College of Medicine of South Africa in 2010; 3. Circulation to Heads of Academic Departments of Psychiatry of eight medical schools; 4. Submission to the South African Society of Psychiatrists(SASOP) in 2010; and 5. Endorsement by the South African College of Psychiatrists in June 2011.
Grady,³ 2011 Evidence-Based Practice for Telemental Health						
Mental health practitioners, including psychiatrists, nurse practitioners, physician assistants, social workers,	TMH; specifically, the use of a two-way, interactive videoconferencing as an alternative medium for clients and patients to directly engage with their mental health providers for mental	Elimination of disparities in access to quality, evidence-based, and emerging health care diagnostics and treatments	A working group of clinicians, health care staff, and health administration personnel collected evidences through systematic literature review and grouped them in tables according to TMH	The following confidence ratings were used for recommendations: considerable confidence, reasonable confidence, and limited confidence based on a specific application. A	The final version of the guidelines was developed from the initial draft following a series of consultations and reviews, with inputs from experts and professional groups that resulted in five drafts preceding the final document.	A standardized validation process was not provided. However; according to the authors, “the guidelines and standards generated by ATA undergo a thorough consensus and rigorous review, with final approval by the ATA Board of Directors.” ⁴

CADTH RAPID RESPONSE SERVICE

Objectives			Methodology			
Intended users/ Target population	Intervention and Practice Considered	Major Outcomes Considered	Evidence collection, Selection and Synthesis	Evidence Quality and Strength	Recommendations development and Evaluation	Guideline Validation
psychologists, counselors, primary care providers, and nurses.	health assessment, treatment, education, monitoring, and collaboration at a distance. ³		application such as setting, diagnostic interview, family, pharmacotherapy, substance abuse, etc... Quality of evidence was classified based on source articles, for example; RCTs, longitudinal study, and case report	second coding variable was introduced to identify the technology used, and account for disparities in bandwidth availability owing to the broad range of equipment that may be used in VC		
Turvey,⁴ 2013 ATA Practice Guidelines for Video-Based Online Mental Health Services						
Licensed healthcare professionals providing real-time interactive VC-based mental health services.	TMH services transmitted via the Internet, including when the initiating receiving, or both sites are using a personal computer with a Webcam or a mobile communications device such as smartphone, laptop, or tablet with a two-way camera capability.	1. Provision of information and education to guide effective and safe medical care to improve outcomes and promote informed and reasonable patient expectations. 2. Improved technical quality and reliability of telemedicine encounters	The guidelines were developed by working groups that include experts from the field and other strategic stakeholders based on evidence from clinical and empirical experience. Details about collection, selection and synthesis processes were not provided.	No information was provided concerning rating of evidence for quality	Requirements, recommendations, or actions in the guidelines are identified by the key words “shall,” “should,” or “may” defined as follows: Shall- indicates a required action whenever feasible and practical under local conditions. Should- indicates an optimal recommended action that is particularly suitable, without mentioning or excluding others. May- indicates additional points that may be considered to further optimize the TMH care process.	A standardized validation process was not provided. However; according to the authors, “the guidelines and standards generated by ATA undergo a thorough consensus and rigorous review, with final approval by the ATA Board of Directors.” ⁴
ATA = American Telemedicine Association; CAPS = Clinician Administered PTSD Scale; CPT-C = cognitive processing therapy-cognitive only; TMH = telemental health; PTSD= posttraumatic stress disorder; RCT = randomized controlled trial; PG = practice guidelines; SD = standard deviation; VC = videoconferencing; VTC = videoteleconferencing; TAU = treatment as usual; MHCU = mental health care user;						

APPENDIX 4: Summary of critical appraisal of included studies and practice guidelines

First Author, Year	Strengths	Limitations
SR and RCTs		
Chipps, ² 2014	<ul style="list-style-type: none"> • This was a systematic review of systematic reviews, in effect, although the included studies were ten, the findings potentially represent a bigger number of individual studies. • The study objectives as well as its inclusion and exclusion criteria were clearly. • Following a systematic literature search, two investigators independently selected studies to be included from 338 citations published between 2000 and 2011 and resolved disagreements through consensus. • The characteristics of included studies were described and their methodological quality was assessed to be moderate to good using a validated instrument (R-AMSTAR). • The conclusions from the systematic review were clearly linked to the quality of supporting studies. 	<ul style="list-style-type: none"> • In unclear whether the included studies were assessed for heterogeneity. Therefore of the appropriateness of conclusion based on combining evidence from multiple sources is unknown. • Ten individual studies were reported to common to some of the included SR and it is unclear how this affected quality of the findings. • Potential sources of conflict of interest were not discussed. However, given the rigor of the methodological approach employed in the systematic review, it does not appear that this might affect the findings of its findings. • Besides live synchronous videoconference-based psychiatry no other modalities of telepsychiatry was addressed.
Luxton, ¹¹ 2010	<ul style="list-style-type: none"> • The study objectives as well as its inclusion and exclusion criteria were clearly. • A comprehensive literature search was conducted covering 1982 to 2009 and the characteristics of the included studies were described. • Most of the studies employed standard telephone to deliver treatment with a few using some voice recording technology. Thus the study may provide sources useful information for telemental health concentrating on audio technology. 	<ul style="list-style-type: none"> • The methods of selection of included studies and of data selection and synthesis were not provided thus it is unknown whether selection bias occurred. • The methodological quality of the included studies were not assessed, and an explicit link between findings and quality of included studies was not provided. • Sources of potential publication bias and conflicts of interest were not assessed. • Two-way video-based TMH which seems to be the mainstream of telepsychiatry was not included in this SR. Therefore, it is unclear how the finding of the SR will be generalizable to the majority of TMH practice
Chong, ⁵ 2012	<ul style="list-style-type: none"> • RCT design with clearly defined objectives as well as inclusion and exclusion criteria. • Outcomes were measured using well established validated instruments • Telepsychiatry service providers 	<ul style="list-style-type: none"> • The study was conducted in low-income Hispanic patients with depression so it is unknown whether the findings of the study is generalizable to, non-Hispanic patients with psychiatric disorders

First Author, Year	Strengths	Limitations
	<p>including psychiatrists were Hispanic fluent in English and Spanish eliminating language/cultural barriers.</p> <ul style="list-style-type: none"> The health center (setting) where the study was conducted had already adopted telemedicine for chronic disease education resulting in familiarity of staff with necessary protocols to follow. 	<p>other than depression,</p> <ul style="list-style-type: none"> Generalizability of the study results to primary care centers which have not adopted telemedicine or do not have experience staff who are accustomed with the patients' language and/or cultures is also uncertain
<p>Morland,⁶ 2014</p> <p>Two Hispanic psychiatrists (both Mexican Americans fluent in English and Spanish, one male, one female) provided telepsychiatry services to the patients.</p>	<ul style="list-style-type: none"> The study used inclusion criteria which allowed for psychiatry comorbidities so that participants may be reasonably representative of the broader patient population The participants were rural residents (100%) and racial minorities representing a population most likely to require telepsychiatry The study design was clearly described and the implementation was rigorously controlled through random assignment of participants, presetting non-inferiority, margin, sample size calculation, careful monitoring of therapist fidelity and follow-up assessment up to 6 months. High retention (85%) and adherence rates (75% completed minimum dose of treatment) indicate participant satisfaction. 	<ul style="list-style-type: none"> The study was conducted in VA clinics or health centers with technology and staff that may not be available in primary care facilities. Thus, it is unknown if the findings will be generalizable in health facilities that are not equally equipped and staffed. The study did not include any women participants. However, this is unlikely to affect the reported findings without a gender difference in outcomes to CPT-C therapy for PTSD.
Practice guidelines		
<p>Chipps,¹ 2012</p>	<ul style="list-style-type: none"> The objectives of the guideline as well as the health questions and target populations it seeks to address are clearly described. The guideline review committee had consultations with a wide range of experts, public sector psychiatrists and relevant professional bodies to achieve consensus on the guideline. Information was provided on technical and administrative requirements to enable practical application of TMH services. 	<ul style="list-style-type: none"> The approach used to collect evidence was not described and it is unknown if the quality of evidence used in the guideline development was assessed. The strengths and limitations of evidence were not discussed and there was no clear link between the recommendation and the supporting evidence.
<p>Grady,³ 2011</p>	<ul style="list-style-type: none"> Pieces of evidence for the guideline were collected using systematic methods with the criteria for rating the evidence clearly described. The working group charged with developing the guidelines was made up of individuals and experts from a 	<ul style="list-style-type: none"> The strengths and limitations of the body of evidence are clearly described The individual recommendations are not clearly linked to the supporting evidence. No procedure was provided for

First Author, Year	Strengths	Limitations
	<p>wide range of relevant professional groups.</p> <ul style="list-style-type: none"> The views and preferences of the target population including patients and the general public were sought. The guideline was externally reviewed and received approval from the Board of ATA prior to its publication. The guideline provides information on technical and administrative requirements to enable practical application of TMH services. 	<p>updating the guideline.</p> <ul style="list-style-type: none"> Given the wide variation in available technology, it is unclear whether the recommendations would be universally applicable in all situations.
Turvey, ⁴ 2013	<ul style="list-style-type: none"> The guideline addresses a wide range of questions on TMH services including appropriateness of patients and suitability of the physical environment as well as administrative and technical covering device characteristic and connectivity requirements to enable practical application of TMH services. The weight/importance assigned to requirement, recommendations and actions of the guideline is indicated by clearly defined text (“shall”, “should”, and “may”). The guideline was externally reviewed by experts and approved by the Board of ATA prior to its publication. 	<ul style="list-style-type: none"> Details of how evidence for the recommendations were collected, synthesized, and graded were not provided. Although it was indicated that the guideline underwent “a thorough consensus and rigorous review, it is unknown whether patient and/or public input was sought and considered. There was no explicit link between the recommendations and the supporting evidence. However, another document- Evidence-Based Practice for Telemental Health⁴ was mentioned as being complementary to this guideline. Telemental health service modalities besides video-based conferencing using the internet were not addressed.

ATA = American Telemedicine Association; CAPS = Clinician Administered PTSD Scale; CPT-C = cognitive processing therapy-cognitive only; TMH = telemental health; PTSD= posttraumatic stress disorder; RCT = randomized controlled trial; PG = practice guidelines; SD = standard deviation; VC = videoconferencing; VTC = videoteleconferencing; TAU = treatment as usual; MHCU = mental health care user.

APPENDIX 5: Main study findings and authors' conclusions

First Author, Publication Year	Main Study Findings	Authors' Conclusions
Chippis, ² 2014, SR	<ul style="list-style-type: none"> • There is evidence to support equivalence between diagnostic assessments conducted via VC and to face to face consultation. • Mental status examination to identify non-verbal behaviors such as tics, dysmorphia, or abnormalities in affect require sufficient bandwidth (≥384 Kbps) and resolution (≥640 x 360 at 30 frames per second). • There is evidence to support the reliability and validity of using VC to administer neuropsychological tests such as the BPRS and the HDRS and the use of PANSS in psychosis trials. depending on bandwidth used. • There is evidence supporting VC use as a beneficial means of patient discharge planning and as replacement follow-up therapy. • "In addition, there are no data that telepsychiatry services are harmful, so it is believed to be safe."² 	Based on the evidence, resource constrained settings should be encouraged to develop telepsychiatry programs along with appropriate evaluation strategies.
Luxton, ¹¹ 2010, SR	<ul style="list-style-type: none"> • Safety plans to mitigate adverse outcomes in telemental healthcare service delivered to clinically unsupervised setting include exclusion criteria intended to prevent patients with vulnerabilities that increase potential risk. • The use of the PHQ instrument with either voice-recording home monitors or in-home Web-based remote access monitors may be effective to detect symptoms of depression and/ or worsening of already existing condition that may increase risk of adverse outcomes in parents receiving telemental healthcare. 	"The current review suggests that telemental health safety concerns can be effectively managed in clinically unsupervised settings. This suggestion is based on a limited review, and caution must be taken before attempting to generalize results." "Studies that specifically focus on the evaluation of safety of telemental health are necessary to address this issue and additional research is needed on the adverse events that might occur when different telehealth modalities (telephone, internet-based, etc.) are used." ¹¹ page 710
Chong, ⁵ 2012, RCT	<ul style="list-style-type: none"> • There was no significant difference between the WEB and TAU groups in terms of number of completed appointments or proportion of completed mental 	"Results show that for low-income depressed Hispanic patients, telepsychiatry service for depression is acceptable, although its feasibility is questionable." ⁵ page

First Author, Publication Year	Main Study Findings	Authors' Conclusions
	<p>health visits.</p> <ul style="list-style-type: none"> • More patients in the WEB group reported visit satisfaction and working alliance with their psychiatrists than patients in the TAU group. • Antidepressant medication use was higher among patients in the WEB group compared with those in the TAU group. • Treatment gains from intake till end of study, as measured by decrease in depression symptoms were similar between the WEB and TAU group, although the WEB patients improved at a significantly higher rate than TAU patients. • There was no significant difference in between the WEB and TAU groups in terms of the number of days in which their symptoms impaired their abilities to carry out their normal responsibilities. 	<p>297</p>
<p>Morland,⁶ 2014, RCT</p>	<ul style="list-style-type: none"> • Significant reductions in PTSD symptoms were achieved at the end of the treatment and maintained at 3- and 6-month follow-up time points in both treatment conditions. • Therapeutic alliance and satisfaction with service received high level scores from participants, with moderate level scores for treatment expectancies. • The difference between the clinical outcomes of the two treatment delivery modalities was not statistically significant and the condition for concluding noninferiority of VTC to in-person treatment was met. 	<p>“Providing CPT-C to rural residents via VTC produced outcomes that were “as good as” in-person treatment.”⁶ page 470</p> <p>“Current findings demonstrate that VTC is a feasible and efficacious means of delivering evidence-based group psychotherapy for PTSD. Delivering a psychological intervention for PTSD via VTC may be a practical solution to the long-standing access to care disparity that exists for rural and ethnically diverse populations.”⁶ page 475</p>
<p>BPRS = Brief Psychiatric Rating Scale; CPT-C=cognitive processing therapy-cognitive only; HDRS = Hamilton Depression Rating Scale; PTSD= posttraumatic stress disorder; RCT = randomized controlled trial; PG = practice guidelines; SD = standard deviation; VC = videoconferencing; VTC = videoteleconferencing; TAU = treatment as usual</p>		

APPENDIX 6: Standard Operating Procedures (SOP) for Videoconference-Based Telepsychiatry

Table 4: Sample General Telepsychiatry SOP

Local Site	Consultant Site
<ul style="list-style-type: none"> • A locally based treating health professional should be present with the mental health service user during the consultation. • All service providers or health workers at the local site, participating in Telepsychiatry should: <ul style="list-style-type: none"> ○ Have read the Telepsychiatry guidelines ○ Be familiar with the use of Telepsychiatry equipment ○ Have clinical documentation available at the consultant site to enable the psychiatrist to familiarize him or herself with the case prior to the consultation using a standard referral sheet ○ Follow the procedure guidelines for each required consultation ○ Document the session ○ Complete a Telepsychiatry Record Keeping Form • All support personnel at the local site should sign a once-off confidentiality agreement. • If required, a translator must be made available for the consultation. • Other persons, such as the family of the service user or a translator, may also be present during the consultation 	<p>All consultants at the consultant site, participating in Telepsychiatry should:</p> <ul style="list-style-type: none"> • Have read the Telepsychiatry guidelines • Be familiar with the use of Telepsychiatry equipment • Ensure that the mental health service user receives a full explanation of the process and has completed the consent form, if competent • Follow the procedure guidelines for each required consultation • Document the session • Complete a Telepsychiatry Record Keeping Form

Source: Chipps et.al. 2012² Page 274

Table 5: Sample Educational Telepsychiatry SOP

Case based teaching	<ul style="list-style-type: none"> • During the consultation, the consultant should use the opportunity to mentor and provide supervision to the local health worker regarding the specific management and treatment of the case presented
Scheduled Clinical Teaching to local District Health Staff	<ul style="list-style-type: none"> • If feasible, some sessions should be dedicated to the teaching of specific topics as identified by the local district hospital staff. • All staff should be invited, including local staff from the OPD clinics, who are involved in the care of mental health care users
Scheduled Clinical Teaching and Case Discussion with PHC clinic staff	<ul style="list-style-type: none"> • If feasible, some specific sessions should be dedicated to topics and cases raised by local PHC staff. PHC staff should have the opportunity to travel to the local site to attend a teaching session with the consultant psychiatrists. These sessions could be case based, with PHC staff presenting local mental health cases.
<p>OPD = outpatient department; PHC = primary health care</p>	

Source: Chipps et.al. 2012² Page 274

Table 6: Sample Consultation Liaison SOPS For Designated Hospitals

Responsible Clinician:	<ul style="list-style-type: none"> Local hospital Health Practitioners
Definition of Service:	<ul style="list-style-type: none"> Consultation Liaison Services to local health practitioners in Hospitals for admitted MHCUs under 72 hour observation, assessment or management; OR forensic assessment for the purposes of confirming diagnosis and advising on management and disposal of the MHCU.
Booking	<ul style="list-style-type: none"> MHCU assessed for suitability for Telepsychiatry Need for translator assessed Bookings should be made at least one day in advance, if not an emergency consultation Relevant documentation should be obtained using a standard referral sheet at least 1 hour prior to consultation
Depending on the outcome of the assessment of suitability, the MHCU will either be present during the consultation or not.	
MHCU Present during Consultation Prior to Session	<ul style="list-style-type: none"> Staff include: Clinician, Translator and MHCU Full explanation provided to MHCU of purpose of consultation, procedure and technical aspects of process e.g. camera placements and microphone. Informed consent signed by MHCU / family / guardian, depending on competency All staff and persons present to be informed of all people participating in consultation by name, position, responsibility
Consultation	<ul style="list-style-type: none"> Patient is introduced to all participants in consultation Case is presented by Health Practitioner to Consultant Interview is conducted If needed, interview and answers are translated Discussion with MHCU and Health Practitioner Confirmation of treatment and management suggestions
Post Session	<ul style="list-style-type: none"> Documentation of key decisions on MHCU's file (local site) and record of clinical consultation (Consultant site) Completion of a Telepsychiatry Record Keeping Form (Consultant site).
MHCU not Present during Consultation Consultation	<ul style="list-style-type: none"> Health Practitioner presents case to Consultant Documentation of key decisions on MHCU's file (local site) and record of clinical consultation (Consultant site) Completion of Telepsychiatry Health Record Keeping Form (Consultant site)
MHCU = mental health care user	

Source: Chipps et.al. 2012² Page 275

Table 7: Sample Consultation Liaison SOPs for Mental Health Clinics

Responsible Clinician:	Local health workers and Multidisciplinary Team
Definition of Service:	<ul style="list-style-type: none"> • Support Services to Health Workers (Medical Officers, Psychiatric Nurses or PHC Nurses) in District Hospitals responsible for mental health service users seen in the psychiatric or mental health outpatient clinic: • Interviewing new MHCUs • Selected follow ups • Second Opinion
Booking	<ul style="list-style-type: none"> • MHCU assessed for suitability for Telepsychiatry • Need for translator assessed • Bookings should be made at least 2-4 weeks in advance, if possible • Relevant documentation should be obtained using a Standard Referral Sheet at least 1 day prior to consultation
Prior to Session	<ul style="list-style-type: none"> • Full explanation provided to MHCU of purpose of consultation, procedure and technical aspects of process e.g. camera placements and microphone, presence of technician • Informed consent signed by MHCU/ family / guardian, depending on competence • All staff and persons present to be informed of all people participating in consultation by name, position, responsibility
New Mental Health Service Users (MHCU)	<ul style="list-style-type: none"> • MHCU is introduced to all participants in consultation meeting MHCU is interviewed by Consultant • Discussion with patient and local health worker • Confirmation of treatment and management suggestions
Follow up of selected mental health service users	<ul style="list-style-type: none"> • MHCU is introduced to all participants in consultation • MHCU case and issues for review are presented to Consultant by health worker • Discussion with MHCU and local case worker • Confirmation of treatment and management suggestions
Post Session	<ul style="list-style-type: none"> • Documentation of key decisions on MHCU's file (local site) and record of clinical consultation (consultant site) • Completion of Telepsychiatry Audit Form (Consultant site)

MHCU = mental health care user; PHC =

Source: Chipps et.al. 2012² Page 276

Table 8: Suggestions to improve a consultation by videoconference

Local site	Consultant site	Monitoring
<ul style="list-style-type: none"> • Camera is set up initially to view every-one in room at local site • Camera allows the consultant to view the patient in full as well as zoom in on face close up • When interviewing, consultant should zoom in on person being interviewed • Encourage person interviewed to look into camera and not on monitor • Ensure microphone is directed at the person speaking • Wait for the person at the other site to stop speaking before responding 	<ul style="list-style-type: none"> • Camera is set up, initially zoomed in on the consultant psychiatrist's face to enable the people at the local site to see the consultant close up • Consultant to wear a solid color (not white) to prevent a vibrating or distorted image • Don't shuffle papers, as microphone will pick up all noises. • Wait for the person at the other site to stop speaking before switching • microphone on to respond 	<ul style="list-style-type: none"> • A Telepsychiatry Record Keeping form shall be completed after every tele-consultation.

MHCU = mental health care user

Source: Chipps et.al. 2012² Page 277

Table 9: Sample Technical SOPs for setting up a Local Telepsychiatry Service

<p>Organizing the local Telepsychiatry Program</p>	<ul style="list-style-type: none"> • Hospitals or facilities with videoconference venues that want to set up a Telepsychiatry Service should to be linked to a Consultant Psychiatrist who is responsible for: Consultation Liaison services to District Hospitals for consultations and for inpatient liaisons for MHCU, ongoing support for rural mental health care inpatient and outpatient services and clinical Education
<p>Supporting the Telepsychiatry Program</p>	<ul style="list-style-type: none"> • The Telepsychiatry Program should be supported by a local Telemedicine Site Coordinator at the local Hospital • The Site Coordinator shall be responsible for ensuring that the scheduling is done, the venue is booked, equipment is functioning, all relevant staff are notified, that the session runs smoothly and that all records and logs are maintained
<p>Scheduling and Support</p>	<ul style="list-style-type: none"> • A scheduling system should be set up between the local and the consulting sites and supported by the Hospital Site Coordinator • Scheduling activities include clinical consultations, clinical teaching sessions and training sessions • Every session should be booked with type of session, dates, times, number of consultations and virtual consultant psychiatrist on duty for each session to be clearly identified in advance
<p>Venue</p>	<ul style="list-style-type: none"> • Telepsychiatry clinical venues should conform to the standard requirement for Telepsychiatry venues • For Telepsychiatry consultations the room should be set up as close as possible to resemble a face-to-face consultation • Consultant sites should also include all reference material, which could be used by the consultant (Mims, DSM) etc.
<p>Bandwidth</p>	<ul style="list-style-type: none"> • Evidence suggests that a minimum of 128 kbps reserved-bandwidth connection provides sound and image quality suitable for mental health consultations, but that 384 kbps is the preferred bandwidth • If the bandwidth is not adequate, consultation should be restricted to consultations without the MHCU or for follow up consultations
<p>Equipment</p>	<p>Equipment should include at least:</p> <ul style="list-style-type: none"> • A high resolution monitor with a minimum of an 36” screen • An omni-directional microphone • A camera which can capture the entire room, have tilt, zoom and pan movement, an automatic iris adjustment and remote control • The monitor and camera should be facing the patient. It seems to work best with the camera mounted on top or on the side of the monitor, which allows “eye contact” with minimal effort

Source: Chipps et.al. 2012² Page 279

Table 10: Digital Standards

Standard	Description of Standard
ITU-T	The International Telecommunications Union has established a series of standards (H.300) for VTC. It includes such sections as the H.320 series for circuit-switched, n x 64 (i.e., ITU-T); the H.323series: packet-switched/network, Internet Protocol; and the H.324: Plain Old Telephone Service (POTS).
Session Initiation Protocol (SIP):	The Internet Engineering Task Force RFC 3261 also applies to VTC. SIP is a text-based protocol for initiating interactive communication sessions between users, including voice, video, chat, and virtual reality
Common Compression methods	Some of the most common compression methods used for still images includes the following. The method used depends on the achievable compression ratio and the number and types of artifacts created during compression. Lossless compression allows for the reconstruction of the exact original data prior to compression without any loss of information. Lossy compression refers to methods that lose data once the image has been compressed and uncompressed. The level of compression and method used affect the amount of data loss and whether or not it is visually perceptible. The type and level of compression may vary depending on the type of exam. Different compression algorithms will achieve different compression ratios with varying degrees of artifacts. The choice of compression method and level should be reviewed periodically for each image and exam type, to insure that artifacts are not perceptible. It should be noted that lossy compression can affect the colors in an image.
JPEG (2000).	JPEG 2000 uses wavelet technology that allows an image to be retained without any distortion or loss. File extensions for JPEG 2000 are either .jp2 or .j2c (traditional JPEG is either .jpg or .jpeg
TIF.	Tagged Image File Format used for formatting and compressing images. It can be lossy or lossless. The file extension TIF is tiff or tif
	A method of compression using wavelets transforms (mathematical functions that divide data based on frequency components). There are a variety of file extensions depending on the wavelet method used. It can be lossy or lossless.
HL7	Health Level Seven is one of several American National Standards Institute (ANSI) Standards Developing Organizations (SDOs) operating in the healthcare arena. Health Level Seven's domain is clinical and administrative data.

Source: Chipps et.al. 2012² Page 280