

SPECIAL REPORT

COVID-19 and Brain Health: The Global Council on Brain Health's Recommendations on What to Do Now

Global Council on
Brain HealthSM
A COLLABORATIVE FROM AARP

Dedication

In honor and memory of all the people who have lost their lives to COVID-19 and to those who cared for them.

Background: About GCBH and its Work

The Global Council on Brain Health (GCBH) is an independent collaborative of scientists, health professionals, scholars, and policy experts from around the world who are working in areas of brain health related to human cognition. The GCBH focuses on brain health relating to people's ability to think and reason as they age, including aspects of memory, perception, and judgment. AARP convened the GCBH to offer the best possible advice about what older adults can do to maintain and improve their brain health. GCBH members gather to discuss specific lifestyle issues that may affect people's brain health as they age, with the goal of providing evidence-based recommendations for people to consider incorporating into their lives. GCBH's work empowers individuals to benefit from insights on the cutting edge of brain health science to enhance well-being across lifespans.

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Introduction

The Direct and Indirect Threats to Brain Health

The staggering impact of the pandemic continues to spread. As of February 24, 2021, there have been more than 112 million confirmed cases of COVID-19 across the globe, resulting in about 2.5 million deaths. Older adults and members of underserved communities have been disproportionately harmed. Sadly, we know those numbers will continue to increase before the virus is contained. While we still don't know the full extent of damage the pandemic will cause, scientific evidence has emerged that, in addition to severe illness and deaths, the virus is also causing damage to people's brain health.

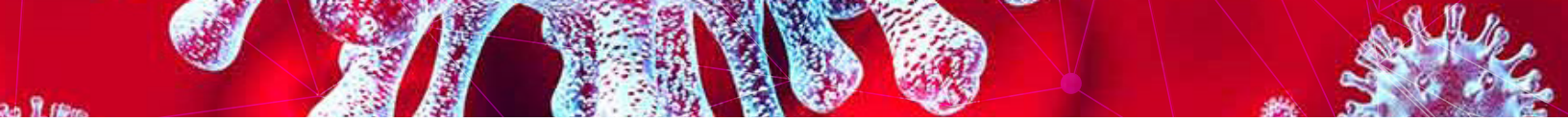
The Global Council on Brain Health's mission is to offer the best possible advice about what adults age 50 and older can do to maintain and improve their brain health. With growing evidence that COVID-19 harms brain health, the GCBH determined it was important to inform people about this impact and what if anything might be done about it. First and foremost, a COVID-19 infection itself can directly harm brain health. Second, although social distancing is one of the best

ways to reduce the risk of infection, isolation can negatively impact mental well-being of adults, thereby indirectly harming brain health.

This report explores both the direct and indirect ways the virus may undermine brain health and offers 10 recommendations to people based upon the current state of the science on how to try to avoid the harms the pandemic poses.

Needed: An All-Society Approach

This report focuses on what individuals can do now. But we start with the recognition that it will take an all-society approach to truly protect the health of all of our brains. In line with the Council's global reach, we are mindful that the spread of COVID-19 has disproportionately harmed more vulnerable populations the world over. It is well-established that along with increasing age, being part of racial and ethnic minorities or living in low- to middle-income countries puts individuals at greater risk for getting sick, facing more severe illness, and dying. Access to health care is a long-standing issue in certain communities and a major contributing factor to poor health outcomes for all health conditions.



However, conditions in places where people live, work, play, and worship all significantly contribute to people's risk factors associated with contracting COVID-19. This has illuminated the socioeconomic factors at play in different health outcomes, underscoring the interrelated social determinants of health. Low-income individuals have been infected in disproportionately high numbers, as many fill the role of society's "essential workers" at greater risk of exposure to COVID-19 and its potential harms.

In all these ways, the pandemic has highlighted health disparities and long-standing inequalities that can affect brain health and mental well-being. Societies at the local, national, and international levels must find ways to better support their citizens who are at greatest risk of the direct and indirect harms of COVID-19. Indeed, health system infrastructure and preparedness play a key role in the COVID response, and this

varies widely country to country. For example, individuals in Europe have had vastly different experiences during the pandemic, depending on which countries they reside in. Likewise, even within the same country, citizens in urban and rural areas face different challenges with regard to access to health care and efforts to curb transmission more generally.

Complicating this challenge, many people of color lack trust in health care systems that have not treated them equitably. They may now be hesitant to get recommended vaccines that could protect them. Society must gain their trust, and we need to be trustworthy. How to achieve that vital aim is beyond the scope of this report, though it will require sustained efforts to ensure equitable access to quality, effective care, along with information that is accurate and relevant. Our goal with these recommendations is to be helpful to all.



The Impact of the COVID-19 Pandemic on Brain Health

Infection — direct threats

There is a growing body of research investigating the long-term impact of COVID-19 infection on the brain, but more research is needed. While COVID is recognized principally as a respiratory disease, neurological problems have also been widely reported. A study published in the *Annals of Clinical and Translational Neurology* analyzed 509 COVID-19 hospitalized patients and found that neurologic symptoms occurred in 82% of cases during the course of the disease. A recent study from University College London in the United Kingdom linked COVID-19 to delirium, brain inflammation, stroke, and nerve damage, and more research in the field is underway.

Much is still unknown about these neurological symptoms, and scientists are racing to learn more. The National Institutes of Health's (NIH) National Institute of Neurological Disorders and Stroke (NINDS) in the United States has recently launched a database to help collect that evidence. Through a grant to New York University, NINDS is supporting the collection of information about neurological symptoms, complications, and outcomes from people of all ages, as well as COVID-19 effects on pre-existing neurological conditions. Across the NIH, efforts are underway to promote and support research to better understand the impact of COVID-19 on the brain, the long-term consequences of COVID-19, and the constellation of symptoms and signs that may be unique to older adults. (Relevant studies funded by the National Institute on Aging on brain health are listed below in Additional Resources.)

A loss of taste and smell are among the most common initial neurological symptoms. Many patients report that these senses return as they recover from the acute phase of infection, but in some cases, the loss of taste and smell persists even after other symptoms improve. In one study, 30% of patients reported symptoms 30-90 days after the onset of illness. COVID-19 can raise the risk of strokes, and blood vessel injury has also been observed. Other neurological symptoms include headaches, extreme fatigue, and trouble thinking or concentrating, sometimes referred to as “brain fog.” Confusion, which can be a characteristic of delirium,

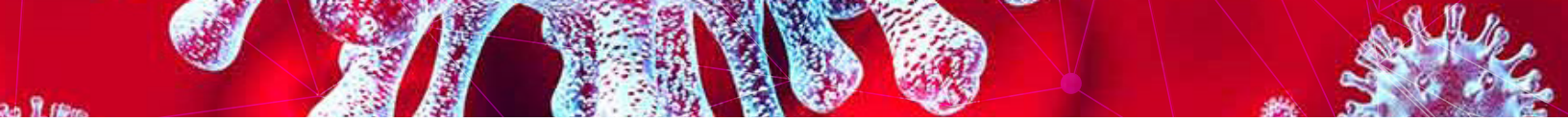
the medical term for a sudden, severe disorientation, has been reported, particularly among older patients who are hospitalized.

Altered mental state appears to be very common among hospitalized, severely ill COVID-19 patients. In a United States [study](#) of over 800 older adults with COVID-19 presenting to emergency departments, delirium was the sixth most common of all presenting signs and symptoms, and 37% had no other COVID-19 symptoms, like fever, cough, or shortness of breath. A small study in Strasbourg, France found that 65% of people who were hospitalized with COVID-19 had acute confusion, according to their Intensive Care Unit assessment. Researchers working together at Vanderbilt University Medical Center (Nashville, TN, USA), INCLIVA Research Health Institute (Valencia, Spain), and Proyecto HU-CI (Madrid, Spain) coordinated a multicenter retrospective evaluation of electronic medical records from 69 sites in 14 countries. Data showed that 55% of the 2,088 people (ages 18-plus with a median age of 64 years) that they tracked between January 20 and April 28, 2020 who were treated for COVID-19 in intensive-care units around the world had developed delirium.

Research to date suggests that the body's widespread inflammatory response to infection may be a large contributing factor to neurological complications associated with COVID-19. For example, with the help of magnetic resonance imaging, researchers have found inflammation in areas of the brain such as the olfactory bulb, which helps control the ability to smell. While more research is needed, the NIH is investigating [new evidence](#) suggesting that the virus may directly infect the central nervous system, cross the blood-brain barrier, and invade cells in the brain and in its blood vessels.

Long COVID

Another area that calls out for investigation is the medium- to longer-term impact of COVID-19 on the brain and whether this will result in later-life cognitive decline, Alzheimer's disease, or other dementias. Researchers working with the World Health Organization have launched a large-scale, global [study](#) to investigate the short- and long-term effects of COVID-19 on



the brain. A large group of investigators from all over the world will track more than 40,000 individuals age 50 and older for at least 2 years to learn about memory and mood disturbances. A deeper understanding of how COVID-19 affects neurological function will also help physicians to better understand why some people (the so-called “long-haulers”) suffer from symptoms longer than others. This is becoming known as long COVID. Although very rare, troubling cases of severe psychotic symptoms like paranoia and hallucinations have been reported in people several weeks to months after they had experienced relatively mild COVID-19 infection even though they had no prior history of mental illness.

While we await research findings and more specific guidance, the Council believes that individuals should take prudent steps to protect themselves. We should do what we can to avoid exposing ourselves or others to the virus, engage in healthy habits to boost our immune systems, and avoid health risks. All these priorities can support brain health. Consider taking the vaccine because it is an important prevention measure to help protect your overall health including your brain. Remember to check in with your health care provider, not only about the COVID-19 vaccine, but also to maintain your medical care for routine check-ups and necessary screenings as well as for any of your ongoing health conditions.

Mental well-being — indirect threats

Living through this pandemic, even without infection, has taken a widespread toll on mental well-being and ultimately brain health.

While the pandemic has affected everyone in different ways, it has brought a great deal of uncertainty and forced us all to adapt to new ways of life. It has raised awareness for many about what is truly important, even bringing positive feelings in some cases, such as gratitude for friends and family. More troublingly, it has unleashed a host of new stressors into all of our lives, along with a range of emotions, some of which can be harmful. For those with mental health conditions such as anxiety, depression, and obsessive-compulsive disorder, the uncertainties have been felt even more acutely. For those who have suffered job loss and economic hardship, or are grieving from the loss of a loved one, the instability may feel overwhelming.

Heightened health risks, uncertainty, reduced social engagement, new routines, and economic hardship all loom


large during this pandemic and can trigger or amplify feelings of stress. Many people have been forced to change rituals and routines under guidelines designed to reduce the spread of the virus, resulting in substantially reduced social interaction. Many have also experienced changes in eating routines, sleeping patterns, and physical activity. For people around the world, the pandemic has meant living with heightened anxieties, fears, and concerns about one’s own health and personal well-being, as well as the health and well-being of loved ones (especially those who carry out essential tasks in public). Others are suffering from economic hardships related to jobs and financial insecurity. These cumulative and prolonged stresses may undermine overall brain function, including the ability to think and reason, as well as attention and mood.

The effects of the pandemic on our connectedness to other human beings deserve special attention. Indeed, the pandemic has brought about new patterns in when, whether, and how we all communicate. These changes can be especially challenging for certain populations, such as individuals who lack access to the internet or do not use computers. By contrast, people sheltering in place with good access to telecommunications have been much better able to stay connected with loved ones, friends, coworkers, and services outside the household.

Consider health care. Many medical appointments have transitioned to telemedicine. Yet this shift has created barriers for some older adults who have less fluency with the latest telecommunications technology. Still others do not have access to the technology infrastructure to make these virtual health care visits possible. Such individuals may find this transition difficult, disruptive, and isolating.

Outside the home, communications should generally be conducted through a mask and from a distance. Yet this important health behavior can be challenging and stress-inducing — especially to individuals who are deaf or those with hearing loss. Masks reduce clarity of human speech and muffle the volume. Facial expressions are also lost behind the mask, as is the ability to read lips. Transparent masks have been developed to try and address some of these issues.

More broadly, the need to social distance has left a great many people alone without normal human interactions or the help of family and friends. Even people sick and dying from COVID-19 are facing the disease alone. We are devoid of normal social gatherings such as funerals and weddings designed to support people. This has impacted people of



all cultures, races, and ethnicities in different ways. In indigenous communities, for example, cultural gatherings and ceremonies have a uniquely defining role in daily life, and the inability to attend ceremonies or cultural gatherings poses distinct challenges to mental/emotional/spiritual well-being.

And we have closed or reduced attendance in schools, restaurants, and places of worship or entertainment. In this more isolating world, caregivers of children or adults with disabilities may be stretched beyond their capacities.

COVID-19 and dementia — both direct and indirect threats

COVID-19 has had an undeniably huge and negative impact on people living with dementia. Although there is limited research in the field, people with a genetic risk for Alzheimer's disease and those living with cognitive decline or dementia appear to be at increased risk for COVID-19 severity.

In the United States, deaths attributed to Alzheimer's disease and dementia rose more than 20% above normal over the summer of 2020, according to the Centers for Disease Control and Prevention (CDC). Researchers do not yet know if the virus caused the additional dementia deaths or if dementia accounted for an increase in COVID-19 infections. But linkages appear to exist and require research: Increased isolation and stress during lockdown, lapses in some nursing home care, lack of personal protective equipment, and missed COVID-19 diagnoses — along with inability of those with cognitive impairments to follow public health safety guidelines to reduce infection — are all likely contributing factors. In the United Kingdom, the Alzheimer's Society reports that more than one in four deaths due to COVID-19 has been in people with dementia, and that significant cognitive decline has been seen among residents of the community and in care homes.

One recent study in the U.S. found that people with dementia were twice as likely to catch the virus as those

without dementia; African Americans with dementia had nearly three times the risk of COVID-19 as Caucasians with dementia. This [retrospective analysis](#) of 61.9 million electronic medical records of adults ages 18 and older in the United States from 360 hospitals across 50 states was collected by IBM Watson Health Explorys. Researchers demonstrated an association between dementia and significantly increased risk for COVID-19 compared to patients without dementia.

Countries can learn from each other's experience. India has been one of the worst hit nations in the pandemic. In October 2020, at a relatively early stage of the crisis there, psychiatrists specializing in dementia care explained the urgent need to implement dementia-relevant pandemic control policies and actions. Bracing for increased deaths, poorer health outcomes, and greater psychosocial problems for people with cognitive decline or dementia, they called for a comprehensive care model to address the needs of people living with cognitive disabilities such as dementia and their caregivers. Shortages of resources and the burden of the pandemic will certainly strain all countries, and we have not yet seen the outcome in India. But it will be important to evaluate the success of health systems which have specifically focused on the needs of people living with dementia and their caregivers.

Dementia caregivers

The point about dementia caregivers requires emphasis. Caregiving has never been an easy task. But the dangers caused by COVID-19 have brought added stress to caregivers who are trying to protect themselves while also helping others with cognitive issues who are less able to defend themselves. The GCBH encourages caregivers to seek guidance and support, such as those from the [IDEAL Programme](#) in the United Kingdom which provides information about how people with dementia can stay well during the pandemic with specific tips to caregivers. (Links to a sample of resources are provided in the Additional Resources section.)



GCBH Top Ten Recommendations to Protect Your Brain Health During COVID-19

Individuals face different challenges in fostering brain-health resiliency during the pandemic. Some workers must cross paths with the public every day. Others do not have to leave their front door. Some households are packed into close quarters and may include family members who are older or have underlying medical conditions. Others live alone and face a different set of concerns. Despite the varied challenges, a growing body of evidence makes clear that certain steps can support brain health for all as society continues to cope with the pandemic. Here are our top ten recommendations for older adults:

1. Consider getting the vaccine as soon as you are able

Because the health risks from COVID-19 increase with age, particularly for those with underlying medical conditions, it is important for older adults to consider getting the vaccine as soon as they can and their health care provider agrees they should. Many places have prioritized vaccinating adults over age 65 because they are at highest risk for severe illness and death. Eighty percent of U.S. deaths have been in people ages 65-plus, with those 85 and older at highest risk for severe illness and death.

Even after you get the shot, it's important to keep wearing those masks while the pandemic continues. Continue to observe other public health guidelines, as well, like hand washing, physical distancing, and avoiding groups of people, especially indoors. By protecting yourself, you help protect the community. A growing body of science is available to help you make good decisions about treatment. (For further information, see AARP's guide to the vaccine: <https://www.aarp.org/health/conditions-treatments/info-2020/getting-covid19-vaccine.html>.)

2. Stay physically active

The COVID-19 pandemic abruptly changed the way we lead our lives because of the importance of keeping our physical distance from other people. While “essential” workers are still commuting to places of work, an incredible 42% of the U.S. labor force now works from home full time (33% are not

working, while 26% go to work sites). People have cut back on local errands, travel, and in-person visits. Many fitness centers and recreational activities have closed.

All this time at home has led to more sedentary lifestyles and a tsunami of physical inactivity. The lack of movement and exercise is of growing concern because physical activity positively impacts cognition in adults and is vital for healthy aging. Moving more also influences mental well-being and can boost mood. Fortunately, there are many ways to stay physically active without going to the gym or using specialized equipment. Walking outdoors (while physically distanced from others), taking extra trips up and down the stairs, doing bodyweight exercises (like push-ups) or moving to an exercise video are just a few examples. (See the [*GCBH's Brain-Body Connection report*](#) for a more thorough discussion on how physical activity helps brain health.) Remember, move throughout the day, and aim for at least 150 minutes of moderate activity each week with two sessions of strength training.

3. Maintain a balanced diet

Balanced intake of food quantity and nutrient quality matters for brain health and immune function. Fruits, vegetables, fish, legumes, grains, and other wholesome foods as well as drinking enough water all support well-being. (See the [*GCBH's Brain Food report*](#) for a more thorough discussion of diets supportive of good brain health and specific suggestions on foods to encourage, include in moderation, or limit.) Yet the pandemic has made it harder for many people to get the nutrients our bodies need to stay in top working order. It has shaken global food systems, inflating prices and straining agricultural production and supply chains, due to restrictions on trade and movement.

These disruptions have reduced access to nutritious food for many, especially for families on tight budgets. The pandemic has also challenged others to adapt their eating routines to a new reality in which they spend many more hours at home. Some may find it is hard to procure food and cook it for themselves. Many have been forced to develop new ways of preparing food. Others may find that constant proximity to the kitchen creates temptations to overeat, especially if they



are feeling stress. Yet our message remains important: A balanced, healthy diet is a pillar of better brain health.

4. Stay socially connected

One of the biggest challenges people around the world have faced during the pandemic is social isolation, especially those who live alone. Limiting social interactions has been necessary to help stop the virus, but extended periods of social isolation can undermine overall health, including brain health. According to the CDC, social isolation increases a person's risk of premature death from all causes, "a risk that may rival those of smoking, obesity and physical inactivity. Social isolation was associated with about a 50% increased risk of dementia." Researchers suspect that social isolation may also be a risk factor for delirium in COVID-19 patients.

It is important that we find ways to connect with family and friends, even when we cannot do so in person. Older people who are more socially engaged and have larger social networks tend to have a higher level of cognitive function. This is an ideal time to strengthen bonds with people inside your own home. Look for ways to have fun. Consider getting an "accountability buddy" to help keep up with exercise. Engaging in a variety of relationships and sharing joint activities usually contributes to feelings of well-being. Technology can help, including the old-fashioned phone or video-conferencing. (See the GCBH Report on Social Engagement for a more thorough discussion of the importance of social engagement.)

5. Maintain a regular sleep schedule

Sticking to a good sleep schedule is important to preserving brain health. Yet the pandemic has exacerbated poor sleep hygiene, due to increased stress and less-structured routines. Focusing on habits that enable you to get 7-8 hours of quality sleep in a 24-hour period will help your mind cope better with emotional stresses and can help the body mount more effective immune responses. This is of particular importance to individuals with sleep disorders, such as sleep apnea. Making sure you get exposure to daylight and minimize screen time an hour before going to bed are among the routines that will help you maintain healthy sleep patterns. (See The Brain-Sleep Connection: GCBH Recommendations on Sleep and Brain Health. See also the Sleep Foundation's guide to sleep during COVID-19: <https://www.sleepfoundation.org/sleep-guidelines-covid-19-isolation>.)

6. Stimulate your brain

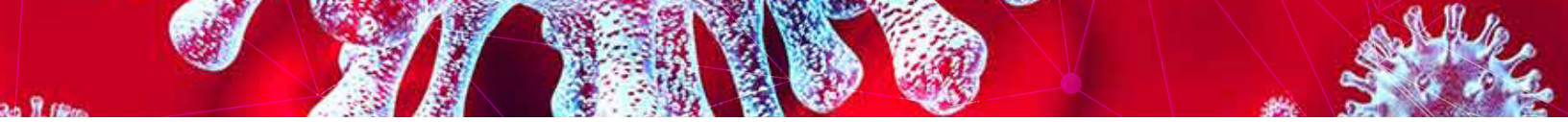
Cognitively stimulating activities are an important element of brain health and help reduce the risk of cognitive decline as we age. So it is important to find ways to incorporate enjoyable cognitively stimulating activities into our daily lives during the pandemic. (See Engage Your Brain: GCBH Recommendations on Cognitively Stimulating Activities.) Many such activities can be enjoyed individually (e.g., reading and crossword puzzles). Making or listening to music provides a great opportunity to stimulate your mind and elevate your mood, and can be done safely at home. Our most recent GCBH report, Music on Our Minds: The Rich Potential of Music to Promote Brain Health and Mental Well-Being was released months after the pandemic started, and its recommendations reflect the new normal of social distancing.

Other activities to stir the mind are usually done with other people (e.g., attending concerts or playing cards), presenting challenges during the pandemic. For these more social activities, technology can often help you adopt new and creative ways to engage safely.

7. Don't put off necessary medical appointments

U.S. life expectancy plunged in the first half of 2020 faster than any time since World War II, reflecting the tragic impact of COVID-19 and further illuminating its toll on communities of color. The news provides a stark reminder of the need to keep up with necessary medical care whenever possible, even if the pandemic has made it less convenient.

COVID-19 has increased demand for medical services for those directly infected with the virus. At the same time, it has induced individuals to reduce demand for otherwise necessary medical appointments, a development that may have played a role in the troubling data on life expectancy. For some, putting off elective appointments, procedures, and treatments may be appropriate, especially when local public health authorities issue relevant guidance. However, in general, to preserve one's health, including one's brain health, it is important to maintain medical appointments for routine check-ups and for ongoing health conditions. Similarly, in case of medical emergencies, such as stroke and heart attack, continue to reach out to your care providers, and call 911 as necessary. The risk of death and disability due to failure to



seek care is greater than the risk of exposure to the COVID infection while seeking appropriate medical care; today most hospitals have protocols in place to ensure safe care for all patients with or without the virus.

8. Take care of your mental health

The GCBH previously defined mental well-being as people's experiences of feeling good, functioning well, and coping adequately with life circumstances and challenges. Fortunately, there are things you can do to maintain this healthy mental state. Carve out time to unwind. Consider taking up a new hobby that can help you relax. Spend time outdoors appreciating the peace and beauty of nature. Take breaks from the stress of news and social media. (For further discussion see *Brain Health and Mental Well-Being: GCBH Recommendations on Feeling Good and Functioning Well*. See also Additional Resources at the end of this report.)

The pandemic has brought about dramatic shifts in lifestyle and economic situations that make it important to safeguard our mental wellness. For some, entire family units are home together all day, every day. For others, family units have been separated and kept apart. These changes have evoked many feelings, including stress, anxiety, and sadness. During these times riddled with uncertainty, it is important to recognize when such feelings begin to undermine mental health. Family, friends, and colleagues may be able to help individuals manage and cope. In other cases, support from professionals may be needed, and technology (like telehealth) can help make mental health care providers available. The National Alliance on Mental Illness has recommendations on dealing with COVID available here: <https://www.nami.org/Support-Education/NAMI-HelpLine/COVID-19-Information-and-Resources/COVID-19-Resource-and-Information-Guide>.

Significant long-term and unmanaged stress can lead to disastrous consequences, and there is concern that the impacts of COVID-19 on brain health may lead to mental health crises for some people. In Japan, suicide rates declined during the early months of the pandemic but then increased by 16% between July and October 2020, with larger increases among women, children, and adolescents. It is too early to understand the trends emerging around the world, which

appear varied at this stage, but vigilance is warranted. Appendix 6 is a list of resources for suicide prevention hotlines around the world.

9. Pay attention to signs of sudden confusion

Delirium has been consistently reported in patients with COVID-19 since the start of the pandemic. Delirium is a sudden state of confusion, characterized by altered levels of consciousness, disorientation, inattention, or other cognitive disturbances. In some patients, delirium is the primary or only symptom of illness in COVID-19 infected older adults presenting in hospital emergency rooms. Sudden onset of confusion at home can be a warning sign, but with individuals in greater social isolation during the pandemic, these warnings may go unobserved. If individuals experience medical conditions or interventions that put them at risk for delirium, including those related to COVID-19, it is as important as ever to regularly check on them.

If signs of confusion or related changes in mental health status or behavior are observed, contact a health care provider. (See *Preserving Your Brain Health During Illness or Surgery: GCBH Recommendations to Prevent and Treat Delirium*.)

10. Monitor changes in brain health

It is always important to pay attention to changes in neurological health, such as new problems in thinking and memory, as these can be signs of significant health conditions. It is especially important to monitor any such changes during the pandemic. COVID-19 is best known as a respiratory illness, but the disease can affect other parts of the body, including the brain, as outlined in this report. Headaches, dizziness, weakness, loss of taste or smell, signs of stroke, and seizures, and decreased alertness or confusion, even if intermittent, are among the neurological symptoms that can appear before other common symptoms of infection. Difficulty in thinking clearly or concentrating, sometimes called "brain fog," has been reported by individuals with COVID-19 or still recovering from it. A health care provider can help determine if any such changes warrant further medical attention.



A Final Note to our Recommendations: When to consult with your health care provider

If you think you may have been exposed to COVID-19, contact your health care provider. Keep track of any symptoms, and be aware of local COVID-19 trends where you live.

The CDC offers helpful guidance: <https://www.cdc.gov/coronavirus/2019-ncov/index.html>.

Please contact your health care provider to determine if taking the COVID-19 vaccine is right for you.

Finally, Tip 7 above bears repeating: Don't keep putting off your regular health care visits, and certainly don't delay

getting emergency care if you think you or someone you are caring for may need it. While we are worrying about the risk of COVID-19, we still need to try to prevent or treat other health issues. Physical, mental health, and disease screenings are very important to maintain your health during the pandemic. Carefully working with your health care provider to properly manage common diseases like hypertension, diabetes, and heart disease is extremely important for your short- and long-term brain health.



Knowledge Gaps

As noted above, the science is still developing around many questions related to the novel COVID-19 virus. While the primary purpose of this report is to make recommendations to individuals based on what we know now, we want to underscore to all of our readers the vital importance of investing in research to examine the direct and indirect impacts on brain health and mental well-being. We encourage readers to seek out enrolling in and advocating for studies. Some of the questions that need to be answered in the future include:

- What are the long-term effects of Covid-19 on brain health, structure, and function? Are there any interactions between COVID-19 and neurodegenerative or vascular pathologies?
- Do any treatments help with “brain fog?”
- Why are people with cognitive decline and dementia more vulnerable to COVID-19, and what can we do to improve outcomes for all people?
- Why do some people experience delirium and others do not?
- Why do some people experience long-term symptoms, the so-called “long haulers?”
- What interventions might mitigate effects of COVID-19 on the brain?
- Can we predict which COVID-19 patients will develop neuro-cognitive symptoms?
- How has the lack of ability to attend ceremonies, events, or cultural gatherings affected mental, emotional, spiritual aspects of brain health?
- How has the loss of in-person support services impacted brain health for the medically vulnerable, such as individuals living with dementia and those with developmental disorders?
- Have the virtual telehealth visits that some people have been able to access been as good or better at delivering needed health and social care?
- How will the pandemic impact long-term mental well-being, including mood stability and emotional stability for people of all ages?

The background of the entire page is a vibrant red. Overlaid on this are numerous virus-like particles, some appearing as small, spiky spheres and others as larger, more complex structures with multiple protruding arms. A network of thin, light blue lines connects small, semi-transparent blue dots, creating a web-like pattern across the red background.

Appendices

1. Participants, Liaisons, and List of Additional Resources
2. Process Used to Produce the Report
3. Disclosure Statement of Potential Conflicts of Interest
4. Funding
5. Selected References
6. Suicide Crisis Information
7. List and Links to Other GCBH Reports

1. Participants, Liaisons, and List of Additional Resources

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**Participation in this activity by these individuals does not necessarily represent the official viewpoint of the U.S. Department of Health and Human Services, the National Institutes of Health, or the National Institute on Aging.*



List of Additional Resources

For Caregivers:

- Alzheimer's Association – [Coronavirus \(COVID-19\): Tips for Dementia Caregivers](#)
- Johns Hopkins Medicine – [Covid-19 Resources for Dementia Caregivers](#)
- National Institute on Aging (NIA) – [Government COVID-19 resources for older adults](#)
- IDEAL Programme – [Improving the experience of dementia and enhancing active life](#)
- Family Caregiver Alliance – [Coronavirus Resources and Articles for Family Caregivers](#)

COVID and the Brain:

- Johns Hopkins Medicine – [How Does Coronavirus Affect the Brain?](#)
- National Institute on Aging (NIA) – [NIA COVID-19 Response](#)
- University of California, San Francisco (UCSF) – [10 Tips for Brain Health while Social Distancing](#)

COVID Symptoms:

- National Institutes of Health (NIH) – [NIH Launches Database to Track Neurological Symptoms Associated with COVID-19](#)
- Centers for Disease Control and Prevention (CDC) – [What to Do If You Are Sick](#)

Dementia Care Guidance:

- IDEAL Programme – [COVID-19 Dementia Initiative](#)
- CDC – [Caring for People Living with Dementia](#)
- Alzheimer's Association – [Guidance for Professionals](#)
- Alzheimer's Disease International – [Advice and Resources](#)

Self-Care During Pandemic:

- Centers for Disease Control and Prevention (CDC) – [Coping with Stress](#)
- World Health Organization (WHO) – [Healthy At Home](#)
- U.S. Department of Health and Human Services (HHS) – [Combat COVID](#)
- IDEAL Programme – [How to Stay Well During the Coronavirus Outbreak](#)

Other Resources:

- Centers for Disease Control and Prevention (CDC) – [People at Increased Risk](#)
- American Diabetes Association – [How COVID-19 Impacts People with Diabetes](#)
- American Heart Association – [COVID-19 Resources](#)
- Know Stroke – [Know Stroke Brochure](#)
- U.S. Department of Health & Human Services – [National Alzheimer's Project Act](#)



2. Process Used to Produce the Report

This paper is not the usual consensus report created by the GCBH. Rather, we developed it through an expedited process, based on the urgency of providing helpful information to older adults and those that care for them and the reality that we could not meet in person during the pandemic. In preparing this report, we were mindful that the science on COVID-19 and brain health is only just developing. The Governance Committee members issuing these recommendations are independent health experts representing diverse, relevant expertise across three continents in the fields of epidemiology, psychology, public health, neurology, psychiatry, geriatrics, cognitive neuroscience, neuropsychology, pharmacology, medical ethics, health policy, and neurodegeneration. The Governance Committee formulated the content for the first draft, which staff prepared at their direction.

Four issue specialists were selected to participate on the GCBH panel on COVID and brain health because they particularly focused on mental health issues, delirium, and

medical care as it relates to COVID and older adults. The Governance Committee met virtually with them to discuss the state of the science as of early February 2021. The experts considered the draft along with the cumulative body of evidence thus far to determine whether it was sufficient to issue recommendations for individuals to maintain and improve brain health during the pandemic. After the discussion and an exchange and refinement of drafts, the Governance Committee made 10 recommendations regarding COVID-19 and brain health for older adults.

Liaisons from civic and non-profit organizations with relevant expertise in brain health provided helpful input and technical feedback during the refinement of the draft recommendations.

The Governance Committee reviewed and finalized the document during subsequent email exchanges and approved the special report on March 3, 2021.

3. Disclosure Statement of Potential Conflicts of Interest

Seventeen of the GCBH experts — all of the issue specialists and governance committee members — participating in the formulation of this report were asked to disclose potential conflicts of interest. Fifteen attested they had no conflicts of interest. Dr. Petersen disclosed consulting with several pharmaceutical companies. Dr. Yaffe disclosed serving on

a data and safety monitoring board for a pharmaceutical company. The authors are unaware of any affiliation of the experts that affected the objectivity of this paper and its recommendations. These disclosures are available upon request by contacting GCBH staff.

4. Funding

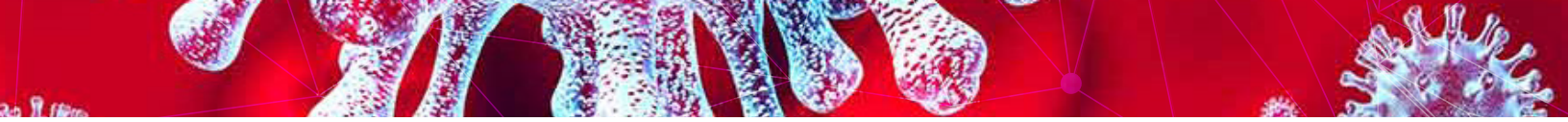
AARP provided the funding and staffing for the convening of the panel discussion and formulation of this recommendation paper. AARP provided modest honoraria for the experts

participating on the panel. Liaisons did not receive reimbursement or honoraria.

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6. Suicide Crisis Information



United States

National Suicide Prevention Lifeline

(suicidepreventionlifeline.org) is a 24-hour, free and confidential hotline available to anyone in suicidal crisis or emotional distress.

Dial 1-800-273-TALK (8255)

Spanish-speaking counselors are available, as well as options for deaf and hard of hearing individuals.

Canada

Canada Suicide Prevention Service (crisisservicescanada.ca)

is a nationwide suicide prevention service offering 24-hour, free support.

Dial 1-833-456-4566

French phone support is available.

United Kingdom

Samaritans (samaritans.org) is a 24/7, toll-free crisis line that provides emotional support to anyone in distress or at risk of suicide throughout the UK.

Dial 116 123

Europe

European Alliance Against Depression provides telephone numbers and websites for individual European countries.

Visit www.eaad.net/help.

Other Countries

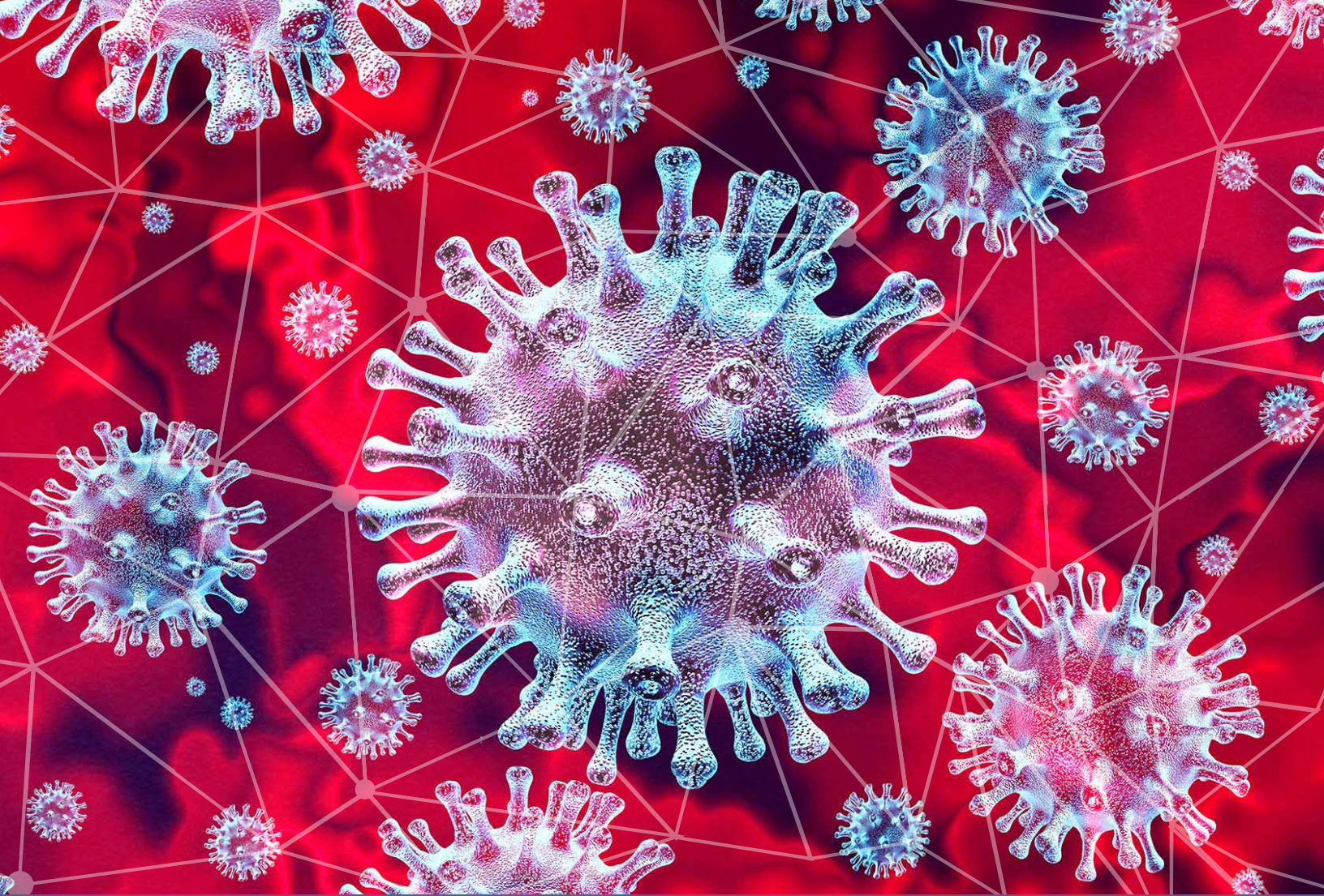
For a list of worldwide suicide crisis lines, see wikipedia.org/wiki/List_of_suicide_crisis_lines

See Also – **World Health Organization** suicide prevention resources: www.who.int/health-topics/suicide

7. List and Links to Other GCBH Reports

All reports are available for download at GlobalCouncilonBrainHealth.org.

- Brain Activities: [“Engage Your Brain: GCBH Recommendations on Cognitively Stimulating Activities”](#)
- Cardiovascular Risks: [“The Brain-Heart Connection: GCBH Recommendations to Manage Cardiovascular Risks to Brain Health”](#)
- Delirium: [“Preserving Your Brain Health During Illness or Surgery: GCBH Recommendations to Prevent and Treat Delirium”](#)
- Exercise: [“The Brain-Body Connection: GCBH Recommendations on Physical Activity and Brain Health”](#)
- Mental Well-Being: [“Brain Health and Mental Well-Being: GCBH Recommendations on Feeling Good and Functioning Well”](#)
- Music: [“Music on Our Minds: The Rich Potential of Music to Promote Brain Health and Mental Well-Being”](#)
- Nutrition: [“Brain Food: GCBH Recommendations on Nourishing Your Brain Health”](#)
- Sleep: [“The Brain Sleep Connection: GCBH Recommendations on Sleep and Brain Health”](#)
- Social Engagement: [“The Brain and Social Connectedness: Recommendations on Social Engagement and Brain Health”](#)
- Supplements: [“The Real Deal on Brain Health Supplements: GCBH Recommendations on Vitamins, Minerals, and Other Dietary Supplements”](#)



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