# COVID-19 and Cognitive Impairment

Much has been learned about SARS-CoV-2, the virus that causes the novel coronavirus, since the beginning of the COVID-19 pandemic. However, questions remain about the long-term impact of the virus on our bodies and brains. In addition to the respiratory and gastrointestinal symptoms that accompany COVID-19, some people with the virus may experience short- and/or long-term neuropsychiatric symptoms, including loss of smell and taste, and changes in their cognition (including memory, thinking and reason) and their ability to maintain attention. For some, these neurological symptoms persist. Researchers are working to understand who may experience these symptoms and why; the mechanisms by which COVID-19 infection causes these symptoms; and what this may mean for a person's long-term cognitive health.

**Scientific Leaders Evaluating Long-Term Impact of COVID-19 on the Brain**
Scientific leaders, including the Alzheimer's Association and representatives from nearly 40 countries — with technical guidance from the World Health Organization (WHO) — are part of an international, multidisciplinary consortium to collect and evaluate the long-term consequences of COVID-19 on the central nervous system, as well as the differences across countries.

Initial findings from this consortium presented at the Alzheimer's Association International Conference® (AAIC®) 2021 include:

- Data from Greece and Argentina suggests that older adults frequently experience persistent cognitive impairment, including persistent lack of smell, after recovery from COVID-19 infection.
- Experiencing neurological symptoms of COVID-19 is strongly correlated with biological markers of brain injury, neuroinflammation and Alzheimer's disease.

These new data point to trends that suggest some individuals may experience lasting cognitive impairment and may even be at a higher risk of developing Alzheimer's disease following a COVID-19 infection, but more research is needed as to who may be affected and why, as well as the mechanisms that connect COVID-19 and cognition.

**Ongoing Research on How COVID-19 May Affect Cognition and Behavior**
A study published in the October 22, 2021, issue of *JAMA Network Open* reported that a high rate of the 740 people in the study (average age was 49) who had COVID-19 experienced cognitive impairment several months after they contracted the virus. Half of these individuals were treated in the outpatient setting, while 27% had been hospitalized and 22% were treated in the emergency department.

A high rate of individuals in the study reported having trouble with their memory nearly eight months after a COVID-19 infection. The researchers found that 23% of those in the study had difficulties with memory recall, 20% with category fluency (producing words from a category within a given time), 18% with processing speed (the time it takes a person to do a mental task), 16% with executive functioning (thinking skills that involve working memory, flexible thinking and self-control), and 15% with phonemic fluency (tasks that require search, access, selection, retrieval and pronunciation of as many words as possible in a restricted time).

**Treatment of Cognitive Impairment After COVID-19**
On December 14, 2021, the American Academy of Physical Medicine and Rehabilitation released shared guidance for clinicians treating individuals experiencing cognitive symptoms after recovering from COVID-19, titled Multi-Disciplinary Collaborative Consensus Guidance Statement on the Assessment and Treatment of Cognitive Symptoms in Patients with Post-Acute Sequelae of SARS-CoV-2 infection (PASC).

The guidance suggests that clinicians perform a neurocognitive test using one or more of the standardized cognitive screening assessments, such as the Mini Mental Status Examination (MMSE). A referral to a neurocognitive rehabilitation specialist or neuropsychologist may be necessary for a more formal or specific assessment.
It also suggests that clinicians perform a routine neurological physical examination and rule out metabolic abnormalities that may contribute to cognitive symptoms.

Clinicians who are considering prescribing medications or supplements to treat symptoms should do so on a case-by-case basis, recognizing the limited scientific evidence for their use to treat symptoms related to COVID-19 infection.
Rehabilitation strategies that may be beneficial for individuals with cognitive issues include dividing up a longer task into small increments with breaks along the way. For memory and organization issues, the individual can take notes, use a planner or phone app to record information, and set electronic reminders. Other tactics include

reducing screen time, proper sleep maintenance, managing stress and increasing physical activity over time.

**References:**

Becker JH, Lin JJ, Doernberg M, et al. Assessment of Cognitive Function in Patients After COVID-19 Infection. *JAMA Netw Open.* 2021;4(10):e2130645. doi:10.1001/jamanetworkopen.2021.30645.

Fine JS, Ambrose AF, Didehbani N, et al. Multi-disciplinary collaborative consensus guidance statement on the assessment and treatment of cognitive impairment in post-acute sequelae of SARS-CoV-2 infection (PASC) patients. AAPR PM&R. December 13, 2021. https://doi.org/10.1002/pmrj.12745.

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