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## The neurological impact of COVID-19

Since WHO declared COVID-19 as a “Public Health Emergency of International Concern” on January 30, 2020, neurologists’ lives have changed in many ways. Now—almost 4 months later—the impact of COVID-19 on neurological services and patients is profound. COVID-19 and mandatory social distancing have forced neurology practices worldwide to dramatically reshape their delivery of care. Simultaneously, non-urgent surgical procedures and medical appointments have been cancelled to increase bed capacity and care for patients with the infection, while many neurologists have had to leave their clinics to help other physicians on the frontlines. As the full clinical spectrum of COVID-19 continues to be described, preliminary findings from case reports and case series have uncovered neurological complications. An important step will be to get a better understanding of the acute and post-infectious neurological manifestations of COVID-19 to guide long-term management and health service reorganisation.

Therapeutic decision making requires awareness and recognition of neurological manifestations. However, for patients with COVID-19, much is still unknown about the neurological complications (eg, their frequency, accurate characteristics, pathophysiology, risk factors, and prognosis), and regional differences in the disease course and outcomes are likely. Besides, while there is evidence suggesting that comorbidities such as hypertension increase the severity of COVID-19, less is known on the risk for patients with neurological disorders.

To accelerate research into the diagnosis, prevention, and treatment of the neurological complications of COVID-19, several initiatives are underway. Some of them are announced by their members in *The Lancet Neurology*. For example, a call for researchers to join an inclusive and collaborative global COVID-19 Neuro Research Coalition has been launched. Potential aims of this Coalition are to build on and link existing international neurology partnerships, and to harmonise methods for neurological research related to COVID-19.

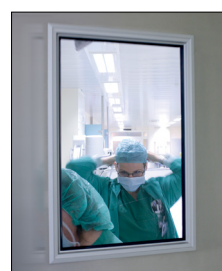
Joint efforts are essential to gather the urgently needed clinical data to develop specific treatment guidelines. For example, a worldwide consortium—the Global Consortium Study of Neurological Dysfunction in COVID-19—that now includes more than 100 centres coordinates three studies to better understand the possible impact of COVID-19 on

the brain. The European Academy of Neurology (EAN) has launched a registry to collect standardised information about demographics, comorbidities, general and neurological manifestations, disease course, and outcome of patients with COVID-19. This registry was created in collaboration with Italian, Portuguese, and Spanish neurological societies which have already launched similar registries at national level. Such registries also exist for individual neurological disorders (eg, multiple sclerosis). The Environmental Neurology Specialty Group of the World Federation of Neurology is committed to provide links to all these registries and make the collected data freely available on its website.

Neurological researchers are not the only ones racing to understand COVID-19, and numerous projects are starting to take shape. An interesting research initiative, the COVID Human Genetic Effort, set up at the Rockefeller University in New York (NY, USA), might uncover relevant findings for neurologists. The initiative aims to identify genetic mutations that make some people highly vulnerable to infection by assessing the genomes of previously healthy patients younger than 50 years who have had severe COVID-19. It is well known that inborn errors of single genes can underly herpes simplex encephalitis; hence, genetic susceptibility might be also behind the severe neurological complications caused by SARS-CoV-2.

COVID-19 will very likely have a long-term impact on the management of patients with neurological disorders. Traditionally, the neurological diagnostic and treatment approach has been face-to-face. However, to protect both patients and health-care professionals, alternative means of care are urgently needed. Bloem and colleagues’ Personal View on how to reshape care of chronic neurological patients by use of Parkinson’s disease as an example is well timed. Although the proposed integrated care model with a patient-centred perspective might not be easily generalised owing to differences between healthcare systems, it nevertheless has initiated discussions on the future of neurological services.

Never before have international efforts and collaborations been so important. While it will take time to fully understand the neurological manifestations of COVID-19, collecting and sharing of data as well as a critical appraisal of the evidence will improve care of neurological patients, now and beyond the pandemic. ■ *The Lancet Neurology*



Arctic Images

For an example of potential neurological manifestations and SARS-CoV-2 see [Correspondence Lancet Neurol 2020; 19: 383–84](#)

For a case series of multiple sclerosis and SARS-CoV-2 see [Correspondence](#) page 481

For more on the COVID-19 Neuro Research Coalition see [Correspondence](#) page 482

For more on the COVID-19 related neurological research studies see <https://www.neurocriticalcare.org/resources/covid19>

For more on the EAN initiative see [Correspondence](#) page 482

For the COVID-19 related EAN registry see <https://forms.gle/xBbnwqjRTxvQnuzj7>

For more on the World Federation of Neurology initiative see [Correspondence](#) page 484

For the COVID Human Genetic Effort project see [www.covidhge.com](http://www.covidhge.com)

For more on inborn errors of immunity to herpes viruses see [Curr Opin Immunol 2020; 62: 106–22](#)

For more on integrative care of neurological patients see [Lancet Neurol 2020; published online May 25. \[https://doi.org/10.1016/S1474-4422\\(20\\)30064-8\]\(https://doi.org/10.1016/S1474-4422\(20\)30064-8\)](#)

For the challenges of the integrated care model see [Lancet Neurol 2020; published online May 25. \[https://doi.org/10.1016/S1474-4422\\(20\\)30157-5\]\(https://doi.org/10.1016/S1474-4422\(20\)30157-5\)](#)