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INCREASING ACCESS TO HIGH-QUALITY MENTAL HEALTH CARE IN THE 21ST CENTURY

George W. Bush Institute Military Service Initiative
Stand-To Health and Well-Being Task Force



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About the George W. Bush Institute

Housed within the George W. Bush Presidential Center, the George W. Bush Institute is an action-oriented, nonpartisan policy organization with the mission of developing leaders, advancing policy, and taking action to solve today's most pressing challenges. Through three Impact Centers – Domestic Excellence, Global Leadership, and an Engagement Agenda – the Bush Institute delivers measurable results that save and improve lives. To learn more, visit www.BushCenter.org.

About the Military Service Initiative

The Bush Institute's Military Service Initiative helps post-9/11 veterans and their families make successful transitions to civilian life with a focus on optimizing health and well-being and leveraging meaningful education and employment opportunities.

Through the Bush Institute's Veteran Wellness Alliance, the Military Service Initiative is helping more veterans access high-quality mental and brain health care by connecting veteran peer networks and best-in-class clinical care programs facilitated by an innovative collaboration called Check-In. To learn more about the Alliance and Check-In, specifically, visit www.bushcenter.org/vwa.

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Stand-To Health and Well-Being Task Force

The Military Service Initiative is facilitating collaboration and innovation through the Stand-To Health and Well-Being Task Force. Responding to the COVID-19 pandemic has revealed challenges within the health care system, provider workforce, and medical supply chain in the United States. In addition to the acute health care demands, health experts and advocates are anticipating a significant increase in the need for mental health services in the coming years as part of COVID-19 pandemic recovery for veterans as well as all Americans. COVID-19 recovery planning offers an opportunity to accelerate implementation of innovative solutions to improve mental health and well-being in the United States. The Task Force combines the experience and expertise of veterans' organizations and subject-matter experts in mental health care and those applying innovative technology solutions in mental health care delivery. The Task Force is providing invaluable insight and analysis to help post-9/11 veterans access high-quality mental health care when they need it and make successful transitions to civilian life. We are grateful for its leadership, enthusiasm, and commitment to veterans. Task Force members include the following:

- Dr. Nick Allen, Director, Center for Digital Mental Health, University of Oregon
- Tammy Barlet, Associate Director, National Legislative Services, Healthcare Policy, Veterans of Foreign Wars (VFW)
- Dr. Zachary Cohen, Depression Grand Challenge, University of California at Los Angeles
- Katy Dondanville, University of Texas Health Sciences Center at San Antonio
- Dr. Kevin Galpin, Executive Director, Telehealth Services, Office of Connected Care, U.S. Department of Veterans Affairs
- Dr. Carmen McLean, Dissemination and Training Division, National Center for PTSD; U.S. Department of Veterans Affairs
- John (JJ) Pinter, Deputy Director, Team Red White & Blue
- Dr. Alex Siegel, Association of State and Provincial Psychology Boards
- Dr. Stephen Schueller, Associate Professor, University of California, Irvine; Executive Director, One Mind PsyberGuide
- Dr. Amanda Spray, Director, Steven A. Cohen Military Family Clinic at NYU Langone Health; Clinical Associate Professor, Department of Psychiatry, NYU Grossman School of Medicine
- Kacie Kelly, Deputy Director, Military Service Initiative, George W. Bush Institute

EXECUTIVE SUMMARY

Our mental health system is failing veterans. Too many veterans don't have access to high-quality care when they need it, and there are several specific barriers to care that must be addressed and removed. These include stigmas that prevent veterans from seeking care, a shortage of high-quality mental health care, and the challenges of navigating to high-quality care providers and programs.

We need 21st century solutions to address the following challenges: A dearth of providers – especially in rural areas – that are skilled in evidence-based treatments for common veteran mental health challenges; limited monitoring of outcomes for veterans engaged in care; and regulatory policy barriers that make it hard to scale care.

The George W. Bush Institute's Military Service Initiative convened the Stand-To Health and Well-Being Task Force to recommend ways to apply innovative technology solutions to expand and improve mental health care delivery. The task force members, with experience at veterans' organizations and mental health technology solutions, focused on using telehealth, digital tools, and data science to topple the barriers to care.

Telehealth, digital tools, and data science have great potential to improve access to high-quality care and ensure that veterans can access the right care at the right time and in the right place. Considerable gains have been made in recent years, and the COVID-19 pandemic created significant momentum by triggering a necessary transformation of health care delivery methods. Now is the time to build on the lessons learned during the pandemic and continue to expand equitable access to quality care.

The task force issued the following recommendations to support the expansion of high-quality mental health care to veterans.

Advance policies to increase interstate telehealth practice

Congress should authorize telehealth practice across state lines and across all mental health professions – or facilitate interstate agreements that will allow veterans to receive care from providers licensed in a different state.

Incentivize integration of outcome-based digital tools through reimbursement, funding, and research

Policymakers must create standards for digital mental health tools to protect veterans and instill confidence that the products actually achieve what they say they do. Linking the standards to reimbursement would provide the proper incentive for effectiveness, safety, and security and ensure that only outcome-based digital tools make their way into the hands of veterans.

Establish policies and regulations to harmonize pertinent data inside and outside health care systems

Applying modern data science to mental health care can ensure better veteran outcomes by identifying those in need of care, selecting best type of care to provide a particular veteran, and monitoring care progression.

INTRODUCTION

Even before the pandemic, the mental health needs of veterans were high. Millions of veterans experience mental health challenges, and specific mental health conditions including post-traumatic stress disorder (PTSD), suicidal ideation, and deaths by suicide are even higher among veteran populations than their civilian counterparts (Fortney et al., 2016). The magnitude of mental health needs among veterans has been demonstrated by several studies. One study of over 200,000 Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans found that 36% received a new mental health diagnosis from 2002 to 2008 (Seal et al., 2010), and at least 19% met criteria for depression or PTSD (Burnam, Meredith, Tanielian, & Jaycox, 2009). For comparison, the rates among the general population for any mental health diagnosis are 30% (Kessler et al., 2005) and 5% for PTSD (Kilpatrick et al., 2013). Further, a recent RAND Corporation report highlighted that post-9/11 veterans are at particularly high risk for co-occurring mental health and substance use disorders (Pederson et al., 2020). These issues have only been exacerbated by the COVID-19 pandemic (Czeisler et al., 2021).

Unfortunately, too few veterans are able to access quality care when they need it, and delays in receiving treatment may lead to more severe mental health challenges, exacerbating the impact on their lives, including job loss or relationship problems. Of veterans with a probable mental health condition, only 30% received adequate care – defined as at least eight sessions of psychotherapy or four doctor visits along with sustained medication – while 48% received no treatment whatsoever (Burnam et al., 2009). Many veterans are lost in the complicated and fragmented handoffs that exist in mental health treatment. In one study, 38% of veterans referred to treatment were never seen, and only 12% completed treatment. This is particularly troublesome as research indicates that starting treatment soon after the end of a service member's last deployment leads to better treatment outcomes (Maguen et al., 2014). However, increasing access to care alone does not necessarily mean increased access to quality mental health care, especially for veterans. The U.S. Department of Veteran Affairs and leaders in Washington are working to improve access to care through policies that supplement expert care in the VA and make it possible for veterans to receive care from the private sector. Examples include the Community Care Network Program and John Scott Hannon Suicide Prevention Law. But there remain significant concerns about the quality of the care that is available in the private sector. To elevate awareness of the potential lack of quality care and to establish a more precise and shared understanding of what quality care means, the Bush Institute's Veteran Wellness Alliance led work in collaboration with RAND to establish the first definition for quality care for PTSD and mild traumatic brain injury (Farmer & Dong, 2020). Central to this definition is that high-quality care is veteran centered, accessible, evidence based, and should include outcome monitoring.

However, there are many barriers to veterans accessing high-quality care, and two stand out as particularly critical: First, stigma and attitudes toward seeking or engaging in mental health care in military culture (Fox, Meyer, & Vogt, 2015; Vogt, Fox, & Di Leone, 2014). The culture may increase personal or social attitudes and values, such as shame or embarrassment, that cause people to avoid seeking care, as well as structural barriers, such as the effect on career advancement. Second, there is a massive supply shortage of quality mental health care, especially quality care that is useful for veterans. Overall, in the United States, we have a shortage of mental health providers (Christidis, Lin, & Stamm, 2018; Konrad, Ellis, Thomas, Holzer, & Morrissey, 2009), and many reports have demonstrated that this challenge is even more of an issue for veterans (Smucker, Pedersen, & Tanielian, 2019; Hepner, Brown, Roth, Ruder, & Pincus, 2021). Veterans require care that is culturally competent, with providers who have expertise in specific evidence-based treatments for common needs of veterans. Lack of quality care is especially severe in rural areas, where many individuals, including veterans, have essentially no access to specialty mental health services (Smucker et al., 2019; Ku, Li, Lally, Compton, & Druss, 2021). Additionally, even when providers are available, many do not have competence or experience in providing care to veterans. This includes a lack

of recognition of military culture – required to provide veteran-centered treatment – as well as experience in evidence-based practices that might be more relevant to common issues among service members and veterans. Further, veterans often experience lengthy wait times to obtain care in the community/private sector.

In sum, the demand for mental health services far outstrips the supply. As such, we must identify innovative solutions that address four critical action areas to ensure veterans can access quality care for their mental health and well-being: 1. Increase veteran care seeking (and engagement). 2. Increase the supply of high-quality care options. 3. Optimize the existing high-quality care solutions by providing the right care at the right time. 4. Ensure quality and outcomes (Figure 1).

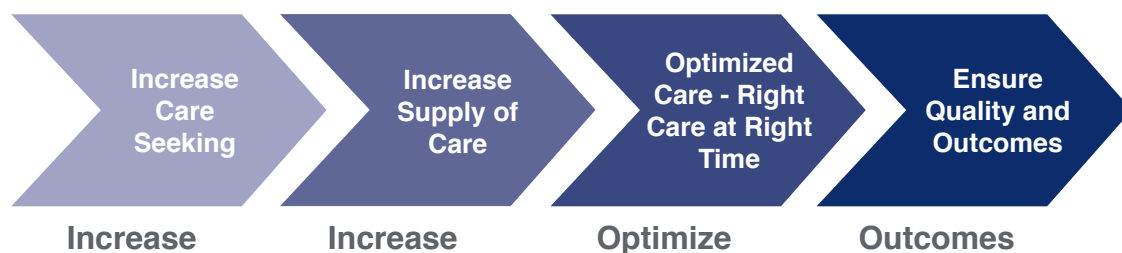


Figure 1. Critical action areas in promoting veteran mental health and well-being

Increase care seeking (and engagement)

Too many mental health services rely on veterans presenting themselves for care – identifying that they have a need and subsequently navigating a fragmented care delivery system. This is especially problematic for veterans already hesitant to seek help because of stigma and attitudes and values. Even when linked to care, many veterans discontinue treatment and do not receive enough sessions to achieve a successful outcome.

Increase the supply of high-quality care options

Over half of the counties in the United States have no access to in-person specialty mental health care (Sun, 2015). Furthermore, even when veterans receive care, very few receive adequate care. Many veterans, especially those in rural areas, receive mental health care from primary care or general care providers, rather than specialty care providers, even though specialty care tends to be more effective. This is not a shortfall that can be fixed with increased rates of training: More than twice the number of trained clinicians would be needed to address the need. Instead, it requires innovative, scalable solutions to expand the portfolio of mental health service offerings.

Optimize care by providing the right care at the right time

There is no one-size-fits-all solution in mental health care. But there are three major factors that contribute to the successful treatment of individuals: (1) the care setting, such as, outpatient, intensive outpatient, and inpatient programs (2) the treatment modality, such as, cognitive-behavioral therapy, cognitive processing therapy, motivational interviewing, or prolonged exposure; and (3) who, or what, is providing the care, such as a specialty mental health provider or support provided through digital tools. Moreover, the needs of the veteran will change over the course of their journey, and being responsive to that is critical to long-term successful outcomes.

Ensure quality and outcomes

Critical to providing high-quality care is knowing when things are not working and providing course corrections and modifications as needed. Although VA is leading advancements in measurement-based care, it is too rarely used by clinicians in the mental health community overall despite its

benefits to patients (Fortney et al., 2017, Resnick & Hoff, 2019; Scott & Lewis, 2015). As such, it is unclear if veterans are actually being helped by the care they are receiving, and it is impossible to comparatively evaluate program outcomes.

Overcoming these barriers will require more changes than simply expanding the workforce. We need innovative solutions that can create effective, efficient, and scalable mental health care resources and elevate opportunities for learning. Existing evidence-based treatments work for many, yet the current mental health care system is insufficient to reach, engage, and benefit all veterans. We must invest in better solutions to address the overwhelming need for mental health care for veterans and for all Americans across the country.

Over the past year, because of the pandemic, systemic shifts in health care have shown utility, and interest in technological solutions has grown to include telehealth and digital tools as well as promising applications of data science. In 2020, \$2.4 billion in venture funding was invested into digital mental health companies (Wang & Zweig, 2021). This rapid infusion in funding has led to an expansion of digital tools with over 20,000 digital mental health products available to consumers. They include mental health apps, digital therapeutics, and virtual mental health offerings. However, estimates suggest that only 3% of such tools are backed by science (Larsen et al., 2019). Thus, it remains hard for consumers to determine which tools to actually use, despite considerable evidence suggesting that they can be useful, especially in the areas of depression, anxiety, and post-traumatic stress disorder (Mohr et al., 2021).

Digital tools fit into various places in traditional care delivery pathways. Early digital tools, such as teletherapy via phone or videoconference, offered opportunities for providers to overcome geographic distance, offering services in places where none previously existed or reducing the need for a veteran to travel to an appointment. New digital tools, however, offer opportunities to transcend other barriers. These include supplemental digital tools that can enhance care by increasing the effectiveness or efficiency of specialty providers or allow non-specialty providers, paraprofessionals, or peers to provide evidence-based care with effectiveness equivalent to traditional services. There are even self-guided tools that may overcome the need for a provider altogether in some instances. Figure 2 demonstrates a continuum of digital tools ranging from those that merely extend a provider’s reach to those that may circumvent providers altogether.

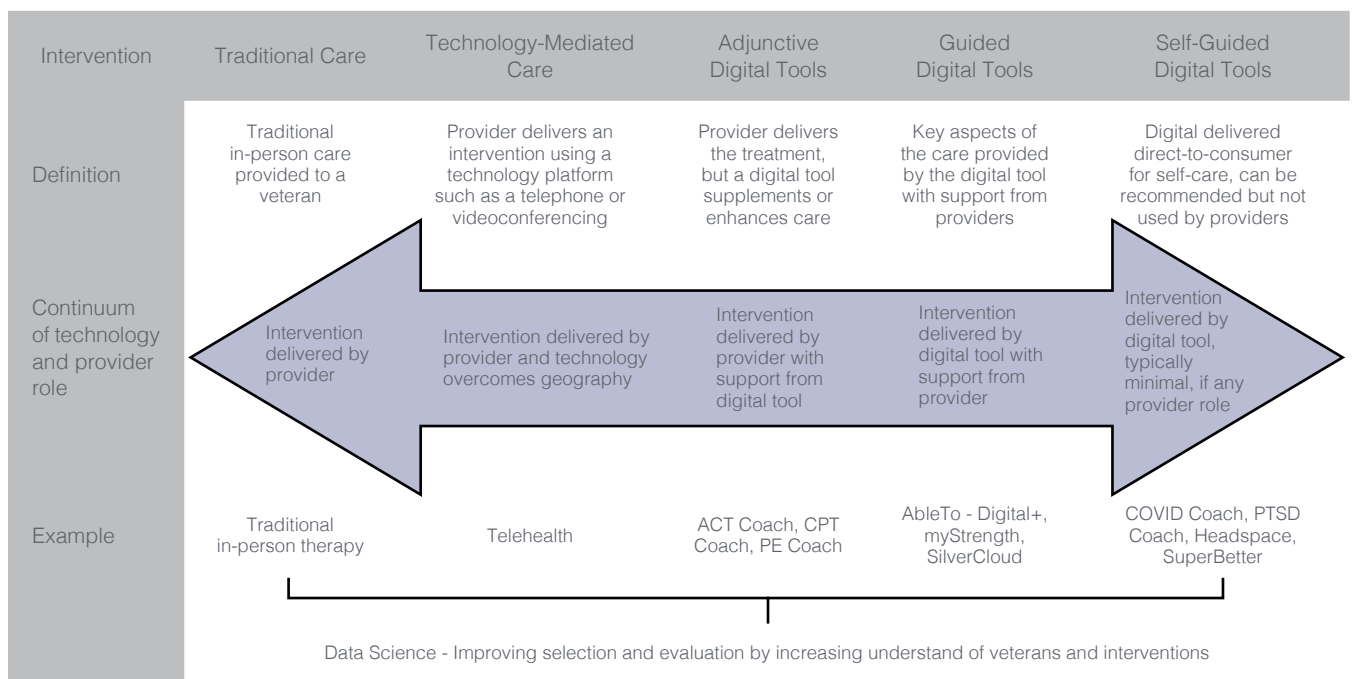


Figure 2. Continuum of digital tools in relation to traditional and human-supported services

Alongside the rapid expansion of digital tools, the amount of data available to inform mental health service delivery has grown. The use of data to create meaning and insights has been broadly referred to as data science. The expansion of data, as well as statistical and analytic methods and computing power, has supported mental health services because data science is better able to identify those who need care and can be useful in selecting treatments that might best fit an individual, monitoring progress while in care, and adapting treatments accordingly to improve impact.

This report discusses three priority areas – telehealth, digital tools, and data science – for policy makers and funders. Recent advances in each of these areas have demonstrated promising potential to overcome gaps in mental health care for veterans as well as where additional development and investment would enhance the ability to provide and scale high-quality care. We highlight why each area is important, where gains have been made in recent years, what challenges remain, and what actions should be taken to drive innovative solutions for one of our country's most complex and tragic problems.

TELEHEALTH

Why is this important?

Telehealth has played an increasingly important role in providing mental health care over the past two decades, with progress greatly accelerating during the COVID-19 pandemic. Telehealth may be a crucial tool to help offer the right treatment for the right person in the right place at the right time because it overcomes geographic and other logistical barriers to accessing in-person mental health care. Mental health care is in extremely short supply in the United States, with 50% of U.S. counties having no access to care. Culturally competent care and/or specific evidence-based treatments are also lacking, which affects veterans who benefit from providers who understand military culture and are experts in treating the mental health challenges that are more common among veterans. Telehealth also allows the best providers and the best treatments to be made available to veterans, regardless of geography. Additionally, telehealth can overcome barriers to receiving in-person care, such as the inconvenience of weekly appointments, the potential need to take off from work or for family reasons, travel time, and stigma around attending mental health clinics, especially in small communities.

Telehealth provided either over the telephone or through videoconferencing software is as effective as traditional, face-to-face treatment (Cuijpers, Noma, Karyotaki, Cipriani, & Furukawa, 2019; Jones et al., 2020; Olthuis et al., 2016; Turgoose, Ashwick, & Murphy, 2018). This includes its effective use for common mental health challenges among veterans, such as PTSD, as well as for common PTSD treatments such as prolonged exposure and cognitive processing therapy (Liu et al., 2020; Morland et al., 2014). Thus, telehealth may be an important tool for expanding access to evidence-based treatments.

What gains have been made?

Over the past decade, VA has leveraged telehealth to increase access to care for veterans receiving care within VA facilities. These efforts gained momentum with the passage of the Mission Act of 2018 that allowed federally credentialed VA providers to care for any veteran receiving care at any VA facility anywhere in the country. But that changed rapidly. For example, at Kaiser Permanente Washington, virtual mental health visits increased 10-fold from March 9 to March 27, 2020, representing 95% of all visits at that time (Simon, 2020). This swift expansion led to increasing numbers of new telemental health users – both in terms of clients and providers. Over three-fourths of patients seen using telemental health during this period in the VA were first time telemental health users, and 35% of clinicians provided a telemental health session for the first time (Connolly et al., 2020). During the pandemic, 67% of psychologists reported conducting all of their clinical work

via telehealth, with predictions that 35% of their clinical work would continue to be remote after the pandemic (Pierce et al., 2021). If true, this would represent a fivefold increase in its use from before the pandemic.

Even before the pandemic, mental health shortages led to calls from leaders in the mental health community for the Centers for Medicare & Medicaid Services (CMS) to address the regulatory and reimbursement

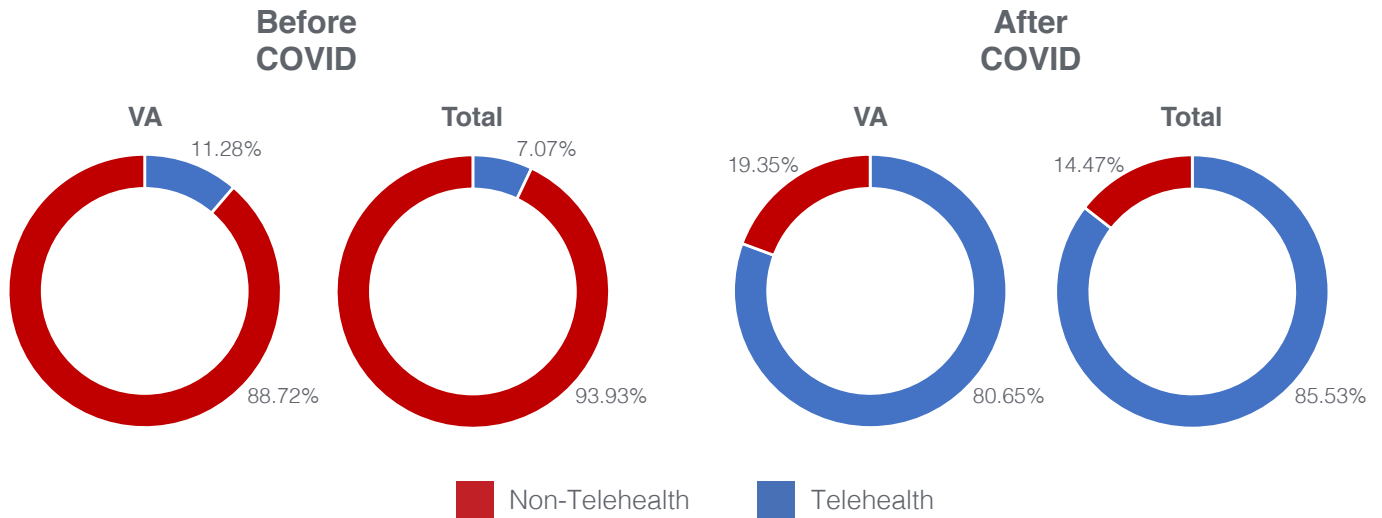


Figure 3. Percentage of mental health appointments provided via telehealth before and during the COVID-19 pandemic, based on data presented in Pierce, Perrin, Tyler, McKee, & Watson, 2021

barriers preventing telemental health expansion, including contracting, licensure, insurance, and reimbursement (Fortney et al., 2019). Many of these regulatory and reimbursement changes were made temporarily during the pandemic: CMS waived billing rules that only allowed mental health professionals to charge for services provided over the phone, authorizing providers to bill for telehealth services conducted via phone or videoconference in the same way they would for face-to-face services. Equally if not more importantly, many states also temporarily lifted in-state licensing requirements or expanded policies to allow out-of-state providers to practice. These regulatory changes, even the short-term ones, have been substantial steps forward in the implementation of telehealth care and have boosted both provider and patient confidence in the tools. Finding ways to make practice across state lines possible for the long term is critical to the health system and the capacity to scale quality care.

These rapid gains in telehealth use during the pandemic ushered in three important improvements that could help sustain its use in the years to come.

- **Infrastructure to deliver telehealth.** Providing effective telehealth services has required investment in infrastructure to ensure access to patients and to avoid technological problems that might interfere with treatment. Infrastructure improvements include the expansion of secure platforms to deliver telehealth (e.g., Doximity, [Doxy.me](#), and Zoom for Healthcare, Connolly, 2021), providers having the necessary resources (e.g., broadband capacity, videoconferencing set ups, digital resources), and patients having sufficient access to broadband and devices such as computers, smartphones, or tablets.
- **Support of health systems and providers.** Health systems' need to adapt to remote delivered care led to approvals from leadership and key stakeholders – such as information technology and security teams – which allowed providers to use telehealth platforms. Given the opportunity to provide care via telehealth, providers have gained experience and built competencies and comfort in telehealth delivered care.

- **Belief in the benefits of telehealth and patient comfort with the tools.** Consumers who have not used telehealth are often concerned about its effectiveness, and they are especially concerned about whether they will be able to form the type of relationship often needed for mental health services. Positive experiences with telehealth, both generally and specifically for mental health care services, have likely helped improve consumer confidence. These positive experiences have also built trust in the use of telehealth platforms. These elements and the alleviation of privacy concerns are important when it comes to making veterans more comfortable with using telehealth to receive mental health care.

What challenges remain?

Despite the massive gains in telehealth delivery during the pandemic, many may not last if permanent regulatory changes are not made. Many providers and patients shifted to telehealth out of necessity, lacking the necessary training or infrastructure to ensure long-term success and adoption. Furthermore, although telehealth may expand its reach substantially, it may still fail to provide services to those who lack sufficient access to necessary technology. This will be especially true if requirements go back to the need for videoconferencing for reimbursement, as telephones are more widely available than computers, smartphones, tablets, or other devices capable of conducting videoconferencing-based telehealth.

Regulation and reimbursement

There are growing concerns from the clinical community that CMS will allow temporary policies related to telehealth expansion to lapse. If CMS does not make permanent policies that permit reimbursement of telehealth by telephone and videoconferencing, many people will be unable to receive this care. It is worth noting that no evidence suggests that videoconferencing-based telehealth is more effective than telephone-based telehealth, and requiring videoconferencing is a substantial barrier for many clinicians and veteran consumers.

State based licensure

Licensing for mental health providers occurs at the state level, and both the provider and the patient need to be physically present in the state where the provider is licensed to provide mental health care legally. So interstate practice remains a considerable barrier to effective use of telehealth outside VA, particularly the expansion of care in states with fewer licensed psychologists and other professions (nurses, medical doctors, and social workers). Some interstate compacts exist to address these concerns, but they only cover certain states, and state laws may affect their use. The Psychology Interjurisdictional Compact (PSYPACT) is an interstate agreement designed to support providing telehealth across state boundaries but covers only psychologists in 18 jurisdictions. Nurses have a similar agreement, the Nurse Licensure Compact (NLC), with coverage in 35 jurisdictions.

Training

Telehealth competencies which may improve the effectiveness of treatment are not commonly taught in training programs. They include virtual environment, telepresence, and digital literacy as well legal and regulatory issues and telepractice development.

Technology infrastructure and digital literacy

Significant discrepancies exist in terms of access to basic technology infrastructure for providers and patients – high speed internet, devices capable of running videoconferencing software and video cameras. These discrepancies often mirror these for general access to mental health services. Digital literacy may also vary

considerably among potential telehealth patients and represent an additional barrier to receiving services in this medium, especially among traditionally underserved populations such as minorities or those living in rural areas.

What is at stake?

Telehealth provides an opportunity to overcome the geographic mismatch between those in need of mental health care and where providers are available. This can be helpful for all types of care and is especially important for those who may require specialist interventions, such as evidence-based psychotherapy or advanced medication management. It can also reduce other logistical barriers that exist to receiving in-person care. Given that changes occurred during the COVID-19 pandemic, it is an opportune moment to ensure that gains are not wiped out. Although we would not expect that telehealth would continue at the same level, sustaining it as a widely available option will help provide access to high-quality care for those in need. It can also help provide the right care to the right person regardless of where patients and providers are located. This would help veterans obtain access to culturally competent care and appropriate evidence-based psychotherapies. Continued demand for telehealth and better reimbursement will create more incentives for providers to be trained in telehealth competencies.

Failure to act will waste the momentum that occurred during the pandemic and limit the availability of high-quality care programs to those who are fortunate enough to live close to mental health providers. It will also restrict providers' ability to reach those who might benefit from their services.

DIGITAL TOOLS

Why is this important?

We do not have enough professionals to provide high-quality care for all veterans in need, unless the care is complemented by scalable resources that are less reliant on professionals – and we won't be able to train enough people to eliminate the shortage. Therefore, we need to broaden the portfolio of available solutions, including digital tools such as mobile apps, wellness products, digital therapeutics, and virtual mental health care (Figure 4). Digital tools have demonstrated effectiveness for a variety of mental health challenges like depression, anxiety, and PTSD (Mohr et al., 2021). There is accumulating evidence that they are helpful in other areas such as substance use, eating disorders, psychoses, and bipolar disorder. In fact, digital tools are being used as frontline treatments in health care systems around the world – places like Australia, Canada, and Europe (Titov et al., 2018).

Digital tools can be designed to play various roles in the continuum of care including as standalone treatments such as self-guided mobile apps for self-management or digital therapeutics that are intended as treatments for mental health challenges; as adjuncts to existing treatments that can increase the efficiency, adherence, or impact of interventions [or as virtual modes of mental health care delivery that can transcend both spaces by offering synchronous options such as teletherapy or time by offering asynchronous options such as messaging-based]. Digital tools may also provide opportunities to increase treatment engagement before initiating in-person care, during traditional treatments, or after receiving treatment to maintain and reinforce gains. The National Institute for Health and Care Excellence in the U.K. has recommended the use of specific digital tools as frontline treatments for depression and anxiety, and digital tools are being used in the U.K.'s Increasing Access to Psychological Therapies (IAPT) program.

Moreover, veterans want digital tools. Two independent studies found that about three-fourths of veterans are interested in using digital tools for mental health challenges (Erbes et al., 2014; Lipschitz et al., 2019). However, both studies found that only about 10% of veterans had reported actually using a digital tool for their

mental health, so the gap between interest and use is wide. Developing and disseminating effective digital tools could also provide a broader menu of options for veterans. Some veterans might even prefer digital tools over traditional face-to-face treatments. In this way, digital tools may help address market segmentation to ensure the diversity of services meets the diversity of interest in different options. Addressing potential interest in digital tools is likely to become even more important moving forward, as many young people have expressed interest in using social media and mobile apps to manage their mental health and well-being (Rideout, Fox, Peebles, & Robb, 2021). So better understanding of how to use digital tools to provide mental health care will not only benefit the veterans of today, but will also create resources of strong interest to veterans in the future.

What gains have been made?

Digital mental health tools are rapidly expanding, with over 20,000 currently available. In 2020, \$2.4 billion in venture capital was invested in companies developing digital mental health products. Digital tools come in a range of products including internet-based therapies, apps that anyone can download, digital therapeutics, and virtual mental health offerings.

One of the most well-established digital tools for mental health is internet-based therapy, especially cognitive-behavioral treatments. Examples of programs making use of internet-based treatments around the world include Australia's MindSpot Clinic (Titov et al., 2020), Canada's Online Therapy Unit (Hadjistravropoulos et al., 2021), Denmark's Internetpsykiatrien Clinic, Norway's eMeistring Clinic, and Sweden's Internet Psychiatry Clinic (Titov et al., 2018). Internet-based treatments have been accepted and proven effective in routine settings, but they vary by digital tool and context, demonstrating the need to select effective, evidence-based treatments (Etzelmüller et al., 2020). Earlier data on internet-based treatments for problem areas such as substance use (Marsch et al., 2014) and insomnia (Ritterband et al., 2009; Ritterband et al., 2017; Vedaa et al., 2019) were used as the basis of many digital therapeutics approved by the U.S. Food and Drug Administration (e.g., reSET, reSET-O, Somryst). For PTSD, a top concern for veteran populations, multiple reviews indicate that internet-based treatments can be effective (Olthuis et al., 2016; Young & Campbell, 2018). Such internet-based treatments can make use of highly effective evidence-based practices, such as prolonged exposure therapy (McLean et al., 2020), cognitive-behavioral therapy (Hobfoll, Blais, Stevens, Walt, & Gengler, 2016), and motivational interviewing (Enggasser et al., 2021; Livingston et al., 2020). As such, internet-based treatments are a highly scalable and effective solution for increasing access to high-quality care. Figure 4 displays some examples of other types of digital tools.

Although many digital tools have been developed, few have been evaluated. Much of the work that has been done has focused on early-stage feasibility and acceptability rather than efficacy or effectiveness (Gould, Kok, Ma, Zapata, Owen, & Kuhn, 2019). However, the VA has led efforts to develop and evaluate digital tools, including products for things like PTSD, military sexual trauma, insomnia, and smoking cessation as well as treatment strategies for cognitive-behavioral therapy, mindfulness, cognitive processing therapy, and prolonged exposure. These products include both treatment-companion apps that are meant to be used in conjunction with evidence-based psychotherapies – such as ACT Coach, CBT-I Coach, CPT Coach or PE Coach – as well as self-care apps for those who seek to manage their own symptoms or are supplementing care – such as such as Calm or Headspace. All these products are available for download in the Google and Apple app stores as well as the VA App Store, which only distributes VA products (<https://mobile.va.gov/appstore/>).

Although self-guided digital tools can play a role from a population-level perspective, some veterans, especially those in most need, will likely require some combination of digital tool plus human support. Again, the VA and Department of Defense have led efforts to teach providers to use digital tools in their practices, developing a competency-based training program (Schueller, Armstrong, Neary, & Ciulla, 2021).



Figure 4. Examples of the types of digital tools for mental health

These programs increase providers' intentions to use digital tools in their practices (Armstrong, 2019). Subsequently, this has led to increased use of digital tools three and six months after training (Armstrong, Ciulla, Williams, & Micheel, 2020).

Training providers may be an especially critical step in increasing the reach and impact of digital tools for multiple reasons. First, patients are more likely to use digital tools if they are recommended by their providers (e.g., Mordecai et al., 2021). Second, patients tend to use digital tools, and benefit more from them, when they are supplied along with some form of human support (Schueller, Tomasino, & Mohr, 2018). Nevertheless, identifying who might benefit most from different levels and types of digital tools could be an important when it comes to creating more efficient and scalable care. For example, patients being treated for depression with low-level symptoms who receive self-guided digital tools benefit as much as those who receive therapist-guided digital tools (Karyotaki et al. 2021). But among patients being treated for depression with moderate-to severe-level symptoms, therapist-guided digital tools are much more effective than self-guided tools. Digital tools might also help facilitate stepped-care models, where patients start with less resource intensive treatments but receive more resource intensive options if they fail to improve. One study compared teletherapy to a stepped-care model – where patients started with internet-based therapy but were moved to teletherapy only if they did not improve – and found that while both treatments produced equivalent clinical outcomes, the stepped-care model was more cost-effective (Mohr et al., 2019). This suggests the potential for a smart and effective allocation of resources that could optimize the clinician workforce, ease the clinician burden, expand access to care, and make more cost-efficient use of available resources.

What challenges remain?

Digital tools are not a panacea to solve the challenges facing mental health service delivery for veterans. Although the development and evaluation of digital tools has grown over the past two decades, many questions remain regarding their use and effectiveness. New digital tools, making use of novel technological features, are being developed at a breakneck pace, creating increasingly complex and untested interventions.

While early efforts mostly involved internet websites with limited interactivity, more recent work leverages a variety of technological advances such as natural language processing and machine learning to create “chatbots” similar to Apple’s Siri or Amazon’s Alexa; virtual reality that can create immersive experiences; or sensors and passive data to understand mental health states. These cutting-edge technologies offer significant opportunity for scalable solutions to supplement the mental health care workforce. However, despite robust research to demonstrate that digital tools can be effective, separating the effective from the ineffective is nearly an impossible task for individual consumers such as veterans or providers. Therefore, despite everything that is known in this area, there is much more to learn.

The needs are most evident in the gap between the expectations for establishing an evidence base for mental health clinical treatments and the existing evidence base for any particular digital tool. While there have been randomized controlled trials demonstrating the effectiveness of digital tools for areas including depression, anxiety, and PTSD, the percentage is quite low given the large number of digital tools that are in the marketplace. Estimates suggest that fewer than 3% of digital tools are evidence based (Larsen et al., 2019). At the same time, evidentiary frameworks need to incorporate direct clinical evidence (e.g., evaluations supporting a specific digital tool) and indirect clinical evidence (e.g., indication that a type of digital tool is effective) and address core principles such as benefit and efficacy, engagement, data sharing and interoperability, risk management, data security and privacy, and equity (Mohr et al., 2021). Models for the evaluation of digital tools that identify classes of effective products – similar to the U.K.’s National Institute for Health and Care Excellence – or that look at the effectiveness and cost effectiveness of services and treatments might help support evaluation that is more adaptable to the current pace of development and deployment. Such models could mimic the FDA’s designation of products as “substantially equivalent” to support clearance for a product that is mechanistically the same as another cleared product. Nevertheless, the following specific challenges need to be overcome if digital tools are going to live up to their potential to increase access to and improve the impact of mental health services.

Validation and regulation

Many digital health tools undergo only early testing, assessing aspects of feasibility or acceptability, rather than efficacy or effectiveness (Chen, Harrington, Desai, Mahaffey, & Turakhia, 2019). Although some rigorous studies of digital tools have been conducted, most products themselves have not been evaluated. Since the first digital mental health product received FDA clearance in 2018, only five other products have been cleared – and then the FDA suspended review of digital tools for psychiatric conditions because of the COVID-19 pandemic. Given the limited oversight from the FDA, several other frameworks and projects were created to better understand digital tools. They include the American Psychiatric Association’s App Evaluation Model and One Mind PsyberGuide, which provides third-party reviews of digital mental health products. However, no consensus or widely accepted standard exists in this space. Furthermore, gold-standard methods of clinical validation, including the randomized controlled trial, may be especially mismatched for the pace of industry development (Patrick et al., 2016), which makes consideration of the quality of specific digital tools challenging. Most industry models do not support clinical research at the level that it is conducted in research settings. Rigorous evaluation data could be helpful in supporting the assertion that a specific digital tool can have a positive impact on the user’s mental health. Additionally, transparency around the work conducted in research settings would promote confidence in findings.

Engagement

Most widely available digital mental health tools are not downloaded very often, and even those that are downloaded are rarely used (Baumel, Muench, Edan, & Kane, 2019; Wasil, Gillespie, Shingleton, Wilks, & Weisz, 2020). Engagement seems to be higher when tools are recommended by trusted sources (Mordecai et al., 2021), including providers involved in an individual’s care, or when digital tools are provided with

some form of human support (Schueller, Tomasino, & Mohr, 2017). Although engagement is a major focus in industry development of digital tools, this is often done in a way that prioritizes conversions of new users or uses metrics such as clicks, views, or downloads rather than long-term use and behavior change. Nevertheless, if no one uses a digital tool, it will not benefit anyone, even if it is evidence-based. Real-world engagement rates are lower than those that occur in clinical trials, especially because such trials usually include researcher outreach or incentives that will not be retained in eventual deployments.

Integrating digital tools into care delivery

Human support is a common factor among the digital tools with the most engagement and best outcomes. As such, integrating digital tools into various care delivery pathways could maximize their impact. However, digital tools may facilitate an expansion of traditional care delivery pathways and open new opportunities by leveraging peers or other forms of non-professional human support. Some preliminary work showed using a VA peer specialist to support a digital tool to reduce unhealthy alcohol use among veterans was highly acceptable to veterans and reduced drinking (Blonigen et al., 2020). Exploring other uses of digital tools combined with peer specialists might help expand access to care while also keeping it veteran-centric. But no model is going to work for everyone. Developing various ways to include the different types of digital tools (e.g., adjunctive digital tools, guided digital tools, self-guided digital tools as in Figure 2) in care would broaden the portfolio options. This would expand the potential to provide the right care at the right time to the right person.

Better understanding who benefits most from which digital tools

Digital tools themselves are not one size fits all, so we must match outcomes to desired level of intervention to understand how to optimize the available digital solutions (see Figure 1). Not everyone will benefit from a digital tool, and even those who do might need different digital tools or different models of delivery to maximize the benefit. A recent review demonstrated that there was no beneficial difference in the use of self-guided and supported digital treatments among those with mild symptoms of depression, but there was a clear benefit in supported digital treatments for those with moderate to severe symptoms (Karyotaki et al., 2021). Digital tools might be more appropriately viewed from the perspective of market segmentation – some people might prefer or benefit more from certain digital tools at certain times. Therefore, we need a variety of approaches to meet the diverse needs and preferences of veterans.

What is at stake?

There is a rapidly expanding ecosystem of digital tools for mental health challenges. Due to the extreme lack of services available to those in need, considerable industry and venture capital investment and development has been put into this area. Studies have demonstrated that digital tools can be effective, but most of the available products are not backed by science. In the absence of regulation or meaningful engagement from the clinical community, these products will make it into the hands of consumers, and many of them will be at best ineffective and at worst harmful. It is nearly impossible for consumers to separate the science-backed solutions from other products. Further, many industry models are centered on creating more users rather than engaged users or users with improving mental health outcomes. Thus, better evaluation and regulation can help protect consumers, instill consumer confidence, and incentivize industry to take clinical outcomes more seriously.

More collaboration between the mental health scientific community and the technology community is essential to assure outcome-based digital tools are developed for consumers, including veterans. Some examples of this exist within government, such as the National Institute of Mental Health's request for applications (NIMH, RFA-20-510) to fund research on existing digital mental health platforms that require partnerships between

software developers and academic researchers. Additionally, the Small Business Innovation Research (SBIR) and Small Business Technology Transfer programs support small businesses in conducting research.

Successful use of effective digital tools has the potential to create scalable services that can reach those in need and overcome some of the challenges due to the scarcity of trained mental health providers. Although self-guided tools might offer considerable public health benefits, there is much to learn about which types of tools help which types of people with which types of needs. Without greater clarity on who and how to match the tools, many people who might benefit from higher levels of care – either in addition to or instead of such digital tools – will be missed.

DATA SCIENCE

Why is this important?

Too many veterans take too long to access the mental health care they need in order to thrive. Even when veterans get linked to care – even evidence-based treatments – not all improve. Selecting a treatment is often done in a generalized way, without consideration of a veteran’s individual concerns, needs, or life goals. Lastly, when veterans are engaged in care, their outcomes are rarely tracked in any systematic way. As a result, opportunities to adapt the course of treatment to improve the likelihood of benefit are limited. Data science refers broadly to extracting meaning and insights from data. It offers the promise to improve the quality of care that veterans receive by improving the identification of those in need, advancing assessment and diagnosis, selecting the right treatment for a veteran from the start, and monitoring outcomes and tailoring interventions during the course of treatment. Figure 5 provides some examples of applications of data science in mental health care to help illustrate its potential.

Data science draws from statistics, computer science, and research methods and includes the use of programming, artificial intelligence, and machine learning. These methods allow the use of a large amounts of data to generate novel insights and understanding. In mental health care, data science can be applied to treatment selection. For example, which person is in need of care, or which treatment might be most appropriate?

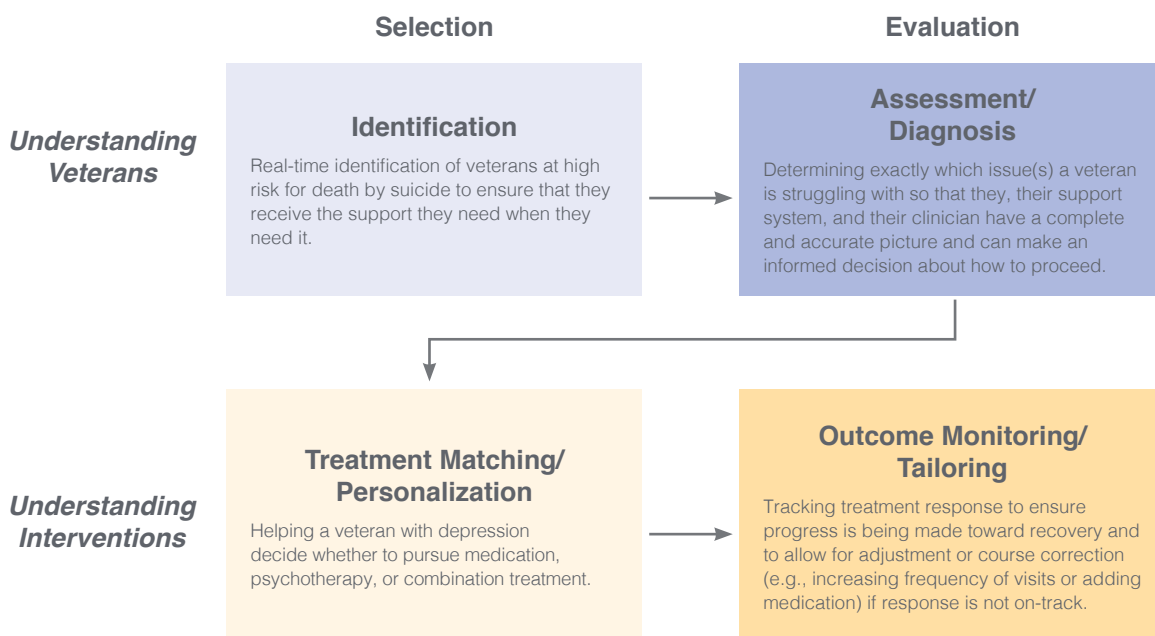


Figure 5. Applications of data science in mental health care

Or – treatment evaluation – how is this person doing, or how is this treatment performing? Using data science approaches, however, requires sufficient and relevant data. The increasing pervasiveness of technologies such as smartphones, social media, and wearable devices has ushered in a new era of “big data” which has expanded potential applications of data science to generate novel solutions in mental health care.

A substantial amount of useful health data are generated both within and outside health care settings. Clinic data include patient-reported outcomes, electronic health record entries, and claims information. Health care systems, including the VA, have followed this trend to capture clinical data gathered during routine screenings and increasingly integrating data from various points of a veteran’s care journey. In addition, useful data from outside health care settings can include information from wearables/fitness trackers (e.g. FitBit, Oura ring), monitoring apps (e.g. sleep, GPS, voice tone), and social media (e.g. Facebook, Instagram, Twitter).

Technology outside the health care setting has contributed to the increase in useful healthcare intelligence. Internet use in the United States is nearly ubiquitous, with 93% of American adults online, most on at least a daily basis and about 31% almost constantly (Pew Research Center, 2021). One result of this massive amount of time spent online – about 1 billion years total across all users in 2018 – is a massive amount of data generation. In every minute, users run 2.4 million Google searches, send 456,000 tweets on Twitter, post 46,740 photos to Instagram, and comment 510,000 times on Facebook. Figure 6 compares the volume of data created by one American’s digital life with data available from the person’s healthcare system interactions over a four-year period. Each red hash is a time this person visited the doctor, was treated as an outpatient, or went to the emergency room. The space between those red hashes is referred to as the clinical white space and is where a person spends most of their life. The blue hashes indicate the person’s posts on a single social media platform in the same timeframe. Other digital-life data, like those from wearables, provide even more continuous information (Coppersmith et al, 2018).

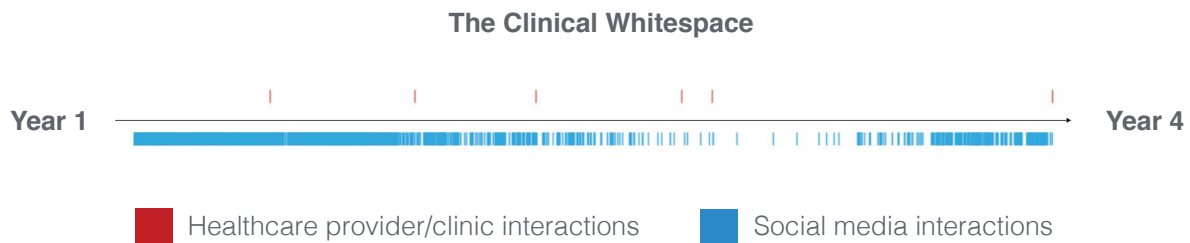


Figure 6. The Clinical White Space: periods of time between healthcare visits where social media data is available and can inform healthcare decisions

Although these data points might seem irrelevant to mental health needs and services, researchers and data scientists have demonstrated the potential of such information to identify those at need for services and to design better pathways to engage people (Birnbaum et al., 2019; Choi et al., 2020; Coppersmith et al., 2018; Fine et al., 2020; Merchant et al., 2019). This includes improving preventive and early intervention opportunities, such as identifying those who may be at risk for suicide or in need of mental health care as well as monitoring care to ensure benefit.

What gains have been made?

Applying data science to identify those at risk and precisely match solutions to subpopulations in need are gaining momentum rapidly in mental health. The VA and DOD have been leaders in curating and linking datasets, which is a huge, but necessary, task to effectively use data science in any future mental health efforts. Projects such as the DOD and VA Infrastructure for Clinical Intelligence (DaVINCI) have brought

together analytic applications and data in a secure workspace to allow for innovative new projects focused on improving veterans' health. Additionally, the VA has committed to training and workforce development through programs such as the Big Data Scientist Training Engagement Program (BD-STEP), which helps advance clinical scientists' skills in data science and brings computer scientists and engineers into VA settings to gain skills in working with large-scale health data. Outside the VA, various training programs and funding opportunities have been aimed at expanding the use of data science in biomedical fields. An example is the National Institute of Health's Big Data to Knowledge initiative. Another goal has been to grow the amount of available data through efforts such as the Million Veteran Program, which collects questionnaires, electronic health records, and blood samples to enable various investigations (Gaziano et al., 2016).

These investments in data science, both within and outside the VA and DOD, have led to a variety of early-stage applications of data science in mental health and have demonstrated important principles that can guide future work. Specifically, these projects have shown that, given sufficient data, highly accurate predictions can be achieved. The two predominant applications for data science are (1) selection – identifying who might need mental health services and which treatments might fit them best, and (2) evaluation – improving assessment and diagnosis as well as monitoring treatment outcomes so that they can be adapted accordingly (Chekroud, 2017; Chekroud et al., 2021; Dwyer, Falkai, & Koutsouleris, 2018; Shatte, Hutchinson, & Teague, 2019; Thieme, Belgrave, & Doherty, 2020).

Innovative projects have demonstrated the potential of data science to more precisely identify those at higher risk and in need of services or outreach. One example in suicide prevention is the Recovery Engagement and Coordination for Health – Veterans Enhanced Treatment (REACH VET) program, which created a suicide risk-detection system using VA datasets and flagged “high-risk” veterans for providers. Importantly, these veterans flagged as “high-risk” through REACH VET were not identified through existing clinical assessment tools (Reger, McClure, Ruskin, Carter, & Reger, 2019). Similar analytics for suicide-risk prediction have been created outside the VA. An analysis conducted across seven health systems and nearly 3 million patients' data used health record information and responses to questionnaires to build a robust prediction model for suicide attempts and suicide deaths (Simon et al., 2018). Another, albeit smaller, study found that similar variables could predict PTSD three months after a severe injury that resulted in an emergency room visit (Papini et al., 2018). Using these types of applications for identification purposes can make care more proactive than reactive and potentially make it possible to provide care to veterans earlier, before long-term consequences of mental health challenges set in.

Another area of rapid growth is enhanced clinical assessment through the use of digital phenotyping. Digital phenotyping refers to using passively collected data to assess a person's behavioral, emotional, or mental state. Digital phenotyping uses diverse data sources, including sensors present in smartphones, social media posts, speakers, or cameras (Torous, Gershon, Hays, Onnela, & Baker, 2019). This innovative method has demonstrated, for example, that the way a person types on a smartphone can predict mood fluctuations in the context of bipolar disorder (Zulueta et al., 2018) or that the way a person talks can help predict PTSD (Marmar et al., 2019). Additionally, other smartphone data streams such as location, screen state, calls and messaging, or light sensors can predict depression (Saeb et al., 2015) or sleep and sleep dysfunction (Saeb, Cybulski, Schueller, Kording, & Mohr, 2017). Social media data can be used for similar purposes, including identifying wording in posts that can signal those at risk for a suicide attempt (Coppersmith et al., 2018) or activity and language that can predict depression (de Choudhury, Counts, & Horvitz, 2013).

Digital phenotyping can improve mental health care in a variety of ways. First, in many areas of assessment, self reporting remains the gold standard of clinical assessment, and, in general, humans are bad self reporters. Digital phenotyping can avoid problems with self reporting such as recall bias. Second, digital phenotyping allows for continuous assessment that extends measurement into the context of people's daily

lives and reduces the burden of completing assessments. Lastly, digital phenotyping may allow for the integration of diverse streams of data such as social data or physiological data from wearable devices.

Such approaches might also be useful to more precisely identify how different types of engagement and outreach strategies resonate with different subpopulations of veterans. One study using social media to understand differences between male and female veterans in terms of needs and support found that women veterans were more likely to seek community and discuss mental health and veterans' issues through online channels, whereas men engaged in political or partisan debate (Kelly, Fine, Coppersmith, 2020). Understanding differences in subpopulations could be especially useful to understand how to reach those who are not engaging in care and better build engagement strategies and care pathways that meet the diverse needs of subpopulations within the veteran community. Understanding heterogeneity within the veteran community may create important opportunities for diversity of interventions expanding beyond our traditional services to include telehealth and digital tools.

Data science also provides opportunities to match veterans to interventions before they receive care or improve ongoing treatments by identifying effective elements or monitoring progress. When it comes to matching people to care, pretreatment patient characteristics can predict improvement in pharmacotherapy or psychotherapy among those treated in routine care settings (Webb et al., 2020). These insights have formed the basis of personalized care that might determine the superiority of one type of care over another for a given person such as psychotherapy versus pharmacotherapy (DeRubeis et al., 2014) or one type of psychotherapy to another (van Bronswijk et al., 2021; Wiltsey Stirman et al., 2021). For treatment outcomes, similar approaches have been applied to techniques/interventions that occur within therapy sessions to identify which session features might lead to higher patient outcomes and quality care (Ewbank et al., 2020). This work automatically categorized 24 different features and found several that were associated with reliable improvement. Although the data might hold value in the future, it is worth noting that one of the benefits of data science is its application to large and robust datasets that currently exist or that could be easily created given sufficient investment in harmonizing or standardizing datapoints. These examples provide proof-of-concept for data science approaches to help better identify those in need of care and improve the care veterans are receiving. One thing that is noteworthy about these approaches is that they make use of routinely collected or easily obtained data – health records, patient-reported outcomes, and session recordings – rather than less commonly collected or more expensive predictors such as biomarkers or functional MRI (fMRI) scans.

What challenges remain?

Advanced analytic methods are subject to many of the same challenges faced by previous statistical methods – namely, the conclusions are only as good as the data available. The growth of data science within mental health care delivery also raises questions about how the workforce will be able to wield new insights and tools made available through data science.

Training and infrastructure

Many clinical scientists do not have sufficient training in statistical methods to use advanced data science techniques. At the same time, many data scientists do not have experience or context in mental health care. Providing cross-training and interdisciplinary experiences is critical. Furthermore, we need infrastructure to collect, clean, and store data and make it accessible in ways that maintain privacy.

Privacy

Mental health is a sensitive topic, and it is often unclear what may be possible to be inferred from a given dataset before it is used. Protecting veteran privacy should be a primary concern. Ensuring that individuals

are comfortable with the ways their data may be used is essential. Leveraging publicly facing data, such as information found on social media, can be a useful way to identify needs and reach veterans, but it also raises questions about consent. Creating data-sharing models that promote transparency while maintaining veteran autonomy and decision-making would help ensure that the information could be used for good while protecting against its exploitation in advancing sales, marketing, and private company profits.

Algorithmic bias and small sample sizes

Some data science models that are excellent at parsing existing data fail when it comes to predicting future trends. When these models are applied to populations that differ in some ways from the one that was used to develop the algorithm, it can create algorithmic bias. This in turn can generate misleading conclusions which can become entrenched into our system. Indeed, algorithmic bias has been demonstrated to be behind racial bias in facial recognition software and gender bias in voice recognition tools (O'Neil, 2016). Encouragingly, suicide prediction models may accurately predict risk among White, Hispanic, and Asian patients – but, unfortunately, not for Black and American Indian or Alaska Native patients (Coley et al., 2021). Similar issues may exist when trying to extrapolate learnings from algorithms developed from small samples to larger populations. Although small studies may provide some proof that an approach might be useful for a given problem area, new algorithms often have to be developed for new samples.

Paradoxically, there is often too much data and not enough data

While the amount of data continues to expand, quality data – information that is labeled, contextualized, and well understood – is often lacking. This leads to challenges in determining which data to use to construct various models. Labeling or obtaining high-quality data could create an additional burden on veterans or providers. Data science approaches need to provide value back to the stakeholders to justify any additional burden. This would allow data to function in a transactional manner – in which those providing data receive commensurate benefit for doing so.

What is at stake?

Mental health care has long been a black box, with consumers having a poor understanding of what high-quality care should include, what is likely to work better for whom, and what drives benefits in specific treatments. Advances in data science can help to begin to open that black box, but, conversely, they can also lead to further opacity by using methods that do not advance understanding. Some key opportunities for data science involve proactively identifying those in need of treatment, more quickly matching them with appropriate treatments, and enabling monitoring to support midtreatment course corrections.

Data science – like telehealth and digital tools – requires intentional considerations regarding data ownership and data sharing. Just because data are available, does not mean the information can be used for any purpose, irrespective of the desires of the veteran who contributed the data. Transparency enabled by informed consent and permissions could go a long way in instilling trust in the process of data science. The potential benefits to veterans and society as a whole should not come at the expense of privacy. Data science should also be used to reduce rather than increase social disparities in terms of who receives high-quality care, ensuring that it does more than reinforce the advantage of mental health care for those already more able to receive it. Lastly, data science applications need to be designed in ways that can be translated into real-world settings and benefit veterans. This includes using methods of deployment-focused processes and human-centered design to put care settings and veterans at the center of the development and evaluation process.

RECOMMENDATIONS

Telehealth, digital tools, and data science hold tremendous promise to improve the mental health and the well-being of veterans. Furthermore, lessons learned and innovations created within the veteran population can be extrapolated for the broader American population. Many resources, including widespread and quality-driven VA care, an expansive data collection and sharing infrastructure, and leading training programs in mental health, provide opportunities to expand gains in veteran mental health care to mental health care more broadly. Veterans also want innovative mental health care that will lead the way to better mental health care for all Americans. However, that promise will remain unrealized without both short- and long-term efforts to address the challenges that stand in the way.

The following recommendations specify ways to remove barriers to more widespread use of telehealth, digital tools, and data science. They target policy makers in both federal and state government as well as leaders in health care licensure and credentialing organizations: On the federal level, these include congressional leaders, the Centers for Medicare & Medicaid Services, the White House Office of Science and Technology, the White House Domestic Policy Council, and leaders in the Departments of Defense, Veterans Affairs, and Health and Human Services. On the state level they include governors' offices and state veterans affairs offices; and, in licensing and credentialing, the American Medical Association, the National Association of Social Workers, and LPC/LMFT – licensed professional counselors and licensed marriage and family therapists.

Recommendation #1: Advance legislation to increase interstate telehealth practice

To assure that all veterans (not just those who receive care from VA providers) have a greater chance of accessing high-quality mental health care, Congress should work to pass federal legislation authorizing interstate telehealth practice or the adoption of interstate agreements that facilitate interstate practice, such as Psychology Interjurisdictional Compact (PSYPACT) and Nursing Licensure compact (NLC). Licensure and reimbursement are major barriers to expansion of telehealth practice. Temporary waivers to existing rules during the pandemic were key contributors to the growth of telehealth over the past year. Relevant professional groups such as the American Psychological Association, American Medical Association, and the National Association of Social Workers should work to support licensure portability for mental health providers. Over the past 10 years, 20 states and the District of Columbia have passed effective or pending PSYPACT legislation; however, promotion of interstate practice through PSYPACT alone is too slow to support the need. National mental health professional associations and Veteran Service Organizations should focus their advocacy to ensure that temporary regulations waived by CMS can endure after the pandemic. For example, authorizing the reimbursement of mental health care delivered over the telephone as well as by video is an equity issue and can be done without reducing the quality of care. Advocacy organizations like Mental Health America have issued similar calls for “telemental health now and from now on” (Plotnick, 2020), and similar clarion calls should guide federal and state legislations.

Further, in the absence of federal legislation, state legislatures need to ensure that state laws do not interfere with efforts to support license portability and interstate licensure across the mental health professions. Professional organizations and federal and agency leadership should help educate state legislatures about the impact that state laws can have on interstate agreements and progress. In addition, state veterans' affairs offices within governors' offices, state professional organizations, and VSOs, should encourage state policymakers to support interstate compacts and licensure portability. Early in 2021, the Department of Defense awarded a \$500,000 grant to support the development of an interstate licensure compact for social

workers which includes collaboration between the Council of State Governments, Association of Social Work Boards, the National Association of Social Workers, and the Clinical Social Work Association. Similar funding and collaborative efforts could be a model for other mental health professions to promote interstate practices.

Recommendation #2: Incentivize integration of outcome-based digital tools through reimbursement, funding, and research

Although effective digital tools exist, they are not making it into the hands of those who need them most. One major challenge is that there are no federal reimbursement mechanisms for digital tools. Congress must address this with legislation that creates a reimbursement method for digital tools – allowing Medicare to pay for digital tools and authorizing CMS to provide technical assistance to the states to support reimbursement via Medicaid. This legislation should also establish a quality review process beyond the insufficient FDA review process currently being used for digital tools in mental health (Alon, Stern, & Torous, 2020). Reimbursable digital tools need to meet sufficient quality standards such that only effective and safe digital tools make their way into the hands of veterans. Australia, for example, recently released National Safety and Quality Digital Mental Health Standards (Australian Commission on Safety and Quality in Health Care, 2020), and similar standards could be developed for digital tools to be considered for veteran well-being.

In addition, the majority of payment models for mental health rely on fee-for-service systems which reimburse for provider time. The goal of many digital tools is to create more efficient and scalable interventions that reduce provider time. A review of current payment practices showed that although some Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes are used for digital tools for which provider time is required – such as adjunctive or guided digital tools – CPT codes are not a viable means of payment for all digital tools (Powell, Bowman, & Harbin, 2019). There are different ways digital tools provide care (self-guided, professional supported, and hybrid approaches), so CMS's reimbursement models should take into account the fact that fee-for-service models are not sufficient. They also fail to incentivize quality and outcomes. On the other hand, value-based care models can help ensure that veterans actually receive benefits from such tools, not simply generate more users. To advance this recommendation, CMS should establish a working group of subject-matter experts on digital tool development, mental health, and reimbursement to determine the adequacy of certain benefit categories for certain types of digital tools – and whether any changes to current modeling are necessary.

In addition, there is a great opportunity for establishing funding for public-private partnerships to accelerate research for this work specific to the veteran community. One model is the National Institute of Mental Health request for applications that requires academic/industry partnerships to conduct research using digital tools with real-world deployments and substantial user bases. VA's Office of Research and Development and VA's Center for Innovation should look to this public-private partnership model and prioritize funding for digital tool validation efforts to establish effectiveness among veteran populations and contribute data necessary to inform reimbursement models. Lastly, funding organizations (government and private sector) should prioritize research on engagement and implementation strategies to determine best models for integrating the range of digital tools into the mental health and well-being continuum.

Recommendation #3: Establish policies and regulations to harmonize useful data inside and outside health care systems

Data science is the key to connecting veterans to the right care at the right time and in the right place. Leveraging existing data to provide actionable real-time insights can identify more veterans who are at near-term risk for mental health challenges or suicide and can optimize the use of the current workforce. VA

and DOD should offer more opportunities for veterans to consent to having their digital phenotyping data used to foster mental health and well-being. Protection and promotion of veterans' health and safety should be central to these efforts, which will also require building trust with veterans. Although health data within health systems is governed by HIPAA – the federal law restricting the release of medical information – health data that lives outside health systems, such as from wearable devices, social media, or in federal databases is not. The White House's Office of Science and Technology should partner with VA and DOD to establish a task force to develop a scalable model that would offer transitioning veterans (and all veterans) the opportunity to integrate digital phenotyping data into their military and health care records. Further, this task force should prioritize recommendations for data ownership, privacy, and other ethical considerations so all available information is leveraged transparently with the consumer (veterans) at the center.

Once the task force has made its recommendations, congressional leaders – with support from VSOs and subject-matter experts from VA, DOD, and HHS – should pass legislation that builds upon them and promotes data harmonization across agencies. These policies should integrate health care data and create the necessary infrastructure to integrate data outside health care systems. More opportunities are needed to comprehensively realize the power of data science, and that will require establishing sufficient and consistent data collection and a data-sharing infrastructure today.

CONCLUSION

Millions of veterans in need of mental health care go untreated every year. Even those who seek treatment often receive low-quality care. There is an urgent need to expand access to high-quality care. Doing so will require innovative solutions that leverage technology – telehealth, digital tools, and data science. Their potential has been evident in recent years; however, additional work needs to be done to ensure that this potential is met. The COVID-19 pandemic has provided an important window of opportunity to move toward sustainable integration of such resources in our systems of care. Considerable investment should be put into the development of a mental health workforce capable of using 21st century tools to meet the needs of veterans. Fortunately, the VA is one of the largest trainers of clinical psychologists through its internship program, and the agency also trains a range of additional mental health professionals through other programs.

Telehealth, digital tools, and data science are not panaceas and will not automatically solve all the problems in mental health service delivery. And they have their limits: These tools rely on considerable technological and data infrastructure, and many populations that have traditionally been underserved by mental health services also lack the technological resources to engage in these services. They include rural populations and some racial and ethnic minorities. Data are unavailable for many members of these groups because they have not previously received care at similar rates to urban populations or non-Hispanic Whites. This limits how many of the needs and experiences of traditional underserved and marginalized groups can be reflected through data science. Failure to address these limitations may worsen disparities in care that already exist. So our recommendations should go hand in hand with broader efforts to expand access to broadband and technology and train a workforce that reflects the racial and ethnic diversity of veteran populations. Policy makers must also consider the unique mental health needs of veterans and military culture.

The fundamental problem many of these resources attempt to solve is the overwhelming demand for mental health services and the limited supply. Ultimately, application of telehealth, digital tools, and data science may create efficiencies to produce potential cost savings. More importantly, if the effort is successful, the tools will identify more veterans in need of care and attempt to serve those in need. The impact on veterans' health and well-being and society could be substantial – reduced suffering, increased job productivity, and improved quality of life. But this will come at a cost and require considerable coordination and investment. Leaders at the VA and DOD, congressional and state policymakers, professional organizations, and private industry all have a role to play in achieving these objectives. They must work together to advance policy, legislation, programs, and products that prioritize veteran-centeredness in their components. The COVID-19 pandemic has brought the country to an exciting turning point in the use of telehealth, digital tools, and data science to advance mental health care delivery, but it is up to us to determine how to make use of this opportunity and bring the mental health care delivery system into the 21st century.

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