COVID-19 Impact on the Brain and Psyche

Attribute to: Eric Larson, PhD, Director of Psychology & Brain Injury at Marianjoy Rehabilitation Hospital, a part of Northwestern Medicine

What are the neurocognitive impacts of COVID-19?

Mental fatigue and mild loss of concentration are frequently reported by people with COVID-19. This presentation is similar to that observed in other viral illnesses that usually do not involve any direct infection of the central nervous system. More severe cognitive impairment is reported in those with secondary illness such as stroke, which has been reported even in younger COVID patients and is believed to result from coagulopathy caused by SARS-CoV-2. Encephalopathy is observed after extubation, possibly due to lingering effects of sedation and possibly due to the effects of mechanical ventilation. This often resolves over a period of days but can sometimes persist for weeks or even months. Encephalopathy can be further exacerbated by bacterial infection, which can develop during ventilation. So far there are relatively few reports of meningitis / encephalitis associated with SARS-CoV-2, although it is possible more reports of direct infection will emerge over time, similar to previous coronavirus outbreaks (e.g., the SARS-CoV-1 outbreak in 2003 and the Middle East Respiratory Syndrome outbreak in 2012).

Is there a patient population that is more likely to experiences neurocognitive impacts?

Early reports showed that the most severe cases of COVID-19 were the most likely to develop neurological symptoms. Risk factors for neurocognitive symptoms in those cases are similar to other populations with acute respiratory distress syndrome. Those risk factors include pre-existing diagnoses such as dementia, subarachnoid hemorrhage and epilepsy. Increased risk of neurocognitive effects is also associated with pathophysiological events during acute care, such as hypoxemia, hypoperfusion and inflammatory response. Finally, further increase in risk is observed when management during acute care includes sedation, mechanical ventilation and complications such as delirium.

What types of therapy are used to treat neurocognitive impacts of COVID-19?

In neurorehabilitation programs, interdisciplinary care of COVID-19 patients begins with medication management, which may target alertness, sleep problems and behavior disturbance. Allied health interventions including speech therapy, occupational therapy and physical therapy targeting functional impairment in an attempt to improve independent self-
The role of nursing evolves from custodial care to intensive education of patients and their families to prepare for the return home. Rehabilitation psychologists focus especially on emotional adjustment to the loss of autonomy and management of associated depression and anxiety.

**What is the long-term prognosis for these patients?**

Early reports are encouraging that many COVID-19 patients will eventually make a full recovery and will be able to return to the roles they had prior to illness onset. Our experience with similar diseases in recent years raises concern that some survivors will experience lasting disability, although the frequency of poor outcome is unknown since there are some aspects of COVID-19 that are unique. Ongoing monitoring of this first cohort of survivors will give us better understanding of prognosis of future cases.

**What psychological impacts are patients facing?**

Because sedation affects recall, the traumatic experiences of individuals with severe cases may not result in a protracted stress response. Those who remain conscious and alert may experience anxiety about their prognosis, especially when they become aware of the extent of their physical debility. This often remits as patients regain their strength and stamina during rehabilitation. Those who are separated from their families during a prolonged hospital stay are at risk for depression, especially given the quarantine that prohibits contact with visitors, although this also resolves on discharge home. Those with permanent disability are confronted with adjustment issues that remain after discharge and which may require outpatient psychotherapy. This experience is similar to that of other populations (e.g., people with stroke, brain injury, spinal cord injury) who have faced a sudden loss of independence. One different aspect of the present illness is its impact on the livelihoods of not only the patients, but their families and society as a whole. Patients’ resilience to the effects of their illness may be mediated by the resilience of their families and their communities to social and economic disruption.