Evaluation & Assessment

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Goals

- **Understand importance of assessment**
- **Differentiate between assessment & scientific experiments**
- **Appreciate variety of approaches & topics**
- **Know where to look for resources**
- **Set assessment priorities**

Program Assessment

- **Assess needs**
- **Improve practice**
- **Increase use & satisfaction**
- **Monitor progress**
- **Select equipment, tools etc.**
- **Fill personnel requirements**
- **Monitor costs & benefits**

Variety readiness &/or needs assessment templates available

ATP version available upon request

This is just page 1 of 23 page in-depth survey!

Telemedicine Site Assessment

Date _____

A. Agency Completing Information

1. Agency/Provider Completing Survey:
2. Address:
3. Town/City: Zip:
4. Contact Person/Title:
5. Telephone: FAX:
6. email:

B. Please tell us about your facility:

1. Number of beds:
2. Number of acute care beds
3. Emergency Room? ___yes ___no
4. Out patient clinic? ___yes ___no
5. Satellite clinics? ___yes ___no
6. Medical Staff
   - ___ Number of Physicians
   - ___ Number of Specialists
   - List specialties
   - ___ PAs
   - ___ Nurses
7. Are physicians employed by the hospital? ___yes ___no
8. If not, how far away from the hospital are the physicians' offices?
9. Insurance statistics
   - % of Medicare
   - % of Medicaid
   - % Third party payor
   - % Self pay
   - % No insurance
10. Administrative culture:
    - a. Do you have a strategic plan that includes telemedicine? ___yes ___no
    - b. Is your Board of Trustees supportive of telemedicine? ___yes ___no
    - c. Is your CEO supportive of telemedicine? ___yes ___no
    - d. Are there physician champions of telemedicine? ___yes ___no
    - e. Are you currently providing telemedicine services? ___yes ___no
    - f. If so, what are your successes?

Assessment

- Scientific studies are needed
- Not everyone can/should do them
- In many cases good review literature will provide the answer
- Web sites, resource centers etc. can often provide information based on sound investigation
- Explore 1st & collaborate when possible

Research Example

- Teledermatology SF = In-person?
  - 308 dermatology cases from IP
  - Digital photos 832 x 608, 24-bit
  - 3 dermatologists (intra & inter)
- 83% diagnostic concordance
- 62% very definite or definite
- Image sharp 83% good/excellent
- Image color 93% good/excellent

SMART – Planning Assessment Goals

S = Specific

What will you achieve? How will you know when done?

M = Measurable

How will you know when it meets expectations?

A = Attainable &/or Assignable

Is it realistic? Who will do it?

R = Relevant

Does it match your mission? Does it match your strategy?

T = Time-Bound

How long will it take? Too much, too little, enough?

What are Your Goals?

- **Patient-centered outcomes**

  Clinical markers, progress markers, etc.

- **Provider-centered outcomes**

  Diagnostic accuracy, efficacy, efficiency, etc.

What are Your Goals?

- **Business-centered outcomes**
  - **Reimbursement, sustainability, etc.**
- **Technical outcomes**
  - **Network expansion, faster, reliability, etc.**
- **Program-centered outcomes**
  - **Participants, contacts, etc.**

What to Find Out

- **What populations will be served?**
- **Which communities are most in need?**
- **Which communities can you best reach & impact?**
- **Who are the users of services?**
- **What is needed & used?**
- **What are the barriers?**

Types of Questions to Ask

- **What drives your re-admission rates?**
- **What specialists/specialties missing?**
- **What are your/patient travel & referral patterns?**
- **What types of patients referring out & to whom?**

How to Find Out

- **Analyze demographics, health status, patterns of health care use**
- **Use secondary sources, literature**
- **Use national & local data bases**
- **Ask stakeholders**
- **Work with community-leaders, users**
- **Use questionnaires & focus groups**

Evaluation Strategy

- ***Indicators:*** **Realistic, concrete activities, products or other services measured by straightforward processes (frequency, amount of time or surveys). Steps required to achieve *Performance Targets &Outcomes.***

Evaluation Strategy

- ***Performance Targets:*** **Concrete goals. Time limited (i.e., will achieve a 25% increase in provider contact during quarter 1) & based on individual *Indicator*.**

Evaluation Strategy

- ***Outcomes:*** **Assessments of performance targets – met successfully or not. Based on statistical analysis of**

Indicators & Performance Targets.

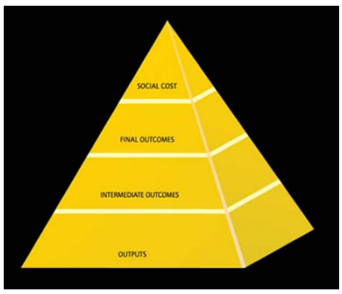


Table 1. Lexicon of Assessment and Outcome Measures for Telemental Health (TMH)

Item No.	Item	Definition	Measurement	Considerations
2.1.1	Patient satisfaction	Patient's subjective satisfaction and experience with the TMH service provided.	The perception of the patient's satisfaction during the TMH visit with usability of the technology, patient-provider communication, and convenience of receiving care via this approach. Does the patient believe that the service met her/his health needs? Would patient do this again? Would patient refer others to this service?	There may be overlap with other constructs such as "Satisfaction with Usability of Technology." Satisfaction does not necessarily require in-person comparison. It could be comparison to no care (i.e., non-inferiority testing). Use of validated measures of TMH satisfaction because measures exist. Measure satisfaction with experience as well as with technology.
2.1.2	Provider Satisfaction	The extent to which the provider values telehealth when interacting with patients.	The following metrics may serve as surrogate markers: retention and recruitment of providers, ease of transition in technical competency, ease of integration into clinical workflow, perceived value of better diagnosis, treatment and disease management.	Satisfaction metric must be considered longitudinally. Include both referring PCMs and consulting provider satisfaction surveys.
2.1.3	Coordination of care	Care coordination is the development and implementation of a shared plan to support patient wellness.	Care coordination measurement consists of both the number of telehealth encounters and the number of different participants involved in the shared plan (e.g., consultant-primary care provider, consultant-teacher, etc.) and the type of telehealth interaction (asynchronous and synchronous).	The nature of the communication, external technologies such as electronic health records and quality of encounters can all impact care coordination.
2.1.3	Integration of care	Integration of care is the efficient assimilation of multiple components within a health system in order to decrease redundancy, delay, and cost.	Measurement of the integration of care includes the type of the telehealth interactions assessed on standardized questionnaires of care coordination or other measures of communication (i.e., participant A to participant B).	The nature of the communication, external technologies such as electronic health records and quality of encounters can all impact integration of care.
2.1.4	Usability	1) The ease (preference, comfort, fit, readiness) of patients to communicate digitally with their providers. 2) Includes technology availability, simplicity of use, service availability, technology native vs. non-facile.	Measurement should include: provider retention rate, patient drop out and rationale, support staff required, technology ease of use, technology down time, and subjective ratings of comfort.	Subjective and objective measurements from both the patient and provider perspective. Part of the evaluation should include how "seamless" the interaction was between people/technology, to include latency and failure of technology. This can be used as both a process/acceptability and an access measure, but definition should remain the same. Patient/provider preferences should also be included.
2.1.5	Rapport	When two or more people feel	Self-reported level of direct and/or indi-	Transcends cultural, racial, ethnic, religious, gender, age,

		that they are connected and understand one another.	rect evidence that the condition of rapport is present between the patient(s) and the professional(s).	geographic, etc. differences and experiences. Try to link clinical outcomes which could be related to rapport.
2.1.6	Stigma	Preconceived, often negative, association with an illness, diagnosis, therapy, technique etc. that may interfere with the provision and/or acceptance of care.	Measures should evaluate stigma among health care providers/staff, patients, and social networks and include, at minimum, the following concepts: Stereotyping/discrimination such as beliefs about mental illness, mental health treatment, TMH and the use of technology to deliver care. Labeling/disclosure such as acceptance of diagnosis, willingness to diagnose appropriately, help seeking and delivering behaviors, willingness to use or conduct TMH sessions.	Perceived stigma should not simply focus on the recipient of care but the providers of care and those giving support. Concerns about stigma should focus on both mental illnesses in general and on the type of delivery (e.g., TMH). From a research and programmatic perspective this is best evaluated pre/post introduction of a TMH service. This can be related to both general access to care and readiness.
2.1.7	Motivational readiness	Assessment of an individual's or organization's willingness to change and adopt TMH services. This is different from preparedness, which is an assessment of individual and organizational ability to adopt TMH services.	Includes: stage of change for individuals and organizations, situational self-efficacy (confidence), trans theoretical model-based measures (pros & cons of change, processes/strategies for change, situational self-efficacy).	Defining criteria for moving into the action stage. Relationship between individuals and institutional readiness and motivation. How interrelated are individuals and institutional motivation? Self-report can be inaccurate, but necessary.
2.2.1	No shows	A patient or clinician who does not attend session, or is more than 15 minutes late.	Percent of no shows as compared to a disease-state specific comparisons in-person group. No shows defined as 15 minutes late or more to appointment. No shows need to be identified as either clinically related or a systems issue (scheduling, time zones, etc.).	Determine cause of no show, i.e., was it lack of transportation, lack of ability to maintain a schedule, did they show up late and have to reschedule, dissatisfaction with treatment. Examine the reasons for the no shows i.e. technology failed or could not be used, the use of technology (vs. travel) made it easier to keep the appointment, etc.
2.2.2	Accuracy of assessment	How well the modality of TMH impacts the reliability and validity of the assessment when compared with the traditional behavioral health care standards for the construct in question.	Comparison of standard measures of assessment (reliability, validity) of TMH vs. in-person (national standard) vs. other telehealth modalities. Measurement should also include session time and number of sessions needed for specific assessments comparing TMH with in-person services at patient site.	Proxy measures to track providers comfort with reliability of assessment through tracking utilization of tests and consults comparing TMH with in-person services at patient site.
2.2.3	Symptom outcomes	Change in identified clinical symptoms over time.	Use of measures of symptom change that are appropriate and psychometrically sound (validity, reliability data published in the literature). Need to be appropriate for the population being treated/assessed	How is this information documented so it is meaningful? Include measure used, cutoff criteria, inclusion/exclusion, what they are comparing outcome to, effect size of intervention. Symptom outcomes are part of a larger universe of outcome metrics that need to be considered. Consider adding

			to include accepted gold standards.	intervention/treatment outcomes with symptom outcomes as a subset as well as other outcomes such as Quality of Life, work attendance/absenteeism, compliance/adherence or psychosocial measures (unit cohesiveness, social isolation)
2.2.4	Completion of Treatment	Degree to which appointments, treatments and completion of treatment plans occurred within the prescribed time frame.	Average number of visits according to treatment plan, average number of visits in given time period, duration of treatment, number/percentage of modules completed; percentage of patients who completed treatment; pre/post functional measures	Third party payers use Axis 5 (Global Assessment of Functioning) to evaluate progress and completion, although this will evolve with the conversion to DSM-V criteria.
2.2.5	Quality of Care	Quality of care represents the process of delivering services and includes both the technical and interpersonal aspects of treatment. Technical quality includes concordance with treatment guidelines, fidelity to evidence based protocols, and system performance measures (e.g., HEDIS). Interpersonal quality includes patient rapport, therapeutic alliance, and cultural competence.	Performance measures (e.g., timely outpatient visit follow hospital discharge) can sometimes be measured from administrative data. Concordance with treatment guidelines and fidelity to evidence based protocols can be measured from chart review. Interpersonal quality should be measured from patient self-report (e.g., therapeutic alliance can be measured using the working alliance inventory).	Quality is defined as the process rather than the outcome of care, because clinical outcomes are measured using other metrics and because high quality care does not necessarily lead to good outcomes. Quality of TMH services should be measured against benchmarks rather than the quality of in-person services which is often sub-optimal. When TMH services are compared to in-person services, it will be critical to choose a similar clinical setting and patient population.
2.2.6	Treatment Utilization	Use of TMH services compared with all other health services related to specific disease processes.	Measurements on number of TMH and non-TMH visits within a health care system to include data on visit duration, frequency, and problem addressed. Measurements on system resources (labs, medications, system funded travel, devices, consultation, number of referrals made and utilized) of TMH vs. non-TMH. Utilization should be correlated with symptom reduction of specific disease processes.	Comparison of digital contacts (mobile phone, e-mail, Web) and its impact on service utilization in non-telemental healthcare. Recommend healthcare systems systematize data on digital contacts. Collect data on both internal utilizations within a system but as possible external service utilizations from outside agencies and providers. As possible during implementation of TMH services collect compare data on pre and post implementation service utilization data.
2.3.1	Number of Services	Degree of access to additional services which are derived from enrollment in telehealth.	The number of clinical care options and auxiliary services offered (e.g., medication management, social services, labs, cardiac care, group therapy); frequency in the use of clinical care options and auxiliary services.	Used for program evaluation, ROI for program expansion, quality, patient/provider satisfaction.
2.3.2	Numbers Served (also referred to as	The workload credit given for the TMH encounter that is	Types of services; complexity of services; time spent with patients; number of	Coding accuracy. Coding training and follow up to ensure coding is being done correctly, i.e., no under or over coding.

	RVUs, relative value units)	related to the complexity of services provided and the time spent with patients which equates to the level of financial reimbursement.	patients seen.	
2.3.3	Wait Times	Wait time is a temporal dimension of access that represents the delay between when the patient wants to receive services and when they can actually receive services.	Operationally, time to next available appointment, when scheduling, and when the patient actually presents for care. For TMH requiring a referral, wait time could be measured as the difference in the referral date and the date the patient was seen. May want to measure wait time separately to see the preferred provider versus any provider.	It is important to realize that improving other dimensions of access (e.g., lowering costs or de-stigmatizing TMH services) could result in increasing wait times due to increased demand. Health systems should measure wait times to all clinics (not just TMH clinics) to determine how resources could best be reallocated to minimize variability in wait times across clinics. Other important measures of temporal access include wait time in clinic and convenience of office hours.
2.3.4	Length of session	How much time the patient spends receiving care. This could include time spent with the provider.	Average/total clinical encounter time, average/total administrative time (set-up time, out-of session contact such as email, text, phone, letters).	Needs to be clinician, patient, staff, and system viewpoint. Needs to accommodate emerging platforms such as mobile health. Length of sessions may interact with frequency of appointments. Efficiencies with telehealth solution create opportunities for novel session duration (e.g., 10-minute check-in)
2.3.5	Distance to Service	Geographic separation or functional barriers between patients and providers.	Distance, time zones, time to appointment.	This includes structural barriers, weather.
2.3.6	Likelihood to access vs. traditional care	Likelihood to use TMH.	Measurement should include the following concepts: familiarity (past use), acceptability (cultural and technical), associations with stigma, willingness, and perceived benefit. Measurement should not focus on satisfaction but rather broad willingness to use.	When possible this should include baseline comparisons against both available and unavailable treatment as usual (e.g., in-person) Most likely this is assessed through self-report questionnaires.
2.3.8	Cultural access	Access to healthcare services that align with cultural expectations.	The degree to which an individual perceives the mode of delivery and related processes to align with cultural beliefs and expectations.	This should include cultural understanding of technology and expectations of interpersonal communication. It should also consider how technology may better connect cultural expectations, e.g., providing access to same culture providers or allowing for communication with a provider outside of one's in-group.
2.4.1	Economic evaluation that incorporates standard economic models			In general, clear definitions do not exist for many of the cost structures. This may be appropriate as costs are derived and perceived differently. There are several costs factors that were identified as important to measure objectively. Until final definitions are set, each cost factor should be operationalized and reported. Consideration should also be given to what is sunk or similar cost of care as usual (provider time).

				Baseline assessments help to identify cost outcomes.
2.4.2	Value proposition	Comparison of clinical and other health service outcomes by overall resources allocated.	Standardized and reported taxonomy of resources allocated and outcomes measured.	There is no consensus yet on the best determinations for economic evaluations in TMH.
2.4.3	Travel direct	Direct cost associated with provider and/or patient travel to care site	All direct costs should be identified, operationalized, and reported for comparison.	Should be included within the broad category of costs. Precise definition may not be possible given differing perspectives but all components should be identified, operationalized, and reported.
2.4.4	Travel indirect	Indirect costs associated with provider and/or patient travel to care site	All indirect costs should be identified, operationalized, and reported for comparison.	Should be conceptualized as comparison to normal care, e.g., loss of work productivity is comparable given 1 hr away regardless of mode of delivery. Indirect costs are both inputs to a cost model as well as potential positive outcomes of telehealth (reduction). Evaluators should determine and report up-front whether indirect costs are inputs to a cost model or expected outcomes.
2.4.5	Technology direct	Direct patient and provider costs associated with the technology utilized to deliver telehealth services.	All direct costs should be identified, operationalized, and reported for comparison.	Need to determine upfront whether costs are as a whole or divided between provider- and patient-associated. Inputs to consider include: hardware and depreciation, software and licensing, infrastructure, network, and maintenance costs.
2.4.6	Technology indirect	Indirect patient and provider costs associated with the technology utilized to deliver telehealth services.	Indirect costs include expenses incurred as a result of technology downtimes, specialized licenses, and administration.	There is cross-over between direct and indirect technology costs. Direct costs should focus on tangible assets while indirect costs are often intangible resources allocated based on the need for tangible assets.
2.4.7	Public vs. private	Payer Perspective.	Whether a project, program, or system utilizes public or private funding.	This is not an outcome measure but rather a perspective. Outcomes measures should be evaluated based upon the financial perspective under which a program operates.
2.4.8	Cost avoidance	Current or future direct costs avoided due to a specific intervention or program.	There are currently no industry standards for cost avoidance measures.	Consideration should be given to measuring items such as hospitalizations, visits, and other costs. These should be operationalized and reported as possible.
2.4.9	Missed obligations	Indirect Cost: Missed obligations	Should be measured as part of overall indirect costs.	Where possible a baseline assessment should be conducted against care as usual. As an outcome measure the assumption is that TMH impacts indirect costs/burden, thus requiring a comparison.
2.4.10	Burden on social network	Societal resources associated with either the provision of or inadequate access to TMH services.		Burden on social network should include direct burden to support resources and broad burden to societal infrastructure. When conducting research a positive or negative directional association should be identified *a priori*.
2.4.11	Personnel (administrative, provider, provider extender, presenter)	Personnel costs associated with the provision of TMH services.		
2.4.12	Supplies	Direct cost of auxiliary supplies required for TMH ser-		

		vices.		
2.4.13	Training	Process by which an individual attains the knowledge and skills required to demonstrate predetermined competencies.	A TMH competency set is required.	May be included as an indirect provider cost. Training is not truly an outcome unless the program is development of a training program
2.4.14	Facilities and maintenance	Direct costs associated with the facilities and maintenance necessary to support telehealth technologies.	Measurement includes cost of physical facilities, facilities maintenance, and systems such as HVAC. Should also include cost to maintain equipment including servers and individual patient/provider technologies.	Should be included with technology direct costs.
2.4.15	Broad resource utilization	Resource utilization is the total allotment of resources necessary to provide telehealth services.	Resource utilization is driven by the numbers of encounters. It encompasses personnel and infrastructure resources necessary to provide each health care service.	Baseline comparisons need to be considered to differentiate resources from treatment as usual and TMH.
Patient safety	Patient safety	Safety of patients and others during the course of treatment (i.e. during sessions and after).	Times had to use safety procedures. Number of times needing to contact collateral/ 911 calls/emergency services calls. Number of psychiatric hospitalizations related to clinic services. Number of times unable to invoke safety plan (tried but could not), hand off to higher level of care from clinic due to safety issues. Problems causing patient transfer to another provider.	Consider Targsoff, other measures of adverse events (or potential ones e.g. increased suicide indication, etc.); response times of all events, etc. including emergency services.

Utilize & Report Results

- **Reassess goals & objectives**
- **Identify strategies**
- **Identify unintended outcomes**
- **Analyze lessons learned**
- **Establish overall outcomes**
- **Develop written report**
- **Disseminate results**

Resources

- **NLM Evaluation guides**

https://nnlm.gov/neo/training/guides

- **Agency Healthcare Research & Quality**

https://healthit.ahrq.gov/health-it-tools-and-resources/evaluation-resources/health-it-evaluation-toolkit-and-evaluation-measures-quick-reference

- **Telehealth Resource Centers Resources**

https://www.telehealthresourcecenter.org/

- **Society for Education & the Advancement of Research in Connected Health**

https://searchsociety.org/

Resources

- **American Telemedicine Association Practice Guidelines**

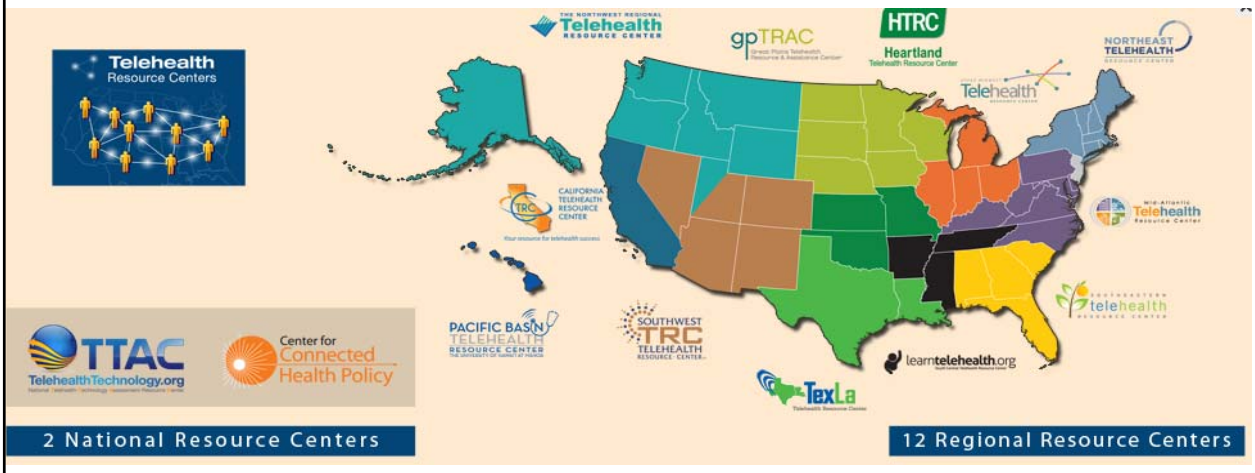
- **Variety of clinical specialties + overall core guidelines**
- **Human factors in TH quick guides (eye contact & lighting)**
- **Metrics for assessing TH**

Contact me for copies

ARIZONA TELEMEDICINE PROGRAM

SOUTHWEST TRC TELEHEALTH RESOURCE · CENTER

Telehealth Resource Centers
We Are Here For You!



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Conclusions

- Evaluation is essential to TM
- Can approach from variety of ways
- Builds confidence in TM practice
- Builds confidence in users
- Opens new doors & new uses of TM

Thank you!

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