

# Chapter 4

## Geriatric Telepsychiatry in Academic Settings

**Shilpa Srinivasan, Ashley Blackmon Jones,  
and Donald Hilty**

### 4.1 Introduction

As the population of older adults in the USA continues to burgeon, with a projected increase from 40.3 million individuals over age 65 in the year 2010 to 72.1 million by the year 2030 and over 80 million by the year 2050, the number of older adults with mental illness is also projected to rise commensurately (US Census Bureau; [1, 71]). The Institute of Medicine (IOM) report, *Retooling for an Aging America: Building the Health Care Workforce*, released in 2008 [2], cast

---

The original version of this chapter was revised. An erratum to this chapter can be found at DOI [10.1007/978-3-319-51491-8\\_9](https://doi.org/10.1007/978-3-319-51491-8_9)

S. Srinivasan, MD (✉)

Department of Neuropsychiatry and Behavioral Science, University of South Carolina School of Medicine, Columbia, SC, USA

e-mail: [Shilpa.srinivasan@uscmed.sc.edu](mailto:Shilpa.srinivasan@uscmed.sc.edu)

A.B. Jones, MD

Department of Neuropsychiatry and Behavioral Science,  
University of South Carolina School of Medicine,  
Columbia, SC, USA

e-mail: [Ashley.jones@uscmed.sc.edu](mailto:Ashley.jones@uscmed.sc.edu)

D. Hilty, MD

Department of Psychiatry, Keck School of Medicine,  
Los Angeles, CA, USA

e-mail: [donh032612@gmail.com](mailto:donh032612@gmail.com)

a spotlight on the pressing need to expand and fortify the health care workforce to meet critical needs of the aging population. Following a congressional mandate in 2009, the IOM committee on the Mental Health Workforce for Geriatric Populations was assembled and generated the 2012 report—*The Mental Health and Substance Use Workforce for Older Adults: In Whose Hands?* [3]. These reports highlight the mental health and substance use (MH/SU) conditions in older adults, with prevalence estimates ranging from 14 to 20% of the overall population. While serious mental illness (SMI) such as schizophrenia and bipolar disorder is less prevalent, depressive disorders and major neurocognitive disorder (dementia)- and related behavioral and psychiatric symptoms are increasingly common in older adults. Given the prevalence of chronic physical health conditions in the elderly, the MH/SU needs are often first encountered in the context of primary care settings, which are under-resourced, both in terms of time and professional training. Stigma in seeking mental health care, lack of information about services, and limited transportation to services remain major barriers to mental health care access and utilization among older adults. [4–6].

In light of the demographic transitions of a growing older adult population and the critical need to meet their mental health needs, healthcare providers with geriatric training and/or expertise have come under scrutiny. Both allopathic and osteopathic psychiatry residency program governing bodies stipulate the inclusion of exposure to geriatric psychiatry clinical experiences as part of residency training. The former requires “*one month FTE (Full Time Equivalent) of organized experience focused on the specific competencies in areas that are unique to the care of the elderly*” [7], whereas this timeframe is not specified for osteopathic psychiatry programs [8].

Since its inception and recognition as an accredited subspecialty by the American Board of Medical Specialties (ABMS) in 1991, additional post-residency training in geriatric psychiatry has been offered, which entails the completion of a one-year fellowship where the focus is on the diagnosis

and treatment of mental health conditions in older adults. Despite the availability of fellowship positions, the number of fellowship trained physicians has declined over the years. The 10-year period between 2001 and 2011 saw a 50% reduction in the number of general psychiatry graduates pursuing subspecialty geriatric psychiatry fellowship training. Similarly, the number of geriatric psychiatrists maintaining specialty certification has decreased over time, with only 47% of geriatric psychiatrists in 2011 maintaining or recertifying in geriatric psychiatry [9, 10]. Of note, during the same ten-year period, medical student interest in pursuing psychiatry residency training increased by almost 20% [11].

To put it in another perspective, Figs. 4.1 and 4.2 illustrate the number (and projected number) of geriatric psychiatrists per 10,000 older adults (age 75 and above) in the USA. These numbers clearly delineate the inadequate volume of the current geriatric psychiatry workforce to meet the mental healthcare needs of the aging population. As a consequence, there is an unequivocal requirement for improved access to specialized psychiatric care for this patient population.

Telepsychiatry, the provision of mental health/psychiatric care via live-two way videoconferencing, is one way to bridge the looming gap between available specialty trained providers

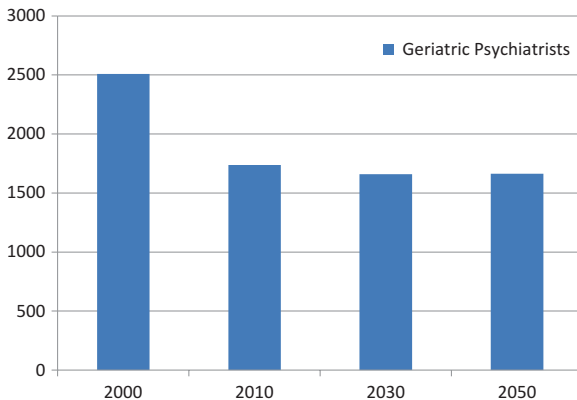


FIG. 4.1 Projected numbers of geriatric psychiatrists in the United States. Source (Adapted from [12])

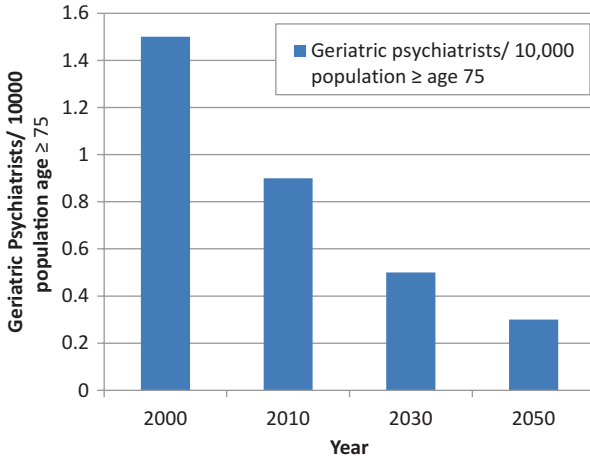


FIG. 4.2 Geriatric psychiatrists/10,000 population  $\geq$  age 75. Source (Adapted from [12])

and the population in need of services. The foundation and history of telepsychiatry has been extensively covered in Chaps. 1 and 2 and includes the effectiveness of telepsychiatry in geriatric populations. However, training future psychiatrists and geriatric psychiatrists via a structured, well-defined evidence-based curriculum in telepsychiatry remains an area of development. This chapter will review the extant literature describing the prevalence of telepsychiatry in psychiatry training programs; discuss factors promoting telepsychiatry incorporation in clinical curricula and implementation, as well as barriers to effective implementation. This chapter will also inform discussion of telepsychiatry in light of ACGME milestones and competency-based assessments. Lastly, a summary of geriatric telepsychiatry outcome studies from the current literature will be provided which can be used as reference material when developing a geriatric telepsychiatry curricular experience for psychiatry training programs.

## 4.2 Approach to Training: Adding to Residency Education Foundation and Putting Telepsychiatry in Context

Telepsychiatry has been integrated into clinical care with educational components being facilitated by the release of telepsychiatric competencies [70] including the first telemedicine competencies based on Accreditation Council of Graduate Medical Education milestones movement [13] and the Royal College of Physicians and Surgeons of Canada clinician competency movement [14]. The competencies provide outcomes mainly in the form of skills, with suggested teaching, supervisory, and program evaluation steps. As has been outlined in several publications, few programs have a formal telepsychiatry curriculum, while others feature an informal telepsychiatry experience, including telepsychiatry approaches to child and adolescent care [15–17]. While it has been shown that residents and training directors have an interest in telepsychiatry, certain misconceptions are evident. In a survey of training directors and residents conducted by Hilty et al., 39% of respondents felt that certain cultures will be less accepting of telepsychiatry care. 36% expressed concern that non-verbal cues are missed, and 33% of respondents noted privacy is a problem. Furthermore, over a third of respondents felt telepsychiatry is not as effective as in-person care [18]. It is therefore evident that training should address competencies that are:

1. Technical
2. Collaborative/interprofessional
3. Administrative [19, 20].

## 4.3 Telepsychiatry in Residency Training Programs: Considerations for Curriculum Development

As has been discussed elsewhere in this book, given the increasing popularity of telepsychiatry initiatives, more emphasis is likely to be placed on exposure and training

during residency. Currently the Accreditation Council for Graduate Medical Education (ACGME) does not require residents to train in telepsychiatry, nor do the accrediting bodies in Canada, Australia, New Zealand, and the United Kingdom [19]. Though telepsychiatry experiences are not presently an ACGME requirement, there are several studies that investigate the prevalence of telepsychiatry exposure in training programs, resident and program interest in telepsychiatry, and model curricula. A 2015 article by Hoffman and Kane published data from surveyed psychiatry residency programs, with 46 respondents. Twelve programs (26.1%) reported having telepsychiatry curricula and 21 (45.7%) programs involved their residents either formally or informally in telepsychiatry experiences. 84.4% of the responding programs reported an interest in receiving a sample telepsychiatry curriculum [16]. In a national survey of psychiatry trainees published in 2013, 19% reported direct patient care experiences in telepsychiatry and 21% were offered didactic exposure. Only 18% of psychiatry residents and fellows reported providing direct patient care through telepsychiatry. However, 72% of the respondents were “interested” or “very interested” in telepsychiatry [15]. This data suggests a significant difference between interest (from residents and programs) and actual clinical exposure to telepsychiatry for residents.

The ability to create a telepsychiatry experience may vary by program, given the support provided by the institution, availability of knowledgeable faculty, and the organizational framework of the training program [19]. Just as other facets of training programs evolve, telepsychiatry experiences will likely change, especially with technological advancements [19]. Given the scope of telepsychiatry to meet the ongoing mental health needs of the aging population and continued interest in clinical and educational exposure to telepsychiatry in psychiatric training programs, expansion of the number of programs offering telepsychiatry exposure and increasing the number of residents trained in telepsychiatry is a logical next step.

### 4.3.1 *Learning and Demonstration of Competency*

There are a few publications that detail residency program telepsychiatry curricula, which are variable between programs [19, 21]. An experience in telepsychiatry offers several benefits for trainees within a psychiatric residency program. The practice of telepsychiatry provides the opportunity for residents to learn and demonstrate competency in all of the ACGME competencies (which are common across psychiatry subspecialties) and many of the milestones (Table 4.1).

Most of the competencies are broad-based skills, applicable to all rotations and experiences in psychiatric residency training, including geriatric psychiatry. There has been an increase in dialogue geared towards creating specific objectives and competencies related to telepsychiatry. Both the American Medical Association and American Telemedicine Association have established guidelines and recommendations for telehealth [22]. In a 2015 article, Sunderji and colleagues presented three areas of skill development for residents using telepsychiatry: technical skills, administrative skills, and collaborative skills [19]. A 2016 study by Crawford and colleagues gathered data from interviews of faculty and residents to recommend telepsychiatry-specific skills for competency and presented recommendations for teaching and learning methods. They identified “technical skills; assessment skills; relational skills and communication; collaborative and inter-professional skills; administrative skills; medico-legal skills; community psychiatry and community-specific knowledge; cultural psychiatry skills, including knowledge of indigenous culture; and, knowledge of health systems” [23]. In the current system, most residents will be able to demonstrate all of the ACGME competencies when being evaluated by a supervisor on a telepsychiatry rotation. The creation of telepsychiatry-specific, evidence-based competencies may be an important future direction, particularly in geriatric psychiatry training.

TABLE 4.1 ACGME core competencies

ACGME competencies	
Patient care	“Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.”
Medical knowledge	“Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.”
Practice-based learning and improvement	“Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.”
Systems-based practice	“Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.”
Interpersonal and communication skills	“Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.”
Professionalism	“Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.”

[ACGME.org](http://www.acgme.org) Common Program Requirements for Psychiatry

### 4.3.2 *Enhancement of Diversity in Patient Care and Learning*

For trainees, telepsychiatry can provide diversity in case exposure by treating patients who are not directly located in the community of their program. Telepsychiatry has



applications across a wide array of patient populations including adults, children and adolescents, geriatrics, veterans, college students, nursing home residents, and patients with developmental disabilities [19, 21, 24, 68]. Experience in the core competency of systems-based practice (SBP) is obtained by working in a different system of care outside of the home institution and through utilization of community resources unique to the specific geographical area of the patient. Telepsychiatry has been employed to provide consultations to patients in diverse locations including emergency rooms, outpatient settings (public and private), inpatient hospitals (psychiatric and non-psychiatric), forensic facilities, primary care offices, nursing homes, rural areas, residential centers, and more [15, 19, 21, 24, 25, 58]. ACGME further expands the goals of systems-based practice to include delivering health care services in various settings, advocating for quality care, and working in a team to improve patient assessment, care, and safety ([ACGME.org](http://ACGME.org)). Psychiatry residents are involved in consultation and collaboration with other providers and staff and documenting the care they provide, which affords the opportunity to display competency in Interpersonal and Communication Skills. Practice-based learning and improvement also incorporates a goal for learning from the use of information technology, which residents develop by not just documenting encounters, but utilizing the telepsychiatry equipment. Patient care and professionalism are important competencies to assess throughout training experiences, and telepsychiatry is no exception. Residents may also learn ethical and medico-legal issues that are unique to telepsychiatry [19, 21].

Telepsychiatry offers an opportunity for attending psychiatrists to work with residents when they are not physically located in the same area, which diversifies teaching faculty. This is particularly important for programs in which geriatric psychiatry faculty may be under-represented. This not only provides the resident an opportunity to observe and learn skills from the teaching psychiatrist, but also provides the faculty an opportunity to teach, which may not be available

where they are located. Residents learn new technological skills, are exposed to different psychiatric practice models, gain the flexibility in navigating systems, and a greater understanding of the applicability of a biological–psychological–social/spiritual/cultural model across treatment venues.

#### 4.3.2.1 Increased Interest and Recruitment in Telepsychiatry

An additional significant benefit for patients, residents, and employers is the potential for clinical experiences in telepsychiatry to positively influence career selection. This results in having more psychiatrists providing care via telehealth and therefore increases access to care for patients. Given the shortage of geriatric psychiatrists discussed in the introduction, telepsychiatry has the potential to make a significant impact on access to mental health care for older adults. If residents have a model for utilizing telepsychiatry as part of their practice, receive mentorship in this arena, and experience the positive benefits of telepsychiatry, it could impact resident decisions regarding future career and practice. Reports in the literature highlight that clinical rotations are one of the influential factors on geriatric psychiatry subspecialty choice [26, 27]. After curriculum exposure to telepsychiatry, many residents reported increased overall interest and an increased interest in participating in telepsychiatry in the future [15, 21]. In one study, 90% of the residents agreed with a statement about their telepsychiatry experience increasing their interest in future participation [21]. Another study found that 72% of residents and fellows were interested in telepsychiatry after having direct clinical exposure, but only 29% reported plans to utilize telepsychiatry after training [15]. A study by Chung-Do and colleagues in Hawaii reported that after a 6–12 month telepsychiatry experience, 73% of the 11 trainees went on to use telepsychiatry in their career and practice in rural areas [25]. Given the evidence, it is reasonable to consider that resident telepsychiatry experiences may at a minimum increase interest and potentially influence career choices.

#### 4.3.2.2. Resident Feedback

When creating a telepsychiatry curriculum, it is important to review feedback provided by residents who have been through a telepsychiatry experience in their training program. There are few telepsychiatry curricula that have been evaluated in the literature, with a paucity of data for geriatric psychiatry specific experiences. However, examples in the literature include a study describing resident feedback after performing telepsychiatry child and adolescent consultations at the University of Toronto. Nearly 100% of residents were in agreement that their telepsychiatry exposure was “enjoyable” and “interesting.” Residents reported feeling personally “rewarded” in providing care that improves patient access to mental health services, found benefits in working with a team, and appreciated obtaining insights into other cultures as well as ethical issues that are specific to telepsychiatry. Residents also provided feedback on the involvement of the supervising faculty, reporting that they appreciated being able to discuss the case and literature with attending faculty [21]. Residents participating in a telepsychiatry rotation at the Veterans Administration Medical Center in California provided positive feedback about using instant messaging for communications between the resident, supervising psychiatrist, and a “Telehealth Clinical Technician” [28]. They found it helpful to obtain quick supervision without interrupting the patient care appointment. In this study, a brief elective experience in telepsychiatry received positive feedback and subsequently became incorporated into the rotation requirements [28]. In another survey of residents and fellows, 77% of respondents believed telepsychiatry was an important part of training and 51% felt that direct patient care via telepsychiatry should be required. This survey did not find a correlation between the interest level after exposure to telepsychiatry and the number of patient care hours on a telepsychiatry experience [15]. Taken together, the data suggests that any exposure to telepsychiatry can increase resident interest.

Based on resident feedback in the literature, there are several aspects of a telepsychiatry experience that programs should consider when developing a telepsychiatry curriculum.

1. Introduce unique aspects to telepsychiatry, such as technology and patient care related topics. This could also include discussion about technology support [21].
2. Enhance resident knowledge of current literature describing telepsychiatry studies and outcomes in older adults (Table 4.2) as well as comparative literature on the effectiveness of telepsychiatry vs. in-person care [19, 22, 24]. This is important because, despite the increase in interest from residents after a telepsychiatry clinical experience, one survey found that 40% still did not agree that using telepsychiatry as a treatment modality was equal to an in-person encounter [15].
3. Provide patient background information and/or access to medical records prior to the encounters [21].
4. Include a follow-up discussion at the completion of the session to enhance the learning experience [21].
5. Allow residents to be active participants instead of observers in the clinical encounter [19, 21].
6. Provide opportunities for residents to observe a telepsychiatry-based clinical interview demonstration by teaching faculty [21].

## 4.4 Implementation: Making It Work

### 4.4.1 *Communication and Presence*

A host of factors affect perception of the telepsychiatry visit and communication by participants [47]. This is particularly relevant when considering implementation for geriatric patient care. The presence of others in the room (e.g., family members, nurses, and tele-coordinators) is important. Many patients feel they are being videotaped when they are not—a big deterrent to disclosure and spontaneity. Other important

TABLE 4.2 Summary of telepsychiatric clinical/outcome studies with older adult patients

Study	N	Location	Technology	Description	Comments
<i>Nursing home</i> Jones [29]	2	USA	ISDN 128 KBS	Case reports	Able to provide care sooner and staff felt supported
Lee et al. [30]	140	South Korea	T1	Prospective over 2 years: CDR, SBT, BDS	TP = in-person; nurses satisfied; caregiver distress reduced; improved patient behavior
Tang et al. [31]	45	Hong Kong	ISDN 512 KBS	Prospective over 1 year	Satisfaction high with learning curve; some savings in costs
Johnston et al. [32]	40	USA	ISDN 128 KBS	Descriptive study: MMSE	Satisfaction high; efficient use of psychiatrist's time
Lykietos et al. [33]	-	USA	Standard telephone	Descriptive study	Reduced hospitalization rate compared to past

(continued)

TABLE 4.2 (continued)

Study	N	Location	Technology	Description	Comments
Rabinowitz et al. [34]	24	USA	ISDN 384 KBS	Pilot study: DCM	Satisfaction high; communication between providers and staff good
Yeung et al. [35]	9	USA	ISDN 384 KBS	Descriptive study: CGI-I	Satisfaction high; significant improvement in 6/9
Rabinowitz et al. [36]	106	USA	ISDN384 KBS	Descriptive study	Cost and time savings exceeded the start-up costs
<i>Other</i>					
Montani et al. [37]	15, medical inpatient	USA	Coaxial cable	TP vs. in-person: MMSE, clock drawing	Nearly equal, with 0.95 correlation; all preferred in-person, though
Menon et al. [38]	24, medical inpatient	USA	Standard telephone	In-person (twice) vs. in-person/video: HDRS, GDS-15	TP as reliable as in-person

Grob et al.[39]	27, veterans home	USA	ISDN 384 KBS	In-person (twice) vs. in-person/video: BPRS, MMSE, GDS	TP as reliable as in-person
Saligari et al. [40]	20, primary care	USA	ISDN 384 KBS	TP vs. in-person: MMSE, GDS	Equal, with MMSE 0.9 and GDS 0.78 correlation
Shores et al. [41]	16, veterans home	USA	T1	TP vs. in-person: DSM-IV, clock drawing	TP equal to in-person
Loh et al. [42]	20, community population	USA	ISDN 384 KBS	TP vs. in-person: MMSE, GDS	Nearly equal with 0.8 correlation for dementia
Cullum et al. [43]	33, primary care	USA	-	TP vs. in-person: MMSE, clock drawing, digit span	High correlations (> 0.60) for all, though only 0.48 for clock drawing
Turvey et al. [44]	118, home	USA	Home monitoring system	Screening for depression with PHQ-2	96.6% completed the screen; helped with triage and treatment

(continued)

TABLE 4.2 (continued)

Study	N	Location	Technology	Description	Comments
Sheeran et al. [45]	19, home	USA	ISDN 384 KBS	Descriptive: DCM, English, and Spanish	For severe depression, all patients improved to mild depression
Vahia et al. [46]	22, rural community	USA	DSL, 512 KBPS	TP vs. in-person neurocognitive testing in Spanish	No significant differences in TP vs. in-person test performance

Reprinted with permission from [67]

*TP* Telepsychiatry, *KBS* Kilobits per second, *CDR* Clinical Dementia Rating, *SBT* Short Blessed Test, *BDS* Blessed Dementia Scale, *CGI-I* Clinical Global Impressions-Improvement Scale, *MMSE* Mini-Mental State Examination, *DCM* Depression Care Management module, *PHQ-2* Patient Health Questionnaire-2, *HDRS* Hamilton depression rating scale, *GDS-15* Geriatric Depression Scale-15, *BPRS* Brief Psychiatric Rating Scale



clues to the patient's problems are evidenced before they appear on video: the time and behavior of the patient's arrival; conversations and other interactions with the telemedicine coordinator; and initial anxiety and distraction due to the equipment and/or self-conscious seeing oneself on the screen (if that exists).

A critical variable in communication is telemedicine's ability to simulate real-time experiences, at least in terms of image and interaction. A speed of transmission of 384 KBS suffices for most everything; the technology must be adequate for the clinical task at hand (e.g., have staff come for an emergently suicidal patient; use a primary care physician (PCP), nurse, or physician extender to evaluate for tremor). A concept that bears on communication is presence, defined as "... the fact or condition of being at the specified or understood place" [48]. The physical, virtual, and imaginal environments affect presence. In a physical environment, informational cues may be incorporated into conversation without conscious awareness (e.g., a patient walks in a reticent way). Participants in the virtual environment created by telemedicine may not realize all cues in the physical environment—so being observant and listening carefully may be more important [47, 48]. Videoconferencing provides "enough" of the physical environment to facilitate decision-making one-on-one and a "social presence" for participants to share a virtual space, get to know one another, and discuss complex issues [49].

#### 4.4.2 *Adapting Telepsychiatry: The Approach and Specifics Related to Patient Care and Other Competencies*

The challenge of meaningful assessment of learner competence has stimulated interest in the Dreyfus and Dreyfus Model, a framework for assessing skill acquisition that describes developmental stages beginning with novice and progressing through advanced beginner, competent, profi-

cient, expert, and master [50]. Although many educators have adopted this model, a lack of consensus about its adaptation to clinical medicine has been documented [51]. Hilty et al. developed telepsychiatry competencies aligned along ACGME domains of patient care, medical knowledge, practice-based learning and improvement, systems-based practice, professionalism, and interpersonal skills and communication [13, 52]. Key telepsychiatry competencies were defined by using milestone levels with the Dreyfus model:

- Level 1—novice (medical student) --> novice resident
- Level 2—advanced beginner (first-year resident) --> second year resident
- Level 3—competent (senior resident)
- Level 4—proficient (beyond Milestones; above average graduating resident, fellow and/or attending)
- Level 5—expert (beyond Milestones; intuitive problem-solver who exceeds principle-based solutions) [50].

This was further simplified to three levels: Novice or Advanced Beginner (e.g., advanced medical student, early resident, or other trainees); Competent/Proficient (e.g., advanced resident, graduating resident, faculty, attending, or interdisciplinary team member); and Expert (e.g., advanced faculty, attending, or interdisciplinary team member). The following suggestions or examples may be considered to incorporate a competency-based approach to telepsychiatry training (Table 4.3):

- Informed consent: verbal or written, depending on the state; option not to continue with the telepsychiatry evaluation is discussed.
- Contextualized history if less familiar with the location (e.g., aware of geographic and cultural specificity for Native Americans).
- Privacy and confidentiality expectations are similar to in-person but be aware of pitfalls with technologies (e.g., cellular phones are not private; Gmail is not HIPAA compliant).

TABLE 4.3 Telepsychiatry (TP) competencies related to patient care, system- and practice-based learning, professionalism, communication, knowledge, and technology

Area/topic	Novice or advanced beginner		Expert
	Competent/proficient	Expert	
	(e.g., advanced medical student, early resident, other trainees)	(e.g., advanced resident/graduating resident/faculty/attending/interdisciplinary team member)	(e.g., advanced faculty/attending/interdisciplinary team member)
<i>Patient care</i>			
History-taking	Obtains standard history	Obtains informed consent for telehealth (checks state regulations to see if form needed; discusses option not to perform telepsychiatry encounter) Obtains contextualized history (e.g., is aware of geographic and cultural specificity)	Recognizes potential informed consent problems (e.g., lack of capacity) and seeks collateral information Conducts in-depth, well-paced, and concise interview; adapts interview to patient age
Engagement and interpersonal skills	Establishes therapeutic alliance Builds trust and rapport	Identifies and manages problem(s) with alliance/trust/rapport Adjusts interview to technological and patient needs/preferences Requests devices to augment hearing	Assesses devices for functionality Determines best appropriate assessment adjustments based on the setting (in-person vs. TP) Readily utilizes nursing and/or ancillary staff or family as historian when relevant

(continued)

TABLE 4.3 (continued)

Area/topic	Novice or advanced beginner	Competent/proficient	Expert
Assessment and physical examination	Stratifies risk and protective factors based on epidemiology (e.g., suicide, homicide risk) Administers screening tools (e.g., MMSE) remotely <sup>CM</sup> Ascertain need for in-person physical exam (PE)/neurologic exam	Assesses risks for suicide/harm to others Ensures identification of significant exam findings (e.g., movement disorders; intoxication/withdrawal) Examines and administers tools with adjustments (e.g., uses remote site staff to complete or do part of PE/neurologic exam)	Synthesizes information (including risk vs. protective factors and obtains key collateral information) Administers tools contextually (e.g., substitutes score item for non-reproducible task at distance) Teaches staff/others how to do parts of PE/neurologic exam and trouble-shoot PE/neurologic exam problems at the remote end

<p>Management and Treatment Planning</p>	<p>Formulates Biopsychosocial (BPS) outline Participates in providing summary and recommendations Demonstrates medical decision-making on safety, need for treatment, and other interventions Follows up with PCP or TP by documentation</p>	<p>Formulates in-depth BPS outline with attention to medical and behavioral issues Provides summary to patient and family Demonstrates awareness of treatment continuum (levels of care) Follows in-person medication recommendations (i.e., reviews options, side effects, and alternatives if applicable, provides specific instructions for PCP to initiate, titrate, and augment) Formulates plan for calls and prescriptions Follows up with PCP by TP or phone</p>	<p>Formulates BPS outline with prioritization and anticipates barriers to treatment plan implementation Tailors recommendations to available resources for older adults, cultural specificity, and patient preference Engages patient, referring doctor or other providers succinctly Provides succinct summary to interdisciplinary team and other providers Selects “best” mode: e-mail, telephone, or other (and if it changes the process); terminates video if disruptive to patient care For medication recommendations: considers safety and adherence factors; plan for follow-up and monitoring; aware of legal and jurisdictional issues related to prescribing</p>
--	--	--	---

(continued)

TABLE 4.3 (continued)

Area/topic	Novice or advanced beginner	Competent/proficient	Expert
Documentation	Drafts TP note hard copy or rudimentary Electronic Health Record (EHR)	Generates initial/revised draft for primary or other specialty care with modification for TP consultation Complex EHR (e.g., Cerner, Epic)	Provides sufficient detail to allow implementation of plan over time and within local context/resources Utilizes phone, e-mail, and asynchronous notes
Billing	Learns why billing is important and how it is configured	Identifies diagnoses for billing	Documents final time spent, diagnosis, and codes Considers health advocacy issues related to billing; access to care
Privacy and confidentiality (medico-legal issues <sup>CM</sup> )	Learns in-person basic regulations	Is aware of regulations and learns translation of principles to video and adjunct regulations, if applicable Is aware that technologies are encrypted differently	Practices within in-person and telemedicine standards Is aware of pitfalls with technologies (e.g., cellular phones are not private; Gmail is not HIPAA compliant)

*Communication*<sup>MS-IPSC</sup>

Cultural, diversity, and social determinants of health	Considers diversity of patients, families, and communities: language fluency, customs Considers one's culture, values, behaviors, and preferences <sup>CM</sup> Learns how social determinants affect in-person care <sup>CM</sup>	Adjusts interview based on patient culture and preference Demonstrates language fluency: double checks/confirms Elicits cultural meaning of illness/wellness Demonstrates awareness of social determinants that may affect interest in, use of, and experience with telepsychiatry	Follows cultural formulation frameworks Ascertains and inquires if culture affects using TP (general exploration) or explanation of illness Considers patient–doctor relationship in context of culture, values, behaviors, and preferences Adjusts interview, assessment, and treatment per social determinants; considers in-person care if critical need
Language/interpreter ability	Uses the interpreter	Demonstrates time management when using an interpreter and incorporates patient preference (e.g., professional/medical interpreter > family)	Assesses verbal and non-verbal dimensions during interpreted encounter
Communication	Clearly communicates with patient, family, and healthcare professionals	Clarifies and amplifies communication	Trouble-shoots communication difficulties

(continued)

TABLE 4.3 (continued)

Area/topic	Novice or advanced beginner	Competent/proficient	Expert
<i>Systems-based practice</i> <sup>MS-SBP</sup>			
Outreach to community	Participates and engages	Visits community in-person before TP (if applicable) Identifies relevant resources and needs within community	Establishes and maintains relationships with communities Demonstrates thoughtful integration of in-person and TP care, if applicable
Inter-professional <sup>MS-IFSC,CM</sup> education (IPE) and team work	Participates and experiences different roles; works effectively	Works with interprofessional team and demonstrates familiarity with IPE Begins to teach within IPE	Serves as IPE provider and teacher Supports interdisciplinary team care (e.g., care coordinators — MA — RN — PA/PCP/NP — therapists)
Collaborative primary care	Considers consultation from perspective of referring provider's perspectives/needs	Understands the referring provider's needs and adapts consult and note appropriately	Engages providers with unclear needs Uses individual consult as an opportunity for building ongoing relationship Integrates indirect care (e.g., case or chart review) into practice



Rural health	Demonstrates knowledge of rural health basics	Learns about rural access, epidemiology, finances, and other	Practices and serves as role model
Special populations	Demonstrates knowledge of differences among special populations (e.g., veterans/community-dwelling/institutionalized elderly)	Recognizes differences and adapts assessment and management approaches accordingly	Practices and serves as role model
Safety	Demonstrates knowledge of systematic assessment	Identifies problems and stratifies risk	Adjusts risk and its management to TP system practice
Care models	Demonstrates knowledge of in-person, TP care, and consulting TP care are	Demonstrates facility with traditional referral to psychiatry, consultation care, and TP Begins to demonstrate understanding of collaborative care	Demonstrates facility with models of consultation, integrated, stepped, and hybrid care Demonstrates flexibility to structure practices style with context

(continued)

TABLE 4.3 (continued)

Area/topic	Novice or advanced beginner	Competent/proficient	Expert
Licensure regulations as applied to telemedicine care model (medico-legal issues <sup>CM</sup> )	Demonstrates knowledge of in-person regulations and differences between states	Demonstrates awareness of similarities/differences between in-person and telemedicine regulations	Practices within telemedicine regulations either from state-to-state or within unique systems (e.g., veterans affairs)
Evaluation	Understands patient satisfaction	Demonstrates knowledge of basic evaluation strategies for TP outcomes	Considers range of evaluation approaches and uses results for QI or to inform practice
Health advocacy	Identifies issues related to access and health equity	Considers how technology can address and also contribute to health equity gaps	Considers ways that the physician role can impact policy and advocacy through technology
<i>Professionalism</i> <sup>MSP</sup>			
Attitude	Demonstrates receptiveness to using technology	Engages within interprofessional clinical practice and teaching/learning	Demonstrates leadership in groups/teams
Integrity and ethical behavior	Demonstrates behavior consistent with	Serves as role model	Serves as role model and gives feedback

Scope	Becomes aware of scope issues of in-person, TP care, and TP consultation	Practices within scope(s)	Provides feedback on scope and boundary issues; trouble-shoots problems
<i>Practice-based learning</i> <sup>MS-PtBLI</sup>			
Administration	Demonstrates knowledge of basics of in-person care	Demonstrates awareness that in-person and telepsychiatric care have differences	Practices with adjustments and customization to telepsychiatric care
QI	Learns how to participate in QI	Applies QI information to cases and system	Analyzes QI options, selects, and evaluates
Teaching and learning	Participates and contributes	Organizes and furthers	Provides context and next steps
<i>Knowledge</i>	Covers relevance and history	Covers relevance, history, and evidence-based	Covers history, evidence-based, and incorporates clinical guidelines

(continued)

TABLE 4.3 (continued)

Area/topic	Novice or advanced beginner	Competent/proficient	Expert
<i>Technology</i>			
Adapt to technology	<p>Identifies differences between TP and in-person care</p> <p>Tries to project 15% more (voice/animation)</p> <p>Recognizes non-verbal limitations (e.g., offering a tissue, handshake)</p>	<p>Takes steps to actively engage and put patient at ease</p> <p>Expects and plans for differences in ease of establishing rapport</p> <p>Identifies barriers and implements replacement behavior</p> <p>Considers incorporating third party by phone</p>	<p>Uses humor to actively engage and put patient at ease with TP encounter</p> <p>Analyzes outcome of each visit and customizes adjustments for subsequent TP encounters</p> <p>Demonstrates ways to express empathy</p>
Remote site design	<p>Acts as observer</p>	<p>Identifies remote site layout problems and possible solutions to optimize viewing</p> <p>Modification: hearing aid/amplification devices</p>	<p>Demonstrates pre-visit planning and continuous, iterative improvement</p> <p>Modification: assesses if non-sensory barriers exist (e.g., room layout)</p>

Technology operation <sup>CM</sup>	Demonstrates familiarity with microphone, camera, and prn 2nd camera Observes how multiple technologies (e.g., primary and secondary camera) are used simultaneously	Operates hardware, software, and accessories Performs basic trouble-shooting (e.g., re-boot system; call for assistance) Operates use of multiple technologies	Optimizes hardware, software, and accessories based on context (for enhancement and avoiding distraction) Manages all trouble-shooting operations on near end and advice on far end prn Optimizes use of multiple technologies
------------------------------------	---	--	--

Abbreviations: *TP* Telepsychiatry, *CM* based on submission for CanMEDS TP competencies, *MS US* Milestones; consistent with non-TP, regular competencies of the Accreditation Council of Graduate Medical Education (ACGME) (*PC* patient care, *K* medical knowledge, *PrBLI* practice-based learning and improvement, *SBP* systems-based practice, *P* professionalism, *IPSC* interpersonal skills and communication, *MS-PC* milestones patient care), *PE* physical examination, *PCP* primary care provider, *QI* quality improvement

- Language/interpreter ability is more of an issue with telepsychiatry, as inputting a professional (rather than a convenient family member) is easier [53].
- Adapting to the technology involves several dimensions: project self 15% more (voice/animation) and use replacement behaviors for offering a tissue or shaking hands on greeting.
- Familiarity with microphone, camera and when needed, a 2nd camera is helpful. Pursuant to the technical skill level of the clinician further optimization of hardware, software, and accessories may be based on context (rather than depending on technical assistance or coordinators). Far end control of cameras and equipment minimizes dependence on remote site patient and staff.
- A geriatric patient evaluation by telepsychiatry could further include a spouse, an adult child, or caregiver who participates in the evaluation in-person or via telephone.

#### 4.4.3 *Teaching and Supervision*

The following case example illustrates a competency-based approach to training learners in geriatric telepsychiatry.

John Smith, a 71-year-old widowed man, lives with his daughter and son-in-law in the rural Southwest. Mr. Smith's daughter asked his primary care physician (PCP) for a psychiatry referral because she was concerned that Mr. Smith had expressed suicidal thoughts. Given the limited access to mental health services in their region, Mr. Smith's PCP sought geriatric telepsychiatry services provided via the affiliated regional medical center. More recently Mr. Smith has withdrawn socially and spends much of his time in his room. His daughter notes he has not participated in family activities, and has told family members he is a "burden to everyone" and that they would be "better off without him." During the telepsychiatry evaluation, Mr. Smith is in a room alone, wearing a hat that obscures his face from view, and avoids looking directly at the monitor.

Questions to facilitate the teaching of competencies before starting or early on:

1. What is the referral source asking the telepsychiatrist to do? What is needed? What might they need from the telepsychiatrist that they are not aware of?
2. What protocols need to be established before the telepsychiatry assessment, given that the patient might present with acute safety risks at the time of the assessment? Who will need to be informed/engaged at that time? What legal mechanisms are needed to ensure the patient's safety? What local resources/services are available in the event of acute safety issues?
3. What can be done to engage him, given that he may be a somewhat reluctant participant?
4. What can the telepsychiatrist do to improve his/her ability to see the patient on screen?

At the mid-point, Mr. Smith has warmed to the encounter, having taken his hat off, is looking more directly into the camera, and answering questions more readily. He said that he began feeling down 3 years prior, shortly after the death of his wife, following which he moved in with his daughter and son-in-law for financial reasons. He endorsed most symptoms of depression, but specifically denied ever thinking about suicide.

Questions further into the clinical assessment might include:

1. What can the telepsychiatrist do further to assess Mr. Smith's suicide risk? Competencies relate to patient care (assessment and physical examination) and systems-based practice (safety).
2. In what ways does Mr. Smith's cultural background affect: The assessment of his suicidal risk? The assessment of his mental status? The assessment of issues in his personal history that relate to why he has developed depression? What can be done to incorporate this understanding of diversity into the assessment? Competences relate to systems-based practice (special populations) and communication (cultural, diversity, and social determinants of health).

#### 4.4.4 *Geriatric Telepsychiatry Specifics*

A good geriatric mental health history not only includes the patient's point-of-view, but also collateral information from all other stakeholders and medical providers—largely dependent on where the patient generally resides and is cared for (e.g., home, family and caregiver, nursing home, staff, and others). Cognition, pain severity, physical/other limitations, and environmental factors that may affect assessment are important to understand. Screening of geriatric patients via self-report questionnaires or clinician rated instruments is virtually the same as for in-person assessments, e.g., Patient Health Questionnaire—9 items, Geriatric Depression Scale—30 items [54, 55].

As part of providing telepsychiatry training, the logistics of conducting a geriatric psychiatry evaluation via telepsychiatry should be covered. There are some important additional items to keep in mind when using telepsychiatry with older adults, including:

- Pre-visit event summary: An accounting of general events and the patient's attitude, comments, complaints, sources of information, and clinician observations (e.g., olfactory/vision/hearing limitations, gait/balance problems, other) need to be communicated before the patient enters the room.
- The clinical examination, in general: this may require staff assistance (often a nurse facilitator) to complete, particularly if a patient is delirious, combative, or agitated, has a low level of formal education, or suffers from aphasia, poor hearing, or vision impairment.
- Cognitive examination: may require item substitution if clock drawing or sentence writing cannot be uploaded to see or held visually in the camera; again staff are better in assisting here so as to not answer questions for the patient.
- Physical examination: camera control at the far end enables easy wide angle, close-up, and focused viewing to detect tremors, micrographia, and other abnormalities but



staff may need to be trained to check for extrapyramidal side effects (EPS) like cogwheel rigidity.

- Encouraging family member(s) to attend in general and when there is significant cognitive impairment can promote patient acceptance. Families are very welcoming of telepsychiatry interventions and are grateful for the extra time and effort put forth to facilitate a telepsychiatry encounter [36].
- It is recommended that most or all telepsychiatry encounters for nursing home residents or elders in similar environments include a member of the social work staff to give input on family of origin, family dynamics, and past family and social history [36].

## 4.5 Geriatric Telepsychiatry Program Options: Potential Prototypes for Academic Engagement

### Example 1.

---

Resident and fellow learners may be incorporated into existing academic geriatric telepsychiatry programs and/or gain clinical experience in geriatric telepsychiatry through community psychiatry rotations. One such experience offered at the University of South Carolina School of Medicine is a geriatric telepsychiatry consultative evaluation model wherein consultations are provided to a rural PACE (Program for All-Inclusive Care of the Elderly). In this model, residents and fellows review records from the requesting facility, obtain a clinical history from patients and collaterals (family members, PACE staff including nursing and social work, and referring PCP), conduct psychiatric evaluations of geriatric patients, review laboratory and neuroimaging results via real-time access to the remote facility's electronic medical record, and formulate diagnostic impressions followed by development of a clinical plan of care, all under the supervision of geriatric psychiatry faculty.

### Example 2.

---

Geriatric telepsychiatry services can combine low and high intensity models. The following clinical vignette is an example highlighting teaching aspects to clinical telepsychiatry care. The telepsychiatric competencies that are pertinent are patient care (PC), interpersonal skills and communication (IPSC), practice-based learning (PBL), system-based practice (SBP) and, although not an official ACGME competency per se, technology (T). The vignette below highlights two particular dimensions: (1) Days 1 and 3 show the consultation role to the PCP—a SBP competency and (2) Day 30 is the assessment of the patient (the other competencies mentioned above).

Day 0, A PCP called a hospital from a skilled nursing facility about a 71-year-old Caucasian woman, with depression, dyslipidemia, and new onset psychosis (i.e., auditory and visual hallucinations). Current medications were venlafaxine extended release (ER) 75 mg in the morning and temazepam 15 mg at bedtime.

The PCP was considering a psychiatric admission. An alternative would be taking the patient by ambulance to a facility nearby that had a synchronous telepsychiatry unit, but there would be a one-month delay for an opening in the schedule. There were no local psychiatrists in the city of 25,000 and the nearest in-person option was 2 h away but with a greater delay in appointment time.

Day 1, Telephone consultation with an academic telepsychiatrist. The telepsychiatrist and general psychiatry resident received the consultation request. The psychiatry resident obtained preliminary information from the PCP who was unaware of any recent acute medical problems. The resident pursued inquiry to establish a differential diagnosis. While the PCP was initially unsure of the potential for bipolar disorder, not having considered or inquired about it; he did not recall severe persisting insomnia and mood swings. After case discussion with the supervising attending telepsychiatrist, a preliminary treatment plan was developed, entailing the following:

1. Continue venlafaxine
2. Replace temazepam with olanzapine (Zyprexa Zydis) 5 mg HS

3. Hold off on the psychiatric admission (it was unclear if beds were available)
4. Exclude medical etiologies by work-up (e.g., a metabolic panel, Complete Blood Count (CBC), Thyroid Stimulating Hormone (TSH) level, Vitamin B12 level, and Rapid Plasma Reagin (RPR))
5. Schedule a follow-up appointment in the PCP's office within the week.

Day 3, PCP office: The PCP noted that there were no waxing and waning mental status changes. The patient and his wife denied racing thoughts, restlessness, decreased need for sleep, and impulsivity such as spending sprees associated with mood elevations of a week's duration. The auditory hallucinations were diminished, but the depression, ruminations, and hopelessness persisted in the absence of suicidal ideation. Initial laboratory work-up was unremarkable. A 5-minute reconsultation by phone to the telepsychiatrist and psychiatry resident led to the following recommendations:

1. Raising the venlafaxine extended release dose to 150 mg
2. Continuing the olanzapine, and/or
3. Follow-up telepsychiatry visit in 2 weeks for a consultative evaluation.

It was recommended that a nurse from the PCP's office be present during the telepsychiatry consultation.

Day 30, Telepsychiatry 60-minute evaluation: At this time, the telepsychiatrist and the resident who was still on service saw the patient. The resident obtained an interim clinical history as well as past psychiatric histories. The patient was about "two-thirds" better in terms of his mood, but he was still not "back to normal" and his enjoyment, drive, and energy remained low; the latter had not changed with olanzapine. The resident directed the PCP's nurse to perform an AIMS evaluation during the consultation visit to assess extrapyramidal symptoms as a side effect of olanzapine, and observed this assessment being performed. Consultation suggestions included:

1. Raise the venlafaxine to 225 mg; or
2. Add bupropion sustained release 150 mg in the morning for residual depressive symptoms
3. Continue olanzapine.

Analysis: The telephone consultation prevented an unnecessary medical or psychiatric hospitalization, used a low intensity intervention, and helped the PCP increase self-efficacy in decision-making (e.g., prescribing antipsychotic medications). The PCP gained trust in the consultant and that type of relationship. Models of telepsychiatry care may be combined with models of in-person care to forge intensity of care interventions, based on technology complexity, specialist time, and service delivery model care [56, 57, 69, 70].

### Example 3. Telepsychiatry utility for collaborative, stepped and integrated care.

---

Academic health centers are uniquely positioned to use the consultation care model to primary care or nursing homes, as one end of a continuum of increasing access and providing case-based PCP education and technical assistance to PCPs (e.g., prescribing medication). Videoconferencing, secure e-mail, and telephone interventions have been used to link psychiatric specialists at academic health centers with rural underserved areas [58]. Indeed, provider knowledge, skills, and complexity of questions improve over time [59], particularly in rural PCPs [60].

More robust models are disease management for depression by telepsychiatry [61], collaborative care for Post-Traumatic Stress Disorder (PTSD) and depression [62, 63], and potentially stepped care [18]. In the disease management study, geriatric patients stayed enrolled longer than another demographic group—this discounts the presumption that older patients may not like to use technology. Integrated care models are increasingly being adopted [18, 62] and competencies have been spelled out for residents and the psychiatric consultant for integrated care [64–66]. These focused on knowledge, individualized treatment plans mental and medical illness, oral/written communication, training/supervision, collaboration, and leadership within clinical teams [66].

## 4.6 Conclusions

Psychiatry training programs, trainees, faculty, and patients have the potential to benefit greatly from implementation of an effective and appropriately designed telepsychiatry curriculum. Not all institutions currently have infrastructure to be able to implement such programs, but the extant literature suggests that there is a large interest in gaining exposure to telepsychiatry particularly among trainees [15, 16]. Creation of a new telepsychiatry program should focus on providing quality care and assuring sustainability [47]. Whether a telepsychiatry program is being established with the plan for trainee involvement or residents are incorporated into an existing opportunity, there are several facets to consider. For the residency training program, striking a balance between obligations for service and education can be difficult at times. Finding a way for the resident to maintain autonomy and be an active provider in the patient's care as well as receive support in the form of medical information, technology support, and case discussion may be a way to begin balancing clinical and educational demands [21]. Providing necessary support for residents to be able to deliver excellent evidence-based patient care via telepsychiatry is an important part of curriculum development [19]. Currently, most of the literature focuses on telepsychiatry program evaluations based on resident experience or satisfaction, and not on the learning needs of the resident [19]. In the future it would be beneficial to fortify this volume of information by including other outcomes or effects of resident training in telepsychiatry. Based on recent publications, there is an additional need to expand literature regarding specific objectives and competencies for telepsychiatry, particularly in geriatric patient care settings [19, 23]. These possibilities make it an exciting time to be a psychiatrist!

### *Key Points*

1. A psychiatry resident or geriatric fellow involved in providing direct patient care with telepsychiatry can be evalu-

- ated on all of the ACGME core competencies, and many of the milestones.
2. Possible benefits to the resident from participation in a telepsychiatry curriculum:
    - Exposure to unique systems of care and patient populations
    - Exposure to additional teaching faculty
    - Learn unique ethical and medico-legal issues related to telepsychiatry
    - Opportunity to work within a treatment team and collaborate in care
    - Enhanced telepsychiatry and technical skills
  3. Data suggests the existence of a gap between resident interest in telepsychiatry and exposure to telepsychiatry in training.
  4. Residents may be more likely to participate in telepsychiatry as a part of their career, if they have clinical experience during residency training.
  5. Residents have provided positive feedback regarding their participation in existing telepsychiatry curricula.

## References

1. Jeste DV, Alexopoulos GS, Bartels SJ, Cummings JL, Gallo JJ, Gottlieb GL, Halpain MC, Palmer BW, Patterson TL, Reynolds CF, Lebowitz BD. Consensus statement on the upcoming crisis in geriatric mental health: research agenda for the next 2 decades. *Arch Gen Psychiatry*. 1999;56(9):848–53.
2. Institute of Medicine (US). Committee on the Future Health Care Workforce for Older Americans. *Retooling for an aging America: building the health care workforce*. Washington, DC: The National Academies Press; 2008.
3. Institute of Medicine (US). *The mental health and substance use workforce for older adults: in whose hands?* Washington, DC: The National Academies Press; 2012.
4. Mackenzie CS, Scott T, Mather A, Sareen J. Older adults' help-seeking attitudes and treatment beliefs concerning mental health problems. *Am J Geriatr Psychiatry*. 2008;16(12):1010–9.

5. Morrow-Howell N, Proctor E, Choi S, Lawrence L, Brooks A, Hasche L, Dore P, Blinne W. Depression in public community long-term care: implications for intervention development. *J Behav Health Serv Res.* 2008;35(1):37–51.
6. Palinkas LA, Criado V, Fuentes D, Shepherd S, Milian H, Folsom D, Jeste DV. Unmet needs for services for older adults with mental illness: Comparison of views of different stakeholder groups. *Am J Geriatr Psychiatry.* 2007;15(6):530–40.
7. Accreditation Commission for Graduate Medical Education (ACGME) 2014. [https://www.acgme.org/acgmeweb/portals/0/pfassets/programrequirements/400\\_psychiatry\\_07012014.pdf](https://www.acgme.org/acgmeweb/portals/0/pfassets/programrequirements/400_psychiatry_07012014.pdf) Accessed 15 Feb 2016
8. American Osteopathic Association (AOA) 2012. <https://www.osteopathic.org/inside-aoa/accreditation/postdoctoral-training-approval/postdoctoral-training-standards/Documents/Basic-Standards-General-Psychiatry.pdf> Accessed 15 Feb 2016
9. Geriatric Workforce Policy Studies Center (GWPSC). 2012a [http://www.americangeriatrics.org/files/documents/gwps/Table%203\\_1.pdf](http://www.americangeriatrics.org/files/documents/gwps/Table%203_1.pdf) Accessed 15 Feb 2016
10. Geriatric Workforce Policy Studies Center (GWPSC). 2012b [http://www.americangeriatrics.org/files/documents/gwps/Table%203\\_9.pdf](http://www.americangeriatrics.org/files/documents/gwps/Table%203_9.pdf) Accessed 15 Feb 2016
11. Geriatric Workforce Policy Studies Center (GWPSC). 2012c Table 5.5 [http://www.americangeriatrics.org/files/documents/gwps/Table%205\\_5.pdf](http://www.americangeriatrics.org/files/documents/gwps/Table%205_5.pdf) Accessed 15 Feb 2016
12. Geriatric Workforce Policy Studies Center (GWPSC) 2008. Table 1.29 Projection on Future Number of Geriatric Psychiatrists in the United States. [http://www.americangeriatrics.org/files/documents/gwps/Table%201\\_29.pdf](http://www.americangeriatrics.org/files/documents/gwps/Table%201_29.pdf) Accessed 15 Feb 2016
13. Accreditation Council for Graduate Medical Education (ACGME). Common Program Requirements 2013. <http://www.acgme.org/What-We-Do/Accreditation/Common-Program-Requirements/articleid/3845> Accessed 11 July 2016
14. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. *Med Teach.* 2007;29(7):642–7.
15. Glover JA, Williams E, Hazlett LJ, Campbell N. Connecting to the future: telepsychiatry in postgraduate medical education. *Telemed E Health.* 2013;19(6):474–9.
16. Hoffman P, Kane JM. Telepsychiatry education and curriculum development in residency training. *Acad Psychiatry.* 2015;39(1):108–9.

17. Volpe T, Boydell KM, Pignatiello A. Attracting child psychiatrists to a televideo consultation service: the TeleLink experience. *Int J Telemed Appl*. 2013;2013:4.
18. Hilty DM, Rabinowitz T, Yellowlees PM, Turvey C, Shoemaker E. Telepsychiatry's evidence base shows effectiveness: new models (asynchronous), more psychotherapy, and innovations with special populations. Symposium. American Psychiatric Association: Toronto; 2015a
19. Sunderji N, Crawford A, Jovanovic M. Telepsychiatry in graduate medical education: a narrative review. *Acad Psychiatry*. 2015;39(1):55–62.
20. Sunderji N, Waddell A. Using real-time Delphi to develop a consensus on competencies. *Med Educ*. 2015;49(11):1151–2.
21. Teshima J, Hodgins M, Boydell KM, Pignatiello A. Resident evaluation of a required telepsychiatry clinical experience. *Acad Psychiatry*. 2016;40(2):348–52. doi:[10.1007/s40596-014-0265-x](https://doi.org/10.1007/s40596-014-0265-x).
22. Balon R, Beresin EV, Coverdale JH, Louie AK, Roberts LW. Strengthening telepsychiatry's role in clinical care and education. *Acad Psychiatry*. 2015;39:6–9.
23. Crawford A, Sunderji N, López J, Soklaridis S. Defining competencies for the practice of telepsychiatry through an assessment of resident learning needs. *BMC Med Educ*. 2016;16(1):1.
24. Hilty DM, Marks SL, Urness D, Yellowlees PM, Nesbitt TS. Clinical and educational telepsychiatry applications: a review. *Can J Psychiatry*. 2004a;49(1):12–23.
25. Chung-Do J, Helm S, Fukuda M, Alicata D, Nishimura S, Else I. Rural mental health: implications for telepsychiatry in clinical service, workforce development, and organizational capacity. *Telemed E Health*. 2012;18(3):244–6.
26. Lief SJ, Tolomiczenko GS, Dunn LB. Effect of training and other influences on the development of career interest in geriatric psychiatry. *Am J Geriatr Psychiatry*. 2003;11(3):300–8.
27. Rej S, Laliberté V, Rapoport MJ, Seitz D, Andrew M, Davidson M. What makes residents interested in geriatric psychiatry? A pan-Canadian online survey of psychiatry residents. *Am J Geriatr Psychiatry*. 2015;23(7):735–43.
28. DeGaetano N, Greene CJ, Dearaujo N, Lindley SE. A pilot program in telepsychiatry for residents: Initial outcomes and program development. *Acad Psychiatry*. 2015;39(1):114–8.
29. Jones BN. Telemedicine in geriatric psychiatry. *Psychiatr Ann*. 1999;29(7):416–20.



30. Lee JH, Kim JH, Jhoo JH, Lee KU, Kim KW, Lee DY, Woo JI. A telemedicine system as a care modality for dementia patients in Korea. *Alzheimer Dis Assoc Disord*. 2000;14(2):94–101.
31. Tang WK, Chiu H, Woo J, Hui E. Telepsychiatry in psychogeriatric service: a pilot study. *Int J Geriatr Psychiatry*. 2001;16(1):88–93.
32. Johnston D, Jones BN. Telepsychiatry consultations to a rural nursing facility: a 2-year experience. *J Geriatr Psychiatry Neurol*. 2001;14(2):72–5.
33. Lyketsos CG, Roques C, Hovanec L, Jones BN. Telemedicine use and the reduction of psychiatric admissions from a long-term care facility. *J Geriatr Psychiatry Neurol*. 2001;14(2):76–9.
34. Rabinowitz T, Ricci MA, Caputo MP, Murphy KM. Minimum data set facilitates telepsychiatry consultations for nursing home residents. In: Ninth annual meeting and exposition of the American Telemedicine Association. Tampa, Florida 2004.
35. Yeung A, Johnson DP, Trinh NH, Weng WC, Kvedar J, Fava M. Feasibility and effectiveness of telepsychiatry services for Chinese immigrants in a nursing home. *Telemed and E Health*. 2009;15(4):336–41.
36. Rabinowitz T, Murphy KM, Amour JL, Ricci MA, Caputo MP, Newhouse PA. Benefits of a telepsychiatry consultation service for rural nursing home residents. *Telemed and E Health*. 2010;16(1):34–40.
37. Montani C, Billaud N, Tyrrell J, Fluchaire I, Malterre C, Lauvernay N, Couturier P, Franco A. Psychological impact of a remote psychometric consultation with hospitalized elderly people. *J Telemed Telecare*. 1997;3(3):140–5.
38. Menon AS, Kondapavalru P, Krishna P, Chrismer JB, Raskin A, Hebel JR, Ruskin PE. Evaluation of a portable low cost videophone system in the assessment of depressive symptoms and cognitive function in elderly medically ill veterans. *J Nerv Ment Dis*. 2001;189(6):399–401.
39. Grob P, Weintraub D, Sayles D, Raskin A, Ruskin P. Psychiatric assessment of a nursing home population using audiovisual telecommunication. *J Geriatr Psychiatry Neurol*. 2001;14(2):63–5.
40. Saligari J, Flicker L, Loh PK, Maher S, Ramesh P, Goldswain P. The clinical achievements of a geriatric telehealth project in its first year. *J Telemed Telecare*. 2002;8(Suppl 3):53–5.
41. Shores MM, Ryan-Dykes P, Williams RM, Mamerto B, Sadak T, Pascualy M, Felker BL, Zweigle M, Nichol P, Peskind ER. Identifying undiagnosed dementia in residential care veter-

- ans: comparing telemedicine to in-person clinical examination. *Int J Geriatr Psychiatry*. 2004;19(2):101–8.
42. Loh PK, Ramesh P, Maher S, Saligari J, Flicker L, Goldswain P. Can patients with dementia be assessed at a distance? The use of Telehealth and standardized assessments. *Intern Med J*. 2004;34(5):239–42.
  43. Cullum CM, Weiner MF, Gehrman HR, Hynan LS. Feasibility of telecognitive assessment in dementia. *Assessment*. 2006;13(4):385–90.
  44. Turvey CL, Willyard D, Hickman DH, Klein DM, Kukoyi O. Telehealth screen for depression in a chronic illness care management program. *Telemed E Health*. 2007;13(1):51–6.
  45. Sheeran T, Rabinowitz T, Lotterman J, Reilly CF, Brown S, Donehower P, Ellsworth E, Amour JL, Bruce ML. Feasibility and impact of telemonitor-based depression care management for geriatric homecare patients. *Telemed and E Health*. 2011;17(8):620–6.
  46. Vahia IV, Ng B, Camacho A, Cardenas V, Cherner M, Depp CA, Palmer BW, Jeste DV, Agha Z. Telepsychiatry for neurocognitive testing in older rural Latino adults. *Am J Geriatr Psychiatry*. 2015;23(7):666–70.
  47. Hilty DM, Luo JS, Morache C, Marcelo DA, Nesbitt TS. Telepsychiatry. *CNS Drugs*. 2002;16(8):527–48.
  48. Kim T, Biocca F. Telepresence via television: two dimensions of telepresence may have different connections to memory and persuasion. *J Comput Mediated Commun*. 1997;3(2)
  49. Cukor P, Baer L, Willis BS, Leahy L, O' Laughlen JO, Murphy M, Withers M, Martin E. Use of videophones and low-cost standard telephone lines to provide a social presence in telepsychiatry. *Telemed J*. 1998;4(4):313–21.
  50. Dreyfus SE, Dreyfus HL. A five-stage model of the mental activities involved in directed skill acquisition, California Univ Berkeley Operations Research Center; 1980.
  51. Carraccio CL, Benson BJ, Nixon LJ, Derstine PL. From the educational bench to the clinical bedside: translating the Dreyfus developmental model to the learning of clinical skills. *Acad Med*. 2008;83(8):761–7.
  52. Hilty DM, Shoemaker EZ, Myers K, Snowdy CE, Yellowlees PM, Yager J. Need for and steps toward a clinical guideline for the telemental healthcare of children and adolescents. *J Child Adolesc Psychopharmacol*. 2016;26(3):283–95.

53. Elderkin-Thompson V, Silver RC, Waitzkin H. When nurses double as interpreters: a study of Spanish-speaking patients in a US primary care setting. *Soc Sci Med*. 2001;52(9):1343–58.
54. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606–13.
55. Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, Leirer VO. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res*. 1983;17(1):37–49.
56. Hilty DM, Yellowlees PM, Cobb HC, Bourgeois JA, Neufeld JD, Nesbitt TS. Models of telepsychiatric consultation–liaison service to rural primary care. *Psychosomatics*. 2006a;47(2):152–7.
57. Myers K, Vander Stoep A, Zhou C, McCarty CA, Katon W. Effectiveness of a telehealth service delivery model for treating attention-deficit/hyperactivity disorder: a community-based randomized controlled trial. *J Am Acad Child Adolesc Psychiatry*. 2015;54(4):263–74.
58. Hilty DM, Servis ME, Nesbitt TS, Hales RE. The use of telemedicine to provide consultation-liaison service to the primary care setting. *Psychiatr Ann*. 1999;29(7):421–7.
59. Hilty DM, Yellowlees PM, Nesbitt TS. Evolution of telepsychiatry to rural sites: changes over time in types of referral and in primary care providers' knowledge, skills and satisfaction. *Gen Hosp Psychiatry*. 2006b;28(5):367–73.
60. Hilty DM, Marks SH, Wegelin JA, Callahan EJ, Nesbitt TS. A randomized, controlled trial of disease management modules, including telepsychiatric care, for depression in rural primary care. *Psychiatry*. 2007a;4(2):58–65.
61. Hilty DM, Nesbitt TS, Kuenneth CA, Cruz GM, Hales RE. Rural versus suburban primary care needs, utilization, and satisfaction with telepsychiatric consultation. *J Rural Health*. 2007b;23(2):163–5.
62. Fortney JC, Pyne JM, Kimbrell TA, Hudson TJ, Robinson DE, Schneider R, Moore WM, Custer PJ, Grubbs KM, Schnurr PP. Telemedicine-based collaborative care for posttraumatic stress disorder: a randomized clinical trial. *JAMA Psychiatry*. 2015;72(1):58–67.
63. Fortney JC, Pyne JM, Mouden SB, Mittal D, Hudson TJ, Schroeder GW, Williams DK, Bynum CA, Mattox R, Rost KM. Practice-based versus telemedicine-based collaborative care for depression in rural federally qualified health centers: a

- pragmatic randomized comparative effectiveness trial. *Am J Psychiatry*. 2013;170(4):414–25.
64. Cowley DS, Dunaway K, Forstein M, Frosch E, Han J, Joseph R, McCarron RM, Ratzliff A, Solomon B, Unutzer J. Teaching psychiatry residents to work at the interface of mental health and primary care. *Acad Psychiatry*. 2014;38(4):398–404. doi:10.1007/s40596-014-0081-3.
  65. Hoge, MA, Morris JA, Laraia M, Pomerantz A, Farley T. Core competencies for integrated behavioral health and primary care. Washington, DC: SAMHSA-HRSA Center for Integrated Health Solutions; 2014. [http://www.integration.samhsa.gov/workforce/Integration\\_Competencies\\_Final.pdf](http://www.integration.samhsa.gov/workforce/Integration_Competencies_Final.pdf). Accessed 1 Sept 2015.
  66. Ratzliff A, Norfleet K, Chan YF, Raney L, Unützer J. Perceived educational needs of the integrated care psychiatric consultant. *Acad Psychiatry*. 2015;39(4):448–56.
  67. Hilty DM, Rabinowitz T. On-call telepsychiatry services: interventions, outcomes, and innovations. In: On-call geriatric psychiatry. Springer International Publishing; 2016. p. 317–31.
  68. Hilty DM, Ingraham RL, Yang SP, Anders TF. Multispecialty telephone and e-mail consultation for patients with developmental disabilities in rural California. *Telemed J E Health*. 2004b;10(4):413–21.
  69. Hilty DM, Yellowlees PM, Parrish MB, Chan S. Telepsychiatry: effective, evidence-based, and at a tipping point in health care delivery? *Psychiatr Clin North Am*. 2015b;38(3):559–92.
  70. Hilty DM, Crawford A, Teshima J, Chan S, Sunderji N, Yellowlees PM, Kramer G, O’Neil P, Fore C, Luo J, Li ST. A framework for telepsychiatric training and e-health: competency-based education, evaluation and implications. *Int Rev Psychiatry*. 2015;27(6):569–92.
  71. Ortman JM, Velkoff VA, Hogan H. An aging nation: the older population in the United States. Washington DC: US Census Bureau. 2014:25–1140 <https://www.census.gov/prod/2014pubs/p25-1140.pdf> Accessed 11 July 2016