

Technology's Acceleration in Behavioral Health: COVID, 988, Social Media, Treatment and More

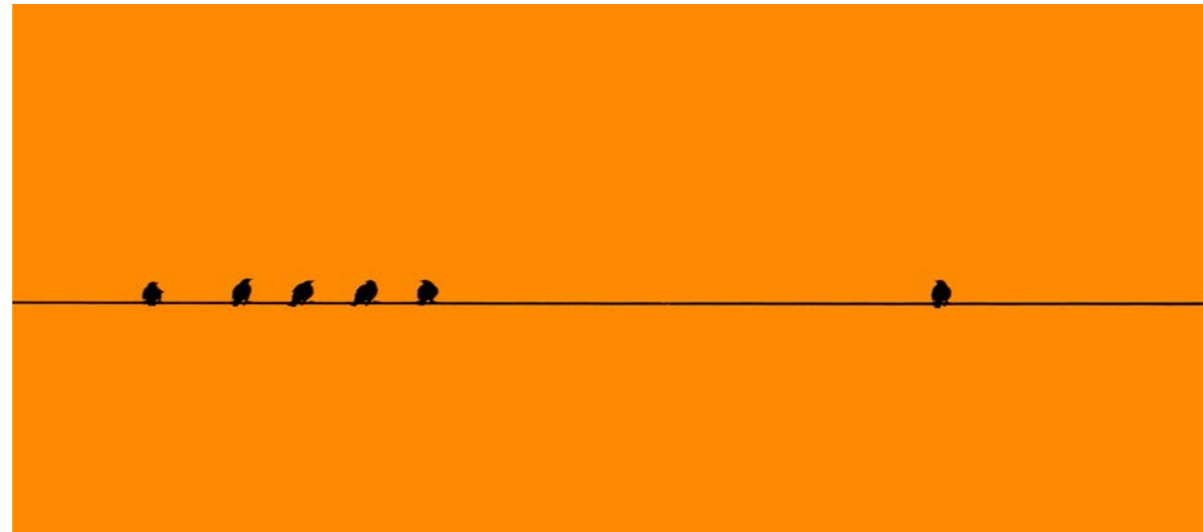


Stephen Phillippi, PhD
Professor- LSU School of Public Health
Program Chair- Behavioral & Community Health Sciences
Director- Center for Evidence to Practice

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- Nearly **1 in 5 Americans** (43 million) experience a **mental health condition**
- Most **lack access** to care
- **Over half** not receiving care they need
- The mental health field continues to experience a **decades-long workforce shortage**



How can technology address these challenges?

*“Digital and mobile technologies hold **enormous potential for increasing access to services, facilitating self-help, monitoring and assessing variations in symptoms and wellness-promoting activities, and increasing health literacy. This potential will be fulfilled only if behavioral health service providers are willing to adopt effective new technologies, to develop the adequate skills to use them, and to fully support service users.**”*

(Nemec and Chan, 2017. p341)

Note the year...



And that train has left the station...

As of 2021, in America....

- 97% own a cell phone
- **85%+ own a smart phone** (compared 35% just a decade ago)
- 72% of adults use at least one social media site (up from 43% a decade ago)
 - 18 to 29 y.o.: 84% are social media users,
 - 30 to 49 y.o.: 81%
 - 50 to 64 y.o.: 73%
 - 65+ y.o.: 45%

SO WHAT ARE WE TO DO AS BH PROVIDERS?



(Mobile fact sheet, 2021)
(Social media fact sheet, 2021)

WHAT ARE WE DOING

Advances in mental healthcare technology--

- Telehealth technology
- 988 tech & mobile crisis response
- Artificial intelligence in social media
- Mobile-mental health apps
- Emerging technology
- Workforce development around technology



Telehealth technology

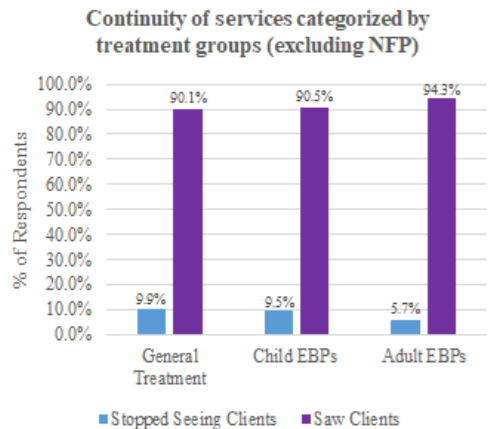
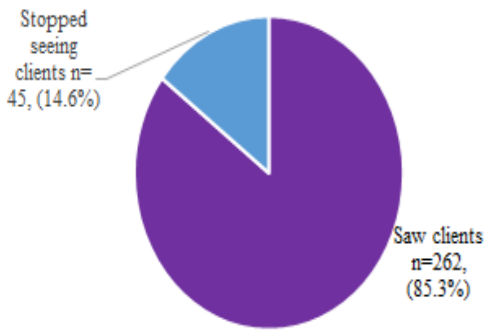


- **Remotely-delivered treatment services dramatic increase** in utilization with COVID-19 pandemic
- Relationship between telehealth & COVID-19 is complicated—
 - Like previous disasters, COVID increased stressors, restricted movement, and disrupted the healthcare system, including behavioral health
 - Revealed critical limitations of in-person treatment, as well as fragility of referral networks
 - Policymakers recognized and offered regulatory flexibility (e.g., Medicaid and HIPAA), and providers developed innovative strategies to quickly pivot to remote delivery.
- NASMHPD found 88% of state MH systems reported community providers experienced a significant decrease in clients since the beginning of COVID-19.
 - 71% reported that decreases have been significantly, but not totally, **offset by the use of tele-mental health**

(NRI, 2020)

(Phillippi et al. 2020)

Telehealth



- In Louisiana, most practitioners reported, with **EBPs doing best with transition**
- Treatment quality and effectiveness---
 - A factor slowing expansion of telehealth, prior to the COVID-19, was the seemingly conflicting agenda to scale up EBPs
 - **Many EBPs have developed tele-mental health adaptations but have not rigorously tested them**
 - EBP telehealth adaptations are grounded in the same behavior theories as the original versions, so it is unlikely they would be totally ineffective
- However, there is **evidence that characteristics of the curative process** (e.g., therapeutic alliance between patient & clinician) **may be negatively impacted** by a telehealth environment and may weaken outcomes

(Phillippi et al. 2020)

(Hrynyschyn & Dockweiler, 2021)

(Kemp et al. 2020)

988 tech & mobile crisis response



- States are using technology to ease calling for help in crisis that will soon be converged with 988. Tech is allowing **interconnectedness** between call centers, as well as **GPS tracking** for emergency **response** and locations of **available services**. EXAMPLES....
 - Austin, TX one of the first to add a fourth option for **911** callers-- now ask if the caller needs emergency medical, police, fire, or **mental health services**. This interconnectedness of services reports 86% of MH calls are now resolved without police.
 - Phoenix, AZ an interconnected consortium of nonprofit agencies has built a crisis line and mobile response system, that is handling about 20,000 calls per month, dispatching MH providers, rather than police, in 2,200 instances a month, with the vast **majority of calls resolved on the phone**.
 - Colorado blended response technologies with telehealth-- using bachelor's level or peer specialists, who bring tablets into the field when responding to crises. **Devices are used to connect to a masters-level clinicians** via telehealth to offer a formal **triage** and **recommendations** for the level of immediate care assessed
 - Charleston County, SC **EMS** is equipped with **telehealth for mobile crisis teams to triage crises virtually** & make recommendations. Quickly places ambulance back into rotation, reduces mobile crisis drives to longer distance locations if not warranted, and limits over utilization of transport to ED for similar MH assessment

(Ruiz, 2021)
(Waters, 2021)
(Neylon, 2020)

988 tech & mobile crisis response



- Using **GPS tracking** for emergency location of people and available services can improve crisis response. GPS location of the nearest mobile crisis response team links teams with the shortest response time. Having caller id functioning and GPS-enabled technology to dispatch are SAMHSA listed best practices.
 - “GPS-enabled Mobile Crisis Dispatch Mobile crisis teams should use GPS-enabled tablets or smart phones to support quick and efficient call hub determination of the closest available teams, track response times, and ensure clinician safety (e.g., time at site, real-time communication, safe driving, etc.).” (pg. 17).
- SAMHSA says best practices to operate regional crisis call centers should include utilizing real-time **bed registry technology**. EXAMPLE...
 - Bed registries in Georgia show availability for crisis stabilization, with interactive exchanges between hospitals and crisis teams. The system monitors bed occupancy and availability in real time as admissions and discharges occur. Data show occupancy at 90% or better, denials at 10% or less, and an average length of stay of seven days or less.

(National Guidelines for Behavioral Health Crisis Care, 2020)

(TTI Bed Registry Project, 2019)

Artificial intelligence in social media



- Technology encountered without individuals necessarily realizing the impact on population MH, by using AI
- Machines acting as "intelligent agents" that perceive an environment (e.g., social media platforms) and takes actions to achieve a goal, take action, or problem solve.
- With **suicide** rising, social media is in a unique position to intervene and connect those in distress with support. Example...
 - Facebook has been using its AI to detect & send alerts regarding suicide concerns since 2017 to those posting things that might indicate suicidal ideation
 - One study of AI interaction showed some FB users at increased risk for suicide. Users with high rates of use, described as addictive, are also known to have higher risk of suicide.
- Not just social media– encounter **transcription, EHR record, & billing**
- BH, AI, & **Phenotyping**– **algorithms to predict outcomes** based on QoL, treatment, risk, protective factors.
 - (Legg & Hutter, 2007)
 - (Gomes de Andrade et. al, 2018)
 - (Facebook, 2021).
 - (Thielking, 2019)
 - (Brailovskaia, Teismann & Margraf, 2020)

Mobile mental health apps



- Software developers intentionally promote tech for self-help—just type “mental health” in your smartphone app store.
- **1/3 of the health-related apps focus specifically on MH.** Many use techniques borrowed from EBPs such as Cognitive Behavioral Therapy to address issues like **depression, anxiety, PTSD, OCD,** and more **without the presence of a provider or physical room/clinic.**
- During COVID-19 several states, like NY, promoted apps to help individuals manage anxiety and social isolation.
- More data are needed to understand how tools fit into the array of available supports. Nevertheless, some are quite popular. (see **Psycom top self-help mental health apps of 2021**)
- Apps are **not a replacement for therapy (yet)**, but are anywhere from **free to very reasonably priced** as compared to traditional MH therapy, and are **accessible**, with response times in the minutes, and **portable** .
- BH experts are paying attention to benefits and risks.
 - Pros include **convenience, anonymity, introduction** to care, lower **cost**, service to a **wider population** of people, **interest**, round-the-clock **access, consistency, support** (including for those in therapy), and **data** collection (e.g. location, movement use, etc.).
 - Concerns include questions of **effectiveness, appropriate populations** for use, **appropriate target** of conditions, **privacy** (from IP addresses to who stores what data), industry-wide **standards, regulation**, and **overselling** (i.e., promising more than the app delivers).

(NAMHC, nd)

(COVID-19 digital mental health resources, nd)

(Truschel & Tzeses, 2021)

Mobile mental health apps

- Researches note internet-based and **mobile device-based data collection for studies has increased with tools for sample population recruitment, retention, and information collection.**
- BRIGHTEN study, a randomized controlled study, found three apps tested to treat depression had a **significant impact on mood and level of functioning**, though one limitation turned out to be the challenge in keeping participants engaged in the research itself.
- Largely untested and unregulated mobile MH application market leaves it **vulnerable to unscrupulous or simply well-meaning but untrained app developers, making it difficult for consumers to navigate to apps that are safe, secure, and effective.** Some argue the breakneck pace of the evolving technology makes it impractical to hold these apps to the same standards of RCTs, other suggest that basing apps on EBPs might be a rational compromise.
- Regarding standards and regulation, NIMH created the Nat'l Advisory MH Council Workgroup on Opportunities & Challenges of Developing Information Technologies on Behavioral & Social Science Research to offer guidance. Noting...**With more than 2.2 billion people in the world with a smartphone, including almost two-thirds of minority and low-income populations, these mental health technologies are more accessible than ever.**
- Emerging guidance highlights that tech still needs to **prove** itself; patient **engagement** is critical to success; and, product **quality** controls are needed. One group suggests practitioners examine if the product has been **tested for use with an intended audience**, and if **behavioral health professionals** (e.g., psychologists, SWs, or other licensed MH providers) **contributed to the development of the technology**

(NIMH, 2019)

(Anguera, 2016; NIMH, 2016)

(Kopelovich and Turkington, 2020; SAMHSA, 2015)

(Rebhan, 2018)

Emerging technology



- Therapists are using tools to improve care for clients-- recommending apps for **homework** and **self-care**, to provide **direct care**, and **supplementing care** through momentary assessment to collect frequent real-time passive self-reports and to provide intensive outpatient monitoring. Example...
 - Talkspace Online Therapy- marketed **to consumers who “can’t afford to visit a therapist but still needing someone to talk to,”** starts at \$65 per week and includes text messaging with a professional as often as the person needs for support through depression and more. Benefits listed such as **24/7 access, no commute/transportation and scheduling hassles, seamlessly switching therapists for continuity of care**, they are certainly addressing several of the barriers to treatment; however, there are currently no data available to show the effectiveness of this online therapy approach.
- Funding research on the effectiveness of these types of strategies to help populations with diverse needs, could help determine the utility of this approach.

(Moitra et al. 2021)

(Perry et al. 2021).

(Talkspace, nd)

Emerging technology

- As therapists & therapies become more tech savvy, approaches are emerging to enhance the therapy environment itself.
- An approach is **avatars** (digital self-representations) to facilitate online communication between therapists, clients, and peers. There are four key ways avatars are being used:
 - online **peer support communities**;
 - to **communicate and interact in a therapeutic environment**;
 - to **participate in skills building games**; and,
 - to **communicate with an autonomous virtual therapist**.
- Research suggests avatars helps clients **engage**, form **therapeutic alliances**, seek treatment due to **anonymity**, **express** and **explore** their **identity**, and **reduces communication barriers** while therapists control and manipulate treatment stimuli. Further research on feasibility, effectiveness, and ethical use is needed.
- More research in MH tech is coming. Between 2009 and 2015, NIMH awarded over 400 grants and almost **\$4.5 million dollars to research technology-enhanced interventions designed to prevent or treat mental health disorders**. Interventions are trending away from computer use and to **mobile devices** and include **interactive formats and game-like approaches**. They also include both active (engaged treatment) and passive (data collection, AI (with automated responses) for assessment and monitoring.

(Rhem et al. ,2016)

(NIMH, 2019)

Technology and workforce development



- For decades, the US MH workforce has suffered from a severe shortage and poor children and rural communities have consistently borne the brunt . The COVID-19 pandemic amplified the shortage and service disparities by simultaneously reducing the workforce and further isolating children in need.
- Tech has the potential to address the workforce shortage in three ways:
 - tech can **reduce the overall prevalence of BH problems** by **detecting relatively minor problems** when they are easier to treat and may be treated through self-help strategies such as the apps described previously.
 - tech can **increase access** to effective treatment models through telehealth.
 - tech can **increase the reach, cost-effectiveness** and **quality** of training and professional development for the BH workforce.
- Implementation science makes clear that the high-quality, widespread adoption of any significant new tech in a given field requires the use of **intentional and adequately funded adoption strategies**, including **developing and maintaining the required competencies for providers** to use the new tech and the **protections of the rights of people** who access the tech-supported services. Important to remember that the **technology itself is not self-actualizing**, and to adequately **plan for, fund**, and take the time to develop the workforce capacity to make optimal use of the technology.

(Kane et al. 2003),
(Thomas and Holzer 2006)
(Nemec and Chan, 2017)

Technology and workforce development

- Exemplars demonstrate innovative tech strategies being employed to build and strengthen the BH workforce.
 - The Behavioral Health Education Center of Nebraska's Virtual Mentor Network has created a state pipeline program for future BH professionals using **online virtual sessions** for rural college and high school students.
 - Univ of Hawaii partnered with the Mayo Clinic to develop an expert children's MH workforce to serve geographically isolated and culturally diverse communities using **interactive video teleconferencing (IVTC)** and telehealth, strengthening collaboration with local primary and BH providers.
- Project ECHO (Extension for Community Healthcare Outcomes) a virtual training and coaching model offers a knowledge-sharing network for **virtual mentoring** with locally based substance use treatment supervisors, to enhance workforce capacity w/ to provide **clinical supervision**.
- PeopleSim, an online interactive tech used in advanced level MSW programs for **virtual client simulations**. Used to train screening, brief intervention and motivational interviewing. The virtual and asynchronous nature of the "patient" offers cost savings, convenience, and consistency over traditional live patient training. Students demonstrated pre- to post gains in screening and intervention skills.

(Keeler et al. 2018)

(Alicata et al. 2016)

(Chaple et al. 2018)

(Putney et al. 2019)

Technology and workforce development

- For the BH and addiction fields, Congress appropriated \$3 billion+ to SAMHSA to establish a nat'l infrastructure of Technology Transfer Centers (TTCs), including-- Addiction TTCs (ATTC Network), Prevention TTCs (PTTC Network), and Mental Health TTCs (MHTTC Network)
 - Tasked with **building the capacity of the local behavioral health workforce to provide evidence-based interventions.**
 - In response to stay-at-home orders in Spring 2020, the entire **TTC infrastructure** rapidly **shifted** its full continuum of **training and technical assistance to a multi-tiered virtual platform to offer uninterrupted remote service delivery.**
 - TTCs reported **increased convenience and decreased costs** in connecting local service providers with trainers and TA providers, but have also noted inequitable access, especially for rural practitioners & communities, based on **bandwidth limitations** & some discomfort with tech.
 - Overall, the TTC network represents a great potential nat'l infrastructure for continuing to use technology to strengthen and support the MH workforce.

Questions remain



- Not clear how providers will need to respond when **individuals just stop coming to virtual spaces.**
- What happens when **crises** emerge, like **suicidality**, and provider is only available via text or client disconnects from smartphone telehealth session. Some apps use a members IP address to determine location to send first responders, but it is often more difficult to determine the client's level of risk in messages. Thus it is **unclear whether crisis response will be over utilized or underutilized.**
- The Amer Psych Assoc points out critical issues practitioners must attend to- **HIPAA compliance & patient privacy protections** of tech based communications, state licensing laws for **practitioners treating patients when location may be beyond their legal or ethical treatment allowance**, as well as the ethics and practice parameters with use of many apps and platforms that allow users to remain **anonymous.**
- The potential disparities in care between large health systems vs. small providers/individual MH practitioners. **The significant investment in the technology, associated training and maintenance, and necessary cybersecurity may be financially out of reach for small orgs and sole proprietors.**
- Many issues were **not dealt with at the height of the pandemic** when the major driver was to decrease any disruption in services, but as technology is integrated more into the work of BH, these questions will need answers.

(Lustgarten et al. 2020)

(Novotney, 2017)

Conclusion

- As BH evolves, ensure the use of tech is done with **fairness** and **equity** so that any individual, in any setting, can have access to equivalent care.
- Imperative that there is intentionality surrounding advances to **avoid** a second tier “**behavioral healthcare-lite**” system for marginalized populations that in fact have the highest needs but are hardest to reach.
- The promise of tech is undeniable. For tech to demonstrably, collectively impact pop-level BH, it will require coordinated efforts that adequately address three key variables: **need, access and quality**.
 - Individually, there is **ample proof of concept** that tech addresses access & need through low-cost self-help apps and AI that passively identifies early signs of functional limitation or dysregulation, thus overall prevalence of BH problems could be reduced.
 - For telehealth adaptations of models, **ensure adequate broadband access** to every home, so there is the potential to ensure that all who need quality BH services will have access to them.
 - **With tech** we can enhance training, develop workforce, create infrastructure advances, and generate improved quality assurance strategies, to **ensure that BH services are delivered by highly trained professionals with adherence to treatment** protocols in a coordinated system of care.



Thank you!



Stephen Phillippi, PhD
Email- sphill2@lsuhsc.edu
Phone- 504.234.3899

Center for Evidence to Practice
laevidencetopractice.com