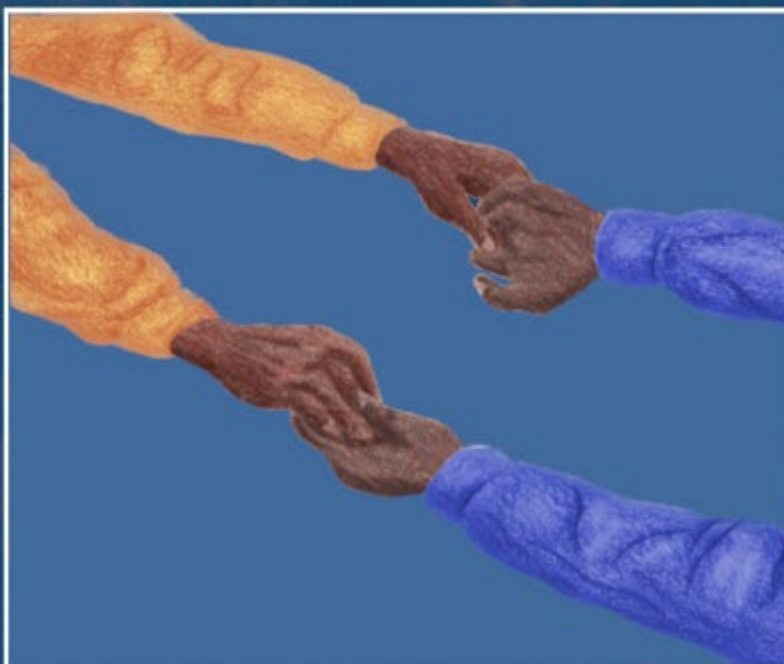


2024

Long COVID and High-risk Populations



Connected and Strong

Tenth in a Series of Ten Technical Assistance Briefs to Foster Unity and Strengthen Continuity Across Crisis Response and Treatment Systems

SAMHSA
Substance Abuse and Mental Health
Services Administration

Long COVID and High-risk Populations

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Abstract

As the world emerges from the height of the pandemic with plans for ongoing efforts for a strengthened behavioral health infrastructure from crisis services to long-term care, one of the conditions that has emerged is “Long COVID.” Long COVID, or post-acute sequelae of SARS-CoV-2 infection, is a newly recognized multisystem condition, characterized by persistent symptoms that develop after the acute phase of coronavirus-19 infection. Clinical and scientific understanding of Long COVID’s neuropsychiatric impact is still evolving, yet symptoms can include cognitive impairment, mood dysregulation (e.g., anxiety and depression), sleep disturbances, post-traumatic symptoms, and chronic fatigue.

Given its heterogeneous nature, the underlying pathophysiology, risk factors, and treatments are still under investigation. Unequal access to timely and appropriate diagnosis and treatment means the impairment caused by Long COVID is expected to disproportionately burden low-income, underinsured/ uninsured, minoritized populations and those with serious mental illness.

With its debilitating impact on quality of life and wide-ranging societal consequences, a critical multidisciplinary approach is needed to effectively diagnose and treat this condition. A multisector, multispecialty collaboration, including primary care and mental health providers as well as governmental, academic, community, and advocacy institutions, is essential to developing needed therapeutic interventions and advancing policy strategies toward improved outcomes. This paper will review the current state of knowledge about Long COVID, lessons learned from other chronic health conditions, implications for crisis response and mental health systems, and Long COVID’s impacts on high-risk populations.

Note: Long COVID is a rapidly evolving science. This paper is up to date as of February 2024.

Highlights

- Long COVID is not a single condition. It represents overlapping symptoms, with the involvement of potentially different physiologic processes, risk factors, and outcomes.
- Diagnosis of Long COVID is challenging for both persons receiving services and health care professionals due to unclear and frequently evolving diagnostic criteria.
- Common neuropsychiatric symptoms of Long COVID include depression, anxiety, post-traumatic stress disorder, fatigue, and cognitive difficulties.
- Underserved communities—including those with serious mental illness—may be at a disproportionate risk of Long COVID due to a disproportionate burden of COVID-19 infection related to social determinants of health.

- COVID-19 vaccination likely has a protective role, with vaccinated individuals demonstrating a significantly lower risk of developing Long COVID.

Recommendations

1. A person-centered and structural humility lens is needed to amplify the insights and expertise of those with lived experiences to help guide research, treatment, and policy considerations.
2. Targeted efforts are needed to advance COVID-19 vaccination efforts among people living with serious mental illness.
3. Behavioral health providers need training in assessing and treating Long COVID neuropsychiatric symptoms.
4. Clinical standards and protocols for the assessment and treatment of Long COVID need to be developed to address the needs of people with serious mental illness or substance use disorders.
5. Behavioral health expertise must be included in multidisciplinary team-based treatment centers.
6. Equitable access to care needs to be a focus in Long COVID care.
7. Support and advocacy groups for individuals with Long COVID need to be expanded.
8. Multisite, multinational studies of Long COVID are urgently needed.

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus responsible for the coronavirus disease 2019 (COVID-19), has resulted in an estimated 6.8 million deaths globally as well as substantial public health, social, and economic disruption.¹ Many individuals continue to suffer from debilitating symptoms months and years after initial infection, requiring multiple—though scarcely available—medical and psychosocial support. In his first State of the Union address in 2022, President Joe Biden outlined a “Unity Agenda,” with a major component focused on the unprecedented impact of COVID-19 on mental health and the need to expand systemic infrastructure to address this crisis.² The US Government Accountability Office estimates that up to 23 million people in the United States are living with “Long COVID”—a syndrome that may include up to 200 different signs and symptoms, including neuropsychiatric manifestations, that persist or develop after COVID-19 infection (see **Box 1**).^{3,4} Long COVID has also resulted in significant economic loss,⁵ with an estimated 2–4 million people out of work due to Long COVID and annual lost wages totaling up to \$230 billion.⁶

In *Connected and Strong: Strategies for Accessible and Effective Crisis and Mental Health Services*,⁷ Pinals and Schofield lay out themes and strategies for further development of behavioral health systems and services to help realize some of the goals outlined by the president.⁸ As part of that work, along with the national rollout and expansion of crisis services for people experiencing suicide, mental health, or substance use crises, it is important to keep in mind how COVID-19 continues to play a role in the lives of many. In a US Senate Committee Hearing on January 18, 2024 titled “Addressing Long COVID: Advancing Research and Improving Patient Care,” Chairman Bernie Sanders introduced Long COVID as an issue that has not garnered enough attention by the medical community, the media, and the general public and called to his fellow congress people that they must do more.⁹ Those living with ongoing COVID-19 symptoms will benefit from awareness, acknowledgment, and support.

The purpose of this paper is to clarify the current definition of Long COVID in children/adolescents and adults and to discuss the mental health effects of this disease on those with serious mental illness (SMI) and substance use disorders (SUDs). This paper also reviews current management and treatment approaches of individuals with Long COVID and how this condition may affect parts of the mental health system. Recommendations for policy development, crisis services, and mental health providers are also provided. The contributions in this paper are offered as a complement to the recent advisory from the Substance Abuse and Mental Health Services Administration (SAMHSA) on the epidemiology and resource considerations for Long COVID.¹⁰

Defining Long COVID

Clinical Presentation in Adults

Early in the course of the pandemic, it became clear that some people infected with COVID-19 experienced ongoing symptoms that extended beyond the initial, acute phase of infection. Several terms and definitions were proposed to describe this condition, including Long COVID, post-COVID conditions, post-acute COVID-19, post-acute sequelae of SARS CoV-2 infection (PASC), long-haul COVID, post-COVID syndrome, and chronic COVID, among others.^{11,12,13,14} One recent paper, for example, utilized a combination of self-reporting and a PASC-scoring algorithm to develop a framework for diagnosing PASC.¹⁵ Still, it is important to note that there

remains a lack of a standardized definition for Long COVID, including varying criteria for the timeline and diversity of symptoms and conditions that are classified under this heterogeneous condition.¹⁶ Because of the evolving and complex nature of identifying this condition and the variable ways to which it is referred, the term “long COVID,” will be used throughout this paper, incorporating the most current information available to characterize the condition.

Long COVID is broadly defined (see **Box 1**) as symptoms or conditions that persist or develop after initial COVID-19 infection.¹⁷ These symptoms and conditions:

- are present four weeks or more after the acute phase of infection,
- may affect multiple organ systems at once, and
- may present with a relapsing-remitting pattern and progression over time, with the possibility of severe and life-threatening events even months or years after infection.

Notably, Long COVID is not a single condition. It represents overlapping symptoms, with the involvement of potentially different physiologic processes, risk factors, and outcomes. Presentation in children/adolescents and adults is mostly similar; nevertheless, there is some unique symptomatology present in the different age groups. Though not exhaustive, **Boxes 2 and 3** present a comprehensive list of symptoms observed in adults and children/adolescents, respectively. All of these symptoms linked with Long COVID may be associated with significant morbidity, adversely affecting quality of life with significant societal implications.

Box 1: Long COVID definition

Long COVID is broadly defined as symptoms or conditions that persist or develop after initial COVID-19 infection. These symptoms or conditions

- are present 4+ weeks after acute infection,
- may affect multiple organ systems at once, and
- may have a relapsing-remitting pattern or progression across months or years after infection.

Long COVID is not one condition. It likely represents overlapping entities, with different biological causes and different sets of risk factors and outcomes.

Box 2: Common symptoms of Long COVID—adults

Neuropsychiatric symptoms

- Depression
- Anxiety
- Posttraumatic stress disorder (PTSD)
- Psychosis
- Sleep disturbances or insomnia
- Attention/concentration deficit
- Memory impairment, disorientation, confusion
- Obsessive-compulsive symptoms
- Dizziness, imbalance, vertigo
- Headache
- Fatigue interfering with daily activities
- Post-exertional malaise
- Parasthesia (pins and needles sensation)
- Change in smell or taste
- Tinnitus (ringing in the ear)
- Hearing loss
- Seizures

Respiratory and cardiac symptoms

- Shortness of breath
- Cough
- Chest pain
- Palpitations

Gastrointestinal/digestive symptoms

- Nausea
- Abdominal pain
- Diarrhea
- Constipation

Other symptoms

- Joint or muscle pain
- Fever
- Rash
- Changes in menstrual cycles
- Erectile dysfunction, reduced sperm count

Recent studies have highlighted autonomic dysfunction (i.e., dysfunction in the regulation of blood pressure, heart rate, and other basic bodily functions) as a common complication of Long COVID, similar to that seen in postural orthostatic tachycardia syndrome (POTS) and myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS).^{18,19} These “dysautonomic” symptoms are present in an estimated half of individuals with Long COVID, marked by extreme exhaustion after physical or mental exercise (post-exertional malaise),²⁰ balance issues, vertigo, lightheadedness/dizziness, mental clouding, and orthostatic intolerance (as seen in POTS with a rapid increase in heart rate upon standing up)—and which may be debilitating for these individuals.²¹

Neuropsychiatric Symptoms of Long COVID

Commonly reported neuropsychiatric symptoms of Long COVID include depression, anxiety, post-traumatic stress disorder, fatigue, and cognitive difficulties. Other symptoms include sleep disturbances and, more rarely, psychosis and obsessive-compulsive symptoms.²² A CDC report published in March 2024 estimates 9% of people who have had COVID-

19 will later develop fatigue symptoms that interfere with one's daily activities, and that people who have had COVID-19 have a 4.3 times higher risk of developing chronic fatigue.²³

There also appear to be differing trajectories for some of the neuropsychiatric symptoms: a recent analysis over a two-year period of nearly 1.3 million people with a history of COVID-19 indicated that mood and anxiety symptoms were often transient, in some cases improving within two months.²⁴ Alternatively, the increased risks of psychotic disorder, cognitive deficits (e.g., “brain fog,” defined as symptoms of inattention, slowed processing, and memory impairment), seizures, and neurocognitive disorders (e.g., “dementia”) persisted throughout the two-year period.²⁵ It is notable that other studies have found a contradictory trajectory of depression and anxiety symptoms, with some reporting an increase in these symptoms over time.²⁶ The divergent pathways of the illness highlight the importance of sustained vigilance and attention over a prolonged period of time—for individuals and health care providers—for the possibility of these delayed serious manifestations. These findings also point to the importance of the workforce in crisis services and throughout behavioral health services to be aware that the person before them may be experiencing symptoms related to COVID-19.

Additional studies suggest that the severity of acute COVID-19—indicated by extended bedridden time (seven days or longer) in one paper evaluating individuals across six countries—is associated with prolonged symptoms of depression and anxiety.²⁷ This illustrates the importance of early targeted attention and support for those with a severe acute disease phase of COVID-19.

Of note, it may be challenging for health care providers to connect neuropsychiatric symptoms to Long COVID, as some of these manifestations may appear similar to other mental health conditions. Moreover, there has been relatively limited awareness of the intersecting and at times confounding nature of these neuropsychiatric symptoms. Though research on mechanisms of the causes of Long COVID is evolving, there are likely multiple intersecting factors that contribute to its development. Theories on possible pathophysiology include widespread immune system dysregulation, adverse impact of the virus on microbiota, blood clotting abnormalities and damage to blood vessels, and dysfunctional neurological signaling.^{28,29} It is important to also note that these hypothesized mechanisms remain partially understood and that biopsychosocial factors may also play a contributory role. Additionally, one cannot underestimate the complex dynamics of the development of neuropsychiatric symptoms of Long COVID and the interactions of pandemic-related isolation periods, social disruption, grief from losses, and emotional and economic stressors, as well as disruptions in health and emergency services, in exacerbating and separately resulting in complex presentations that may be seen in individuals presenting in emergency departments and psychiatric and crisis services.

Box 3: Common symptoms of Long COVID—children and adolescents

Neuropsychiatric symptoms

- Mood (sadness, tension, anger, depression)
- Anxiety
- Sleep disorder (insomnia, hypersomnia, poor sleep quality)
- Cognition (decreased concentration, learning difficulties, confusion, memory loss)
- Fatigue
- Balance issues, dizziness, vertigo
- Tinnitus, otalgia (ear pain)
- Ophthalmologic symptoms (dry eye, blurred vision, photophobia)
- Altered taste and smell
- Hyperhidrosis (excessive sweating)
- Headache
- Numbness and paresthesia (pins and needles)
- Tremors
- Speech disturbances
- Swallowing difficulties (dysphagia)

Respiratory and cardiac symptoms

- Sputum/nasal congestion
- Cough
- Rhinorrhea (runny nose)
- Heart rate changes
- Chest pain

Gastrointestinal/digestive symptoms

- Abdominal pain
- Constipation
- Diarrhea

Other symptoms

- Exercise intolerance
- Myalgia/arthralgia
- Loss of appetite/body weight changes
- Dermatologic symptoms (dry skin, itchy skin, rashes, hives, hair loss)
- Urinary symptoms
- Changes in menstrual cycle

Long COVID in Children and Adolescents

Though most of the current research on the long-term effects of COVID-19 infection has focused on adults, there is a growing body of work evaluating its impact on pediatric populations. Reassuringly, children and adolescents have consistently lower rates of post-COVID symptoms than adults; however, they still can experience long-term consequences from COVID-19 infection, including debilitating Long COVID symptoms.³⁰ Research has found that children with Long COVID experience symptoms similar to adults, such as fatigue, headache, dizziness, shortness of breath, chest pain, concentration difficulties (including attention deficit hyperactivity disorder [ADHD]), memory issues, mental and physical exhaustion, sleep disruption, decreased appetite, and changes in smell and taste.^{31,32,33} However, a recent study showed that in comparison to adults, children were at an increased risk of epilepsy or seizures, encephalitis, and nerve root and plexus disorders (disorders related to nerve networks), although the current data could not indicate the persistence or severity of these outcomes.³⁴ Nevertheless, these conditions could likely have detrimental consequences for children’s physical and emotional health and overall functional capacity.

While the prevalence of Long COVID is thought to be lower in pregnant women who had COVID-19 during pregnancy,³⁵ infants born to mothers who had COVID-19 during pregnancy were more likely to be diagnosed with neurodevelopmental conditions.³⁶ As seen in some adult cases, recent studies indicate that children with Long COVID can have hypometabolism in the brain, and adolescents with Long COVID can also have features consistent with ME/CFS.³⁷ See **Box 3** for an outline of common symptoms of Long COVID in children and adolescents.

The impact of the COVID-19 pandemic on children and adolescents has been profound, including the resulting social isolation, economic destitution, food insecurity, death of loved ones including parents and caregivers, disrupted education, and increased stress.³⁸ These multifaceted elements will likely affect the neuropsychological and overall development of young people for several years to come, and it necessitates a longitudinal awareness and intervention to mitigate long-term risks and morbidity.

Long COVID and High-risk Populations

Populations with Serious Mental Illness

A comprehensive understanding of how SMI is associated with COVID-19 outcomes—including in terms of risks of infection, death, and Long COVID—remains an evolving area of research. People with SMI may be at a disproportionate risk of Long COVID, as they experienced a disproportionate burden of COVID-19 infection during the pandemic.³⁹ At the onset of the COVID-19 pandemic, there were concerns in the mental health community that people with SMI—such as schizophrenia spectrum disorders (e.g., schizophrenia and schizoaffective

disorders), bipolar disorder, and major depression—would be at increased risk of COVID-19 infection and adverse outcomes due to COVID-19.^{40,41} These concerns were based on well-documented evidence of other major health care disparities for people living with SMI. Adults with schizophrenia have a shortened life expectancy of up to 10–15 years, dying at approximately 3.5 times the rate of the general population.⁴² Though the causes of premature mortality are multifactorial, in part the shortened life-span is due to high rates of smoking, diabetes, and obesity, which are also at-risk behaviors or conditions for COVID-19 infection.⁴³ Additionally, people with SMI are more likely to experience poverty, unstable housing, and living in congregate settings (e.g., group homes or residential care facilities)—all social determinants of health that were associated with higher rates of COVID-19 and more severe courses of the disease.⁴⁴ Finally, people with SMI experience gaps in health care delivery, including inadequate screening for common metabolic conditions and cancers, and lower rates of timely treatment for acute surgical care.^{45,46,47} These care gaps may extend to immunizations, diagnosis of acute infections such as COVID-19, and appropriate treatment for severe symptoms.⁴⁸

Initial concerns for the SMI population at the onset of the COVID-19 pandemic were about elevated risks of acquiring infection. During that early period of the pandemic, vaccines were not yet available, and social distancing, hygienic practices, and masking were the best preventive measures known. Due to the reality of the high prevalence of people with SMI who experience homelessness,⁴⁹ are in jails or prisons,⁵⁰ and reside in nursing homes,⁵¹ the proposed COVID-19 prevention strategies were harder to implement for this population.

Prior to the COVID-19 pandemic, various authors showed increased morbidity and mortality for SMI populations from many infectious diseases—including HIV and hepatitis B and C—with multifactorial causes, such as poverty, homelessness, and lack of access to equitable care, among many other social risk factors.^{52,53,54} Thus, it is unsurprising that COVID-19—another infectious disease—would have a disproportionate impact on people with SMI.

A systematic review and meta-analysis publication outlined evidence showing that individuals with mental health conditions were at a higher risk of COVID-19-associated mortality.⁵⁵ The paper described multiple findings, including that people with psychiatric disorders and SUDs had a higher risk of hospitalization for COVID-19 infection, although no differences were found for intensive care unit admissions. Interestingly, the risk of hospitalization was not shown to be higher in those with psychotic disorders, although individuals with SMI were noted to have a higher risk of death from COVID-19 compared to those with other mental health disorders.⁵⁶ A recent UK Biobank–based cohort study appears to confirm this risk of increased COVID-19-related mortality for individuals with SMI, although contrary to the meta-analysis paper, it found an increased risk of hospitalization among those with schizophrenia and psychotic illness.⁵⁷ The reasons proposed for this increased risk of COVID-19-associated mortality in individuals with mental health conditions, including SMI, are many, including limited access to care, higher

prevalence of medical comorbidities, or aberrations in the immune system and the body's inflammatory process—elements that are associated with psychiatric disorders.^{58,59}

There is mixed evidence on the impact of antipsychotic use on the severity of COVID-19 infection. The aforementioned meta-analysis also reported that taking antipsychotic medications or anxiolytics (medications that reduce anxiety) prior to a COVID-19 infection was associated with severe outcomes, including COVID-19 mortality.⁶⁰ This reported negative impact of antipsychotic use and COVID-19 outcome has been challenged by a subsequently published cohort study of psychiatrically hospitalized individuals with SMI during the early months of the pandemic.⁶¹ Taken together, the current evidence for the potential impact of psychotropic medications on COVID-19—including antipsychotics, mood stabilizers, and antidepressants—remains speculative at best, as various papers have indicated different and at times contradictory results.⁶² It is important for more extensive research to be conducted and to better ascertain whether certain medication classes used to treat mental health conditions might be potentially beneficial or harmful to COVID-19 processes.

Given the emerging evidence that individuals with SMI have several risk factors—including complex psychosocial circumstances and health-related risks—placing them at potentially higher likelihood of adverse outcomes from COVID-19, it is reasonable to hypothesize that this may compound their risk for Long COVID. A meta-analysis of demographic characteristics and comorbidities associated with an increased risk of developing Long COVID found that several co-occurring conditions and characteristics were significantly associated with a higher risk of Long COVID.⁶³ As discussed above, these factors—including obesity, smoking, and preexisting metabolic and cardiovascular diseases—are highly prevalent in SMI populations.^{64,65}

Taking all these together, a prudent recommendation to help reduce Long COVID risk for SMI populations will include optimizing established health maintenance interventions for them.^{66,67} These include targeted behavioral and psychosocial considerations (e.g., healthy nutrition, physical activity, and smoking cessation with FDA-approved treatments)^{68,69} as part of the overall strategy for mitigating Long COVID in SMI populations. Accomplishing this will require expanded timely and regular screening and therapeutic interventions for chronic medical conditions, as well as creating more integrated care options for individuals with SMI for the management of physical and mental health conditions. The fragmentation of our current health care system—with physical and mental health services being largely separated—can exacerbate poor outcomes for people with SMI across multiple domains. Having rapid access to care will be important to help open doors that will avoid downstream negative consequences of untreated health conditions.⁷⁰ Additionally, given evidence illustrating the protective impact of COVID-19 vaccination on developing Long COVID,⁷¹ innovative vaccine promotion interventions focused on SMI populations should be actively explored.^{72,73} The emerging certified community behavioral health clinics (CCBHCs) with requirements for ensuring that physical and mental health care are both available to individuals, as well as strategies for rapid access, can potentially shape the desired outcomes.⁷⁴

Populations with Co-Occurring Mental Illness and Substance Use Disorders

The COVID-19 pandemic led to an increase in substance use, with a 2020 survey by the Centers for Disease Control and Prevention reporting that approximately 13% of Americans started or increased alcohol or substance use as a coping mechanism for COVID-19-related stress.^{75,76} Drug overdose deaths also reached record highs in the pandemic.^{77,78} SUDs co-occur at high prevalence with mental disorders; individuals with SMI have higher rates of alcohol, tobacco, and drug use disorders than the general population, with differential access to treatment based on race and ethnicity.^{79,80,81} Research has also shown that having an SUD was associated with increased COVID-19-related hospitalization and mortality,⁸² and it is reasonable to assume that the underlying complexities and psychosocial difficulties of Long COVID may increase the risk of substance misuse and SUD.⁸³

Thus, as part of an overall strategy for addressing Long COVID in populations with SMI, culturally responsive SUD treatment should include multidisciplinary resources to address the pandemic's impact on this marginalized group. To mitigate the risks of Long COVID, it is imperative to factor in unique difficulties experienced by individuals with SMI—including stigma, poverty, financial barriers, decreased awareness of somatic problems, and lack of access to integrated services, among many others—to make better health outcomes possible.^{84,85,86,87,88}

As part of the 2024 National Association of State Mental Health Program Directors (NASMHPD) technical assistance *Connected and Strong* theme, Gaba, Walter, and Pinals describe some of the challenges associated with providing care for people with co-occurring mental illness and SUDs.⁸⁹ They highlight further the impact of trauma and intergenerational, cultural, and other variables to consider when providing treatment that can impact these co-occurring conditions, which can have a secondary impact of helping to minimize COVID-19-associated risks.

Racial and Ethnic Minoritized Populations

Research throughout the COVID-19 pandemic has indicated that compared to White individuals, Black and Hispanic/Latinx individuals had higher rates of COVID-19 hospitalization and death.⁹⁰ Although some recent research⁹¹ on Long COVID showed a higher prevalence of Long COVID diagnosis in White non-Hispanic female individuals who lived in higher-income areas, this likely reflected more of the racial and socioeconomic disparities in access to and engagement with health care than the true reality of those impacted by Long COVID. One study noted that individuals from racial/ethnic minoritized groups—specifically Black and Hispanic/Latinx—had significantly increased likelihood of experiencing Long COVID,⁹² and these findings seem to be congruent with the reasonable conjecture that given the greater impact and prevalence of acute

COVID-19 infection on these communities, they would be at higher risk of developing post-acute infection complications such as Long COVID.

It is important to emphasize the fact that due to entrenched health inequities, racially marginalized groups have been less likely to have equitable access to health care services, including delayed Long COVID diagnosis.⁹³ Within SMI populations, racial and ethnic minoritized individuals experience mental health disparities across multiple domains, from access to and utilization of services to diagnosis and health outcomes.^{94,95} Thus, minoritized individuals with SMI are even more likely to experience vulnerabilities within the health care system, such as higher utilization of psychiatric emergency services, increased likelihood of being involuntarily hospitalized when seeking care, treatment attrition, and more frequent interactions with law enforcement during times of mental health emergency and crisis.^{96,97,98,99}

LGBTQI+ Populations

People with some lesbian, gay, bisexual, transgender, queer and/or questioning, intersex, asexual/aromantic/agender and other (LGBTQI+) identities are at higher-risk to developing Long COVID. Data from the Household Pulse Survey, a population survey conducted by the U.S. Census Bureau designed to measure emerging social and economic issues, suggests that adults who identify as bisexual or transgender are more likely to experience Long COVID symptoms than those with other gender or sexual identities.¹⁰⁰ As of October 2023, which is the latest data available, 24% of adults who identify as bisexual had ever had Long COVID, compared to 20% of those who identified as gay or lesbian and 14% of heterosexual adults.¹⁰¹ Additionally, bisexual and gay and lesbian individuals are consistently more likely to report having significant limitations to daily activities because of Long COVID symptoms. Repeated COVID-19 infections, structural healthcare disparities and social determinants of health are thought to contribute to this increased risk of Long COVID among the LGBTQI+ population.^{102,103}

Risk and Protective Factors in Long COVID

A systematic review and meta-analysis across 41 studies with almost 900,000 individuals in care,¹⁰⁴ as well as other research and review papers,^{105,106,107} outlined factors associated with a higher risk of developing Long COVID.¹⁰⁸ Some of these factors, including race/ethnicity and poverty, are discussed above. Older adults, who already have a greater likelihood of chronic comorbid conditions, are another population segment reported to have a higher risk of Long

COVID and will have additional complexity in management. Thus, support for this high-risk group will require close collaboration between geriatricians, rehabilitation specialists, neurologists, mental health clinicians, and social workers.

In terms of protective factors, COVID-19 vaccination likely has a protective role, with fully vaccinated individuals demonstrating a significantly lower risk of developing Long COVID.¹⁰⁹ The beneficial impact of COVID-19 vaccination on Long COVID risk is supported by other data,^{110,111} including findings that vaccination reduces the risk of Long COVID even in individuals with other risk factors, such as obesity or older age.¹¹² This extends the positive effect of vaccination beyond mitigating adverse impacts during the acute phase of COVID-19 infection and into lessening the likelihood of Long COVID.

In addition to the aforementioned positive impact of COVID-19

vaccination, the oral medication nirmatrelvir (marketed as Paxlovid) can be used for the treatment of acute COVID-19 infection and was approved by the US Food and Drug Administration (FDA) in December 2021. A US Department of Veterans Affairs–based cohort

Box 4: Risk and protective factors associated with Long COVID

Risk Factors

- Female sex
- Ages 40–69 years and ≥ 70 years
- Obesity; high BMI
- Smoking/tobacco use
- Preexisting health conditions, including:
 - Anxiety, depression
 - Lung disease, including asthma and chronic obstructive pulmonary disorder (COPD)
 - Diabetes
 - (Ischemic) heart disease
 - Immunosuppressed status
 - Chronic overlapping pain conditions (COPC)
- Racial/ethnic minoritized background
- Socioeconomic deprivation/poverty
- Hospitalization for COVID-19 infection

Protective Factors

- COVID-19 vaccination
- Treatment with Paxlovid during initial infection shows promise, though more research is needed
- White, non-Hispanic background
- Residence in high-income and low-unemployment regions

study found that in people with COVID-19 infection, treatment with Paxlovid within five days of testing positive for COVID-19 was associated with a reduced risk of Long COVID regardless of vaccination status and history of prior infection.¹¹³ However, a study published in January 2024 by researchers from the University of California San Francisco found that Paxlovid did not reduce the risk of developing Long COVID for vaccinated, non-hospitalized individuals infected by COVID-19.¹¹⁴ Though the methodologies of these studies and limitations as a result may explain these conflicting results, more research is needed to guide clinical practice regarding treatment and prevention of Long COVID.

The factors associated with Long COVID remain a rapidly evolving research area. Given the heterogeneity of the condition and overlapping elements, **Box 4** is not meant to be an exhaustive list but rather to provide an overview of risk and protective factors based on the current knowledge in this field as of the time of this writing.

Lessons Learned from Other Medical Conditions and Prior Epidemics

Post-Viral Syndromes and Chronic Fatigue Syndrome

Experience caring for individuals with post-viral syndromes may provide lessons on supporting and advancing health and social services for those experiencing Long COVID. The cluster of mental and physical symptoms seen in Long COVID are similar to those reported in post-viral illnesses linked to two other coronaviruses: severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).¹¹⁵ Neuropsychiatric symptoms, such as depression, anxiety, fatigue, sleep disturbances, PTSD, myalgia, dysautonomia, and post-viral chronic fatigue syndrome, have been linked as residual impacts of SARS and MERS infection.^{116,117} Much of the impact of these epidemics was felt in developing countries with limited resources; SARS first emerged in 2003 in the Guangdong region of southern China and MERS in Jeddah, Saudi Arabia, in 2012.^{118,119} Thus, there may be insights gleaned from the management of these complex conditions under limited resources in other parts of the world that could be used in supporting people with SMI in other socioeconomically disadvantaged groups.

Similarly, dysautonomia, described above and having a common set of symptoms with Long COVID, is present in POTS and myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS).¹²⁰ In fact, a recently published proteomic study found that ME/CFS and Long COVID have similar immune pathophysiology and resulting impact on mitochondrial functions involved in energy production.¹²¹ There is a recognized history of negative stereotyping and marginalization of individuals diagnosed with ME/CFS. Given the similarity in the range of symptoms in ME/CFS and Long COVID (e.g., post-exertional malaise and dysautonomia), efforts should be taken to prevent stereotyping and marginalization for those experiencing Long COVID. Research has shown that people with ME/CFS encounter stigmatizing responses in

accessing care. Individuals report having their concerns minimized during health care encounters, moral character questioned, and symptoms attributed to psychological distress rather than recognition of their physical symptoms.¹²² Early in the COVID-19 pandemic, individuals experiencing Long COVID reported a lack of recognition of their symptoms by medical providers, similar attribution to psychogenic etiology, and provision of psychotropic medications.^{123,124,125}

Despite increasing awareness about Long COVID, challenges continue for individuals to get the recognition needed, with one study showing that nearly two-thirds of individuals with Long COVID experienced stigma and discrimination due to their illness.¹²⁶ This included facing social and health system skepticism and disbelief about their symptoms—and the debilitating effects on their health—feeling shunned, and internalizing of shame.¹²⁷ All of these have the potential to lead to significant psychological distress and decreased engagement with services and care due to fear of anticipated discrimination—akin to well-documented experiences of those living with ME/CFS¹²⁸ and in other viral epidemics, including HIV/AIDS.¹²⁹ For people with serious mental illness and those within the Black, Indigenous, and people of color (BIPOC) community, the impacts of stigma and discrimination can be further compounded.

Patients from the ME/CFS community and those with other post-viral illnesses have been a resource to individuals struggling with Long COVID regarding patient knowledge and symptom management. There is an extensive body of literature regarding patient-care experiences and resources for individuals with ME/CFS, including the recognition that patient education and healthcare provider trainings are essential in understanding prognosis and treatment outcomes. This peer-to-peer connection around sharing strategies to mitigate and/or address symptoms could be something to foster and build-into the system of care for Long COVID.

To tackle this complex issue, a multifactorial approach in Long COVID management is needed, including advancing a person-centered and structural humility lens, and amplifying the unique insight and expertise of those with lived experiences in helping guide the necessary research, treatment, policy, and societal discourse.

Lessons from HIV/AIDS

As highlighted above, stigma and discrimination foster worse outcomes in epidemics—as highlighted by research on HIV/AIDS^{130,131}—and useful lessons can be learned from prior epidemics on strategic interventions around clinical, research, and sociopolitical interventions and outcomes for those most at risk. The lessons learned from the HIV epidemic, including the importance of public health messaging and the use of community members to provide and promote these messages, have been valuable in the fight against COVID-19. Several other lessons include these:

1. **The importance of testing and contact tracing.** HIV taught the world the value of widespread testing and contact tracing to contain the spread of infectious diseases. In the early days of the epidemic, this approach was used in many countries to help control the spread of COVID-19.
2. **A focus on developing medical treatments.** The HIV epidemic spurred a massive effort to develop effective treatments resulting from a tremendous influx of money to understand aspects of the immune system and its efforts to combat viral infections. This work later helped inform the development of treatments for COVID-19. Treatments such as remdesivir, dexamethasone, and monoclonal antibodies were developed specifically for COVID-19. The use of monoclonal antibodies in particular was built on earlier basic science work conducted during the early days of the HIV epidemic.^{132,133}
3. **The importance of public education and community engagement.** The HIV epidemic highlighted the need for public education and community engagement to promote safe behaviors and reduce stigma. This lesson has been applied to COVID-19, with many public health campaigns focused on promoting behaviors such as wearing masks, washing hands, practicing social distancing, and more recently, vaccine (and booster) adherence.
4. **The importance of targeted interventions for different communities to provide education within those communities.** Both of these epidemics disproportionately affected certain communities, such as BIPOC, low-income, and SMI communities. Members of these communities are more likely to experience language and cultural barriers as well as retain a distrust of government and health care institutions. As a result, public health messaging and outreach efforts were tailored to these communities and delivered by trusted messengers who were themselves members of these communities. This was also true for the LGBTQI+ community.
5. **The role of social determinants in disease outcomes.** The HIV epidemic also highlighted the impacts of social determinants of health, such as poverty, discrimination, and lack of access to health care, on disease outcomes. This lesson has been relevant to COVID-19, as the pandemic has disproportionately affected marginalized communities.

6. **Use of the stepped care model.** This model has been recommended during HIV and COVID-19, where the most effective and least resource-intensive treatments are provided to individuals being served first, and more resource-heavy interventions are then stepped up according to individual needs.
7. **The importance of global collaboration:** Finally, the HIV epidemic showed us the value of global collaboration in fighting infectious diseases. This lesson has been applied to COVID-19, with many countries working together to share information, develop treatments and vaccines, and coordinate their response to the pandemic.

Diagnosis and Treatment of Long COVID and Its Challenges

As the detection and management of Long COVID continues to improve, there will be an increased need for mental health services to develop clinical standards and protocols for managing this condition, given its risk of co-occurrence with mental illness and SUDs. Similar to best practices developed for concurrent management of SMI and chronic infectious diseases such as HIV and hepatitis C, as noted above, there will likely be a need for integrated clinical models to provide coordinated services. Standardized routine evaluation for co-occurring conditions will be important in all settings (see **Box 5**).

It will also be important for mental health providers to include Long COVID as part of their clinical assessments when evaluating individuals. This is especially important for those presenting with fatigue and other nonspecific, common Long COVID symptoms and in crisis settings where mental health providers function as first responders in the absence of medical personnel. Conversely, medical providers should screen for anxiety, depression, and other psychiatric illnesses among people being treated for Long COVID. Mental health providers will need to triage persons with Long COVID to connect them with an appropriate provider type and setting depending on the severity and constellation of symptoms they present.

Box 5: Examples of preventive care and management of other chronic conditions in persons with Long COVID

- **Screening tests for early diagnosis**
 - HIV, hepatitis C
 - Blood glucose and lipid profile
 - Cancer screenings
 - Mental health conditions (depression, anxiety)
- **Prevention strategies through vaccines**
 - Influenza, pneumococcal, shingles, hepatitis A and B
- **Chronic conditions that may be present (preexisting)**
 - Cardiovascular disease
 - Infectious diseases (HIV, hepatitis B and C)
 - Mental health conditions
 - SUDs

Diagnosis of Long COVID

Diagnosis of Long COVID is challenging for both the individuals being served and health care professionals, and often results in ruling out other medical or psychiatric conditions. Individuals may present to primary care clinics with a myriad of symptoms. Common symptoms of Long COVID as described above and in the following boxes and figure are multisystemic and can vary in severity.

Given the array of symptoms, clinicians should inquire about the history and severity of any experienced COVID-19 illness, including type and duration of symptoms, complications, impairment in daily function, and treatment course. It can be helpful, when available, for the provider to review outpatient or hospital records. Clinicians should also review pre- and post-COVID-19 psychiatric and SUD history, current medication use, and comorbid medical conditions, as well as conduct a physical examination with vital signs, cardiopulmonary and neurologic examinations, and ambulatory pulse-oximetry or orthostatic vital signs.¹³⁴

Based on the history and physical examination, the clinician should consider diagnostic assessments to evaluate other possible causes of a person's symptoms. This can include psychological assessments, blood laboratory tests, and even neurophysiological and neuroimaging options.¹³⁵ It is essential to use a person's unique presentations to guide subsequent diagnostic assessments and examinations. See **Box 6** for an outline of diagnostic approaches.

Cognitive and psychiatric assessments. Some providers may use multiple assessments to identify specific neuropsychiatric and neurocognitive changes in individuals, including established scales such as the Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA).^{136,137} MoCA may have increased sensitivity in identifying even mild cognitive deficits.¹³⁸ Providers will also likely assess for mood dysregulation, including screening for depression and anxiety using the Patient Health Questionnaire-9 (PHQ-9) or the General Anxiety Disorder-7 (GAD-7).^{139,140} Other psychiatric reviews of symptoms should be conducted based on unique presentations for each individual. The COVID-19 Yorkshire Rehabilitation Scale (C19-YRS)—and later its modified version—is a validated scale that can be used for the assessment and monitoring of Long COVID symptoms.¹⁴¹

Serological testing. Importantly, while there is recent research to suggest a blood protein signature for Long COVID may include increased complement activation and thromboinflammation that has potential for diagnostic breakthroughs for Long COVID,¹⁴² there are currently no standardized findings for Long COVID by blood or cerebrospinal fluid in clinical practice. Testing may rule out other metabolic or hormonal causes, including anemia, thyroid dysfunction, and vitamin or mineral deficiencies, that would suggest other reversible conditions.¹⁴³ Rarely, providers may assess for coagulopathy or inflammation. For example, interleukin-6 (IL-6) has been associated with fatigue and executive dysfunction, and C-reactive

protein (CRP) has been associated with depression and perceived poor quality of life.¹⁴⁴ Low levels of SARS-CoV-2 antibodies have been associated with neuropsychiatric symptoms of cognitive challenges and fatigue; however, antibody levels may not be as helpful, as they naturally attenuate with time.¹⁴⁵

Box 6: Selected possible diagnostic assessments for Long COVID and ruling out other medical and psychiatric conditions

Cognitive and Psychiatric Assessment

- Cognitive: Mini Mental State Examination (MMSE); Montreal Cognitive Assessment (MoCA)
- Psychiatric: Patient Health Questionnaire-9 (PHQ-9); General Anxiety Disorder-7 (GAD-7); Beck Depression Inventory-II (BDI-II); Beck Anxiety Inventory (BAI); Hospital Anxiety and Depression Scale (HADS); PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-5 (PCL-5)
- Other: Modified COVID-19 Yorkshire Rehabilitation Screening (Modified C19-YRS); Fatigue Severity Scale; Tokyo Metropolitan Distress Scale (TMDP); Patient-Reported Outcomes Measurement Information System® (PROMIS®)

Serological Testing in Blood

- Metabolic and electrolytes: comprehensive metabolic panel, thyroid function, B-natriuretic peptide
- Anemia and vitamins: complete blood count, iron studies, vitamin B₁₂, vitamin B₁
- Inflammatory: C-reactive protein, d-dimer, fibrinogen, coagulation factors, interleukin-6, neutrophil-to-lymphocyte ratio
- COVID-19 antibodies

Neuroimaging and Neurophysiological Testing

- Brain magnetic resonance imaging (MRI); positron emission tomography (PET)
- Electroencephalogram (EEG)
- Tilt-table testing

Neuroimaging and neurophysiology assessments. Brain magnetic resonance imaging (MRI) has demonstrated mixed findings with Long COVID.¹⁴⁶ In addition, brain positron emission tomography (PET) scans have demonstrated a hypometabolic pattern in brain areas involving mental health and cognitive deficits in small studies in persons with Long COVID.^{147,148} It is unclear whether these findings will be replicated in larger studies and whether they will be required for the diagnosis of Long COVID. However, policymakers should be mindful of the evolving use of advanced technologies in assessments for Long COVID to reduce potential inequity in diagnosis and access to treatments for marginalized populations. Finally, limited studies suggest individuals affected by Long COVID may have abnormal brain waves linked to

executive dysfunction and fatigue.¹⁴⁹ Tilt-table testing may be used to assess for evidence of dysautonomia (this is a test looking at blood pressure stability and other functions when an individual is positioned in different ways on a table that tilts).

Treatment for Long COVID

Access challenges. For many individuals, establishing the diagnosis and ruling out other potential causes is itself a lengthy process involving multiple tests and follow-up visits with the ordering provider. The evaluation may continue with referral to sub-specialists and COVID-19 recovery clinics.

Post-COVID care centers have arisen across the country as a response to the number of persons who suffer post-acute sequelae of SARS-CoV-2 infection, or Long COVID. These clinics are multidisciplinary, bringing together specialists from general medicine, pulmonology, cardiology, infectious diseases, immunology/allergy, neurology, psychiatry, sleep medicine, and rehabilitative medicine, among others. These centers have sought to centralize access to specialists and overlapping testing. However, many primary care teams may not be aware of these specialized centers or how to get access to their services for potentially eligible individuals with Long COVID.

Given the rising numbers of individuals who experience Long COVID symptoms and who seek out post-COVID-19 care centers, wait times have been seen upward of 9–12 months. Moreover, many clinics are concentrated around academic and urban centers, which also may limit their availability. If the waiting time for an appointment at a COVID-19 recovery clinic is too long or such a clinic is unavailable, physicians may refer to relevant sub-specialists to address specific clinical concerns with an individual. As with other referrals, sub-specialty care may be limited by insurance, distance, transportation, and availability of appointments. This creates particularly challenging barriers for SMI populations and lower-income and marginalized communities who have limited proximity and access to these clinics, due to multiple factors, including insurance/coverage access, geographical distance, and transportation issues. Additionally, given prolonged waiting lists, referral from primary care may become delayed, fragmented, or not initiated in the first place. Behavioral health leaders around the country are working hard to maximize access to care and expand models of integrated care to reduce some of these barriers.¹⁵⁰ Moreover, *Connected and Strong* emphasizes President Biden’s Unity Agenda in bringing forces together to ensure Americans have healthier environments; reducing the Long COVID burden is part of that effort.^{151,152}

Treatment. Treatment for a given Long COVID symptom often focuses on improving an individual’s function and can be targeted toward specific symptoms (see **Box 7**). Clinical trials are needed to better understand their overall safety and efficacy profiles, as many of the emerging treatments are based on knowledge of other, similar conditions. For example, individuals with predominant dysautonomia and orthostasis may benefit from beta blockers and

increased salt intake—a treatment regimen common among persons with POTS. Those with increased fatigue may benefit from learning ways to use incremental, targeted actions, such as pacing, as a means to conserve energy and minimize overexertion and neurocognitive dysfunction (“brain fog”). This treatment approach builds on prior work with ME/CFS individuals. Other symptom-specific behavioral considerations include post-concussive syndrome protocols for cognitive dysfunction and compression stockings for POTS. However, it is important to emphasize that effective treatment strategies for Long COVID are under intense investigation. Some therapeutics have limited but promising evidence, including apheresis to reduce circulating antibodies, as well as stellate ganglion blocks or transcutaneous vagal stimulation to improve dysautonomia symptoms.¹⁵³ Medications such as low-dose naltrexone and aripiprazole may be helpful in managing symptoms such as brain fog, fatigue, and pain.^{154,155}

Box 7: Potential symptom-based treatments for Long COVID

Behavioral and Dietary Strategies

- Pacing/energy conservation for post-exertional malaise
- Post-concussive syndrome protocols for cognitive dysfunction
- FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) elimination diet, probiotics for gastrointestinal symptoms (e.g., bloating)
- Increased salt intake for orthostasis

Symptom-Specific Medications

- Beta blockers for postural orthostatic tachycardia
- Compression stockings for postural orthostatic tachycardia
- Low-dose naltrexone for pain, fatigue, neurological symptoms
- Low-dose aripiprazole for brain fog, fatigue, poor sleep
- Antihistamines, intravenous immunoglobulin to reduce inflammation (small studies)
- Vitamin/herbal supplements (e.g., coenzyme Q10 for fatigue; pycnogenol for inflammation)
- Paxlovid to reduce likelihood of developing Long COVID

Davis HE, McCorkell L, Vogel JM, et al: Long COVID: major findings, mechanisms and recommendations. Nat Rev Microbiol 2023; 21:133–146.

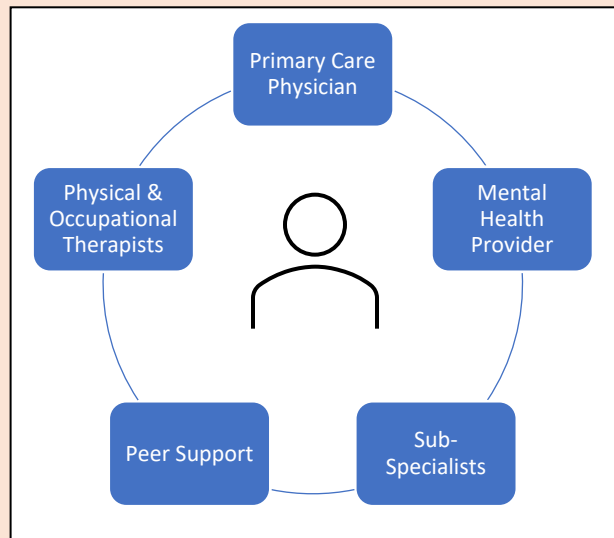
<https://doi.org/10.1038/s41579-022-00846-2>

Multidisciplinary care team. Given that the individuals being served frequently experience multisystemic, debilitating symptoms, early engagement of a multidisciplinary team for a comprehensive assessment and management is essential (see **Figure 1**).¹⁵⁶ The team may include

primary care physicians, mental health specialists (e.g., psychiatrists, behavioral health therapists, psychologists), physical therapists, occupational therapists, and nutritionists. With the increasing complexity of care required, particularly in underserved populations already at risk for care fragmentation (e.g., populations with SMI), case managers and social workers may also be key members of the team.

The post-COVID care centers described above reflect many of the best practices, including these:

Figure 1: Sample multidisciplinary team for patient-centered management of Long COVID



1. *Multidisciplinary teams.* Given the range of symptoms, a multidisciplinary care team that includes medical professionals, mental health professionals, and other specialists can provide comprehensive support. This team works to develop and implement individualized treatment plans that address the unique needs of the person being served.
2. *Physical therapy and rehabilitation.* Physical therapy and rehabilitation may be effective in addressing the physical symptoms associated with post-viral conditions, such as muscle weakness and shortness of breath. A rehabilitation program can be tailored to the individual's needs, with a focus on gradually building strength and endurance.
3. *Cognitive-behavioral therapy.* Cognitive-behavioral therapy (CBT) may be effective in addressing the psychological symptoms associated with post-viral conditions, such as anxiety and depression. CBT can help individuals learn coping strategies to manage these symptoms and improve their overall quality of life.
4. *Peer support groups.* Peer support groups, where individuals can connect with others who are experiencing similar symptoms, may be effective in providing emotional support and a sense of community. These groups can be facilitated in person or online and can be particularly helpful for individuals who are isolated due to their symptoms. Of note is that inadequate social support has been linked to the occurrence and severity of PTSD symptoms in these individuals.
5. *Symptom management strategies.* Various strategies, such as pacing activities, managing stress, and maintaining a generally healthy lifestyle, may be effective in managing symptoms associated with post-viral conditions. These strategies can be tailored to the individual's needs and may require ongoing support and guidance from health care professionals.

Care Delivery and Policy Implications for the Mental Health System

Delivery of Crisis Services

The ability to appropriately identify Long COVID among people with mental illness and SUDs may be especially challenging in the context of mental health crisis services, such as crisis call centers, mobile crisis response teams, and specialized mental health crisis facilities. Given the overlapping symptoms between Long COVID and common mental illnesses that frequently precipitate crises, there is a need to consider Long COVID as a contributing or even causal factor in a differential diagnosis, similar to conditions such as dementia or traumatic brain injuries (TBIs). Furthermore, medical conditions can play an important role in determining the disposition of someone in a mental health crisis. While Long COVID is unlikely to present as an acute medical issue that would rise to the level of requiring emergency treatment, it is important to consider during a crisis assessment to potentially inform a linkage to primary care or other specialty medical resources as part of disposition planning.

To detect and address Long COVID, as well as other medical conditions with concurrent psychiatric symptoms, there is a need to increase baseline awareness and training among both medical and nonmedical crisis service providers. Browning and others described the role of medical interventions in behavioral health crisis management in detail, and part of that work involves ascertaining from a biopsychosocial perspective what is happening with the individual in crisis.¹⁵⁷ In general, crisis service providers, such as mental health clinicians paired with peer support specialists and technicians, have minimal medical training. Mobile crisis teams that include emergency medical technicians or paramedics, who often conduct a brief medical assessment by screening vital signs and doing a physical examination, can be responsible for considering Long COVID as part of a crisis assessment prior to potential transport to a facility. Many crisis facilities, such as 23-hour observation units and crisis residential programs, include nursing and medical staff who can conduct basic medical screenings. These medical staff should be trained in Long COVID and be familiar with resources that can be made available to these individuals. In the absence of medical staff, algorithmic decision supports, such as standardized medical screeners for dementia, TBI, or other altered mental status, should also include Long COVID. Long COVID awareness campaigns should include crisis service providers as an audience to further disseminate the importance of detecting neuropsychiatric symptoms.

Training in Long COVID for Mental Health Providers

Mental health providers will need training in assessing and treating Long COVID neuropsychiatric symptoms, understanding their expected time course, and learning up-to-date science around treatment and recovery. Mental health treatments for people with Long COVID

may be delivered by different types of providers depending on clinical needs, and some individuals with greater symptom complexity may require more specialized treatment at a higher level of care. To support the workforce to serve these clinical needs, it will be important to develop training initiatives across professional associations, continuing education platforms, and providers to ensure the dissemination of clinical best practices in people with co-occurring mental illness and SUDs and Long COVID.

Coordinated Care with Other Specialties

As with other general medical conditions that intersect frequently with mental disorders and SUDs, it will be essential for mental health providers to coordinate care with primary care and other sub-specialties. Embedding mental health clinicians in Long COVID specialty clinics and as key members in the multidisciplinary team is one key step. Similarly, existing mental health clinics that offer integrated physical health services¹⁵⁸ would be another natural point of care for populations with SMI. CCBHCs can serve an important function in this arena. Additional efforts should be made to streamline access to these services by augmenting funding mechanisms and resources. Ultimately, behavioral health clinicians share responsibility for **supporting person-centered and recovery-oriented care** coordination efforts that account for the complexity of the underserved populations needing these services.

Outreach to Underserved Populations

Vigorous outreach efforts to highlight individuals with SMI as a high-risk population and to continue behavioral health care occurred from the onset of the COVID-19 pandemic. For example, clinician scientists and public health advocates successfully compelled health authorities to add SMI as a priority condition for vaccination, which helped protect this underserved population.¹⁵⁹ In addition, telehealth minimized disruption in care for individuals with SMI in rural areas or with mobility challenges,¹⁶⁰ although many people also had limited access to telehealth capabilities related to the so-called digital divide, and some high-risk populations therefore were not reached. Telehealth flexibilities continue to evolve with the US Department of Health and Human Services declaration of the end of the federal public health emergency for COVID-19 as of May 11, 2023.¹⁶¹ It will be important to track these evolving policies to help maximize care to marginalized populations.

In addition to the underserved communities mentioned throughout this paper, it is also important to improve access to Long COVID management along with medical and mental health care for incarcerated people. This is especially important given the overrepresentation of justice involvement among individuals with SMI and SUDs, as well as chronic comorbid conditions—all factors that exacerbate the risk of COVID-19. To fully address inequities facing some of the most underserved communities with Long COVID—including those living with SMI, racialized

groups, and low-income populations—interventions addressing structural racism and ableism and advancing anti-oppressive systems of care are essential.

Given that persons with SMI are also at greater risk of homelessness and people experiencing homelessness are at higher risk of adverse outcomes after COVID-19,¹⁶² strategic interventions focused on this high-risk group remain an ever-urgent issue. This is especially the case given the pandemic-related deterioration of health and community infrastructure. Concerted policies and efforts should be explored to reduce and decriminalize homelessness, especially in the setting of racial disparities in the carceral system and for minoritized individuals with SMI. Many strategies to move the needle on this issue were articulated in NASMHPD’s 2018 technical assistance brief, *Bolder Goals, Better Results: Seven Breakthrough Strategies to Improve Mental Illness Outcomes*.¹⁶³ Though many of these ideas have been pursued, the impact of COVID-19 on people experiencing homelessness serves as a grave reminder of the work still needed to solve these problems.

Technical Assistance to State and Local Mental Health Systems

For mental health systems to account for the impacts of Long COVID, significant technical assistance will need to be provided to highlight best practices and emphasize practical approaches to improving care. Technical assistance might focus on topics such as

- data collection on COVID-19 status to be able to look at intersections with priority populations as defined by demographic, diagnostic, and psychosocial factors;
- implementation of trainings and workforce development;
- integration and coordination of best practices, including support that can be offered by peer specialists, patient navigators, and community health workers;
- use of technology and information systems to support higher-quality care; and
- awareness of financing opportunities that can be pursued to ensure budgetary readiness.

Research on Mental Health and Long COVID

To advance the field’s understanding of clinical and health system needs, significant research will need to be conducted in various critical areas. Mental health support for Long COVID will need to focus on helping individuals return to functioning, but specific treatments for physical and cognitive rehabilitation and recovery are still under investigation. Multisite, multinational studies will be vitally important for collecting large-scale scientific population/epidemiological data and conducting clinical trials for effective treatments.

Launched in 2021, the National Institute of Health’s [Researching COVID to Enhance Recovery \(RECOVER\) Initiative](#) is a nationwide research program to fully understand, diagnose and treat Long COVID. In February 2024, NIH announced an additional \$515 million would be invested into this initiative to support these efforts.¹⁶⁴ Support and advocacy groups for individuals with

Long COVID have proven to be essential in garnering international awareness and actionable efforts,¹⁶⁵ and they continue to provide essential, mutually supportive spaces for people who are navigating the uncertainty around this emerging syndrome.

Policy Implications

There are significant policy implications for the multiple intersections between Long COVID and mental health. Health care systems will need to adapt and develop new approaches to ensure high-quality clinical services that are coordinated across providers and proactively reach out to high-risk populations.

Another domain that requires urgent attention by policymakers is the impact of Long COVID on the employment and disability status of those affected. A study of over 15,000 people found that those with a history of Long COVID were more likely to be unemployed compared to unemployed individuals previously working before the pandemic, and cognitive impairment was associated with a decreased likelihood of working full time.¹⁶⁶ Consequently, there is a need for a comprehensive national response, including:

- expanded access to and eligibility for federal and state disability programs,
- development and adoption of holistic services and inclusive policies and programming to optimize and advance workforce engagement for those impacted by Long COVID, and
- promotion of equity-centered and targeted interventions for communities disproportionately impacted by Long COVID.

With workforce shortages in behavioral health services at a critical level, these types of interventions to promote healthy workforces and healthy environments have the potential to offer some relief to many.

For these complex changes to be feasible and actualized, policymakers will need to invest in community-driven strategies, multidisciplinary workforce readiness, technical assistance, data sharing, and funding for further research and program implementation in these varied yet synergistic areas of high need.

Conclusion

Although the public health emergency is over and COVID-19 impacts have abated considerably since it first emerged, the disease is still very much present, and its effects remain daunting, especially for those living with Long COVID and for those in the health care community tasked with caring for them.

This paper describes the significant impacts of Long COVID on adults and children who suffer from SMI or SUD. In addition to discussing the diagnostic complexity of Long COVID and providing recommendations for management and treatment, this review addresses policy

implications for the behavioral health community at this moment of transition in the pandemic. From the information reviewed and available, the following recommendations emerge:

1. **Targeted efforts are needed to advance vaccination efforts among people living with SMI.** Those with SMI or SUD are at high risk of COVID-19 infection and of developing Long COVID. This is particularly true among Black and Latinx people with SMI. Vaccination in these groups is critical, as data clearly shows a reduced risk of infection and development of Long COVID for those who are vaccinated.
2. **Behavioral health providers need training in assessing and treating Long COVID neuropsychiatric symptoms.** To increase access to care for Long COVID, behavioral health providers need to have a basic understanding of the expected time course and up-to-date science around treatment and recovery. Efforts to increase baseline awareness among providers will be an ongoing task for mental health and substance use professional organizations.
3. **Clinical standards and protocols need to be developed to address the needs of people with SMI or SUD.** Standardized routine evaluation for COVID-19 and its post-acute viral conditions will be important in all settings.
4. **Behavioral health expertise must be included in multidisciplinary team-based treatment centers.** These approaches have already been shown to be most appropriate for the diagnosis and ongoing care of Long COVID. Additional post-COVID care centers should be developed in close collaboration with behavioral health providers.
5. **Equitable access to care needs to be a focus in Long COVID care.** Health care leaders should focus on equity to minimize barriers faced by SMI populations and lower-income and marginalized communities who have limited proximity and access to specialty clinics and other resources to reduce the overall burden of Long COVID.
6. **Support and advocacy groups for individuals with Long COVID need to be expanded.** These interventions have proven to be essential in garnering international awareness and actionable efforts. They are readily available online and provide essential, mutually supportive spaces for people who are navigating the uncertainty around this emerging syndrome.
7. **Multisite, multinational studies of Long COVID are urgently needed.** Investing in this research area will be vitally important for collecting large-scale scientific, population/epidemiological data and conducting clinical trials for effective treatments.

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