



Preparing for the Behavioral Health Impact of COVID-19 in Michigan

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Abstract

Purpose of Review As a global pandemic, COVID-19 has profoundly disrupted the lives of individuals, families, communities, and nations. This report summarizes the expected impact of COVID-19 on behavioral health, as well as strategies to address mental health needs during the COVID-19 pandemic and its aftermath. The state of Michigan in the USA is used to illustrate the complexity of the mental health issues and the critical gaps in the behavioral health infrastructure as they pertain to COVID-19. Scoping review was conducted to identify potential mental health needs and issues during the COVID-19 pandemic and its aftermath.

Recent Findings The ramifications of COVID-19 on mental health are extensive, with the potential to negatively impact diverse populations including healthcare providers, children and adolescents, older adults, the LGBTQ community, and individuals with pre-existing mental illness. Suicide rates, alone, are expected to rise for Michiganders due to the economic downturn, isolation and quarantine, increased substance use, insomnia, and increased access to guns associated with the COVID-19 pandemic.

Summary This report promotes awareness of a behavioral health crisis due to COVID-19. Increasing access to behavioral health care should minimize COVID-19's negative influence on mental health in Michigan. We propose a three-prong approach to access: awareness, affordability, and technology. Addressing workforce development and fixing gaps in critical behavioral health infrastructure will also be essential. These actions need to be implemented immediately to prepare for the expected "surge" of behavioral health needs in the ensuing months.

Keywords COVID-19 · SARS · Mental health · Substance use · Suicide · Telehealth

Introduction

As a global pandemic, COVID-19 has profoundly disrupted the lives of individuals, families, communities, and nations, infecting millions and killing more than a half

million people. While the physical health impacts of COVID-19 are salient in this pandemic, the less conspicuous impact of the pandemic and infection control strategies on behavioral health can be severe as well. This report summarizes the expected impact of COVID-19 on behavioral health as well as strategies to address mental health needs during the COVID pandemic and its aftermath [1]. The state of Michigan, USA, is used to illustrate the complexity of the mental health issues and the critical gaps in the behavioral health infrastructure as it pertains to COVID-19. It is evident, as outlined in this report, that "Michigan will experience a mental health crisis as a result of the aftershocks of COVID-19 unless we act now [1]."

Briefly, more than 84,000 Michigan residents have tested positive for COVID-19 and 6,219 have died prematurely due to this virus so far [2]. Many individuals infected with COVID-19 have died while quarantined from significant others, leaving behind family and friends who grieve alone [1]. Preparing for and treating this immense number of

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COVID-19 patients has overwhelmed healthcare systems, which are simultaneously facing financial distress as elective procedures are canceled, primary care offices are shuttered, and visits for non-COVID-related issues are minimized or postponed [1]. As a result, healthcare workers have been called upon to work long hours and, at times, provide care to COVID-19 patients with inadequate personal protective equipment, risking their own lives and accidental viral transmission to their families [1].

The Michigan “Stay Home, Stay Safe” executive order has effectively diminished the spread of COVID-19, but it has increased social isolation and weakened residents’ access to their support systems, such as friends, extended family, co-workers, teachers, and religious communities [1]. Michigan’s executive order and residents’ own efforts to avoid infection have created large economic consequences, closing businesses (some temporarily but others permanently), spiking unemployment rates, and creating widespread financial stress [1].

Methods

A scoping review [3] was conducted due to the limited number of COVID-19 publications that identified potential mental health needs and issues during the COVID-19 pandemic and its aftermath. First, PubMed was searched using the keywords COVID-19, coronavirus, SARS, pandemic, and epidemic cross referenced with mental health, psychiatry, depression, anxiety, substance use, isolation, domestic violence, and suicide. Next, Michigan was added as a keyword to these initial searches. Over 102 articles were reviewed. Citations from pertinent articles were reviewed, as well as those articles that cited the pertinent articles that are bulleted in the reference list. Emphasis was placed on publications related to the 2003 SARS coronavirus as a means to project potential impacts of COVID-19 on mental health in Michigan. Timely information from internet searches of reputable medical institutions (National Institutes of Mental Health, CDC, Michigan Department of Health and Human Services, etc.) was also included.

Prior to publication, the original, unpublished report titled *Preparing Michigan for the Behavioral Health Impact of COVID-19* [1] was posted on the Pine Rest Christian Mental Health Services’ website on April 6, 2020, as a tool to educate legislators, professionals, and the public of the potential impacts of COVID-19 on mental health in Michigan. The original report was written and posted immediately with the aim of mitigating and minimizing the negative effects of the COVID-19 pandemic on the behavioral health of Michigan residents. This scoping review highlights and updates the original report with the original authors’ permission. The original,

unpublished report is extensively cited to appropriately acknowledge their contributions to this scoping review.

Potential COVID-19 Impacts on Mental Health in Michigan

As summarized in Table 1 [1], the ramifications of COVID-19 on mental health are extensive and have the potential to impact large proportions of the Michigan population. An April survey of 24,155 Michigan residents found 79% of respondents reported concern about stress, loneliness, anxiety, and/or depression, with 29% indicating that they were “very” or “extremely” concerned about these mental health symptoms [70]. These concerns may be well-founded, as 32% of Michigan adults endorsed symptoms of an anxiety or depressive disorder in a June 2020 study [71]. Though widespread, these mental health impacts may be particularly negative for specific groups and likely deadly for many due to exacerbations of suicide risk factors.

Risk Factors for Suicide in Michigan

Notably, many of the factors impacted by COVID-19 and listed in Table 1 are well-established risk factors for suicide [1]. As succinctly stated by David Jobes, “We do not want a double tragedy. There are tragedies of people dying by this virus, every day. Our suicidal patients do not have to die as well [31].”

Economic Distress

Since the onset of the COVID-19 pandemic, the official USA unemployment rate has increased 11.2% to a striking 14.7% [20]. The true proportion of Americans currently out of work is likely even higher, as social isolation and stay-home orders have precluded many from actively seeking new jobs, a requirement to be included in the official unemployment rate [20]. Consistent with the national trend, unemployment insurance claims indicate that Michigan unemployment rate has risen dramatically from 3.6% in February 2020 to 21.7% by the end of April 2020 and is the 3rd highest state insured unemployment rate in the USA [21]. These unemployment rates are concerning in themselves but alarming in the context of mental health, due to the relationship between suicide and financial problems or unemployment. In a year without a substantial economic downturn, the Centers for Disease Control and Prevention (CDC) reported job loss or financial problems contributed to 16% of suicide deaths [28]. Suicide rates in prior economic recessions increased 1.3% for every 1% rise in the unemployment rate [1, 22]. Given this relationship, we estimate an approximately 15% increase in the national suicide rate and a 24% increase in the Michigan suicide rate during the coming year based on the unemployment rate

Table 1 Summary of factors impacted by the COVID-19 pandemic and mental health implications [1]

Factor	Impact of COVID-19	Implications for mental health
COVID-19: direct and indirect effects	<ul style="list-style-type: none"> • In a study of 1200 individuals in China during early stages of the COVID-19 pandemic, 54% reported experiencing a moderate or severe psychological impact from the outbreak and 29% reported moderate to severe anxiety symptoms [4••] • Those hospitalized with COVID-19 have increased rates of delirium, which can create long-term memory deficits; COVID-19 may also directly damage the brain [5] • Acute respiratory distress syndrome (ARDS) develops in 20–42% of those hospitalized for COVID-19 [6]. ARDS survivors often have prolonged (ϵ 3 years) and substantial symptoms of anxiety (38%), depression (32%), and PTSD (23%) [7•] • Medical illnesses are associated with increased suicide risk, especially for older adults [8••]. • Chronic obstructive pulmonary disease (COPD) was associated with a 2.7 times greater risk of suicide [9] 	<ul style="list-style-type: none"> • Early phases of the SARS saw increases in persistent depression, anxiety, panic attacks, psychomotor agitation, psychotic symptoms, delirium, and suicidality [13] • Among SARS survivors, many continued to struggle with sleep difficulties, occupational functioning, emotional and social functioning, and fatigue more than 1 year post-infection [14] • Following the 2003 SARS epidemic in Hong Kong, suicide rates spiked, particularly among older adults [15] • Suicide and infection peaks coincided [15] • Elevated suicide rates persisted for 2 years post-outbreak and after economic recovery [15]
Lessons from SARS	<ul style="list-style-type: none"> • COVID-19 is too new to know long-term effects, but we can use SARS to estimate impacts [1] • Similarities between SARS and COVID-19: <ul style="list-style-type: none"> ◦ Respiratory illnesses caused by coronaviruses, generally spread by respiratory droplets or contact with contaminated objects [10, 11] • Can lead to serious illness and require mechanical ventilation, particularly for at-risk groups that include older adults and those with comorbid medical conditions [10, 11] • Differences between SARS and COVID-19: <ul style="list-style-type: none"> ◦ SARS has a higher case fatality rate (10% vs 2% for COVID-19) [10, 11] and mechanical ventilation rates (20–30% vs 3% for COVID-19) [10, 12] ◦ COVID-19 can be spread when individuals are asymptomatic, resulting in more infections and deaths [10] 	
Social isolation/social distancing	<ul style="list-style-type: none"> • Michigan did well in practicing social distancing, reducing average mobility 40–55% and ranking in the top 4 USA states for social distancing by mid-April 2020 [16]; unfortunately, this also resulted in more social isolation 	<ul style="list-style-type: none"> • Living alone and felt loneliness both strongly predict increases suicidal thoughts and suicide attempts [8••, 17•] • Prison studies show social isolation increases suicide attempts even when social isolation is forced/mandated [17•]
Quarantine	<ul style="list-style-type: none"> • At least 1.34 million Americans and 46,700 Michigan residents have been diagnosed with COVID-19 [2], resulting in self-quarantine and, often, isolation from family members and roommates [1] • In Michigan, ϵ 1.9 million COVID-19 tests have been completed, often indicating the presence of COVID-19 symptoms/high-risk exposure and concurrent self-quarantine [2] 	<ul style="list-style-type: none"> • Quarantined individuals exhibit increased mental health symptoms, including: <ul style="list-style-type: none"> ◦ Low mood/depression (18–73%) [18•] ◦ Irritability/anger (57%) [18•] ◦ Fear or anxiety (20%) [18•] ◦ Trauma-related symptoms (28–30%) [18, 19] • Various other mental health symptoms, such as insomnia, guilt, indecisiveness, and confusion [18•]
Financial stress/problems	<ul style="list-style-type: none"> • USA official unemployment rate rose from 3.5% in February 2020 to 4.4% in March 2020, before spiking up to 14.7% in April 2020 [20] ◦ 1 in 7 Americans are now out of work [20] ◦ Between March 15, 2020, and May 2, 2020, more than 33 million Americans filed for unemployment, including 1.25 million Michigan residents [21] 	<ul style="list-style-type: none"> • Studies of long-term outcomes for these individuals indicated increased risk of PTSD symptoms, depression, and alcohol use disorders [18•] • Risk of anxiety and anger post-quarantine was particularly elevated for those with a history of psychiatric illness [18•] • Telephone support lines staffed by mental healthcare workers, contact with others through the use of technology, and support groups for quarantined individuals can help reduce the psychological impact of quarantine [18•] • Economic downturns and increased unemployment rates predict higher suicide rates and increased substance use [22, 23] • Debt increases risk of [24]: <ul style="list-style-type: none"> ◦ Suicide death (8 times) ◦ Alcohol or drug dependence (9 times)

Table 1 (continued)

Factor	Impact of COVID-19	Implications for mental health
Suicide	<ul style="list-style-type: none"> ◦ At 21.7%, Michigan had the 3rd highest unemployment rate in the USA at the end of April 2020; this constitutes an 18.1% rise since February 2020 [20, 21] • Since the COVID-19 pandemic began, there has been an increase in calls to suicide crisis hotlines: <ul style="list-style-type: none"> ◦ Colorado calls to National Suicide Prevention Lifeline increased 47% in March 2020 (compared to March 2019), with 20–30 extra calls/day and that last an average of 2–4 min longer [25] ◦ Some crisis lines have seen a 300% increase in calls [26] • Suicidality increased during and after the SARS epidemic across multiple countries [13, 15] <ul style="list-style-type: none"> ◦ Increases in suicide rates varied by subpopulation, ranging 14–42% [13, 15, 27] ◦ Economic factors (unemployment and GDP) improved relatively quickly, but reductions in suicide rate to the pre-SARS level was much slower, spanning at least 2 years [15] • Suicide rates were particularly elevated for older adults, who are more vulnerable to both COVID-19 and SARS [15] 	<ul style="list-style-type: none"> ◦ Depression (3 times) ◦ Psychotic disorders (4 times) • Among Americans who died by suicide, 16% experienced a recent job loss or financial problem, 22% struggled with physical health problems, and 29% experienced a crisis within 2 weeks of death [28] • Economic downturns are associated with increased suicide rates, with suicide rates increasing 1.3 to 1.6% for every percentage point increase in the unemployment rate [20, 29] ◦ Current unemployment data predicts a 15–18% rise in the USA suicide rate and a 24–29% rise in Michigan's suicide rate [21] ◦ This would result in up to 8700 more suicides nationwide and 449 in Michigan (in addition to 48,344 USA suicides and 1548 Michigan suicides annually) [30••] • Many evidence-based suicide prevention interventions can be utilized while social distancing with minor modifications, including suicide risk assessment, safety planning, and outreach to at-risk individuals via phone, letters, texting, and/or emails [31]
Community gatekeepers	<ul style="list-style-type: none"> • Primary care physician (PCP) offices are currently closed or have reduced hours [1] • USA outpatient healthcare visits have decreased by nearly 50% [1, 32] • Schools, places of worship, and community centers are currently closed or only available online [1] 	<ul style="list-style-type: none"> • 66% of those who die by suicide saw their PCP within a month of death, indicating the importance of suicide risk screenings by PCPs for suicide prevention [33] • When the pandemic has passed, it is anticipated that community gatekeepers, such as PCPs, will face a sudden increase in behavioral health needs [1]
Insomnia	<ul style="list-style-type: none"> • There are numerous indicators that COVID-19 directly and indirectly causes sleep impairment/insomnia, as evidenced by known relationships with anxiety, studies of quarantined individuals and COVID-19 healthcare workers, and studies of the mental health impacts during similar epidemics [1, 14, 18, 34, 35]. • Many Americans bought guns for the first time at the start of the pandemic [1st time buyers when the pandemic started in the region] [37] • 3.7 million background checks and 2.5 million firearm sales were completed in March 2020 [38] <ul style="list-style-type: none"> ◦ Approximately 1 million more background checks, 85% more firearm sales, and 91% more handgun sales than March 2019 [38] ◦ Marks the highest 1-month number of firearm background checks since tracking began in 1998 [38] 	<ul style="list-style-type: none"> • Insomnia increases suicide risk 2–4 times in the general population [36] ◦ For individuals with mental illness, insomnia increases suicide risk 18 times [36] • Access to firearms increases odds of suicide at least 3-fold [39] ◦ Gun ownership and unsafe storage also increase suicide risk [8••] • Guns are the most common means of suicide in the USA [8••] • 90% of suicide attempts are non-fatal and 80–95% of survivors do not later die by suicide, but 90% of suicide attempts involving guns are fatal [40]
Special populations		
Older adults	<ul style="list-style-type: none"> • Age group that is most vulnerable to serious complications from COVID-19 and has highest COVID-19 case fatality rate [10] 	<ul style="list-style-type: none"> • Age group with the highest rate of suicide in the USA, especially particularly for men [41]
LGBTQ individuals	<ul style="list-style-type: none"> • Decreased connection to LGBTQ community due to social distancing [1] • Many LGBTQ youth are quarantined/homebound with their parents, who vary in supportiveness [42] <ul style="list-style-type: none"> ◦ 1/3 of LGBTQ youth report parental acceptance; 1/3 report parental rejection [42] 	<ul style="list-style-type: none"> • The LGBTQ suicide rate is 5–6 times that of the general USA population [43, 44] • Felt connection to the LGBTQ community and peer support decreases depression, anxiety, and suicide risk [45, 46] • LGBTQ youth who report experiencing high parental rejection are 6 times more likely to report severe depression and 8 times more likely to attempt suicide [47] • May need increased support and assistance with caring for family members [15]
Mental healthcare workers	<ul style="list-style-type: none"> • Increased risk of stress/burnout and vicarious trauma during the pandemic [1] 	

Table 1 (continued)

Factor	Impact of COVID-19	Implications for mental health
Healthcare providers	<ul style="list-style-type: none"> • May be at increased risk of contracting COVID-19 in some settings (e.g., residential, inpatient) [48] • Increasing rates of distress for healthcare workers treating COVID-19 patients include personal concerns about COVID-19 infection, social isolation to minimize viral transmission, fears of potential exposure of family members or friends, felt vulnerability or loss of control, infected colleagues and associated survivor's guilt, personal protective equipment shortages, insufficient hospital capacity during COVID-19 infection surges, and other work-related stressors [8•, 35] • Ambulatory healthcare visits decreased by more than 50% in mid-March 2020 [32] • More than 1 in 5 physicians have been furloughed or experienced a pay cut since the start of the pandemic, including 18% of those treating COVID-19 patients [49] 	<ul style="list-style-type: none"> • Physicians already had elevated rates of suicide prior to the pandemic [8•] ◦ Suicide risk increases with job-related issues; physicians are three times more likely to suicide after job-related issue than non-physicians [50] ◦ Job-related issues preceding physician suicides include increased pressure, feared layoffs, lack of control over working conditions, and role conflicts [50]; factors that have all increased during COVID-19 [1] • Quarantined healthcare workers reported more severe depression, PTSD symptoms, anger, fear/nervousness/worry, guilt, helplessness, and isolation/loneliness than members of the general public who were quarantined [18•] ◦ Following quarantine, healthcare workers reported greater felt stigmatization and avoidance behaviors [18•] • Healthcare workers in China who treated COVID-19 patients experienced: <ul style="list-style-type: none"> ◦ Psychological distress (72%) [35] ◦ Depression (50%) [35] ◦ Anxiety (45%) [35] ◦ Insomnia (34%) [51] ◦ Mental health impacts were greater for nurses (compared to physicians), frontline workers, and those in areas with higher COVID-19 rates [35] • Studies of the SARS epidemic found similar mental health impacts, with worse symptoms for those who worked on SARS units, were quarantined, or had friends/family who were infected [13]
Those with current or prior mental health conditions	<ul style="list-style-type: none"> • May be at increased risk of contracting COVID-19, based on data from the COVID-19 epidemic in China [52] and the following: <ul style="list-style-type: none"> ◦ Mental health disorders increase risk of pneumonia and other infections [53] ◦ Cognitive impairments may decrease awareness of risk or understanding of precautions to decrease viral transmission [52] ◦ Confined conditions in inpatient or residential settings [52] ◦ Depression, anxiety, interpersonal conflict, and felt loneliness can impair immune functioning [53] ◦ If infected, mental illness discrimination may pose barriers to accessing care, mental health symptoms may complicate care delivery, and dual stigma (COVID-19 and mental illness) may further exacerbate mental health symptoms [1, 52, 53] 	<ul style="list-style-type: none"> • Experience more psychological distress after various types of trauma [18•] • Prior depression increased risk of prolonged anxiety, depression, and/or PTSD 3–4 times for ARDS survivors [7•] • COVID-19-related worry/anxiety may worsen pre-existing mental health conditions [32] • Nationwide quarantines pose barriers to ongoing mental health treatment [52] • Mental health interventions, such as support groups, cognitive-behavioral stress management, and narrative interventions for trauma, can improve immune system functioning [53]
Substance use disorders (SUDs)	<ul style="list-style-type: none"> • USA alcohol sales were up 24–95% in March 2020, depending on the type of alcohol [18•] ◦ Michigan beer sales rose 36% [18•] • Michigan marijuana sales rose 41% between February and March 2020 and 200% between January and March 2020 [54] • Individuals having a SUD are more vulnerable to contracting COVID-19 and experiencing serious complications of COVID-19 [55•] ◦ Risk is particularly elevated for individuals who smoke, vape, use opioids, or have a history of methamphetamine use [55•] 	<ul style="list-style-type: none"> • 17–24% who die by suicide are acutely intoxicated at time of death [57] • Alcohol dependence lifetime suicide risk: 7% [58] • 25–32% of suicide victims with known mental illnesses had a SUD [59] • Groups critical for recovery (peer support, Alcoholic Anonymous, etc.) are limited by social distancing, increasing risk of relapse [55•] • Financial, housing, and legal difficulties prevalent in the SUD population decreases access to the technology needed for telehealth [55•]

Table 1 (continued)

Factor	Impact of COVID-19	Implications for mental health
Children and adolescents	<ul style="list-style-type: none"> • May face risk of being deprioritized for COVID-19 treatment due to SUD stigma [56] • COVID-19 has increased barriers to SUD treatment, including detox, medically assisted treatment, residential care, and intensive outpatient programs [55•] 	
COVID-19 and children/adolescents	<ul style="list-style-type: none"> • Parental unemployment and financial stress are increasing [1] • Many children are separated from positive external family members (e.g., grandparents), teachers, and other supportive adults who may be protective against mental health symptoms [1] • Parents are likely experiencing more anxiety/irritability due to juggling work at home, pandemic-related anxiety, changes in childcare, and need to provide homeschooling [1] • Working remotely may lead to decreased emotional engagement/monitoring within the home [1] 	<ul style="list-style-type: none"> • Quarantined children have 4 times higher post-traumatic stress scores and 30% met criteria for PTSD [18, 19] • Children separated from caregivers due to COVID-19 may be more susceptible to mental health problems [19] • Family conflict and low parental monitoring increase children's suicide risk [60] • Teens experiencing social isolation are twice as likely to attempt suicide attempts [17•]
Children with autism spectrum disorder (ASD) or other special needs	<ul style="list-style-type: none"> • School closures and social distancing are preventing access to special education supports and ASD services, limiting academic progress and adversely impacting socioemotional functioning [1] • Changes due to pandemic-related closures and stay-home orders may be particularly difficult for individuals with ASD, who often struggle to adjust to changes in environment and schedule [63] 	<ul style="list-style-type: none"> • Current unemployment rates predict a 48% rise in USA child abuse and neglect and a 78% rise in child abuse and neglect in Michigan [20, 21] • A recent survey of parents/guardians of youth with ASD found: <ul style="list-style-type: none"> ◦ 63% of youth with ASD are missing key therapies; only 35% are receiving remote services or therapies [64•] ◦ 58% of youth with ASD do not "moderately" understand information about COVID-19, which may create additional confusion and distress [64•] ◦ 95% of youth with ASD have worsened ASD behavior, and 82% have worsened mental/emotional health [64•] ◦ 97% of parents/guardians feel stressed or overwhelmed due to disruptions in ASD services; 95% report their own mental health has worsened [64•]
Trauma		
Domestic violence (DV)	<ul style="list-style-type: none"> • DV rates have increased worldwide during the pandemic, with rates tripling in some areas [65] • DV calls to law enforcement across Michigan have increased by 17–200% [66] • Michigan DV emergency shelters report increased requests for emergency shelter, citing a 66% increase in some cases [67] 	<ul style="list-style-type: none"> • The odds of developing PTSD following DV is 6 times greater than found other types of trauma [68] • 64% of DV victims develop PTSD, 48% depression, 18% suicidality, 19% alcohol use disorder; 9% other SUDs [69] • Some European countries are using code words at pharmacies to help victims get help, but this is not implemented in the USA [65]

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alone. Nationally, suicide hotlines have recently reported 47 to 300% increases in crisis calls [25, 26]. Within Michigan, the mental health impact of the economic decline was felt by early April, with approximately a third of Michiganders indicating they were “very” or “extremely” concerned about financial security [70].

Isolation/Quarantine

Social distancing in Michigan was mandated by the ‘Stay Home, Stay Safe’ executive order from March 22 to May 31, 2020. Although social distancing will likely save lives by decreasing the spread of COVID-19, for many individuals, it will increase social isolation and felt loneliness, known risk factors for suicidal thoughts and suicide attempts [8•, 17•]. In addition, social distancing limits involvement in religious communities and services, reducing the protective effects these practices typically have on suicide risk, such as a five times lower risk of suicide for individuals who attend religious services weekly compared to those who do not [1, 8•]. Identified protective effects of religious service attendance on suicide attempts and deaths remain after controlling for social interaction and support, suggesting this effect may endure the pandemic-related reduction in religious social support [72]. Unfortunately, the protective effect of religious service attendance on suicidal ideation does appear to be mediated by social support, and other protective aspects of religion and spirituality, such as purpose or meaning in life, may be negatively impacted by lack of formal religious participation [56, 73].

The social impact of COVID-19 is often greater for those who contract the disease, including more than 84,000 Michigan residents who had a COVID-19 diagnosis as of August 4, 2020 [2]. Once diagnosed with COVID-19, individuals are often quarantined, which extends social isolation to separation from family members and roommates [1]. Prior studies have shown increases in depression, acute stress disorder, post-traumatic stress disorder (PTSD), anxiety, insomnia, and cognitive impairments with quarantine [18•]. Individuals with pre-existing mental illness exhibited even greater risk of anxiety, depression, anger, and other mental health symptoms following quarantine [18•].

Increased Substance Use

The USA entered 2020 within a growing substance use disorder (SUD) crisis, and data suggests this crisis was further exacerbated by the COVID-19 pandemic [1]. In Michigan, alcohol sales have increased 41% and marijuana purchases have nearly doubled since the beginning of the pandemic [54, 74]. The use of alcohol and other substances has also been shown to increase with unemployment during prior economic recessions [23]. Although results of large-scale SUD

studies during the pandemic are not yet available, at least one Michigan healthcare system reported a 20–30% increase in new patients with SUDs by May 2020, suggesting a rising incidence of SUDs [75].

In addition to increased risk of SUD development, pandemic-related factors pose significant hazards for those with existing SUDs. Specifically, 58% of patients diagnosed with an existing SUD increased their use during unemployment [55•]. The rise in alcohol and marijuana consumption also increases the likelihood that those in SUD recovery will observe others’ increased use of substances, a known risk factor for relapse [55•]. The risk of substance use relapse is also greater with social isolation resulting from social distancing [55•].

At the same time, support groups critical for SUD recovery and relapse prevention are currently limited by social distancing and restrictions on gatherings [55•]. While many 12-step groups have been able to transition to online platforms, they include barriers for new and current members, such as the need to use passwords to prevent “zoom-bombing” and the decreased felt connectedness some members report when attending online meetings rather than in-person meetings [6]. As self-help groups are attended by half of those who receive treatment for SUDs, these limitations impact a significant number of individuals seeking treatment or in recovery [76]. While some Alcoholics Anonymous Michigan districts clearly documented whether meetings will occur in-person and how to locate online meetings (e.g., District 3, Genesee County, District 11), others refer to social media or simply state that most groups are now on Zoom. Fortunately, at least 14 online support groups are available in West Michigan that focus on various populations, including alcoholics, adult children of alcoholics, family members of current, prior, or suspected substance users, narcotics, refugee, women, and LGBTQIA.

Those individuals who need a higher level of care may face further barriers to care. Many residential rehabilitation and medical detoxification facilities have limited admissions in order to facilitate social distancing, provide quarantine for new patients and those exhibiting COVID-19 symptoms, and adhere to guidelines from the American Society of Addiction Medicine (ASAM) and state-level executive orders [77, 78]. Within Michigan, various residential programs have reported reduced access, with Detroit-area residential treatment facilities reporting 30% reductions in capacity [79].

In addition to SUD risk, increased substance use can directly contribute to suicides [1]. It is estimated that 17–24% of individuals who die by suicide were acutely intoxicated at the time of death [57]. The lifetime suicide risk for individuals diagnosed with depression, bipolar disorders, and psychotic disorders is substantial, but is exceeded by the 7% lifetime suicide risk found for individuals diagnosed with alcohol

dependence [58]. These coinciding risk factors with potentially lethal outcomes highlight the need to ensure SUD programs and well-trained staff are available to address the anticipated growth in substance use disorders in Michigan [1].

Insomnia

Sleep impairments and insomnia have been attributed to various aspects of the COVID-19 pandemic. Quarantined individuals, healthcare workers treating COVID-19, those with elevated anxiety, and survivors of COVID-19 may be at greater risk of insomnia than other individuals [1, 14, 18, 51]. The resulting impact on suicide risk is substantial. Insomnia increases the risk of suicide two to four times within the general population and 18 times for individuals with mental illness [36].

Access to Community Gatekeepers

Primary care providers (PCPs) are important community gatekeepers for mental health issues, prescribing 79% of antidepressants and treating 60% of individuals receiving care for depression in the USA [1, 80]. Due to efforts to slow the transmission of COVID-19, outpatient healthcare visits have dramatically decreased, including a 49% decrease in primary care visits and a 30% decrease in behavioral health visits [32]. This decline in medical care visits may reflect delayed help-seeking by patients or decreased access to treatment, resulting in worsening mental health symptoms [1].

The Joint Commission, a large USA hospital-accrediting organization, predicted four “waves” of morbidity and mortality in the pandemic: (1) a wave due directly to COVID-19, (2) a wave from urgent non-COVID-19 conditions due to limited resources and diminished help-seeking, (3) a wave from chronic conditions due to interruptions in care, and

finally (4) a large wave due to the mental health impacts of the pandemics and similar interruptions in mental health care and diminished help-seeking as those expected in the second and third waves [81].

Typically, Michigan death rates tend to decline gradually from January to June (Fig. 1) [82]. In 2020, this pattern was disrupted and attributed to the COVID-19 pandemic. Excluding confirmed COVID-19 deaths, Michigan death rates increased in March (6%) and peaked in April (16%) compared to 2019 [82]. Excess Michigan deaths ($n = 1995$) occurred from non-COVID-19-related causes during March, April, and May of 2020 compared to the same months in 2019. Early in the pandemic (March), the majority of these excess deaths were attributed to causes that may reflect missed COVID-19 diagnoses or complications caused by the virus itself, including pneumonia and influenza (52% increase), septicemia (42% increase), and COPD (11% increase) [10, 82]. Later in the pandemic (April), excess deaths were attributed to pneumonia and influenza (24%), heart disease (27%), and strokes (20%) and may correspond to the predicted second wave of urgent non-COVID-19 conditions [81, 82]. Fewer excess deaths due to COPD and sepsis were found in April than March, possibly due to substantial increases in COVID-19 testing (in April, Michigan’s COVID-19 test positivity rates steadily declined from 41 to 10%) [2, 82]. This second wave of urgent, non-COVID-19 conditions (heart attacks and strokes) may reflect barriers to care or delayed help-seeking for urgent conditions during the pandemic, as reflected in a 50% decrease in emergency department visits at Michigan hospitals, a 17% decrease in Michigan emergency medical services (EMS) transports between March 15 and May 23, 2020, and a 62% increase in out-of-hospital deaths during this same timeframe [83, 84]. Consistent with mortality data, these changes were most pronounced for heart attacks (10% decrease in EMS transports, 43% increase in out-of-

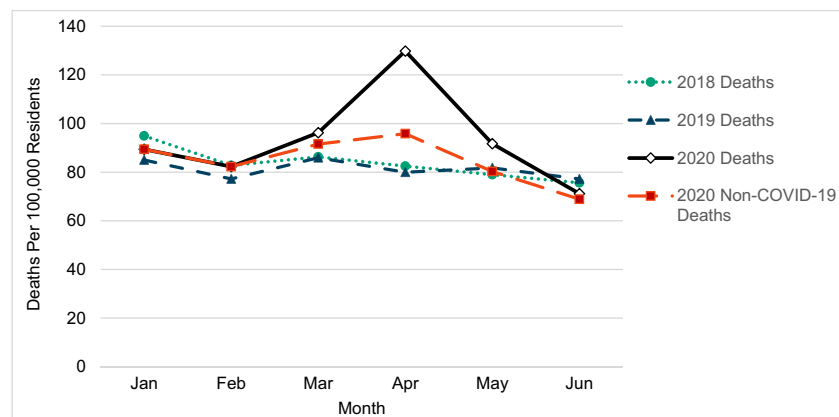


Fig. 1 Increase in Michigan 2020 all-cause mortality rates and non-COVID-19 mortality rates compared to two prior years. Data from the Michigan Department of Health and Human Services (MDHHS) shows increases in both deaths per 100,000 residents from all causes of death (solid line with diamond markers) and deaths per 100,000 residents from

non-COVID-19 causes of death (long-dashed line with square markers) beginning in March, peaking in April, and returning to rates comparable to those seen in 2018 (dotted line with circle markers) and 2019 (short-dashed line with triangle markers)

hospital cardiac arrests) and strokes (12% decrease in stroke patient transports) in Michigan [84].

Due to pandemic-related barriers to care and delayed help-seeking, another wave of new patients experiencing distress and mental health symptoms is expected to inundate PCPs as non-COVID-19 medical visits resume [1]. It is essential that PCPs have a system in place to easily refer individuals to mental health services and specialists should this occur.

Physical Health Problems

Among COVID-19 confirmed cases in the USA, approximately 19% are hospitalized and 6% are admitted to the intensive care unit (ICU) [10]. Generally, patients who receive ICU medical care and recover have an increased risk for mental health issues [1]. The term post-ICU syndrome was coined to describe the high prevalence rates of post-traumatic stress symptoms (19–39%), anxiety (23–62%), and depression (17–43%) that persist after physical recovery [34, 85]. These rates of mental illnesses are equivalent to rates observed in survivors of acute respiratory distress syndrome (ARDS), an acute lung condition that afflicts up to 42% of patients hospitalized for COVID-19 [10, 85].

Aside from pulmonary symptoms, patients hospitalized with COVID-19 may develop cardiac arrhythmia (17%) and/or experience acute cardiac injuries (7–20%) [86]. It is expected that the odds of suicide will be increased two to three times for survivors of severe cases of COVID-19 based on the odds ratios found for patients with other significant pulmonary and cardiac health conditions [9]. Based on similarities between COVID-19 and SARS coronavirus (SARS-CoV), survivors of severe cases of COVID-19 will likely experience ongoing physical health concerns similar to those experienced by the survivors of SARS, such as shortness of breath, chronic lung disease, kidney disease, fatigue, and/or insomnia [1, 14]. As with many chronic health conditions, these aftereffects are predicted to adversely impact survivors' mental health and suicide risk [1, 9].

Access to Guns

USA gun sales escalated with the onset of the COVID-19 pandemic [1]. In March 2020, handgun sales increased 91% and overall firearm purchases increased 85% compared to the prior year, with many purchases by first-time buyers [37, 38]. This rise in gun ownership predicts a subsequent increase in suicide deaths based on prior studies identifying a three-fold increase in the odds of suicide when firearms were available in the home [39]. This relationship between firearm access and suicide may be due to the substantially greater lethality of guns than most other methods of suicide attempts, resulting in guns being the most common method of suicide deaths in the USA [8, 40].

Populations at Risk for Mental Health Issues

Many of the risk factors identified thus far will impact many, if not most, Americans and Michigan residents. Due to the differential impact of COVID-19 and its associated risk factors on various populations, however, certain groups are at greater risk of mental illness, suicide, and substance use disorder than others [1]. As described below and summarized in Table 1, we expect mental health within the following populations to be significantly impacted by the COVID-19 pandemic: healthcare providers, older adults, children and adolescents, LGBTQ community members, individuals with pre-existing mental illness, and individuals at risk of domestic violence [1].

Healthcare Providers

In addition to experiencing many of the stressors and risk factors described thus far, healthcare providers are experiencing additional stressors due to their professional roles [1]. Due to close contact with COVID-19 patients, in conjunction with inadequate personal protective equipment, healthcare providers are experiencing increased fears of personal infection and worries about accidental exposure of family members to the COVID-19 virus [8, 35]. Paradoxically, the actual mechanism to prevent transmission to loved ones (social distancing and isolation) may weaken providers' emotional support systems and resilience [1]. The emotional impact of isolation may be particularly heightened for healthcare providers [1]. Studies examining the psychological impact of epidemic-related quarantines found that, in comparison to quarantined members of the general public, quarantined healthcare providers experienced more severe depression, PTSD symptoms, anger, guilt, helplessness, felt isolation or loneliness, and anxiety symptoms, such as fear, nervousness, and worry [18].

Aside from these personal concerns, healthcare providers may also be experiencing professional stressors that range from inadequate supplies of personal protection equipment to the emotional strain of caring for distressed patients with COVID-19 [1]. These frontline workers may be experiencing fear, grief, survivors' guilt, and moral injury as they triage patients in life-and-death COVID-19 scenarios, assess best chances of patients' survival, and observe co-workers and friends become infected and sometimes die [1, 35]. Apart from direct impacts of COVID-19, initial reports found a 34% increase in insomnia, 50% increase in depression, 45% increase in anxiety, and 72% increase in psychological distress among frontline COVID-19 healthcare workers in China [35, 51].

In addition to these direct mental health impacts of the pandemic on healthcare workers, the healthcare system has been faced with rising costs and plummeting revenue, resulting in the loss of 43,000 healthcare jobs by April

2020 and an estimated \$36.6 billion net loss nationwide by the end of June 2020 [87, 88]. Throughout Michigan, health systems will experience a significant operational loss despite federal funds being allocated to health systems through the CARES Act. In total, Michigan health systems received 4.4 billion dollars from COVID-19 relief funds and Medicare advanced reimbursement loans [89]. Due to how fund allocation was calculated, Michigan received only \$31,045 per COVID-19 case, \$130,000 less than the national average of \$160,286 per case [89]. The University of Michigan Medicine initially budgeted \$175 million in profit prior to COVID-19 [90]. However, despite \$136 million in federal funds, and employee furloughs and attrition, Michigan Medicine now projects to lose \$3 million this year [90]. Other state health systems, such as Henry Ford and Ascension Health are expecting losses of \$500 million and \$2 billion accordingly [90].

These financial woes of the healthcare system directly impact the personal financial stress of healthcare workers, regardless of their income or position in the organization. In Michigan, we observed executives and administrators taking temporary pay cuts (5–70%) and no bonuses [91]. Consistent with nationwide reports of nearly 20% of physicians reported being furloughed or experiencing a pay cut by April, Michigan physicians have experienced pay cuts and hour reductions [49, 92]. Healthcare workers lower on the pay scale have experienced the greatest financial stress due to furloughs, terminations, reduced working hours, and greater risk of COVID-19 exposures.

A Michigan-based nonprofit research organization directly assessed these stressors in an April survey of 210 ambulatory healthcare clinics in Great Lake states, with 50% of respondents located within Michigan and 76% working in privately owned clinics [93]. A majority of respondents reported being “very” or “extremely” concerned about high levels of stress and anxiety (67%) [93]. The percent of respondent expressing they were “very” or “extremely” concerned about COVID-19 infection of clinicians (72%), staff (71%) or family members (70%) was surpassed only by revenue concerns (84%), with 63% indicating they were “extremely” concerned about their ability to remain operational due to lost revenue [93]. Only 13% were confident in their personal protective equipment [93].

These additional mental health burdens for healthcare providers are occurring within a context of elevated suicide rates for physicians that predates the COVID-19 pandemic [8, 50]. Because of job-related stressors, physicians are three times more likely to die from suicide than non-physicians [50]. Unfortunately, the COVID-19 pandemic has generated numerous job-related stressors for physicians and other healthcare providers that may result in even higher rates of physician suicide unless preventive measures are quickly implemented [1].

As illustrated in the vignette below, mental health providers are experiencing elevated rates of stress, burnout, and vicarious trauma, which may compromise the state’s ability to effectively respond to the projected behavioral health crisis associated with COVID-19 pandemic and its aftermath [48].

On the Mental Health Frontlines: a Clinical Vignette [1] Provided by Evonne Edwards, PhD

Exhaustion and vicarious trauma are already impacting some mental health providers during the early weeks of the COVID-19 pandemic [1]. As explained by one Michigan therapist working with a patient infected with COVID-19, “You’re in session with someone you have a relationship with, that you have worked with a couple years, that you may not see again [1].” During therapy, the clinician remains focused on the patient, supporting them as they process painful emotions and make the difficult decisions that accompany a life-threatening disease. “Afterwards, you have your own grief and loss that you have to process and deal with, but when you’re at home, with your family [due to teleworking], there is less space to process it,” states one Michigan therapist [1]. “You cannot discuss it with your family and you do not have your colleagues right next door to consult and process with, so your own emotional processes can get pushed to the side and not dealt with. And then you have two or three sessions in a row like that [1].” It is the role of the clinician to help others manage anxiety; however, during this pandemic, clinicians may struggle to manage their own, a balance “that’s easier some days than others [1].”

Older Adults

Older adults, over the age of 60, are the most vulnerable to infection, serious complications, and fatality due to the COVID-19 virus [1, 10]. In Michigan, 35% of COVID-19 cases and 87% of COVID-19 deaths are individuals aged 60 or older [94]. Prior to the COVID-19 pandemic, older men already had the highest rate of suicide of any age and gender group, with men age 75 and older having the highest suicide rate in Michigan of any age and gender group [8•, 30, 41]. The risk of suicide is even greater for older adults with medical illnesses [8•, 9•, 41]. This combination of general medical and mental health risk factors predicts a larger increase in suicide rates for older adults than the general population, a prediction consistent with analyses of Hong Kong suicide rates following the 2003 SARS epidemic [15].

Many daily activities for older adults residing in assisted living and long-term care facilities have been disrupted due to Michigan executive orders and infection control guidelines, including mandatory cancelation of communal dining and all external group activities and the prohibition of visitors apart from those in specific circumstances (e.g., to provide medical

care or support activities of daily living, to exercise power of attorney, or visiting an individual in critical condition or hospice care) [78, 95]. Though necessary to prevent rapid spread of COVID-19 infection and deaths in these vulnerable populations, these executive orders have resulted in increased social isolation, loneliness, and disrupted daily routines for many older adults.

Light exposure and daily routines are essential in maintaining an optimal circadian rhythm [96]. To prevent a compounding of risk by sleep difficulties resulting from disrupted circadian rhythms, it is important for nursing home facilities to prioritize daily light exposure and support older adults in developing new daily routines to minimize disruptions to circadian rhythms [97]. While older adults may be less familiar with virtual visits, staff in care facilities can help older adults, including those with cognitive impairments, utilize technology to connect with friends or family members.

Children and Adolescents

Children and adolescents are not spared from a multitude of COVID-19-related suicide risk factors [1]. Specifically, they may experience increased family conflict and witness family members struggling with increasing levels of stress, fear, and anxiety [1]. Lack of parental engagement and monitoring may result, as family members attempt to balance childcare, homeschooling, and work [1]. Family conflict and inadequate parental monitoring increase the odds of suicidal thoughts, non-suicidal self-injury, and suicide attempts for children [60]. Social distancing may result in isolation from positive external supports, limiting important protective factors that may otherwise mitigate suicide risk for these children and adolescents [1]. Prior research found teens experiencing social isolation have twice the suicide attempt risk, suggesting social distancing may be particularly deleterious for adolescents [17•].

The risk of child and adolescent trauma may also be higher during the “Stay Home, Stay Safe” executive order [1]. Being isolated within the home environment, youth may witness increased anger and irritability that may erupt into fights, domestic violence, and/or child abuse [1]. Studies of child abuse and economic factors found risk of child abuse and neglect increased 4.3% with each 1% increase in parental unemployment [61, 62]. Based on current rates of unemployment in Michigan, child abuse and neglect can be expected to increase by 78% [1, 21]. Alarming, the odds of suicide are three to five times greater among victims of child abuse and neglect compared to non-victims [98].

The majority of children diagnosed with intellectual/developmental disabilities or autism spectrum disorder (ASD) (63%) have not received key therapies during the COVID-19 pandemic as a result of statewide school closures and the cancellation or postponement of non-life-saving

medical treatments and procedures [64•]. Overwhelmingly, the impacted children exhibited worsened ASD behaviors (95%) and mental and emotional health (82%), as reported by parents and guardians [64•]. These parents/guardians also reported feeling overwhelmed or experiencing greater stress due to service disruptions for their child (97%) [64•]. Not unexpectedly, these parents/guardians reported worsening of their own mental health [64•].

LGBTQ Community

The risk of suicide is five to six times greater in members compared to non-members of the LGBTQ community [43, 44]. Approximately, one-third of LGBTQ youth live with parents who do not support their LGBTQ child, and the risk of suicide attempts is eight times higher for these LGBTQ individuals than other LGBTQ youths [47]. Previous studies have shown that connectedness to LGBTQ communities and peer support can decrease depression, anxiety, and suicide risk for LGBTQ individuals, and even mitigate the damage from parental rejection or family victimization [45•, 46]. Hence, a further escalation of suicide risk is projected for the LGBTQ community, especially LGBTQ youth, due to social distancing measures that may isolate them with non-supportive family members and separate them from protective social supports during the COVID-19 crisis [1].

Individuals With Pre-existing Mental Illness

Impaired immune functioning has been exhibited among individuals experiencing depression, anxiety, interpersonal conflict, and/or loneliness [53]. Given that individuals with mental health disorders have an elevated rate of contracting pneumonia and other respiratory infections and reports from China identified these individuals as particularly vulnerable to COVID-19 infection, individuals with pre-existing mental health issues may have a greater likelihood of contracting COVID-19 than other individuals [1, 52, 53]. Individuals in need of residential mental health are experiencing barriers to treatment due to the infection control-related reductions in census and admission, similar to those discussed for residential SUD treatment. Individuals currently receiving or in need of residential mental health or SUD treatment may experience barriers to treatment and additional mental health difficulties due to infection control policies. Vocational programs, crisis residential programs, and psychosocial rehabilitation services (Clubhouses) are closed in many parts of Michigan, further limiting care for those in distress or struggling with severe mental illness [99–101]. Due to confined spaces, individuals currently receiving services in residential treatment settings may have elevated risk of COVID-19 infection [1, 52]. Illustrating the contagion risks in these settings, nearly one in five residents of a Michigan adolescent residential treatment

facility contracted COVID-19 following the infection of a staff member [102]. Once infected, those with severe mental illness may have difficulty accessing COVID-19 treatment due to cognitive impairments and/or mental health discrimination [52].

Survivors of ARDS, which occurs in severe COVID-19 cases, who have previously experienced depression have a three to four times greater risk of prolonged anxiety, depression, or PTSD compared to other ARDS survivors [7]. Even non-infected individuals with pre-existing depression, anxiety, and other mental health issues are expected to experience elevated worry and anxiety symptomatology due to exacerbation of symptoms by pandemic-related stress [48, 52].

Those at Risk for Domestic Violence

Rates of domestic violence (DV) and associated trauma-related symptoms are expected to increase during the COVID-19 crisis as a result of rising stress-induced irritability and anger, spiking unemployment rates, and diminishing options for victims to access help or escape perpetrators during stay-home orders [1, 65]. Already in some Michigan counties, DV reports to law enforcement have doubled, while requests for domestic violence-related emergency shelter have increased by 66% [1, 66, 67]. The risk of PTSD is six times higher in individuals who have experienced DV compared to other types of trauma, with 64% developing trauma-related symptoms [68, 69]. Prevalence rates of other mental health conditions are also elevated for victims of DV, including depression (48%), alcohol use disorder (19%), and substance use disorders (9%) [68]. Tragically, but perhaps unsurprisingly, suicidal ideation and attempts are experienced by 18% of DV victims [69]. When children are exposed to the trauma

of witnessing domestic violence, their risk of a later suicide attempt is twice as high as that of unexposed children [98].

Lessons Learned from the 2003 SARS Coronavirus Epidemic

Although dissimilar in magnitude and case fatality rates, the 2003 SARS coronavirus (SARS-CoV-2) epidemic and the current COVID-19 (initially identified as SARS-CoV-2) pandemic share many similarities [1]. Studies of the aftereffects of the SARS epidemic can, therefore, be used as a model to estimate the impacts of COVID-19 on mental health (Table 2). This model can allow clinicians and public health officials to learn from effective interventions during the SARS epidemic and implement effective interventions to address mental and physical health threats [1].

An Already Stretched Behavioral Health System Infrastructure

“Access to Behavioral Health Care in Michigan: Final Report” outlined pre-COVID-19 challenges facing Michigan’s mental health and substance abuse healthcare infrastructure [103]. As summarized in Table 3, the key findings of this study illustrate the magnitude of untreated mental illness in Michigan, lack of mental health providers and ongoing shortages, and barriers pertaining to access, affordability, and awareness [1]. With the COVID-19 pandemic, these behavioral health needs are further magnified rather than mitigated [1].

Discharge planning in inpatient psychiatric settings is becoming challenging given that programs continuing care for patients in less acute settings are frequently not available, such as partial hospitalization or residential services [104].

Table 2 Impact of SARS-CoV on mental health and effective interventions [1]

Implications for mental health	Interventions
<p><i>Highly educated SARS survivors 1-year post-infection</i></p> <ul style="list-style-type: none"> • 1/3 were unable to return to work full-time [14] • 60% experienced fatigue; 50% had difficulty sleeping [14] • 33% exhibited significant declines in mental health; 43% received psychiatric care (mean number of visits 13) [14] <p><i>Impact on caregivers</i></p> <ul style="list-style-type: none"> • Exhibited significant decreases in social functioning and mental health [14] <p><i>Suicide rates in Hong Kong after SARS</i></p> <ul style="list-style-type: none"> • 42% increase in suicide rates among older adults for 2 years after SARS [15] • Suicide peak corresponded with infection peak [15] • Early phases of the SARS epidemic saw increases in persistent depression, anxiety, panic attacks, psychomotor agitation, psychotic symptoms, delirium, and suicidality [13] 	<p><i>What worked with SARS</i></p> <ul style="list-style-type: none"> • Multidisciplinary mental health teams supporting patients and healthcare workers [13] • Specialized mental health services for COVID-19 patients with comorbid mental health disorders [13] • Provision of psychological counseling via tele-technology for patients, families of patients, and the general public [13] • Regular screening for depression, anxiety, and suicidality by mental health workers for COVID-19 patients and healthcare professionals [13]

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Table 3 Challenges facing Michigan's mental health and substance abuse infrastructure [1, 103]

Untreated mental illness	Of the estimated 1.76 million Michigan residents who experience mental illness, 38% (666,000 individuals) do not receive mental health treatment. Of the estimated 638,000 Michigan residents who experience SUDs, 80% (510,400 individuals) do not receive SUD treatment. Anxiety, depression, and alcohol use disorders are the most prevalent psychiatric disorders and also the disorders most likely to remain untreated. This is particularly true for those experiencing mild-to-moderate symptoms.
Providers and shortages	Behavioral healthcare provider shortages are especially pronounced in Michigan's upper peninsula and the northern half of the lower peninsula. Of the 36 counties in these regions, 53% (19 counties) have no psychiatrists and 39% (14 counties) have no SUD treatment facilities.
Affordability and awareness	Many Michigan psychiatrists do not participate with insurance plans, limiting access to care. Among those with untreated mental illness, the top self-reported barrier to treatment was "Couldn't afford costs" (40%). Lack of awareness of treatment options was endorsed by 22%. After readiness for change, the most frequent self-reported barriers to SUD treatment were affordability (27%) and unawareness of treatment options (19%). Those with Medicaid insurance were least likely to receive needed mental health treatment (49%). For SUDs, the privately insured were most likely to remain untreated (87%). Among individuals with private insurance, those in high-deductible insurance plans were least likely to receive treatment.
Other challenges	Psychiatric patients with high acuity symptoms or medical complications often have prolonged waits for transfers to appropriate treatment settings, resulting in frequent emergency department "boarding" of psychiatric patients. Except for psychiatric urgent care settings, wait times for appointments with psychiatrists can span weeks to months

Immediate Strategic Actions Needed for Behavioral Health System Infrastructure

From a statewide behavioral health provider's point-of-view, we have outlined below strategic actions to address the mental health needs associated with the COVID-19 pandemic and its aftermath [1]. These actions should be implemented immediately to prepare for the expected upsurge of behavioral health needs in the ensuing months [1].

Improve Behavioral Health Access Through Awareness, Affordability, and Technology

Ongoing Investment in Telehealth

Teletherapy and telepsychiatry are essential strategies to address currently underserved communities in Michigan, as well as meet the projected COVID-19 rise in mental health needs [1]. It is encouraging that many providers are offering virtual behavioral health services, and many Michigan payers are reimbursing tele-services with copays and deductibles waived for these behavioral health services [1]. The importance of securing payment for telehealth is underscored by Great Lakes ambulatory clinics identifying reimbursement as the greatest barrier to implementing or expanding telehealth services [93].

We advocate that Michigan take these additional steps:

- Extension of payer reimbursement of tele-behavioral health services through June 2021, if not longer [1]. As summarized above, Michigan residents with mental health issues are at high risk of COVID-19 infection and mental

- health symptom exacerbation [1, 48, 51–53]. Individuals who survive severe complications of COVID-19 will likely experience prolonged and serious mental health symptoms and require continued mental health treatment [7•]. This extension will allow high-risk Michigan residents to continue to access mental health services, despite physical distance, social distancing, or medical complications [1].
- Expand behavioral health capability and capacity throughout the state by supporting public and private foundation grants [1]. For example, almost \$3 million was recently awarded to behavioral health organizations in Michigan by The Michigan Health Endowment Fund and four other partners [1].

Significantly Improve Public Awareness of Mental Health and Substance Use Disorder Treatment Options and Increase Individuals' Recognition of the Importance of Treatment Engagement Before Further Exacerbation of Mental Health Symptoms or Problematic Substance Use

The institutions and care providers where behavioral health problems are often first detected and referrals for treatment made—such as primary care offices, schools and universities, community health centers, emergency departments, and places of worship—are currently closed or functioning below typical capacity [1]. As a result, symptoms of mental illness and SUDs remain undetected, critical treatment referrals are not being made, and stressors leading to suicide and increased mental illness/SUD symptoms are rising simultaneously. To mitigate these compounding behavioral health risks, the following strategies are recommended:

- Widely market tele-behavioral health options currently available in Michigan to address awareness barriers to accessing treatment [1].
- Commence statewide communication urging individuals to seek behavioral health assistance when experiencing mental health symptoms and highlighting the availability of tele-behavioral health services [1]. This message should be delivered from Michigan's highest authorities and echoed throughout the state by public and private organizations, community leaders, and care providers [1].
- Provide education to residents and staff of long-term care facilities about the availability and effectiveness of teletherapy in treating depression and anxiety in older adults [105]. Individuals in these settings may particularly benefit from evidence-based teletherapy due to their elevated risk of COVID-19 exposure and complications, social isolation and disrupted daily activities following protective executive orders, and elevated risk for suicide.
- Educate the general public on how to identify mental illness signs or symptoms, check in with others, and support each other in accessing treatment.

Match Behavioral Health Capacity With Statewide Needs

To assist hospitals at maximum capacity due to COVID-19 cases, the Michigan Department of Health and Human Services has applied "COVID-19 Relief Healthcare Facility" infrastructure to enact a statewide COVID-19 Load Balancing Plan that enables overwhelmed hospitals to identify hospitals with capacity and transfer patients to these "relief hospitals" when needed [1]. If behavioral health needs quickly swell, as predicted in this report, it may be necessary to temporarily expand the Relief Healthcare Facility infrastructure to match behavioral health capacity with statewide need [1]. Michigan should also take the following steps:

- Utilize hospital "bedboard" monitoring tools, such as EMResource [106], to provide up-to-date statewide snapshots of inpatient and partial psychiatric hospitals' available capacity [1].
- Implement a statewide treatment resource tracking tool, such as OpenBeds [107], to allow for the rapid identification of available inpatient, outpatient, and telehealth treatment options for mental health and SUD difficulties [1].
- Ensure access to these tools is easy-to-find and promote usage by services such as United Way, the National Suicide Prevention Hotline, and Michigan's mental health "warmline" [1].
- Establish and fund 365/24/7 call centers that can quickly connect consumers and referring providers to behavioral health services [1].

Waive Behavioral Health Copays and Deductibles for the Short Term

As summarized above, perceived unaffordability is a substantial barrier to mental health and SUD treatment initiation [1, 103]. Due to the COVID-19 pandemic, many Michigan insurance companies have waived copays and deductibles for telehealth treatment of behavioral health needs [1]. We recommend these waivers continue through June of 2021, with expansion to in-person behavioral treatment once it resumes in Michigan [1]. This recommendation is consistent with existing policies promoting access to primary care.

Further Development of Behavioral Health Workforce

Increasing access to psychiatrists, psychologists, social workers, and other mental health clinicians is paramount to meet the rising behavioral health needs in Michigan. Recruiting and training entry-level and professional staff will be necessary, with emphasis placed on treating those experiencing loss, trauma, substance use disorders, and/or suicidal ideation or behaviors. The ongoing shortage of behavioral health providers in Michigan is a long-term problem beyond the scope of this report. However, several steps could be taken immediately to begin addressing this issue.

Retraining Existing Providers

Many mental health clinicians lack confidence and competence in providing effective treatment for suicidality, often as a result of few graduate training programs in counseling, marriage and family therapy, social work, and psychology providing formal training in empirically based suicide prevention treatments [108, 109]. Fortunately, clinical training in evidence-based suicide prevention practices and interventions is increasingly available. Some of these evidence-based interventions and treatment approaches include the following: the Columbia Suicide Severity Rating Scale (C-SSRS) for consistently assessing suicide risk [110]; Collaborative Assessment and Management of Suicidality (CAMS), a clinical framework for assessing, treating, and managing suicide risk [111]; Cognitive Behavioral Therapy for Suicide Prevention (CBT-SP), which uses a relapse prevention approach to reduce suicide risk [112]; and Dialectical Behavior Therapy (DBT), an intensive treatment modality designed for individuals with chronic suicidal thoughts, behaviors, and attempts that has demonstrated effectiveness in reducing suicide attempts by two-thirds [113]. Incorporating these interventions and other best practices for suicide prevention, SAMHSA recommended *Zero Suicide* framework as a systemic approach to evidence-based suicide prevention and quality improvement and has reduced suicide rates by 64–75% in systems where it has been implemented [114]. The training costs

and time requirements of these trainings and the implementation of the Zero Suicide framework, however, can be difficult for individual clinicians and behavioral healthcare organizations to absorb [1].

Entry-Level Recruitment and Training

Prior to the pandemic, Michigan faced a shortage of qualified candidates to fill vital psychiatric and nurse technician roles. This ongoing need could help address the rise in unemployment if displaced workers can receive the skills training necessary to provide valuable, frontline mental health care [1]. For patients in a mental health crisis, it is crucial that behavioral health employees, including non-clinicians, be adept in recognizing, assessing, and intervening to address suicide risk. To equip entry-level direct care employees with these critical skills, a limited number of research-informed trainings have been developed and validated, including Question, Persuade, Refer (QPR) [115]; Applied Suicide Intervention Skills Training (ASIST) [116]; and Assessing and Managing Suicide Risk (AMSR) for direct care staff [117]. These trainings have demonstrated effectiveness in improving staff members' abilities to recognize suicide warning signs, evaluate suicide risk, engage at-risk individuals in treatment, and produce clinical outcomes, such as increased felt hope and decreased suicidality in care recipients [115, 116]. Although the cost of these trainings for a single employee is minimal, the cumulative cost across a behavioral healthcare agency can present a significant barrier to necessary staff training.

It is, therefore, recommended that communities and state-wide leaders collaborate to ensure funding and training infrastructure are provided that ensures easy access to training in these life-saving interventions for all behavioral healthcare employees and clinicians. Such an investment could help care providers meet the rising mental health needs and save many Michigan lives through effective suicide prevention [1].

Addressing Critical Gaps in Behavioral Health Infrastructure

Michigan has a long-standing problem with boarding psychiatric patients in emergency departments due to the difficulty in providing access to appropriate care settings [1]. This issue is particularly problematic for psychiatric patients with COVID-19 because psychiatric hospitals are not equipped or staffed to safely and effectively care for patients with medical complications arising from this highly infectious disease [1]. Patients with high psychiatric acuity can also be particularly difficult to place due to the increased staffing needs required to manage the most severe or aggressive symptoms, provide increased monitoring, and alter interventions and procedures in order to ensure the safety of the patient and others on the unit. One potential solution is to implement a Psychiatric

Intensive Care enhanced per diem rate to improve access to costly care required for these difficult-to-place patients, thereby decreasing the burden on emergency departments and acute care hospitals [1].

Michigan treatment settings received COVID-19 resources through a variety of methods. Similar to other hospitals throughout the nation, general resource disbursement was made to those facilities based on how much Medicaid or Medicare revenue was received pre-COVID. Some funds through the CARES Act were distributed to the areas hardest hit by COVID-19, specifically southeast Michigan, rural areas, and Federally Qualified Health Centers. Resources that flowed through FEMA were distributed to state, county, and government agencies. Some of those funds have been made available to private non-profits through a grant funding process at the discretion of the agency.

Additional Mental Health Services

Due to the COVID-19 crisis, an increased number of treatment and support groups will be needed for individuals quarantined at home, caregivers, COVID-19 healthcare providers, mental health clinicians, and LGBTQ individuals [1]. Behavioral health services and coverage will also need to expand to include case management, care coordination with external providers, psychoeducational classes, and transition clinics that can help address gaps in care between psychiatric inpatient settings and outpatient treatment [1]. Expansion of these services and insurance coverage of them can help address gaps in the mental health treatment continuum, enable existing mental healthcare systems to adapt to the predicted spike in behavioral health care needs, and ensure suicidal individuals are immediately able to access critical evidence-based care for suicide prevention [1].

Conclusion

Just as the initial response to the COVID-19 pandemic focused on physical health, the subsequent response needs to address the mental health of Michigan residents [1]. Improving and increasing access to behavioral health care by means of awareness, affordability, and technology; training and developing the workforce; and fixing gaps in mental health infrastructure will be essential to minimize the impact of the COVID-19 pandemic on behavioral health in Michigan [1]. These actions need to be implemented immediately to prepare for the expected "surge" of behavioral health needs in the ensuing months and to prevent a "double tragedy" from pandemic-related suicide deaths [1].

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Compliance with Ethical Standards

Conflict of Interest Evonne Edwards, Carol A. Janney, Amy Mancuso, Heide Rollings, Amy VanDenToorn, Mariah DeYoung, Scott Halstead, and Mark Eastburg declare that they have no conflicts of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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