

# Assessing common and potentially modifiable symptoms of post-COVID-19 condition (long COVID) in adults

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## 1 Fatigue is the most common symptom of long COVID

Fatigue is associated with diminished activity tolerance and postexertional malaise and symptom exacerbation. Providers should assess its frequency, severity, duration, impact, and alleviating and exacerbating factors (physical, cognitive and psychological), as well as sleep hygiene and effect on daily activities. To rule out other causes, a comprehensive history, physical examination and routine bloodwork including hemoglobin and thyroid-stimulating hormone are important.<sup>1</sup>

## 2 People with long COVID frequently experience anxiety or depression

It is important to validate a person's psychological experience during long COVID and screen for symptoms of anxiety and depression, which are common. Providers should explore isolation, stress and any underlying drivers of psychological symptoms, with a focus on potential impairment in function.<sup>1</sup>

## 3 Assessment of dyspnea on exertion should explore a physical examination and oxygen saturation monitoring during a walk test<sup>2</sup>

In people with normoxia and mild acute illness, dyspnea may be due to weak respiratory muscles and cardiac or noncardiac diseases. A limited set of routine investigations, in addition to pulmonary function and natriuretic peptide tests, may be useful in differentiating people with post-viral reactive airway disease from weak respiratory muscles and cardiac disease. For more severe dyspnea, residual lung abnormalities (e.g., fibrosis) or cardiac disease may explain the dyspnea requiring specific investigations, such as chest radiograph, echocardiography and a 6-minute walk test.<sup>2</sup>

## 4 Evaluation of sleep disturbances should explore sleep pattern, duration, quality, frequency of awakenings and whether the person feels refreshed after waking

Special attention needs to be paid to the use of alcohol, cannabis, caffeine and sleep medications by people with long COVID. Severe acute illness may warrant a sleep study as the need for supplemental oxygen owing to nocturnal hypoxemia was reported in 6.6% of people who were admitted to hospital 60 days after acute COVID-19, which may persist beyond 90 days.<sup>3</sup>

## 5 Investigation of palpitations should include orthostatic vital signs and a 12-lead electrocardiogram

Cardiac dysautonomia has been associated with long COVID.<sup>4</sup> Postural orthostatic tachycardia syndrome can be diagnosed with orthostatic vital signs and a 10-minute stand test.<sup>5</sup> Holter monitoring may help distinguish inappropriate sinus tachycardia (the most common arrhythmia associated with long COVID) from other arrhythmias.<sup>5</sup>

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**Competing interests:** Kieran Quinn is a former assistant scientific director of the Ontario COVID-19 Science Advisory Table from Aug. 8, 2022, to Sept. 30, 2022. He is the current assistant scientific director of the Ontario Public Health Emergencies Science Advisory Committee and has received Canadian Institutes of Health Research (CIHR) grants (awarded to his institution) to study the long-term effects of COVID-19. He has served as an advisor for the chief science advisor of the Canada Task Force on Post-COVID-19 Condition. Fahad Razak holds a salary award as the Graham Farquharson knowledge translation fellow from the PSI Foundation and is an employee of Ontario Health. He was also an employee of Public Health Ontario during the writing of this manuscript. Fahad Razak has received grants (outside the current article) to study COVID-19 from the CIHR, Canadian Frailty Network, University of Toronto (including the Department of Medicine, St. Michael's Hospital and the Sunnybrook Health Sciences Centre), Digital Research Alliance of Canada (Data Champions Pilot Project) and Royal College of Physicians and Surgeons of Canada. Angela Cheung has received CIHR grants (awarded to her institution) for CANCOV (platform observational study of COVID-19 in Canada) and RECLAIM (adaptive platform randomized controlled trials for long COVID interventions). MediciNova is providing a study drug and placebo for the RECLAIM trial, a multicentre study across Canada. Angela Cheung has served as an advisor for the Ontario COVID-19 Science Advisory Table, Public Health Agency of Canada, Canadian Agency for Drugs and Technologies in Health, COVID-19 Immunity Task Force and chief science advisor of the Canada Task Force on Post-COVID-19 Condition. No other competing interests were declared.

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