

# New Frontiers in Healthcare and Technology: Internet-and Web-Based Mental Options Emerge to Complement In-Person and Telepsychiatric Care Options

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## Abstract

**Background:** Web and Internet-based resources are remarkably popular with the public, patients and others as a way to access mental health information, tools for self-care, advice/consultation from a professional, and provider-directed treatments.

**Objective:** This paper provides a framework of a spectrum that includes person-centered health education options (conceptual endpoint), patient and caregiver-centered mental health care interventions (evidence-based literature review), and more formal provider-directed treatments (conceptual endpoint).

**Methods:** The evidence-based literature review was focused on treatment studies, using a minimum of three key words and the 1996-2015 period, resulting in 13,612 articles. This was reduced to 388 (title words used), to 125 (abstracts for methods, design, and outcomes) and 40 (evidence-based criteria of guidelines).

**Results:** Technology is frequently used, is readily accessible and satisfies persons, patients, and caregivers. Its impact on openness to engage with others and begin self-care appears very positive; its ability to help people change behaviors and engage additional clinical services appears modest, though this is inadequately evaluated. Formal treatments over the Internet, asynchronous care models, or traditional video-based synchronous services are as good as or better than in-person services, though an incomplete range of services has been evaluated. Relatively few treatment studies assess outcomes, compare in-person and e-MentalHealth care, and or compare technology-based care options to one another; hybrid models of care have emerged, but have rarely been studied.

**Conclusions:** For persons or patients not in care, use of the internet for common, non-acute problems appears to work, though a one-time clinical evaluation may help them place options in context. Clinicians and patients should specifically plan how to use technology and exercise sound judgment, based on guidelines when available. More research is needed on the application of new technologies to clinical care, with randomized trials and health services studies for effectiveness suggested.

**Keywords:** Primary words were apps; Care; Caregiver; Centered; Education; Effectiveness; Efficacy; Emotional; Internet; Mental; Mobile; Outcome; Patient; Person; Practice; Quality; Reliability; Research; Satisfaction; Service; Technology; Validity; Web-based

**Secondary keywords:** Aynchronous; Hybrid; E-mental; Health; Face-to-face; In-person; Synchronous; Telemedicine; Telemental; Telepsychiatry; Videoconferencing

## Introduction

Globally, Africa, the Middle East, and Latin America are the fastest growing populations in terms of Internet usage; in the United States, Internet use has grown dramatically over the past decade, with a jump from 44% of the population [1,2]. Online health information varies in quality and readability [3-5], but it has helped users feel empowered, be more confident (i.e., self-efficacy), suffer less anxiety, make decisions on health-related behaviors, and feel more connected to their doctor [6-9]. The Internet overcomes geographic distance, serves those with special needs (i.e., autism-spectrum, sensory and motor disabilities), reduce the impact of immobility (i.e., panic disorder or phobias) and suits generational preferences (i.e., teenagers). Social networking has been defined as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) share a connection with specific users, and (3) view and traverse their list of connections and those made by others within the system [10]. A meta-analysis shows that health behaviors change with this medium [11].

A review of 115 studies on e-mental health (eMH) from 2005 to

2010 reported that 94% were peer-reviewed and 51% were described as primarily research [12,13]. Most of the research (76%) originated in the United States, Australia, or the Netherlands. Four areas of e-MH service delivery were identified: information provision; screening, assessment, and monitoring; intervention; and social support. E-MH has been defined as “mental health services and information delivered or enhanced through the Internet and related technologies” [14]. However, there is no agreement on a field-specific definition. Some scholars consider e-MH to include only initiatives delivered directly to MH service users [15] and only on the Internet [15,16], as opposed to, for example, delivery via stand-alone computers or video seminars. The terms telemental health (TMH) and telepsychiatry have typically been used for traditional MH care services provided synchronously by videoconferencing [17], or asynchronously (e.g., provider interview of a patient, with video capture, uploading additional information, and

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transmission in a Health Insurance Portability and Accountability Act (HIPAA)-adherent manner to a remote psychiatrist) [18].

Internet-based mental health (MH) education and services are on the rise, as more patients, caregivers, and MH providers are using the Internet. This is driven by consumers or persons at-large, before they become patients in traditional services, and transitions our thinking from clinic-based care past patient-centered care to person-centered care known as participatory medicine [19-21]. MH-related, technology-based services exist on a continuum: self-help/support groups – well-prepared materials for patient psychoeducation and provider professional education – tips for assessment and selfcare (e.g., depression) – informal provider consultation online – asynchronous communication with providers – MH services with professionals like teleMH ((TMH) care or; Internet-based cognitive behavioral treatment (CBT) [22-30].

Consumers, patients, caregivers and providers use a variety of sources of information, turn to it for many reasons, and use the information for next step planning (Table 1). A population survey assessed Internet use, past psychiatric history and the 12-item General Health Questionnaire [31]. It showed that 18% of all Internet users had used it for MH information, with the prevalence higher among those with a past history of MH problems and those with current psychological distress. Second, the quality of the information varies. Only 12% selected the Internet as one of the three most accurate sources of information, but 24% said it was one of the three sources they would use. A survey of 600+ students of law, nursing and computer science in Spain, using a 25-item questionnaire, found they had a strong distrust in online MH information, notwithstanding their daily use of the Internet [32]. The frequency and methods of their research on the Internet correlated with their health status and their frequency of medical appointments.

MH providers face many challenges with these emerging technologies, and they, like many others in society, may fear the trends [33]. First, how do they keep up with the slew of new options patients are using, particularly adult clinicians not pulled along by child and adolescent patients? Second, how do they evaluate the technologies or help patients do so? This is particularly true for psych apps for smartphones [34]. Third, can we assume the person or patient will use the “right” service at the “right” time (e.g., not using social media when expressing suicidal ideation)? More broadly, though, do the advantages (empowerment, in-time learning, increased self-efficacy) outweigh the liabilities? Finally, when patients are starting care – or already in care – what steps do patients and clinicians need to take to track and evaluate use (e.g., do clinicians and programs change treatment plans and expectations for outcomes? If a patient follows inaccurate advice, he/she may have a bad outcome or may have longer suffering due to delayed access of the “right” or better care option). Assuming that patients will inform and discuss the options with clinicians may be too optimistic.

The American Telemedicine Association Practice Guidelines for TMH Care [35] and Video-Based Online Mental Health Services do not cover all the new nooks and crannies of the technology innovations [36]. The former focuses on synchronous standards and the latter on initiation and reception of services using personal computer with a webcam or a mobile communications device (e.g., “smart phone”, laptop, or tablet; with two-way camera capability. Neither guideline addresses communications between professionals and consumers or patients via texting, e-mail, chatting, social network sites, online

“coaching” or other non-MH services. Many persons or patients are using self-help services to complement regular care (i.e., hybrid models) [37].

This paper will...

- 1) Review the literature on patient and caregiver sought MH information, self- or patient-directed assessment, informal treatment options, and semiformal treatment options,
- 2) Propose a spectrum of MH information to clinical care options; it places the above evidence-based review about treatment between an endpoint with informal Internet-based MH education and another endpoint of formal clinical care/treatment options co-owned by patients and clinicians.
- 3) Help the clinician to gain a relative sense of the similarities, differences, and complimentary fit of new technology-based options, in-person care, and video-based traditional care models,
- 4) Provide an overview of the formal guidelines for traditional e-MH care, informal guidelines for new technology-based care options, and suggest preliminary considerations on how to approach innovative patient-centered/driven care options.

## Methods

The review of the literature was conducted in the MEDLINE, PubMed, psycINfo, EMBASE, Science Citation Index, Social Sciences Citation Index, Telemedicine Information Exchange databases, Centre for Reviews and Dissemination, and The Cochrane Library Controlled Trial Registry databases for the period of July 1996 to March 2015. Primary words were apps, care, caregiver, centered, education, effectiveness, efficacy, emotional, Internet, mental, mobile, outcome, patient, person, practice, quality, reliability, research, satisfaction, service, technology, validity, web-based. Secondary words were asynchronous hybrid, e-mental, health, face-to-face, in-person, synchronous, telemedicine, telemental, telepsychiatry, and videoconferencing. The evidence-based literature review was focused on treatment studies, using a minimum of three key words and the 1996-2015 period, resulting in 13,612 articles. This was reduced to 388 (title words used), to 125 (abstracts for methods, design, and outcomes) and 40 (evidence-based criteria of guidelines) (Levels I and II). For the endpoints (health information; formal treatment studies), recent references indicative of typical programs/resources were used to supplement the framework, including the end with e-MH, telehealth, telepsychiatry, and hybrid MH care.

The standard for guidelines for evidence bases is set by the Institute of Medicine and partnering medical organizations, with reviews by the Agency for Healthcare Quality and Research (AHQR) and Cochrane Database of Systematic Reviews [38-41]. A fundamental feature is a panel of multidisciplinary experts to rate two factors: 1) the quality of evidence (e.g., Levels I (best) to IV (least)); and 2) consensus, expert opinion. Level I includes: a high quality randomized controlled trial (RCT) or prospective study; testing of previously developed diagnostic criteria on consecutive patients; sensible costs and alternatives; values obtained from many studies with multi-way sensitivity analyses; and systematic review of such Level I studies. Level II includes: a lesser quality RCT; prospective comparative study; retrospective study; untreated controls from an RCT; lesser quality prospective study; development of diagnostic criteria on consecutive patients; sensible costs and

alternatives; values obtained from limited studies; with multi-way sensitivity analyses; and a systematic review of Level II studies or Level I studies with inconsistent results.

### **Web- and Internet-based patient-centered/driven self-help, informal peer education, resources for caregivers, and self-assessment and care inroads**

**Health information: who seeks it and what do they want?:** The users of the Internet are mostly female (86% vs. 73% of men) and seek information on diseases or medical problems, treatments or procedures, doctors or other health professionals, hospitals or other medical facilities, food safety or recalls, drug safety or recalls, and pregnancy and childbirth [1,2]. Caregivers (a term used for adults who provide unpaid care to a parent, child, friend or other loved ones) usually have access to the Internet (79%) and of those, 88% look online for health information. One's education affects use (89% of those with a college degree vs. 70% with a high school degree vs. 38% without a high school diploma. Income is a predictor, as well (95% with household income \$75,000+ and 57% with < \$30,000).

A systematic review of the effectiveness of online services in facilitating MH help-seeking in young people aged 14-25, emphasizing rigorous designs (N=18) showed high satisfaction and higher use by females [42]. There was no change in help-seeking behavior in (N=3) RCTs, but a quasi-experimental study showed a slight but significant increase in help-seeking [42]. The cross-sectional studies reported that online services facilitated seeking help from a professional source for 35% of users. Limitations included small sample sizes and inadequate measurement of help-seeking.

Many patients migrate to sites like Patients Like Me (<http://www.patientslikeme.com/>), a consumer driven site where individuals connect with others in the community who are experiencing similar medical issues. Young people with developmental challenges may have few traditional care options and feel more comfortable anonymously or at a distance, to share experiences and try to learn new behaviors [43]. Comfortable with Internet-based chats and groups, they may even express ideas of self-harm, negative affective states, or pessimistic cognitions of other peers [44,45]. This is concerning, though, if these things are not shared with parents and/or professionals. Anxiety (phobias or panic disorder) or trauma (e.g., military personnel with PTSD) patients may be avoided [46].

Common prejudice is that psychotic patients are not eligible for remote consultations and that they do not use of technology, in general. This is attributed to stimulus overflow and inability to deal with the abundance of information, difficulties with concentration during psychosis, lack of energy, paranoid ideas and fear of symptom provocation. However, they successfully use the Internet for information related to their illness and medication (e.g., side effects and the hope of finding better medication) [47-49]. On the other hand, patients may feel the need to guard themselves against excess information that Internet frequently offers. For loved ones of these patients, the simulated reality game "Second Life" described below, when used as an educational tool, may improve the user's understanding of psychotic symptoms (i.e., auditory- and/or visual hallucinations [50]. Health promotion strategies are typically at freestanding websites [51].

A community sample of young adults assessed the impact of patient-related factors, for e-MH care and the impact on use of conventional services for MH care in France [52]. Factors were organized into: 1) predisposing factors (age, sex, educational attainment, professional activity, living with a partner, children,

childhood negative events, chronic somatic disease, parental history of depression); 2) enabling factors (social support, financial difficulties, parents' income); and 3) needs-related factors (lifetime major depression or anxiety disorders, suicidal ideation, ADHD, cannabis use). Overall, 8.65% (105/1214) of participants reported seeking e-MH care in case of psychological difficulties in the preceding 12 months and 15.7% reported psychological difficulties. The likelihood of e-MH care was positively associated with lifetime major depression/anxiety disorder and lifetime suicidal ideation; the predisposing factor of childhood life events was negatively correlated. E-MH care did not hinder traditional care, but was associated with face-to-face psychotherapy.

**Support groups and participation in a "community.":** Most support groups are for consumers and patients, based on the following premises: 1) knowledge affects changes in behaviors, 2) peer support/feedback help with changes (or in some cases, the opposite), and 3) even informal contact by e-mail, chat or telephone with a health care provider feels personalized and affects such changes. Internet-mediated support groups can include specialized groups for individuals with disabilities or unique modes of experience [53].

Web-based support has coalesced in MH around certain groups of users (e.g., caregiver) and specific populations. These include:

- Individuals with stigmatizing or rare illness with social isolation [54].
- Schizotypal personality disorder patients, who have interest in social interaction on the Web [55] and interpersonal relationships without the usual in-person difficulties.
- Military personnel re-entry into regular life [56], whose fear of stigma reduces help-seeking [57,58] and who prefer technology-based platforms (e.g., 33% of personnel were more willing to use a technology-based platform for MH care than talk to a counselor in-person) [59].
- In about 2/3 of studies, caregivers who use Internet-based services have significantly reduced stress and improved quality of life for MH disorders [12]. They use interactive communities to bulletin board therapy groups. Family caregivers located in rural areas found e-health support to be beneficial in comparison with conventional caregiver support [60].

**Formal materials or opportunities for consumers, patients, caregivers and providers:** Some consumers, patients, caregivers (psychoeducation) and providers (professional education) are seeking robust, structured programs like bulletin boards, videos, and advocacy sites. Many Internet-based materials and opportunities to learn exist for caregivers of patients, for those with MH (dementia, schizophrenia, anorexia) and medical disorders [12]. Services included webcasts, discussion boards, online classes, learning modules, and chat rooms; the best outcomes were best for satisfaction and comfort with services via cell phones [61]. Continuing medical education resources [62] are increasingly available.

Young people may benefit from structured health information, web-based screening and assessment, and online treatment options-across many settings-as free-standing promotion sites, programs at school, and combination home/primary care settings or home/MH specialist settings. Many Internet interventions have been developed to provide broad MH promotion in children and adolescents: Kindertelefoon

(www.kindertelefoon.nl), YooMagazine (www.Yoomagazine.net), Ciao, ReachOut (www.reach-out.org) and Walkalong (www.walkalong.ca) particularly target youth.

**Psych apps and other tools for self-directed habit, lifestyle or illness changes:** These tools typically target good habits/health promotion, disease prevention, and informal management of symptoms or problems. Techniques might include use of a diary, a questionnaire or survey to provoke reflection or “stepping back” to re-evaluate one’s assumptions in a conclusion. Exercise and substance (i.e., alcohol) logs are popular, mood assessments (MoodyMe <https://itunes.apple.com/us/app/moody-me-mood-diary-tracker/id411567371?mt=8>), and those that map behavior patterns across time, including triggers, diet, sleep and other related factors. Stress reduction programs using a mobile phone app is an increasing field of interest because of a large number of potential users and economical impacts on community [63].

Precision Medicine [64] suggests the drive towards more individualized medicine may be less based on epidemiological and consensus-driven algorithms, and more by informatics, laboratory medicine, and testing. Uptake of apps has generally been slow in MH, as MH organizations were not eligible to receive federal start-up funding for IT infrastructure. Mobile apps offer 1) portability for access anytime, anywhere, regardless of patient geography and transportation barriers; 2) an inexpensive option versus traditional desktop computers; and 3) additional features (e.g., context-aware interventions and sensors [65] with real-time feedback. MH app demand is high across census-designated areas, generations, and, to a degree, age, with less use by older adults [65]. Text messaging may be higher in urban areas [66] than rural areas [67].

Psych apps are used mainly for many functions, including to: 1) communicate with other patients, caregivers, social supports, or providers; 2) augment psychotherapy and medical support with journaling, diaries, symptom tracking tools, and psychoeducation between clinic appointments; 3) (smart) monitor, that is, to use tools to predict relapse behavior or worsening affective symptoms, through sensors and data activity; 4) practice self-assessment and care through reflection about their symptoms; 5) make learning more interactive than traditional paper homework; and 6) organize, track, and thus monitor long-term their activities, moods, and therapy homework [22,68,69]. Since patients often forget key events between visits, logging “symptoms, affect, behavior, and cognitions close in time to experience” (known as ecological momentary assessment; EMA) helps with reporting of symptoms [70,71].

Various mobile apps especially those focusing on self-help in dealing with anxiety disorders, MH well-being and stress reduction, have been adjusted so that various patient groups may benefit from them. One example is “Fear Fighter”, a computer guided self-exposure approach to treat phobia/panic developed at the end of last century [72]. Exposure therapy is effective for phobia/panic but qualified and trained therapist resources are scarce. A computer-guided approach can make most of the treatment suggestions, and still achieve formidable results; both patients and clinicians achieve benefits by saving time and enhance health care efficiency [73].

App designers are not always clinicians, but if they were, there may be better accuracy of the content [74] and it may be more straightforward for trainees to use them [75]. Recent studies suggest that clinicians should be involved in the development process and a simple methodology of creating an app has been proposed, using just an Internet browser and a text editor [76]. The barriers are typical: anxiety/fear, technical skills (e.g., coding in computer programming language)

and time. In psychiatry, the latest app advance is for resident training in psychodynamic therapy [77]. A search revealed 166 and 240 psychiatry apps on the Apple’s ios-based App Store and the Android Google Play Store, respectively, but a scarcity of high-quality, comprehensive, textbook grade e-learning materials [78]. A survey of medical students (N = 185; mean age 22; users of Apple IOS devices) showed that 66.7% had between 1-5 medical smartphone apps, used mainly for classroom and clinic purposes; 95.2% of the students indicated that having a psychiatry smartphone application would be useful, preferably with textbook content and clinical videos embedded [78].

### **Clinician-assisted decisions, telepsychiatric care and other evidence-based options**

**Informal advice from health professionals without guidance:** Some of the above options, while not considered “care,” involve some oversight by MH providers (e.g., depression). This usually involves bulletin boards with occasional comments or steering by professionals. For example, in an asynchronous chat group with education, the provider can participate periodically (e.g., paper, video or other) based on the discussion to provide information, corrections of misunderstood concepts or distortions, or review of self-report measures with a follow-up piece of advice. Ironically, sometimes the “best” outcome of one of these forums is when a patient is referred to see a professional when things are not simple or there is a perception by the facilitator that too many concurrent problems are at-hand.

In a recent study, researchers reviewed the public social networking accounts of college students to assess for symptoms of depression, finding that 25% exhibited depressive symptoms based upon the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) [79] criteria, and 2.5% met the criteria for major depressive disorder. Online reinforcement from their friends may have made them more likely to discuss their depressive symptoms publicly via social networking sites [80].

Support and self-help programs are delivered via Internet especially to rural areas but also within urban environments – for patients and caregivers. These allow anonymous questions, offer relevant treatment ideas, and self-help interventions without stigma (e.g., severe mentally ill or individuals with drinking problem) [81]. The range of initiatives for support for caregivers includes hotlines for consultation on key decisions (i.e., decision support), psychosocial/CBT (individual or group), problem solving training, coaching for positive parenting skills (e.g., Internet- or app-based follow-up assessment and engagement of treatment), and use of formal questionnaires to self-diagnose and refer loved ones (e.g., Patient Health Questionnaire for depression; hospital anxiety and depression scale).

**Innovations or additions to regular traditional treatments:** The least structured of these options is patient-doctor correspondence integrated with clinical care and the EHR. As the Internet increases level of knowledge and information amount regarding specific illness, the users may more easily talk to their doctor regarding their specific conditions and potential treatment options [9]. Schizophrenic patients especially perceive the shift in hierarchy to a more equal relationship. In this respect, a specific advantage for patients with psychosis is not having to face another person, but still being able to gain information and interact with others without feeling devalued or unsafe [47].

Psych apps, as described above, are used for many reasons in supplementing or complementing care, including to: 1) augment psychotherapy and medical support with journaling, diaries, symptom tracking tools, and psychoeducation between traditional face-to-face

clinic appointments; 2) encourage self-assessment and reflection about their symptoms; and 3) make learning more interactive than traditional paper homework [22,68,69]. Apps are beginning to be used for illness-specific education, treatment resource location, and tracking of treatment progress [82]. Psychometric measures such as the Patient Health Questionnaire (PHQ-9) [83] and other military population measures are preferred by soldiers by iPhone rather than paper or computer due to its interface, portability, and convenience [84]. An app called PTSD Coach (<http://www.ptsd.va.gov/public/pages/PTSDCoach.asp>) has been designed to help veterans learn about and manage symptoms that commonly occur after trauma [85]. It also has direct links to support and help; such apps are not designed to act as a substitute for treatment.

One promising area is supporting patients in attendance to treatment, which is a common reason psychiatric treatments fail to produce intended outcomes. Unfortunately, only about half of all patients obtain psychiatric treatment [86] due to stigma and poor insight. Direct or remote education, motivation and support may increase attendance (i.e., treatment readiness), recognition of treatment benefits, and collaboration between care providers – all contribute to a positive psychiatric treatment [87]. Recent patient-centered strategies that increase patient attendance and adherence to treatment include simple mail, telephone or SMS reminders [88,89].

Internet-based CBT (ICBT) and other evidence-based treatments are most often for patients with depression and anxiety. ICBT appears to be effective when delivered in clinical practice (i.e., guided by a qualified therapist [90,91]. Effect size and recovery rates were comparable to, or somewhat superior to, in-person CBT [92]. Internet-based cognitive therapy (CT) is often combined with text messages (mobile cognitive therapy; mCT) and therapist e-mail and telephone contact – this prevents relapse in depression, is acceptable and is feasible for both patients and therapists [93]. Online MH interventions are also as effective as traditional in-person therapy for disorders such as depression and anxiety [94-97]. In a 30-month study using CBT for social phobia research, the long-term effects of in-person delivered CBT was comparable to Internet-based treatment [97].

**Asynchronous telepsychiatry (ATP):** ATP to primary care is feasible, valid and reliable in English and Spanish-speaking patients in primary care [18]. Similar methods are used in radiology, dermatology, ophthalmology, cardiology and pathology. One ATP model uses a basic questionnaire for screening by the provider of the patient, video capture of that interview, and uploading of patient histories for a remote psychiatrist for review in a HIPAA-adherent manner [18]. Diagnosis and treatment recommendations are made and PCPs implement care successfully about 80% of the time and the model is cost-effective [98,99].

**Synchronous TP (STP) or TMH:** E-MH models of clinical care and education have pros and cons [17, 100,101], including their level of overall intensity, cost, feasibility and depth of the relationship between the TMH provider, the PCP and patient. Low intensity models include tele-education, formal case review and in-person, telephone or email doctor-to-doctor “curbside” consultations. A systematic approach was a multi-specialty phone and email teleconsultation system for adults and children with developmental disabilities [102]. Moderate intensity models include an integrated program of MH screening, therapy on site, and telepsychiatric consultation (phone, email or video), with continuing medical education (CME) and training on screening questionnaires [103,104] or asynchronous telepsychiatry (ATP) to primary care in English and Spanish-speaking patients in primary

care [18,98,99]. High intensity models are typically the ones previously mentioned involving collaborative care [105-107].

**Improved access at a distance to rarely available standard treatments:** Rapid eye movements are part of the Eye Movement Desensitization and Reprocessing approach typically used for treatment of a patients suffering from an acute stress disorder. However, experts who provide uncommon treatments may be difficult to find in one’s community, which is why a videoconference mediated treatment has been tested with promising results [108].

TMH has contributed to development of “remote speech therapy,” a Swedish innovation since 2010. This has been well established in rural areas of Sweden, Finland and Scotland [109]. The aim of the project was to reduce therapists’ travel time while enabling patients in rural communities to have better access to speech and language therapy services. School children living in remote communities had the opportunity to receive therapy sessions in their schools while the speech therapist was located at a central location.

**New treatments with a growing evidence base (e.g., virtual reality (VR):** VR is usually defined as “a computer-simulated environment that can simulate physical presence in places in the real world or imagined worlds.” VR can recreate sensory experiences, which include virtual taste, sight, smell, sound, and touch. There are VR platforms for games, entertainment, marketing, flight simulation, medical education and other fields, and now the virtual characters (avatar, virtual agent) and environments are being used to practice dynamic and real-life social interactions in a safe environment [30,110]. The virtual character (avatar) may be a graphical representation of the user or the user’s alter ego in 3D form; people are known to psychologically identify with virtual representations that do not necessarily reflect their actual appearances [111]. Moreover, the appearance of avatars can cause behavioral and attitudinal shifts that might positively influence current treatment or motivate individuals who were reluctant to that due to lack of insight or stigma [30].

Virtual environments used in these approaches are either single-user virtual environments (SVEs) or collaborative virtual environments (CVEs). In an SVE, a single user explores the virtual environment and responses from the environment or a virtual agent (avatar) must be preprogrammed. CVEs have been used to examine and investigate the ability to recognize emotions [112], and also teach students how to manifest their emotions and understand the emotions of other people [113]. A prototype Internet-based VR apps was Second Life (<http://secondlife.com/>) [114]. Virtual characters and environments represent a valuable tool for the supportive therapies and the training of social skills and non-verbal decoding (e.g., high-functioning autism), as they provide a safe, repeatable and diversifiable learning environment [115]. There are few problems, though as when participating in violent games, avatars personalize risk by simulating harm to digital representations with which people directly identify, and this may be upsetting [116]

Another type of a VR platform is a fully immersive system. These fully immersive software systems give the user a full immersion in the virtual reality environment. A review of VR reports it has been used in the treatment of many psychological issues [114], including eating disorders, autism spectrum disorders, stress management, pain management, and PTSD (e.g., VR exposure therapy (VRET), used in the treatment of phobia and trauma-related disorders like PTSD). One avatar therapy program has helped schizophrenic patients significantly reduce the frequency and intensity of the voices, their omnipotence and malevolence [117]. The treatment involves having a schizophrenic

Level	Source/Entry	Initiator Goals/Aims	Questions And Perspectives	Liabilities	Other Comments
1	Website information and support/chat groups	Health information: gain perspective, obtain standard and updated info Answers, tips and perspective	How should I approach the problem? What should I do or what are others doing?	Quality of information and lack of regulation	Better if referred by clinician who has evaluated the materials
2	Formal educational materials	Person/patient: education Caregiver: education, supports, and advice Clinician: continuing medical education	An effort to improve or to show effort (if referred by other)? Using evidence-based or "sound" info Documenting progress	Less interaction with instructors or clinicians May present a learning style mismatch	Better if referred by clinician who has evaluated the materials
3	Self-directed assessment and care	Person/patient: good habits, reflection tips Caregiver: reflection tips, tools to assess loved ones Clinician: tips on clinical care, options to refer patients	If it is my preference/style (or I have limited resources), what can I accomplish? Is this problem serious? Can my patients do some of this outside the office?	Not all problems can be self-assessed Some illnesses affect our insight Is it "really good," though?	Better if referred by clinician who has evaluated the materials
4	Assisted self-care assessment, traditional evaluation and decision-making, and automated support systems	Person/patient/caregiver: empowering Clinician: skepticism unless the resource is of known quality and reputation	Empowering and increased self-efficacy/confidence in next step? Could this address MH provider shortage and costs?	Risk of oversimplification and misdiagnosis in receiving an opinion without them knowing you	Alternative might be members of an interdisciplinary team or lower-cost providers
5	Asynchronous, between-session clinician contact	Person/patient/caregiver: contact, advice Clinician: don't make quick decisions, not that simple, and preference to schedule/bill	Builds relationship and clinician is "available"	Patient-clinician may have different styles; things taken out of context; and miscommunication Needs new models of clinical support	Will most likely increase over time
6	Synchronous, traditional or e-MH care	Person/patient: gold standard of care with more research Clinician: if patients like it, it is a good option	There is no shortcut to synchronous decision-making (patient-clinician; primary care-psychiatry)	It always has to be scheduled (and paid for)	A great option; not always needed due to lesser, easier options

**Table 1:** The Continuum of Internet-Based Options For Informal Mental Health (MH) Education, Self-Directed Care and Traditional Care.

patient select one of several different avatars on a computer in order to create a virtual representation of the scary voices that previously existed solely in his/her imagination. The system then synchronizes the avatar's lips with its speech, enabling a therapist to speak to the patient through the avatar in real time. The therapist encourages the patient to oppose the voice and gradually teaches them to take control of their hallucinations.

### Clinical care and program evaluation: General approaches and application to new technology options

An approach to clinical and program evaluation for new technology-based health and care options may better prepare our review of the guidelines below (Table 2) [118,119]. Program evaluation has become increasingly important to meet program, patient, provider, and externally driven (Joint Commission, reimbursement) needs – and more accountability is expected by both consumers and payers. A contemporary view is that we want to do "good" care, make a difference, and self-assess rather than doing things the same old way or waiting on bad outcomes to require oversight. Contemporary program evaluation and outcome work is a substantial shift in philosophical approach for some, from seeing what happens with planned services to planning the outcomes and then designing the services-in advance. Now, it is patient- and outcome-centered, whereby the end product determines what is built or put in place – hence assessment includes satisfaction, technology, cost, clinical, process of care, and other outcomes - iterative feedback, adjustments and further study make it useful.

Parameters and methods fall into three basic frameworks that naturally overlap with one another: 1) research measures, in the form of feasibility, validity, reliability, satisfaction, costs and outcomes;

2) clinical care measures (e.g., mood questionnaires; habit diaries; utilization of health services); and 3) customized measures for technologies. Suggestions:

- Pick 1-2 things to measure rather than trying to measure everything (e.g., an app for substance); how frequently is the app used, frequency of near misses of or actual use of substances.
- Pick an outcome that has high heuristic value (e.g., substance relapse; averted suicide; frequency of increased visits cued by using an app).
- Adopt standardized measures already used in the literature; they typically have undergone multiple iterations, levels of review and psychometric testing.
- Use a readily available, easy to use self-report instrument or program.
- Collect data prospectively rather than retrospectively, with some exceptions.
- If possible, pick a regular evaluation interval (e.g., beginning and then 3-, 6- and 12-months).
- Follow guidelines, but assess their liabilities to anticipate problems, take corrective actions, and generalize findings among different patients.
- Identify who has the responsibility to prevent, identify, and correct the issues: patients, providers, or programs? If patient locus of responsibility is higher than before, are they ready, and what support do they need? If providers have to adjust roles and responsibilities, do it proactively, too.

*Fundamental issues and components*

1. Each of the parties, picking only 1-2 foci (e.g., depression),
2. A rudimentary standard of evaluation (i.e., Patient Health Questionnaire-9; PHQ-9)?
3. A customized patient outcome (e.g., social engagement if that had lessened due to depression),
4. Satisfaction an existing 5– to 10–item survey for regular care and maybe on one technology options (e.g., a chat room or a diary for depression),
5. 1-2 parameters that “ground, tether or contextualize” the evaluation, that is,
  - a. Age or population (e.g., for geriatric patients over 65, ensure absence of dementia or cognitive decline; e.g.; screening for substance use like the Alcohol Use Disorders Identification Test (AUDIT))
  - b. Disorder-specific (e.g., plan for tracking suicidal ideation for a depressed patient, in general, or if a teenager due to high risk)
6. A log/diary by the patient and the clinician about
  - a. The experience, overall,
  - b. How and what technology was used and the relative frequency of use, too (e.g., texting 3 times/week)

*Questions and considerations for patients.*

7. What am I seeking when I choose to view a website, visit a chat room, get an informal suggestion or work with a clinician directly?
8. What are my means: time, \$, and other resources?
9. What is my learning style: alone vs. group of learners, reading versus doing something, prefer a little versus a lot of instruction?
10. Do I experience my provider the same or differently at a distance?
11. How intensive of a treatment do I want and how much should I “connect” in-person and online?
12. How do I choose a clinician based on information on the Internet, screening them by phone or in meeting them?

*Clinical care issues for the provider and the patient.*

13. Do the new technologies and associated behaviors affect the therapeutic relationship, clinical approach and treatment plan?
14. Is tradition care complemented by technology-based options that are patient-driven?
15. Is there a shift in action by the provider ‘outside’ the regular ‘hour’, is it paid for, how does he/she do that, and what are the unanticipated consequences?
16. Did I do things better/worse than expected, what are my technology-based strengths and did I have any unusual reactions?
17. Did the patient and I talk about the options, work together to select the plan, and how should be continue to discuss this?

*Questions for clinical and program evaluation and administration.*

18. Are we using a standard approach or was it left to chance or played out spontaneously?
19. What are we measuring and what is the best way to do it?
20. How often are we “checking in” done offline, is it spontaneous/cued and is it tracked, reviewed and are the important points fed back into care?
21. What are the outcomes are we measuring for patients, family, clinicians and systems?
22. Can the technology help us use resources better, as we do with interdisciplinary teams for a range of services in stepped care?
23. How does technology affect care coordination to highest clinician roles and responsibilities? For example, in addition to a regular staff/clinicians strengths/weaknesses (e.g., better in-person, worse with bipolars).
24. What additional resources (i.e., time, \$, staff/manager/medical director/administrative director, trainings) are necessary?

**Table 2:** An Approach to Clinical and Program Evaluation for New Technology Options and Questionnaire.

## Formal guidelines for traditional TMH care, informal guidelines for new e-MH care options, and other considerations

**Introduction:** Guidelines tangibly help by providing clinical criteria, protocols, algorithms, review criteria, and other components – all aimed to help clinicians make the best clinical decisions, avoid bad outcomes, and to provide an approach in uncharted circumstances. Generally, guidelines are generated when there is enough evidence to guide clinicians, such that MH care treatments and methods that are long running, are better reviewed. Therefore, guidelines are also on a temporal, non-linear spectrum, starting with synopsis of guidelines on eMH/TMH, texting/e-mail, social media, professionalism, and Internet-based care; person/patient-centered health information and experimental treatments are less well-developed, but have been put out due to concerns, cautions and critical incidents (Table 3). The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all circumstances presented by the patient and his or her family, the diagnostic and treatment options available, and available resources – and in light of all pertinent clinical, administrative and regulatory circumstances.

**Traditional TMH care Guidelines:** The adult ATA TMH Guideline, AACAP Practice Parameter and the Telepsychiatry Committee of AACAP form a foundation for this paper, as they cover the approach, scope, clinical, administrative and technical aspects of services for adults and children and adolescent patients [35,120]. Child and adolescent MH practice poses significant differences from adult practice in terms of scope of practice, the diversity of providers and the variety of specialized settings [121]. First, child and adolescent mental healthcare clinicians contend with specialized populations (e.g., developmental disorders), family and systems work, a variety of treatment modalities (e.g., parent management, play therapy) and settings (e.g., corrections/juvenile hall, school).

**Internet-based videoconferencing Guidelines:** The American Telemedicine Association Practice Guidelines for TMH Care [35] the more recent Practice Guidelines for Video-Based Online Mental Health Services [36] do not cover all the new nooks and crannies of technology innovations. They do not address communications between professionals and clients or patients via texting, e-mail, chatting, social network sites, online “coaching” or other non-MH services.

At the beginning of a video-based MH treatment with a patient (i.e., not at every subsequent encounter unless circumstances warrant re-verification), the verification of essential information is suggested because: 1) the professional needs to comply with the relevant licensing laws in his/her jurisdiction (in principle) and where the patient is located when literally receiving care (i.e., not where the patient’s home is, 2) an emergency management protocol is entirely dependent upon where the patient receives services, and 3) mandatory reporting and related ethical requirements such as duty to notify are tied to the jurisdiction where the patient is receiving services. Verification includes provider name, credentials and sources to check the information on the professional (e.g., state license #). Similarly, the name of the patient and if preferred, a government issued photo ID on the video screen or via a smart card, is suggested.

**Key considerations for future guidelines on person- and patient-centered care:** Clinical, legal, professional and communication ramifications of these care options will mainly be explored. Health

information on the Internet for persons, patients, and caregivers is rarely regulated. It usually involves various levels of quality and synthesis, from unreviewed, unvetted submissions (e.g., anecdotes to Wikipedia to college papers to excerpts of actual research), to professionals’ websites (also varying quality), to organizations/institutions/businesses that claim some oversight/expertise, and so on. Obviously, the best quality sites in MH may be from the National Institute of Health or specific disorder agencies (e.g., Depression and Bipolar Support Alliance).

Regulation of psych apps is a key issue in terms of quality, in general, but also in terms of education [78]. Application stores do not routinely review the accuracy of the content prior to publication [74], and while the majority of interns use them on a daily basis, there still needs to be more guidance and advice on this matter [75]. The Food and Drug Administration (FDA), in February 2015, noted that it considers that “many mobile apps are not medical devices” and thus do not fall under its regulatory authority. The FDA also notes that even for those apps that do meet the definition of medical devices, if they pose a low risk to the public then the FDA will consider “enforcement discretion” and may not enforce requirements. Thus at this time the mobile MH space for apps is largely unregulated by the FDA [122]. On the other hand, regulations can stifle the development of innovative apps that are not connected to a life-sustaining medical device (i.e., outright fatal errors are rare). And, after all, patient educational materials and books in the United States are not subject to regulation, either.

New digital communication from one user to another user using standard protocols: e-mail, SMS text messaging, multiple messaging service (MMS) messaging, and instant messaging have issues that appear to be similar for proprietary networks (e.g., Twitter direct messages, Facebook Messenger, Epic My Chart electronic medical record messaging, My HealtheVet electronic medical record messaging).

Requests for other contact between visits (e.g., texts, e-mails) are increasing due to time online [123]. Asynchronous written or e-mail language is good for answering yes/no questions, trading a piece of information (e.g., confirming appointment, medication side effect), but it is not synchronous. Emails ‘should’ be sent during regular working hours to attend to expectation and boundary issues [123]. Asynchronous methods do not afford vocal nuances like pitch modulations, changing volume, and meaningful pauses, and there is no accompanying body language; this may lead to misinterpretations and have unexpected consequences. (Interestingly, some of this, too, may be “in play” soon, if patients and doctors begin to send audio- or video-clip messages!)

**Guidelines on use of social media:** Preliminary guidelines discuss concerns about patient privacy, professional image, confidentiality, and defined expectations for use in general [124,125] and for social media [126]. Providers should consider the professional and ethical responsibilities for routes of communication, absences, or any other changes in accessibility in advance. Guidelines for social media use also suggest discussions with the patient in advance, as part of the informed consent process:

- Consider pros/cons of gathering information about patients: intent, use and implications
- Physician-produced blogs, microblogs, and comments: “pause before posting” and “step back” to consider what is conveyed to the public about the physician and the profession



### *General*

1. Maintain professionalism at all times — follow institutional policies, “assume that all information exchanged is public and posted in a medium no different than a newspaper,” and maintain a disclaimer.
2. Be authentic, have fun, and do not be afraid — “the only way to create meaningful relationships over social media is to be genuine.”
3. Ask for help — pay attention to “how people interact (e.g., etiquette)” and “mimic the social media service and community’s practices (so long as they are professional).”

### *Traditional TMH care guidelines*

4. The adult ATA TMH Guideline (ATA 2009; Yellowlees et al 2010).
5. AACAP Practice Parameter and the Telepsychiatry Committee of AACAP (AACAP 2008) and steps toward a formal guideline (Hilty et al 2015).

### *Key considerations for website health information, texting and e-mail*

6. Health information on the Internet for persons, patients, and caregivers is rarely regulated. When possible, seek out information from organizations/ institutions/businesses that have some oversight/expertise (e.g., the National Institutes of Health; specific disorder agencies like the Depression and Bipolar Support Alliance).
7. Be cautious, due to unclear privacy/confidentiality issues, about use of new digital communication from one user to another user using standard protocols (i.e., e-mail, SMS text messaging, multiple messaging service (MMS) messaging, and instant messaging. The issues appear to be similar for proprietary networks (e.g., Twitter direct messages, Facebook Messenger, Epic MyChart electronic medical record messaging, My HealtheVet electronic medical record messaging).
8. Requests for other contact between visits (e.g., texts, e-mails) with asynchronous modalities is good for some things (e.g., answering yes/no questions, trading a piece of information) but not other things (i.e., emergencies, complex decisions). Attend to expectation, boundary and nuances in communication of one mode versus another.
9. Use e-mail, text, instant messaging only for patients who maintain in-person follow-up.

### *Social media*

10. Be mindful of privacy, professional image, confidentiality, and expectations for use in general (Recupero et al 2005; Frankish et al 2012) and for social media (Koh et al 2013); follow institutional policies.
11. Consider pros/cons of gathering information about patients: intent, use and implications
12. Physician-produced blogs, microblogs, and comments: “pause before posting” and “step back” to consider what is conveyed to the public about the physician and the profession

### *Professionalism beyond social media*

13. Contextualize decision-making in terms of professionalism and follow the lead of organizations have specifically made recommendations about professionalism and social media (e.g., The American College of Physicians, Canadian Medical Association, and British Medical Association (Farnan et al 2013; AMA 2011).
14. Separate personal and professional life (Behnke 2008; CMA 2015), if it can be done (BMA 2013; Grajales et al 2014).
15. Contextualize approaches based on education/training/supervisory issues (DeJong et al 2012).

### *Internet-based videoconferencing guidelines*

16. The American Telemedicine Association Practice Guidelines for Video-Based Online Mental Health Services cover teleMH (TMH) services (ATA 2013).
17. Follow state (e.g., licensing laws), federal, and other regional
18. Verify provider and patient information.

### *VR guidelines (Yellowlees et al 2012)*

19. All patients should undergo an in-person or telemedicine assessment to evaluate patient safety and appropriateness for treatment with this modality, establish care, confirm their

- diagnosis, create a treatment plan and discuss consent. This is particularly important in a potential emergency situation where therapists have to know the physical location of a patient, as per telemedicine guidelines, in order to call for help.
20. All patients should then sign a written consent form if required in the state in which they reside (which can be done electronically), be trained in how to use the virtual environment, be given a tour, and receive a copy of their diagnostic assessment and treatment plan.
  21. If patients and providers are federal employees, they can be treated in the virtual environment from any state by any provider. If the patient or the provider is not a federal employee, the treating provider must be licensed to practice in the state from which the patient logs in.
  22. All providers will have fully authenticated avatars using their real names, and will have biographies published that link their professional identities to their avatars for patients to read.
  23. Patients and providers will then schedule sessions for either counseling or cognitive behavioral therapy, or a combination of both.
  24. Any major changes to the treatment plan, such as altered medications, should require an in-person telemedicine consultation.
  25. Either the provider or patient may at any time either cease therapy, or request a telemedicine or in-person consultation to review progress.

**Table 3:** Synopsis of Guidelines on Emh, Person/Patient-Centered Health Information, Texting/E-Mail, Social Media, Professionalism, Internet-Based Care, and Experimental Treatments.

- Digital venues for communicating with colleagues about patient care: ensure security/privacy and follow policies of institution

**Professionalism guidelines (including, but beyond social media):** The effect on professionalism and education/training of the next generations has been explored [127]. Many organizations have specifically made recommendations about professionalism and social media (e.g., The American College of Physicians, Canadian Medical Association, and British Medical Association [128,129], focusing on communication with patients, gathering information, online education and other topics. Separation of personal and professional life is suggested [130-132]. In fact, a physician should assume that one's private profile can be found. *The Journal of Medical Internet Research* provided guidelines based on a review of over 100 articles, websites, policies and reports [133]:

- Maintain professionalism at all times — follow institutional policies, “assume that all information exchanged is public and posted in a medium no different than a newspaper,” and maintain a disclaimer.
- Be authentic, have fun, and do not be afraid — “the only way to create meaningful relationships over social media is to be genuine.”
- Ask for help — pay attention to “how people interact (e.g., etiquette)” and “mimic the social media service and community’s practices (so long as they are professional).”
- Attend to privacy/confidentiality, and clinical boundaries; separate personal and professional sites [134].

**VR guidelines [114]:** Patients only receiving generic educational information on an open virtual reality environment can be anonymous, but providers within that world should be fully identified, as should be their corresponding avatars. For patients who wish to move to a secure virtual reality environment for some form of virtual therapy, whether this is individual counseling or cognitive behavioral therapy, the provider should treat the patient in accordance with the following protocols to ensure high practice standards, and legal and ethical processes:

- All patients should undergo an in-person or telemedicine assessment to evaluate patient safety and appropriateness for treatment with this modality, establish care, confirm their diagnosis, create a treatment plan and discuss consent. This is particularly important in a potential emergency situation where therapists have to know the physical location of a patient, as per telemedicine guidelines, in order to call for help.
- All patients should then sign a written consent form if required in the state in which they reside (which can be done electronically), be trained in how to use the virtual environment, and receive a copy of their diagnostic assessment and treatment plan.
- HIPAA compliance of the virtual environment must be documented, verifiable and ensured prior to patient contact.
- If patients and providers are federal employees, patients can be treated from a provider from any state. If the patient or the provider is not a federal employee, the treating provider must be licensed to practice in the state from which the patient logs in.
- All providers will have fully authenticated avatars using their real names, and will have biographies published that link their professional identities to their avatars for patients to read.
- Patients and providers will then schedule sessions for either counseling or cognitive behavioral therapy, or a combination of both.
- Any major changes to the treatment plan, such as altered medications, should require an in-person telemedicine consultation.
- Either the provider or patient may at any time either cease therapy, or request a telemedicine or in-person consultation to review progress.

## Discussion

Web- and Internet-based resources are remarkably popular with the public, patients and providers – this is a new era of medicine. Technology is frequently used, is readily accessible and satisfies users.

It facilitates openness to engage with others and begin self-assessment and care; its ability to help people change behaviors and engage additional clinical services appears modest, though this is inadequately evaluated. For persons or patients not in care, use of health issues for common, non-acute problems appears to work, though a one-time clinical evaluation may help them better place options in context. Formal treatments over the Internet, asynchronous care models, or traditional video-based services are as good as or better than in-person services, though an incomplete range of services has been evaluated. Healthcare systems use technology to disseminate treatments to many points-of-service, in-time, which helps to customize care. More research is needed on the application of new technologies to clinical care, particularly treatment interventions, and also head-to-head studies (e.g., in-person versus eMH care; e-MH option one versus option two). Finally, if eMH option one is combined with in-person or TMH care, are outcomes improved in an additive versus multiplicative fashion?

The proposed framework of low intensity/informal/health information to high intensity/formal health/standardized treatments may help participants “step back” and gain perspective on trends. Such a framework had not existed in the literature, though it is parallel to stepped, integrated, and other models of service delivery. Traditional care, depending on the setting, may have little to very formal, robust evaluation. While guidelines help to provide perspective and broad themes for doing things well, practice parameters and minimal standards may also be useful as technology-based options continue to emerge. At a minimum, though, since the options are less standardized, it is best to pro-actively evaluate care more thoroughly, in order to identify positives and liabilities and then move to discuss reasonable outcomes, reflect on expectations, and prevent/minimize problems.

Clinicians have to become aware of, adapt to, and clinically oversee some or all of these new technology options in order to provide the best care – this means adding to or upgrading all parts of clinical care (e.g., review of decision-making, new advisory roles to patients, greater complexity of care, hybrid models of care). This also impacts standards for professionalism, privacy/confidentiality, tracking of data, evaluation and general practice management. Most of these technologies – not just social media, texting and e-mail – impact these areas. Patients are empowered by increased access to information, providers and exposures – in ways that can be adjusted to patient needs and comfort, with or without clinician supervision [135]. Their attitudes toward clinicians and MH care may shift, for the better or for the worse (e.g., they may want to do more out of the clinic, expect more availability via technology, or like technology-savvy providers). It is critical that clinicians increase their awareness and understanding of web-based options to understand patients’ concerns, changes in the therapeutic relationship, and potential positive/negative effects on outcomes. Clinicians need to create a positive climate, discuss options with patients, and help them to incorporate user-friendly approaches.

Technology may soon reshape healthcare service delivery – a particularly interesting area will be the shift from clinic- or doctor-centered care to person- or patient-centered care. Mobile health, the patient centered medical home and stepped care models are already moving that direction. Another fascinating area is the use, research, and outcomes related to hybrid models of care [37,107]. Combining traditional in-person approaches with online services – or combining two technology interventions. MH providers may soon practice in-person, virtually, or both, but how they spend their time may change (e.g., ½ traditional, ¼ review of tech results, and ¼ interdisciplinary

team leadership). Clinicians, clinical managers and administrators need to shift their philosophy—from seeing what happens—to designing the services in advance to achieve outcomes. The scope/foci of evaluation, potential levels of depth/complexity, and duration of measurement (i.e., short- to long-term) require thoughtful planning [118]. A key question is, “If the person or patient is in care, should this be overseen by a professional, and if so, how?” Legal, reimbursement and other factors need to be re-evaluated.

## Conclusions

Web- and Internet-based resources are remarkably popular with the public, patients and providers – this is a new era of medicine. Patients are empowered by increased access to information, providers and exposures – in ways that can be adjusted to patient needs and comfort, with or without clinician supervision. These steps help patients initiate, participate and steer their care. Clinicians have to become aware of, adapt, use sound clinical judgment, and serve new advisory roles to patients, as we are all challenged to keep the best of MH care, yet make it more accessible. Prioritization of outcomes and evaluation in the provision of clinical (TMH) services is important – not just after you start, but preferably before all parties start something new, though that is seldom the case.

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