

The coronavirus pandemic has caused over 46¹ million confirmed cases worldwide and over 9 million in the United States.² As these figures are based on manual case-reports the actual case number is likely many times higher.^(3, 4, 5)

By the time an effective vaccine is available there could be over 50 million total cases of COVID-19 in the United States alone. This estimate assumes it is several more months to an effective vaccine and that the real number of cases is five times^{6, 7} the reported cases. The number of people at risk for severe illness, should they become infected with COVID-19, is estimated over 1 billion persons.⁸

There are several reasons to believe one complication people with COVID-19 risk is the development of long term post-viral diseases, including Myalgic Encephalomyelitis. A Canadian study of a closely related virus, SARS-CoV-1, found that ~10% of survivors had symptoms of myalgias, diffuse pain, rapid fatigability and non-restorative sleep with loss of function.⁹ Another SARS-1 follow-up found 27% of survivors met a broad CDC definition for Chronic Fatigue Syndrome.¹⁰ Infection with flu viruses¹¹ has also been found to increase the risk of developing Myalgic Encephalomyelitis.*

It is clear steps should be taken now while, for many, prevention remains a viable option.

Based on the experience of patients with ME, there may be many post-COVID-19 patients with no apparent organ damage yet having devastating symptoms: loss of cognitive ability, impaired sleep, widespread pain, autonomic system dysfunction and near-total loss of function.

We propose longitudinal studies large enough to include a substantial number of people with debilitating general symptoms after clearance of the coronavirus. Objectives should be to determine the nature, frequency, and pathological development of this illness(es)—including the relation to Myalgic Encephalomyelitis (as defined by a homogeneous criteria, e.g. International or Canadian Definition). Biological samples, symptoms and physical examinations should be assessed at set points so the process of chronic illness development after acute COVID-19 infection can be understood.

Secondly, population studies, designed to assess the frequency of long-term illness post-COVID-19, should be immediately undertaken. These studies should evaluate what symptoms and biological signs are characteristically present, their frequency, and which serve as risk factors for Myalgic Encephalomyelitis in survivors of COVID-19. Those studies now underway should be financially supported.¹²

Thirdly, current or upcoming longitudinal studies of COVID-19 patients should be provided resources to catalogue the incidence (and any co-occurring abnormalities) of ME, as defined by the International or Canadian Criteria, in their patients in a uniform manner.¹³ ME expert clinicians can and should be consulted to help with this effort.

During this pandemic attention has justly been focused on acute illness –however the specter of post-infectious Myalgic Encephalomyelitis would be ignored at our peril. Prompt investigation

now will provide the best opportunity to learn how to prevent ME in victims of acute infection and to understand and cure ME for the many persons for whom prevention is too late.

* Multiple pathogens have been shown to trigger either Myalgic Encephalomyelitis or a post-viral fatigue syndrome following acute infection. ^{14, 15,16}

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