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Commentary

Delivering Mental Healthcare During the COVID-19 Pandemic

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When the COVID-19 pandemic began in the spring of 2020, VA's Office of Mental Health and Suicide Prevention (OMHSP) faced a number of challenges – to ensure the delivery of mental healthcare for Veterans with mental health needs, address the specific effects of COVID-19 on mental health and well-being, and support VA healthcare providers who were helping to address these challenges.

Ensuring the Delivery of Care

At the onset of the pandemic, VA medical centers faced a significant challenge in shifting to virtual care. Providers had to figure out how to best care for Veterans remotely, either via telephone or video-teleconferencing. Keeping patients who needed residential or inpatient care safe from COVID-19 while addressing their mental healthcare needs also presented a significant challenge. PTSD treatments posed an added difficulty, as some treatments encourage Veterans to approach trauma-related situations (e.g., crowded public places) that may not be available or safe when stay-at-home orders are in place. How to best implement virtual care and reorganize residential and inpatient care emerged as key priorities for VA medical centers.

OMHSP staff detailed several actions VA took to transition to virtual mental healthcare (Rosen et al., 2021). Whereas most of the research on telehealth had focused on video care, many Veterans experienced difficulty accessing video technology, often due to

limited Internet connectivity, and had to rely on telephones to speak with their providers. In response, VA scaled up platforms for remote care and provided mobile devices and Internet access for Veterans in need. VA also undertook administrative and training enhancements to help clinicians deliver virtual care.

These efforts to deliver telemental healthcare proved successful, as VA sustained 91 percent of its pre-pandemic outpatient mental healthcare workload by quickly pivoting to virtual care. By June 2020, direct-to-home video encounters increased 11-fold and telephone contacts increased 5-fold relative to pre-pandemic levels (Rosen et al., 2021). In-person care decreased from 85 percent of visits before COVID-19 to only 20 percent of visits by June 2020. Distribution of tablets to enhance rural Veterans' access to telehealth increased mental health visits, decreased visits to emergency departments overall and for suicide-related behavior, and decreased suicidal behavior (Gujral et al., 2022). OMHSP's National Center for PTSD's (NCPTSD) Consultation Program provided expert guidance on delivering PTSD treatment via telehealth. The PTSD Mentoring Program supported the clinical infrastructure to achieve the shift to virtual delivery of evidence-based psychotherapy for PTSD and provided ongoing technical assistance to help sites operationalize directives. VA also updated the PTSD Clinical Dashboard to include telephone and VA Video Connect-based telehealth.

Addressing the Impact of COVID-19 on Veterans' Mental Health

The mental health impact of COVID-19-related stressors, such as illness, disruptions in social functioning, and economic hardships has been a significant concern since the onset of the pandemic over two years ago. Military Veterans may be particularly at risk for experiencing adverse mental health impacts related to the pandemic for several reasons. Relative to the general population, Veterans have a higher rate of pre-existing trauma, which may sensitize them to the negative impact of COVID-19 stressors. COVID-19 stressors may also exacerbate existing mental health disorders, which are experienced by Veterans at a higher rate than the general public. In addition, employment instability and financial difficulties pre-date the pandemic as commonly reported stressors among Veterans and these problems have worsened since the pandemic began. Further, restricted in-person services and reduced social interactions may be a particular concern for those Veterans who already have limited social engagement.

OMHSP responded to Veterans' unique mental health needs during the pandemic by creating content on coping with COVID-19 for Veterans, VA providers, community and business leaders, and the public at large. A key article focused on how to help Veterans feel more comfortable wearing masks. NCPTSD developed the COVID Coach app designed for everyone, including Veterans and

service members, to support self-care, stress management, and overall mental health during the pandemic. COVID Coach was released at the end of April 2020 and has since been downloaded almost 230,000 times.

Despite the negative impacts of COVID-19 on Veterans' mental health and well-being, research that has followed Veterans over time found that many have been resilient in the face of the pandemic (e.g., Nichter et al., 2021). However, the experience of the pandemic has not been the same for all Veterans. Women Veterans or Veterans who are members of marginalized racial or ethnic groups may be at greater risk for adverse mental health outcomes. Knowing how to best meet their needs is critically important.

Supporting Mental Healthcare Providers

The COVID-19 pandemic has also increased stress on VA staff. Mental health providers working on site may face increased workload, risk of exposure, concern about safety and transmitting illness to others, and caring for very sick patients. Staff providing mental healthcare through telework had to adapt to changing roles and faced reductions in social factors (adequate supervision, mutual

support from co-workers) known to prevent burnout. Some mental healthcare providers are also helping other VA staff contend with loss, fear, exhaustion, or distress related to the pandemic. Staff are contending with these stressors in addition to pandemic-related workloads and increased caregiving demands outside of work. More research is needed on interventions that can support staff recovery and resilience. These approaches span self-care techniques (e.g., mindfulness, Whole Health), brief clinical interventions, work group-based approaches like Stress First Aid that destigmatize stress and encourage co-worker support, and organizational strategies to reduce stress and burnout.

Going Forward

We have learned many valuable lessons during this pandemic. First and foremost, consistent with our history, Veterans and our VA healthcare workers rose to the occasion. Despite many personal stressors, VA healthcare workers continued to deliver high quality mental healthcare to our Veterans. VA staff across the enterprise demonstrated creativity in meeting Veterans' needs, and fully leveraged technology to ensure patient safety while delivering exceptional care. Our task moving forward is to apply the lessons learned

during the pandemic to enhance future mental healthcare. Virtual modalities should continue wherever needed and desired. Intensive outpatient programs can work alongside our residential programs to broaden and bridge the continuum of services. Standardizing processes will improve access and continuity of care from admission to discharge.

Most importantly, we must remember our most valued resource is ourselves. Remember the passion we all had during those early career days? Let's recommit to the oath we took. Lastly, let's be sure we apply Whole Health principles to our personal lives so we may bring the best to our patients and families.

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Studying Mental Healthcare and Other Care During the COVID-19 Pandemic

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The COVID-19 pandemic created both challenges and opportunities for VA medical operations and research. As described by the Office of Mental Health and Suicide Prevention (OMHSP), VA medical centers responded quickly to critical issues and implemented solutions based on what they knew at the time, which was often limited. The COVID-19 pandemic also challenged research funders to adopt new methods to facilitate essential and timely research. Initially, researchers focused on developing vaccines and new treatments – national efforts to which VA contributed. As a health system caring for nine million Veterans, VA also needed to answer critical questions about how to meet the needs of our patients while various services were interrupted, and how to protect our most vulnerable patients from the combined effects of economic stresses, social isolation, and generalized pandemic anxiety. In response, the Office of Research and Development (ORD) funded supplements to ongoing projects to add attention to COVID-19-specific outcomes; launched a national study and special solicitation on disrupted care and its effects on acute and chronic health outcomes; accelerated funding for long COVID-19 research; and joined interagency collaborations with NIH, CDC, and FDA on real-world studies of the effectiveness of vaccines and COVID-19 therapies.

The Impact of Deferred and Disrupted Care on Mental Health

The Health Services Research and Development Service (HSR&D) funded two research initiatives to examine the possible connections between pandemic-related disruptions in VA care and Veteran mortality and morbidity across chronic, acute, and mental healthcare settings. In 2021, HSR&D released a Targeted Solicitation for Service Directed Research (SDR) on Pandemic-Related Disrupted and Deferred Care and funded the Disrupted Care National Project (DCNP). One aim of the DCNP is to examine the factors contributing to the excess non-COVID-19 mortality observed among Veterans during the COVID-19 pandemic. This analysis requires mapping trends in pre-pandemic and pandemic

mortality, and analyzing these trends in relation to changes in VA healthcare utilization during the pandemic. This project will analyze changes in all-cause mortality and, once CDC data on cause-specific mortality is available, the project will also examine the pandemic's impact on deaths from suicide, overdoses, and other acute and chronic conditions.

The DCNP is also coordinating VA investigators conducting research funded through the broader initiative on disrupted care. A key component of this project is to understand how the pandemic has broadly affected mental healthcare and mental health outcomes for Veterans. Projects underway are assessing the impact of COVID-19-related care disruptions on antipsychotic medication use and on treatment for overdoses and opioid use disorder (OUD). Other studies are examining the quality of telemental healthcare for Veterans during the COVID-19 pandemic.

VA successfully pivoted to virtual care during the pandemic with generally good outcomes. At the same time, this shift may have affected the care of specific Veteran groups such as those without Internet access, Veterans in residential addiction services, and those in inpatient mental health facilities. Understanding in more detail the patterns of change that occurred across the broad scope of mental health services during the pandemic will help VA maintain essential services for Veterans during future crises.

Structural and Social Determinants of Mental Health

Concern about Veteran mental health was an early research priority due to the prevalence of pre-existing mental health conditions in the Veteran population and the recognition that the pandemic could exacerbate isolation, stress, and anxiety. Many of the early research supplements in ORD went to VA mental health projects that examined how the pandemic affected their enrolled populations or that analyzed the efficacy of interventions adapted for specific pandemic concerns. The Mental Illness Research Education and Clinical Centers

(MIRECCs) and OMHSP National Centers also undertook extensive work that examined the impacts of the pandemic. A September 2021 conference brought these groups together to review the learnings of these two centers. Key among their findings, the centers reported that during the first year and a half of the pandemic, VA saw an increase in generalized anxiety disorder but not a noticeable increase in other psychiatric outcomes and no increases in suicide-related indicators associated with the COVID-19 pandemic. Furthermore, some VA patients who were at an increased risk of experiencing psychological distress during the pandemic demonstrated resiliency and showed positive psychological outcomes (Pietrzak, Tsai, and Southwick, 2021).

Disordered substance use is a particular concern for VA, given national reports of increased opioid and alcohol-related deaths during the pandemic (Yeo, He, and Ting, 2022). From 2019 to 2020, there was a 30 percent increase in drug overdose deaths in the United States, with the highest rates among Black and American Indian or Alaska Native persons (Kariisa et al., 2022). In response to these national trends, VA increased opioid overdose education and naloxone distribution (OEND) in 2021 for VA patients at risk for opioid overdose. VA is still assembling national data on alcohol and opioid use in Veterans as well as drug overdose and alcohol-related mortality. However, existing research on alcohol consumption has shown that not all Veterans have responded to pandemic conditions in the same way. Women Veterans, Veterans with PTSD, and racial/ethnic minority Veterans tended to increase their alcohol consumption and binge drinking over the first year of the pandemic more than other Veteran groups (Davis et al., 2021). Also, Veterans who had pre-existing anxiety and high financial stress consumed more alcohol in the first six months of the pandemic (Tran et al., 2022).

These ongoing studies indicate the need to understand the structural and social determinants that increase isolation, stress, and economic hardship for those Veterans who are

Myocardial Infarction among Veterans across COVID-19 Pandemic Phases

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In 2020, the rapid spread of the novel coronavirus worldwide forced VA hospitals across the country to start triaging the delivery of medical procedures, in efforts to flatten the curve of COVID-19 growth and its associated high mortality. VA hospitals nationwide received mandates to postpone all elective cardiovascular procedures, while permitting only urgent, life-threatening ones. In tandem, federal mandates and professional medical societies published guidelines recommending similar deferrals of non-urgent cardiovascular procedures at hospitals nationwide.

There are important reasons why this novel approach – both triaging cardiovascular procedures and deferring those that are non-urgent – warrants rapid evaluation: (1) COVID-19 has produced an unprecedented, natural experiment to demonstrate the comparative effectiveness of a vast number of high cost procedures to guide future treatment decisions on usefulness of therapies or de-implementation; (2) evaluation of this approach will inform how to best manage healthcare rationing responses in disaster situations, pandemics, workforce disruptions, and abrupt changes in operational capacity or funding; and (3) we must determine whether vulnerable populations are disproportionately impacted by this approach to ensure that we are delivering equitable care to our Veterans at the highest risk of adverse health outcomes. The pandemic has created an opportunity to evaluate this approach, an evaluation that traditional randomized controlled trials will likely never accomplish.

As part of an HSR&D-funded COVID-19 Rapid Response project, we are examining how the new treatment paradigm during the pandemic has impacted Veterans presenting with myocardial infarction. We are focusing on procedural treatments for myocardial infarction given the strong evidence base for their potential to reduce mortality, particularly if delivered in a timely manner in the case of ST-Elevation MI (STEMI). We are comparing trends in myocardial infarction presentation, procedural treatments, and outcomes between

the pre-pandemic phase and four unique pandemic phases, with sub-analysis across race, ethnicity, and sociodemographic factors. We are also performing mediation analysis to assess the impact of decreased procedures on 30-day mortality.

Using the VA Corporate Data Warehouse and the VA Cardiovascular Assessment Reporting and Tracking System for Cath Labs, we are using ICD-10 codes to identify patients requiring inpatient care for STEMI or non-STEMI (NSTEMI). We are including all patients diagnosed with STEMI or NSTEMI in the VA healthcare system from January 1, 2019 to August 15, 2021 (n=30,840).

Veterans are being categorized into one of four pre-defined COVID phases according to the date of their first STEMI or Non-STEMI diagnosis during the study period, as described below.

Pre-Pandemic (January 1, 2019 through February 15, 2020). Defined as the one-year period prior to the pandemic.

Phase 1 (“Acute Phase,” February 16, 2020 through April 14, 2020). Defined as the two-month period surrounding the initial nadir of patient and procedural volumes due to the pandemic, which included the period of initial stay-at-home orders and VA directives to limit cardiovascular procedures to essential ones.

Phase 2 (“Recovery Phase,” April 15, 2020 through December 14, 2020). Defined as the initial recovery period during which VA hospitals started to phase back elective procedures but no vaccines were yet available to Veterans.

Phase 3 (“Vaccine Initiation Phase,” December 15, 2020 through May 31, 2021). Defined as the period during which Veterans started receiving the COVID-19 vaccine through VA.

Phase 4 (“Post-Vaccine Phase,” June 1, 2021 through August 15, 2021). Defined as the most recent recovery period after which all Veterans who desired vaccination should

Key Points

- In order to curb the spread of COVID-19 and conserve limited resources during the pandemic, VA deferred elective cardiovascular procedures across its hospitals nationwide.
- An HSR&D-funded Rapid Response Project is examining the impact of this deferral of care on Veteran outcomes.
- Findings from this work will identify whether this new paradigm of care has resulted in changes in the quality of cardiovascular care in VA, and if so, identify sources of potential vulnerabilities.

have had the opportunity to receive one, and cardiac catheterization labs had largely resumed routine practices.

We hope to better understand whether our methods of triage within VA were appropriately executed, and whether cardiovascular outcomes among Veterans changed during this evolving paradigm of care. Findings from this study will be important for informing the optimal triage of cardiovascular procedures under resource-constrained settings, including the ongoing pandemic, as well as how we routinely prioritize cardiovascular procedures moving forward.

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Studying the Causal Effects of Infection within a Complex Pandemic

HSR&D COVID-19 Observation
Research Collaboratory Team

The last few years have been devastating for so many Americans, including many Veterans and their families. The COVID-19 epidemic exacerbated, triggered, and intersected wide-ranging social and economic changes in a dynamic policy environment. The individual and institutional implications of these intersecting forces are likely to be felt for decades.

In this context, after a competitive solicitation process, HSR&D chartered a COVID-19 Observational Research Collaboratory (CORC) with a targeted mandate: to understand the health services and clinical impacts caused by infection with SARS-CoV-2 in Veterans. CORC is one of several HSR&D initiatives interacting with VA's Office of Research and Development COVID-19 research projects and is a collaboration of investigators across five VA facilities (Ann Arbor, Durham, Palo Alto, Portland, and Puget Sound) with deep connectivity throughout the broader HSR&D Centers of Innovation. CORC is led by a Principal Investigator team (in alphabetical order): Amy S.B. Bohnert, PhD, C. Barrett Bowling, MD, Edward J. Boyko, MD, Denise M. Hynes, PhD, RN, George N. Ioannou, MD, Theodore J. Iwashyna, MD, PhD, Matthew L. Maciejewski, PhD, Ann M. O'Hare, MA, MD, and Elizabeth M. Viglianti, MD, MPH, MSc.

The CORC team framed its primary task as providing causal evidence of the individual impact of COVID-19 infection on outcomes beyond the initial period of acute illness. To do so, we had to address the reality that randomization to infection was not possible. We turned therefore to contemporary thinking about observational causal inference using two key tools. The first tool was a directed acyclic graph (DAG) to identify mechanisms of action by which infection would affect outcomes of interest, which can inform regression adjustment. Convening a national advisory team of 31 clinical and methodological experts, we used a multi-step process to identify the relationships among potential confounding and colliding variables; throughout this process we synthesized existing knowledge and judgement. This step is important because recent developments have

shown that old-fashioned “just throw everything in a reduced model” approaches to statistical model building can produce misleading answers – there are some factors, known as colliders, for which controlling *increases* rather than *decreases* bias. No simple empirical method exists for distinguishing whether a variable is a confounder (and should be controlled for) or a collider (in which case control introduces bias); instead, researchers must articulate a proposed (and not immediately verifiable) causal structure of relationships.

Having identified the DAG, we then organized our design and analysis around the concept of target trial emulation (TTE). The TTE approach avoids common biases and errors of observational studies through a two-step design process: (1) define the randomized controlled trial that would most precisely answer the causal question of interest (the target) without regard to feasibility; and (2) design an observational study that emulates that trial as closely as possible. To identify causal effects of COVID-19 infection, we imagined an impossible and unethical trial in which Veterans would be randomized prospectively to infection (e.g., through exposure at such a high level to cause infection) or no infection – a randomized trial that should never be done. We defined the inclusion and exclusion criteria of the specified target trial and applied them to our emulated trial. And then we attempted to emulate the balance in baseline characteristics achieved through randomization, by matching Veterans who tested positive for SARS-CoV-2 for the first time in each calendar month of the pandemic (identified from the COVID-19 Shared Data Resource) to Veterans who had not yet tested positive as of the date of infection of their matched comparator. We used exact matching by certain key characteristics followed by propensity score matching. We matched using propensity scores built separately for each calendar month given the changing dynamics of the epidemic. And we carefully designed our TTEs to guard against subtle selection biases or inclusion of information after infection (or

Key Points

- The COVID-19 Observational Research Collaboratory (CORC) aims to shed light on the health services and clinical impacts of SARS-CoV-2 infections in Veterans.
- The CORC program of research is intended to answer select core questions with rigorous causal methods, including a carefully designed target trial emulation.
- At the same time, the CORC's Data and Coordinating Center is working to support not only the CORC's primary analyses but also VA-wide analyses.

not). We incorporated over 20 DAG-informed potential confounding variables in hopes that these matched cohorts would be sufficiently balanced that internal validity would hold for a diverse range of electronic health record – based outcome investigations.

Armed with these individually-matched cohorts of nearly every (several hundred thousand) COVID-positive Veteran from each month and their nearly identical comparators (up to 25 per COVID-positive Veteran), we have turned to three “work streams” in our Long-Term Outcomes (LTOs) study. First, we are using the rich resources of the electronic health record within VA and linked Medicaid and Medicare claims to study outcomes, such as healthcare utilization, costs, suicide, and depression. These studies are an essential step for forecasting future VA service needs.

Concurrently, we have begun fielding telephone-based surveys administered serially to matched cohorts of COVID-positive Veterans and their nearly identical uninfected comparators to study things that do not appear reliably in the medical record or may be heavily biased by potential differences in access to VA care or coding. The surveys aim to understand the total effects caused by COVID-19 on disability, financial toxicity, and other mental health outcomes. We will continue to follow these Veterans – both

The Disrupted Care National Project (DCNP): Analyzing the Impact of the COVID-19 Pandemic on Veteran Health

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The effect on health outcomes of pandemic-related disruptions in care will be a defining public health question for our generation. Changes in healthcare utilization, particularly in the early phases of the pandemic, were profound. In March and April of 2020, admissions to VA hospitals decreased 42 percent¹ and outpatient visits, either in person or remote, decreased 30 percent.² While it is possible the 40 percent fall in admissions for events such as myocardial infarction occurred partially because people were less active, it is likely that many delayed or did not seek care at all, which could have resulted in harm to patients. Interestingly, admissions for appendicitis, a disease whose incidence would not be expected to vary because of behavior change but has been shown to be manageable in some cases with antibiotics rather than surgery,^{3,4} decreased by 57 percent.¹ This finding suggests that some of the foregone healthcare of the pandemic may have saved patients from avoidable interventions. The natural experiment of the pandemic is an opportunity to reveal the effects, both positive and negative, of the resulting variations in healthcare. The Disrupted Care National Project (DCNP) will explore these effects and identify areas we should focus on during the pandemic recovery. As we move forward, we will further develop the conceptual framework depicted in Figure 1 by adding more potential confounders or pathways as they come to light.

Goals of the DCNP

The DCNP has both research and coordinating center components. It is led by Contact Principal Investigator (PI) Louise Davies at White River Junction Medical Center (WRJ), with WRJ also serving as the Coordinating Center for the HSR&D disrupted care agenda. Multiple PIs Amy Justice at West Haven, and Anita Vashi at Palo Alto, bring deep expertise to the research and coordinating center work

for the DCNP. The overall goal of the DCNP is to characterize how the COVID-19 pandemic affected healthcare delivery and outcomes for Veterans to create a research roadmap for future work in this area. The analyses will inform priority setting during the recovery from the pandemic and preparations for future disruptions.

Research Agenda

To begin, the DCNP is performing parallel ecologic analyses of VA data, U.S. population data from the Centers for Disease Control and Prevention (CDC), and Medicare population data from the Centers for Medicare and Medicaid Services (CMS). These analyses will place the VA experience in context, by comparing excess mortality overall, within demographic and diagnostic subgroups, and by calendar month. The analyses will test for associations between mortality trends and changes in healthcare utilization.

We will then take full advantage of the richer, patient-level electronic health record data available within VA to better understand how much of the excess mortality is likely attributable to COVID-19 by using a risk index for undiagnosed cases and examining how it is distributed across specific demographic and diagnostic subgroups. Last, the DCNP will examine the effects of disruption in care on Veteran outcomes for chronic illnesses such as hypertension and surgical procedures.

Coordinating Center Work

Coordinating Center activities are designed to accelerate progress, ensure sharing of knowledge, and to consider the needs of stakeholders. The Coordinating Center will also work to reduce duplication of efforts by supporting a community of closely collaborating investigators in the disrupted care space. Specific activities currently underway include the following.

Key Findings

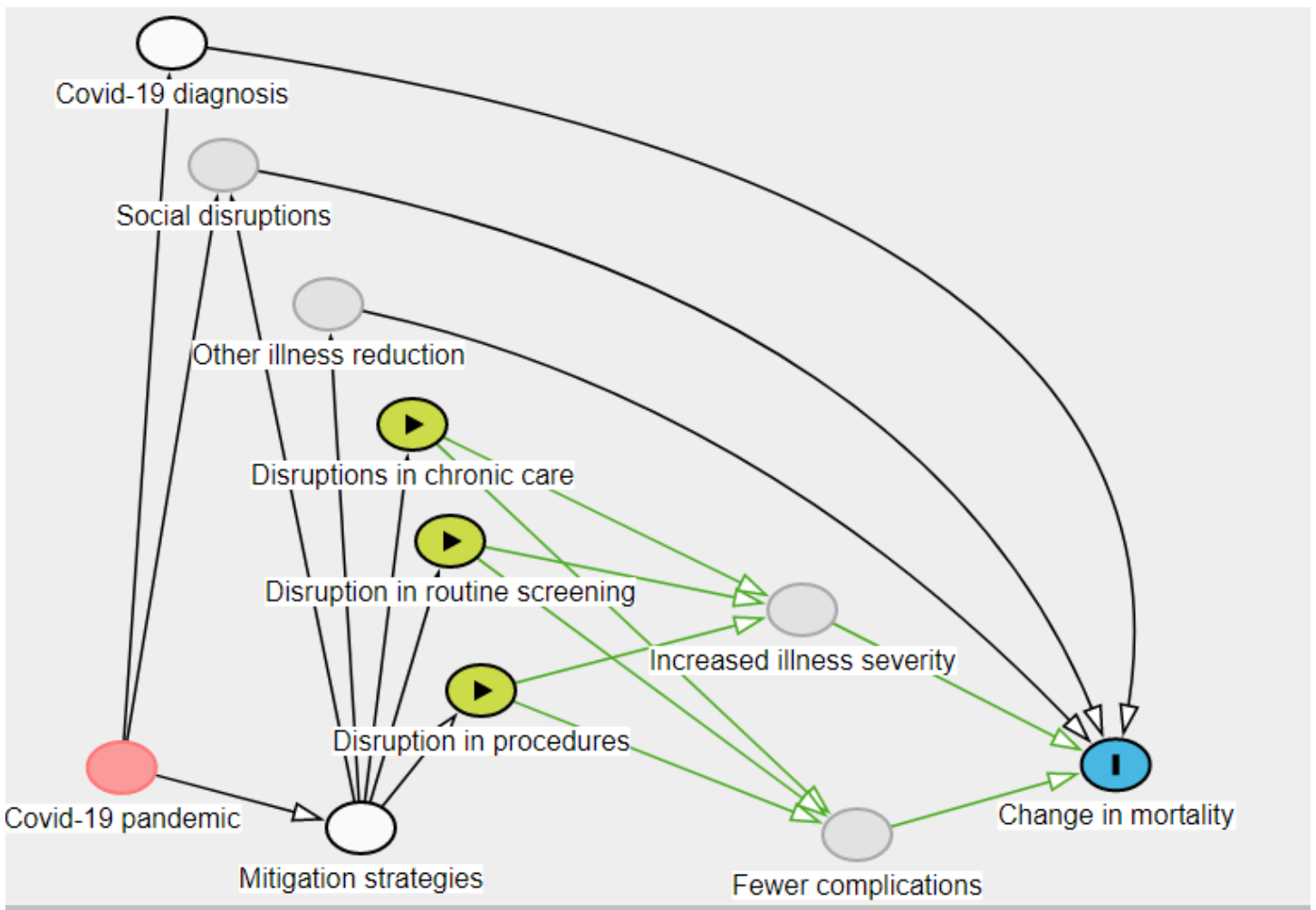
- In March and April 2020, admissions to VA hospitals fell by 42 percent – likely due to pandemic-related disruptions in care.
- Admissions for appendicitis, which can sometimes be managed by antibiotics vs surgery, fell by 57 percent during this same period, suggesting that foregone healthcare may have saved some patients from avoidable procedures.
- The Disrupted Care National Project is exploring both the positive and negative effects of disrupted care during the pandemic; this work will help VA prepare for future such disruptions.

- Regular convening of a Steering Committee made up of operational partners within VA and planned communications with external stakeholders who share an interest in the findings.
- Creation of forums to facilitate the curation of data and research methodologies.
- Establishment of research definitions related to disruptions in care.
- Development of a platform(s) for in-depth research discussions regarding research methods, ideas, and definitions, and sharing of static reference materials related to the pandemic.

Impact

The DCNP will characterize how the COVID-19 pandemic affected healthcare delivery and outcomes for Veterans, inform priority setting during the recovery from the pandemic, and help with preparations for future disruptions. Through coordination with all investigators working in this area, the science will advance efficiently, and findings will be shared broadly with partners and stakeholders.

Figure 1. Conceptual Framework of the Impact of Disruption in Care on Changes in Mortality



Mitigation strategies include lockdown and social distancing, imposed by both government and individual choice; COVID-19 diagnosis includes diagnostic codes and PCR/antigen tests; social disruptions include economic loss or substance use; other illness includes reductions in influenza; change in mortality represents both excess mortality and reductions in population-level mortality.

Below are links to other HSR&D funded projects in the disrupted care space.

- Overview of the COVID-19-related work to date within HSR&D: <https://www.hsrdr.research.va.gov/covid-19/>
- Abstracts for the COVID-19 Rapid Response Projects and Medication Collaboratory Projects: <https://www.hsrdr.research.va.gov/covid-19/covid19-projects.cfm>

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Geographic, Patient, and VA Medical Center Variation in Receipt of Primary Care in a National Sample of Veterans with Diabetes

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During the pandemic, patients with chronic disease were more likely to miss primary care medical appointments when compared to pre-pandemic times (Wong SYS, et al., 2020). Guidance on confinement to reduce the risk of COVID-19 among vulnerable patient populations contradicted usual recommendations to maintain a regular patient-provider relationship in order to ensure care coordination for medications, education, and laboratory monitoring (Beran, et al., 2021). Concerns about the lack of continuity of care during the pandemic persist among clinicians, and the downstream effects of disruptions in care on disease management are still unknown (Verhoeven, Tsakidzitis, Philips, & Van Royen, 2020).

As part of an HSR&D-funded Rapid Response Project, we examined the geographic, patient, and VA medical center characteristics among a cohort of Veterans with Type 2 diabetes receiving primary care in the VA healthcare system. VA is the nation's largest provider of telehealth, with telemedicine infrastructure in place before the onset of the pandemic; community ordinances and closures during the pandemic required VA to expand this infrastructure. By considering demographics, disease burden, VA medical center characteristics, social vulnerability, and regional effects, we addressed social determinants in COVID-19 research and produced an analysis of primary care during one point in the pandemic.

Results

Our final cohort consisted of 1.6 million Veterans with Type 2 diabetes residing in 125 VA medical center catchment areas who received primary care in VA in FY 2018 or 2019, of whom 73 percent were non-Hispanic White (NHW), 22 percent were non-Hispanic Black (NHB), and 6 percent were Hispanic. The mean age was 70 years and 95 percent were male.

We adjusted all analyses for age, gender, race, rural-urban residence, service-connected disability, marital status, the van Walraven comorbidity score, diabetes medication use and type, diabetes control prior to the pandemic, quartile of the CDC social vulnerability index, pre-pandemic VA medical center, telehealth adoption, and spatial random effects for catchment areas. Figure 1 provides a probability map of having a primary care visit by catchment area for the study population based on parameter estimates with shading reflecting adjusted quintile of probability estimates. Results from our adjusted logistic regression analysis revealed that the prevalence of having any primary care visit during the 4th quarter of 2020 varied substantially by VA medical center catchment area with values ranging from 22 percent to 60 percent. The legend reflects the catchment areas with the highest and lowest probability of receiving any primary care within each quintile.

The odds of having any type of primary care visit decreased slightly with increasing age and were lower in men than women. Relative to NHW, the odds of having any type of primary care visit were similar in NHB and Hispanics. The odds of having any type of primary care visit were also similar in rural and urban Veterans and in married compared to non-married Veterans. Having a service-connected disability of at least 50 percent was associated with higher odds of having any type of primary care visit as was use of diabetes medication, while pre-pandemic Hemoglobin A1c levels were inversely associated with the odds of having any type of primary care visit.

We found that Veterans living in areas with the highest socially vulnerable index were more likely to have any type of primary care visit than Veterans living in areas with the lowest social vulnerability. With respect to pre-pandemic telehealth acuity, Veterans at VA

Key Findings

- An HSR&D-funded Rapid Response Project examined the geographic, patient, and VA medical center characteristics of a cohort of Veterans with Type 2 diabetes in order to analyze the prevalence of primary care visits during the fourth quarter of 2020.
- Results from this analysis indicate that Veterans living in areas characterized by socioeconomic, housing, and transportation vulnerabilities were more likely to receive primary care than their peers living in areas without these risk factors.
- In addition, the analysis found that lower pre-pandemic VA medical center telehealth acuity was associated with a lower overall probability of receiving primary care during the pandemic.

medical centers with lower levels of telehealth prior to the pandemic were 40 percent less likely to have any type of primary care visit during the 4th quarter of 2020 than Veterans at VA medical centers with higher levels of telehealth adoption prior to the pandemic.

Conclusion

In this study, we sought to examine geographic, patient-level, and VA-medical center variation in the receipt of primary care during the COVID-19 pandemic. Our cohort of Veterans with Type 2 diabetes receiving care in VA presented a unique opportunity to study a vulnerable population within a healthcare system that had existing infrastructure to deliver telemedicine during an unprecedented global pandemic.

In our first analysis, we modeled the receipt of any primary care in the fourth quarter of fiscal year 2020. We observed that even after covariate adjustment accounting for patient and VA medical center factors, substantial spatial variation in receipt of primary care remained. This result indicates that there were other geographically varying factors that

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were associated with primary care receipt during the pandemic. Regional variation in COVID-19 burden and local ordinances and closures could explain part of the unaccounted variability.

In this same analysis, we observed that as social vulnerability increased, the probability of receiving primary care also increased. This result indicates that patients living in areas characterized by socioeconomic, housing, and transportation vulnerability were more likely to receive primary care than their peers living in areas without these risk factors. These patients may disproportionately rely on community care and services that shut down during the pandemic, requiring them to utilize VA resources more heavily; however, our study is limited to VA services only and does

not currently look at care received outside VA. Additionally, we found that lower pre-pandemic VA medical center telehealth acuity was associated with a lower overall probability of receiving primary care during the pandemic. One possible explanation is that areas with lower rates of telehealth utilization pre-pandemic were also “underprepared” to manage care in the event of a public health emergency even after adjusting for the social vulnerability of patients in the area. Recent studies suggest that patients prefer in-person visits (Predmore, Roth, Breslau, Fischer, & Uscher-Pines, 2021), so understanding the barriers to access will be important going forward. Lastly, translating the differences we observed in primary care during the pandemic to patient health outcomes such as hospitalization and mortality will direct the

next phases of research so that they offer guidance to the medical community.

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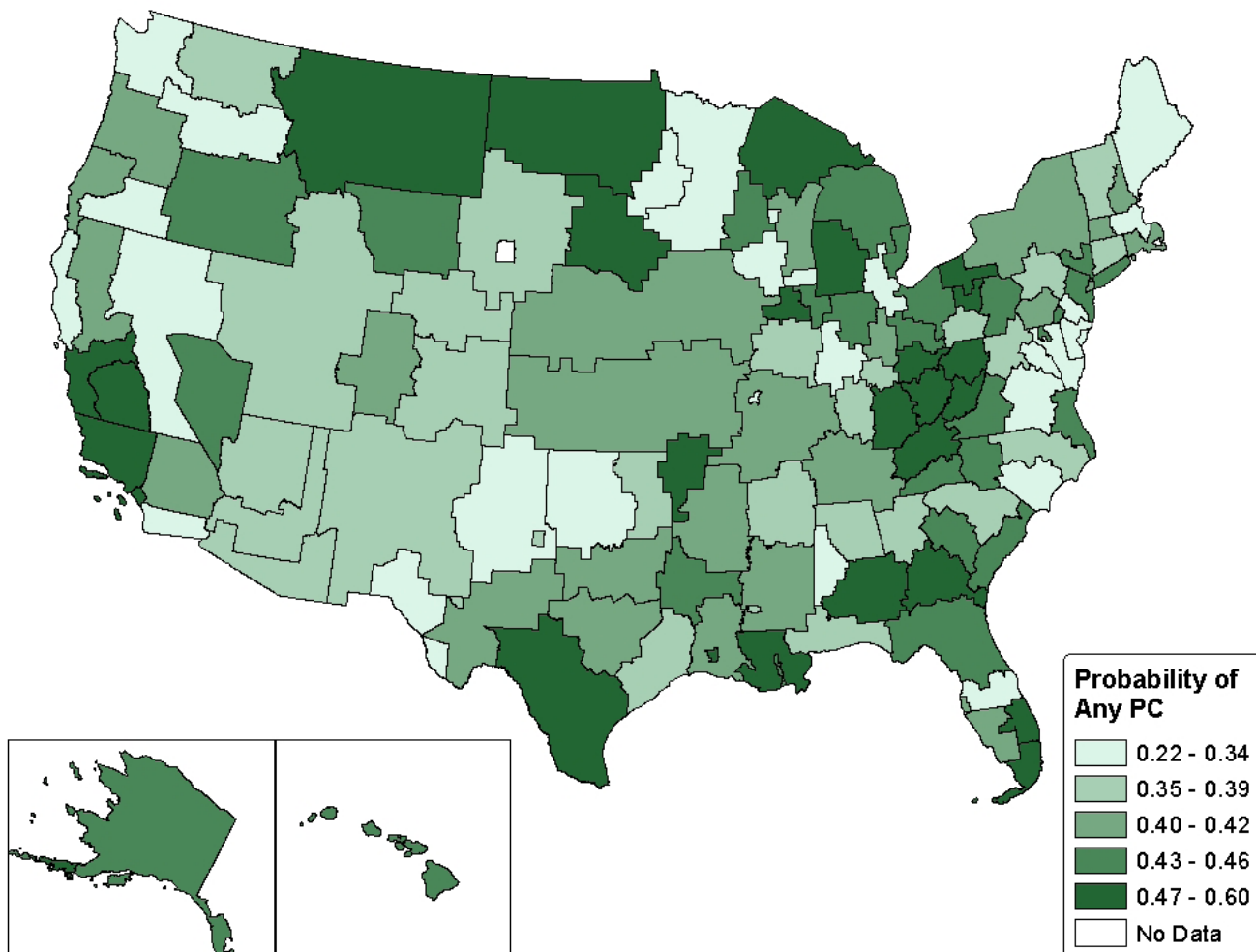


Figure 1. Adjusted predicted probability of receipt of any primary care visit in the 4th quarter of FY 2020 by catchment area. Predictions correspond to individuals with average covariate values for all variables included in the model (age, gender, race, rural-urban residence, marital status, service-connected disability, the van Walraven comorbidity score, diabetes medication use, mean HbA1c levels in 2019, CDC SVI and pre-pandemic VA medical center telehealth adoption).

Self-Help Crisis Intervention to Improve Mental Health Among At-Risk Veterans During the COVID-19 Pandemic

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Many Veterans report symptoms meeting criteria for psychiatric disorders, such as Major Depressive Disorder (MDD) and Posttraumatic Stress Disorder (PTSD), but are not engaged in mental health treatment. Stressful events, such as the COVID-19 pandemic or natural disasters, often exacerbate mental health symptoms, leading to increased impairment and suicide risk. Unfortunately, there is a dearth of evidence-based strategies that primary care teams can offer to support patients during these stressful events. Thus, in response to the COVID-19 pandemic, we developed a self-help crisis intervention called *Managing Emotions in Disaster and Crisis* (MEDIC) that aims to improve mental health among at-risk Veterans.

Delivered via mail or email, MEDIC provides two evidence-based, cognitive-behavioral, self-management strategies on a weekly

basis over the course of four weeks (see Figure 1). Veterans may also choose brief individual support calls with a Primary Care-Mental Health Integration (PC-MHI) provider or group telephone support calls with a peer.

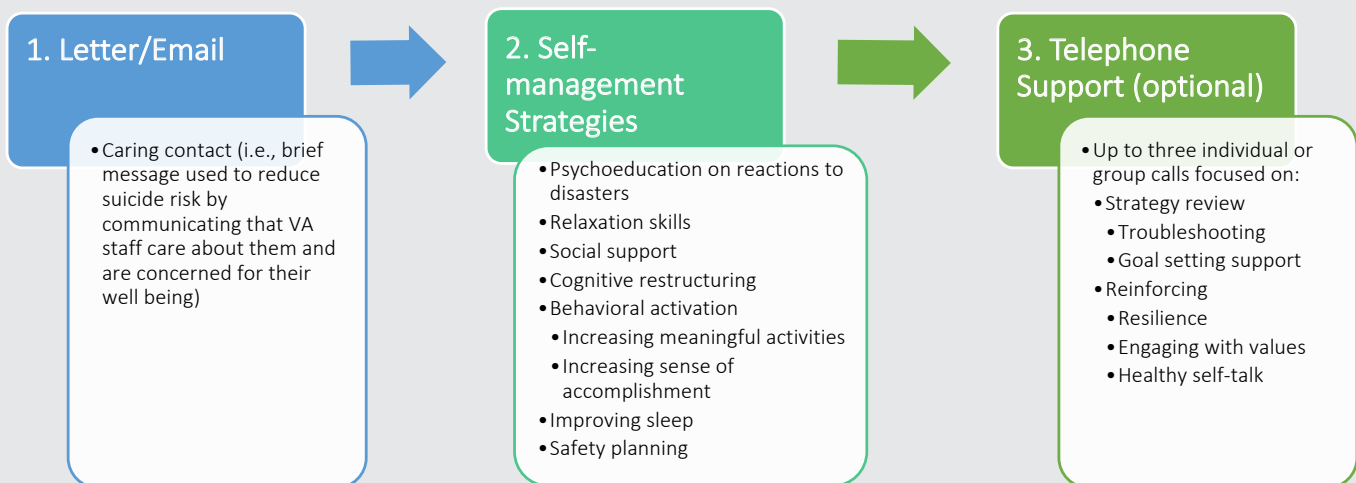
To test the effectiveness of MEDIC in an open trial, we recruited 117 Veterans in late 2020 who were either living in rural areas (~75 percent) or participating in VA's Veteran Integration to Academic Leadership (VITAL) program (~25 percent), and who were not engaged in psychotherapy but had current MDD or PTSD symptoms. We collected post data (n=108) at six weeks and follow-up data (n=62) at six months.

Findings: Results provide preliminary support for the acceptability and effectiveness of MEDIC.

- High engagement/utilization (M = 7 of 8 handouts read, 88 percent of those reading any handouts tried at least one self-management strategy) and high treatment satisfaction.
- Decreased psychological distress and symptoms of MDD and PTSD at six-week post-assessment, with treatment gains maintained at six-month follow-up.
- Decreased rates of morbid and suicidal ideation.

Implications: Although further research is needed, MEDIC shows great promise as a self-help intervention to support at-risk Veterans' mental health during crises and disasters. Its low-intensity format (<1 provider hour required per Veteran across four weeks) enhances feasibility for busy primary care clinics.

Figure 1. MEDIC Components



COVID-positive initially and their comparators – for at least 1.5 years to understand the dynamics of recovery.

Finally, from the beginning, we in the CORC LTO study realized that we would not know all the questions that need to be answered. To discover new questions, our third work stream is an active program of qualitative inquiry that is using interviews with Veterans and their caregivers, as well as textual analysis of documentation in the VA-wide electronic health records of these Veterans. As we discover new patterns, we can explore their generalizability with integration into the ongoing electronic health record and survey-based programs of work.

While the LTO group conducts these primary analyses, the Data and Coordinating Center (DCC) of CORC is working to support not just the LTO, but VA-wide analyses. First and foremost, that means actively partnering to find ways to

overcome traditional VA barriers to sharing data across research projects. Our goal is to make available to VA investigators the large monthly matched cohorts to allow those investigators to bypass all the steps of rebuilding matches to support causal comparisons and investigation of outcomes. This work is supported by a fundamental commitment to sharing all code developed in the CORC with readers of our papers, as well as with other VA investigators to support more rapid, open science on pressing COVID-19 problems – or any other research for which these tools might be helpful.

In our DCC function, we are working closely with the VA Informatics and Computing Infrastructure (VINCI), VA’s Centralized Interactive Phenomics Resource (CIPHER) and the VA Information Resource Center (VIREC) to facilitate the provision of COVID-19 related data, analytic code, and methodologic expertise, and to support VA investigators

working in this area. Additionally, we have a nationwide methods advisory group that provides detailed review of CORC projects to strengthen analysis plans; they are also able to provide similar discussion or review of other proposals to investigators who wish such assistance. The DCC is also currently developing a Young COVID Investigators series (You CIDS) to nurture early career investigators and advise on research design and data resources. Additionally, the DCC provides a consultative function to HSR&D’s Director and other operational partners across VA on interpreting and translating emerging evidence.

The CORC program of research will, of course, not answer every important question about COVID-19 in health services research; it is not intended to. Instead, our goals are to answer select core questions with rigorous causal methods and, at the same time, catalyze the research of other investigators.

disproportionately affected by the pandemic. VA needs to translate this knowledge into policies, clinical treatment, and access to mental healthcare that more equitably address the needs of all Veterans.

Mental Health as a Window into the Complex Effects of the Pandemic

The pandemic profoundly disrupted the lives of millions of Veterans, affecting their employment, social networks, and healthcare. While we are gradually learning the range of health effects due to these disruptions, mental health provides an early and important window into the complex effects of the pandemic. As we examine the effects of COVID-19 to better prepare for the next pandemic, several general conclusions are warranted.

1. VA needs to focus on the needs of our most vulnerable patients who may require more proactive outreach, including those with mental health conditions.
2. Isolation and loss of social networks are bad for health. Alcohol and drug use, and deaths due to both, increased during the pandemic based on national statistics.
3. Not all our worst fears or expectations were realized. Despite increases in anxiety and depression during the pandemic, increases

in suicides have not yet been reported within VA or in the U.S. population. Some populations we think of as vulnerable – those who are homeless, and those who are seriously mentally ill – may show more resilience than the average patient.

4. VA’s pivot to telehealth was a success and allowed continuity in mental healthcare. But there are patients and conditions for which telehealth may not be an adequate substitute for face-to-face care. As we continue to increase virtual care, we need to develop better methods to maintain services such as mental health screening, team-based care, primary care mental health integration, and urine testing for patients on medication therapy for opioid use disorder.

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