

BHI COVID-19 Neurologic and Mental Health Call to Action Summary

The coronavirus (COVID-19) pandemic, and the extreme measures implemented to reduce its spread, will have short-term and long-term consequences for brain health and illness here in Florida and across the globe. The virus, and the fear of it, as well as the pandemic experience not only affects the direct health of adults and children, but also every aspect of how residents of the region live, learn, work, and play.

The Brain Health Initiative (BHI) is an initiative headquartered in Lakewood Ranch, Florida dedicated to promoting and protecting brain health, increasing performance outcomes, and fighting brain illness across the lifespan throughout the Suncoast region and beyond. BHI is led by scientific and clinical experts from Massachusetts General Hospital, a Harvard Medical School Teaching Hospital. To increase patient outcomes and address the urgent and critical need to understand the brain health impacts of COVID-19, we propose the execution of a COVID-19 neurologic and mental health **public health campaign** and a short 15-question self-report symptom **screeener** to be added to intake forms completed by persons being screened for COVID-19 throughout the state of Florida. *The statewide public health campaign and the BHI COVID-19 Neurologic and Mental Health Symptom Screener have the potential to decrease the spread of COVID-19, inform treatment, improve patient outcomes—perhaps saving lives, decrease healthcare burden including associated costs of care, and provide valuable data for researchers worldwide, now and in the future, illuminating a spotlight on the region and the state of Florida as a leader in life sciences working together with Massachusetts General Hospital and Harvard Medical School related to brain health and brain illness.*

As cases of COVID-19 continue in Florida and throughout the country, emerging research indicates that a significant subset of those afflicted by the virus may experience symptoms more congruent with neurologic disorders than with respiratory illness as their first signs of the infection. These symptoms include changes in sense of tastes or smell, dizziness, numbness in the extremities, lack of coordination, or altered states of consciousness, and may indicate that the virus has compromised the patient’s central nervous system.^{1-6,16} Detection of these symptoms – when noted as early as possible in the course of assessment for the virus – can shape the course of treatment and may lead to improved patient outcomes and perhaps save lives.³ Improved outcomes reduce overall health care burden, including hospital expenditures, while early detection of symptoms may decrease the spread of the virus, pro-actively relieving healthcare-systems overburdened by patients.

The *BHI COVID-19 Neurologic and Mental Health Symptom Screener* contains seven questions based on neurologic symptoms reported in the scientific literature by clinicians in China, Italy, the UK, South Korea, France, and the US, who have been working with large numbers of affected patients. Eight additional questions related to mental health symptoms shown to impact the primary pulmonary conditions of the virus are also included. Research indicates that mental health symptoms could have consequences for treatment and outcome of the coronavirus as well. These

items include, but are not limited to, depressive symptoms,⁷ post-traumatic stress (PTS),⁸ and increased alcohol⁹ and drug use.¹⁰

The ***BHI COVID-19 Neurologic and Mental Health Public Health Campaign and Symptom Screener*** serves two major functions:

- **Clinical Information.** First, although the proposed **screeener** is *not* meant to be used as a diagnostic tool, combined with a **public health campaign** it will provide valuable clinical information.

- **Neurologic**

For example, in published scientific reports, a substantial percentage of patients have presented with anosmia (loss of smell) before displaying typical symptoms of the virus.⁶ A study of over 2 million participants from the U.K. and U.S. who tracked their symptoms on a smart-phone app revealed that more than 65% of those who eventually tested positive for the coronavirus reported a loss of smell and taste.¹⁶ If identified by a screener, these patients can be warned to self-isolate before infecting others, thus potentially reducing the number of infected individuals in the community. In the first large study of neurologic symptoms related to COVID-19,⁵ researchers found that one-third of the 214 study patients displayed neurologic symptoms and that these cases tended to be more severe than those without neurologic symptoms. Additional reports indicate that CNS involvement can lead to severe complications, such as stroke and Guillain-Barré Syndrome.^{11-12,17} If these reports are true, early identification of such cases can lead to earlier treatment and perhaps save lives. The Centers for Disease Control and Prevention (CDC) has now updated its guidelines to include five of the seven neurologic symptoms from the proposed BHI screener as warning signs for the coronavirus. Three neurologic symptoms, including muscle pain and new loss of smell or loss of taste, are considered priorities for COVID 19 testing, while confusion has been added as emergency COVID 19 warning sign.¹⁵

- **Mental Health**

Further, the mental health consequences of COVID-19 and the relationship between mental health symptoms and COVID-19 symptomatology and illness course remain critically overlooked and poorly understood within the global COVID-19 response. Early evidence suggests that patients with COVID-19 are vulnerable to symptoms of depression, anxiety, and post-traumatic stress. Patients with mental health symptoms may be at heightened risk for COVID-19, and COVID-19 may lead to a worsening of pre-existing mental health symptoms. Given the critical reciprocal nature of mental and physical health, we are confident that mental health factors have the potential to shape the recovery process from COVID-19 and to contribute to the morbidity and mortality associated with COVID-19. Because of the heightened vulnerability to COVID-19 of those with mental health symptoms, it is imperative that patients being tested for COVID-19 be screened for psychological distress so that they can be provided mental

health services when possible. Further, research has noted that those patients diagnosed with pulmonary virus who attest to heavy alcohol or drug use are at higher risk for requiring mechanical ventilation.¹³ Patient screening on alcohol or drug use may thus inform early treatment options for health care providers. Understanding the effect of COVID-19 on patient's risk of anxiety, depression and other outcomes, such as self-harm and suicide are clinical imperatives as these symptoms often slow down the recovery process and are risk factors for morbidity and mortality.¹⁴ Identifying these symptoms early will have the most impact on patient outcomes.

- **Research Data.** Second, the proposed screener will provide valuable data that - when combined with patient data on COVID-19 test outcomes, progression of illness, and recovery - can enable scientists to make urgent new discoveries. The opportunity to collect data across multiple regions/systems throughout the state and contribute to the COVID 19 global knowledge base holds great potential to answer many essential research questions. Research questions that may be answered include, but are not limited to: What percentage of cases include neurologic and mental health symptoms? Does early identification of these symptoms flatten the curve and improve outcome? Are there differences in incidence or sequence of presentation of symptoms in different regions of the state and county? Are neurologic symptoms associated with greater depressive and post-traumatic stress symptoms? Does COVID-19 increase risk of future degenerative disorders, hasten progression in patients previously diagnosed with dementia, or intensify cognitive symptoms? How many people who present for testing are reporting increased alcohol and drug consumption? Which individuals would benefit from early neurologic and psychosocial interventions to optimize recovery and improve neurologic and mental health? At what point in recovery do neurologic symptoms remit and mental health improve? Answers to these and many other questions will not only benefit the state but will contribute to the challenge for quality research¹⁴ to be incorporated into the COVID 19 global knowledge base. All of the data analyzed by our team will be de-identified to protect individual privacy.

In closing, a statewide public health campaign and screener can benefit the state in several areas. The added patient information may inform treatment. This has the potential to decrease the spread, optimize recovery, shorten hospital stays, reduce burden of care including associated costs, and proactively link patients with neurologic and mental health services, as needed. In addition to the immediate and potentially life-saving benefits of early reporting of such symptoms, examining the relationship between these symptoms to the course of the disease and patient recovery afterwards could be **crucial** to understanding and addressing the brain health of the community going forward.

This effort will illuminate a spotlight on the state of Florida as a leader in life sciences working together with Massachusetts General Hospital and Harvard Medical School related to improving brain health and brain illness outcomes for our residents and serving as a model for others to follow.

The timely implementation of The *BHI Neurologic and Mental Health Public Health Campaign and COVID-19 Symptom Screener* throughout the state is a vital opportunity for early detection and treatment optimization, with the potential to be replicated on a national and global scale. We seek your collaboration to discover and understand the as-yet unknown consequences of COVID-19 on the brain health of our state – and beyond.

For more information, please contact Dr. Stephanie Peabody, Founder and Executive Director Brain Health Initiative: Peabody2@fas.harvard.edu.

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About the Brain Health Initiative (www.brainhealthinitiative.org)

The Brain Health Initiative (BHI) is a cutting-edge, new approach to protecting brain health and fighting brain illness across the lifespan. The BHI works collaboratively with Massachusetts General Hospital, a Harvard Medical School Teaching Hospital, and the Academy for Brain Health and Performance to build brain healthy communities through education, research, innovation and action, with solutions that focus on *brain health promotion, prevention, early detection, evidence-based intervention, and performance optimization*. The BHI is creating a culture that promotes increased brain health protective factors and decreased risk factors, thereby improving brain health and optimizing brain performance outcomes for the Florida Suncoast region and beyond.