

Movement Disorders in the World of COVID-19

A. Jon Stoessl, CM, MD, FRCPC,^{1*}  Kailash P. Bhatia, FRCP, MD,² and Marcelo Merello, MD, PhD³

¹*Pacific Parkinson's Research Centre & Djavad Mowafaghian Centre for Brain Health, University of British Columbia, Vancouver, BC, Columbia*

²*Department of Clinical and Movement Neurosciences, UCL Queen Square Institute of Neurology, London, United Kingdom*

³*Raul Carrea Institute of Neurological Research, Movement Disorders Unit, FLENI, Ciudad Autónoma de Buenos Aires, Argentina*

In a few weeks, our world has become a very different place. Those things that we took for granted have been severely disrupted, and, suddenly, we all fear for our own mortality and health of our loved ones.

For those involved in patient care, there are additional challenges. Fortunately, there is to date no evidence that our movement disorders patients are at increased risk of coronavirus infection, compared to individuals of comparable age and with similar comorbidities. Nevertheless, patients with chronic neurological disease are, in general, more susceptible to the effects of serious infection of any kind, perhaps particularly respiratory illness, and even more so if this is compounded by involvement of central respiratory centers, as may be the case for SARS-CoV-2. Emerging guidelines on access to intensive unit care and mechanical ventilation in some countries are excluding access to patients with “very advanced neurological disease.” This is clearly a fine line to walk that is ethically challenging, but may nonetheless be necessary if limited resources mean that access to advanced care is not available to all. At this point, there is no justification to impose a blanket restriction on patients with Parkinson's disease (PD), but difficult decisions may need to be made on an individual basis.

From a practical perspective, the more widespread challenge is that of providing adequate ongoing care for our patients in the face of the critically necessary self-isolation and social distancing precautions that are

now enforced on a virtually global level. In developed countries and for patients with adequate resources, there has been widespread and rapid adoption of telehealth technology that should have perhaps been considered and more widely embraced some time ago. However, we need to remain cognizant that video assessments, though highly practical and validated for certain aspects of the examination, are not the same as an in-person encounter, and not all patients have access to, or comfort in using, the necessary technology. There may also be some concerns on the medico-legal front, but one hopes that pragmatism will prevail in these extraordinary times. On the other hand, video conferencing with a patient and their family members in their home environment may allow insights into their daily lives that we do not enjoy in a standard office/clinic visit. If direct patient contact visits are deemed necessary and urgent, precautions should be taken, including the use of personal protective equipment, but also risk mitigation to minimize exposure of other patients and health care workers. While the number of situations requiring direct patient contact should presumably be limited in our field, one example would be DBS battery failure, which could be life threatening. Although botulinum toxin treatment is currently on hold in most centers, this may ultimately need to be reintroduced on a carefully considered basis for those patients who are suffering from pain or disability.

Video-conferencing technology may be helpful not only for physician assessments, but may also permit interaction of allied health personnel either concurrent with or separate from the clinical assessment. Although not permitting the traditional laying on of hands, our patients may still be granted access to counseling, medication advice, and instruction in exercise programs. One of the important practical lessons we have learned from COVID-19 is our need for social interaction, which we take for granted. This is an important therapeutic need for our patients and also for our own health. Although we are no longer able to conduct business as usual, the enforced time at home may allow us to connect with friends and family at a distance, using

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*Correspondence to: Dr. A. Jon Stoessl, Djavad Mowafaghian Centre for Brain Health, University of British Columbia, 2215 Wesbrook Mall, Vancouver, BC, Canada, V6T 1Z3; E-mail: mdjeic@gmail.com

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the same Internet-based video technology. An additional challenge is the high rate at which we are bombarded with new information and updated guidelines and regulations, even from credible sources, to say nothing of the profusion of misinformation for which there is no good scientific basis. For centers that have already established PD registries, obtaining information on the impact of COVID-19 may be feasible and useful. However, the establishment of a new registry could be time-consuming and require ethical and other approvals, and the knowledge derived will depend entirely upon the quality of the data collected.

COVID-19 raises many interesting scientific questions for which there are currently no clear answers. SARS-CoV is known to enter the brain,¹ where it can bind to the enzyme, angiotensin-converting enzyme 2 (ACE2), and cause neuronal death in the absence of encephalitis.² ACE2 expression is widespread in the brain, including not only cardiorespiratory centers in the medulla, but also the striatum.³ We are unaware of evidence to date that the SN is a site of susceptibility, as has been suggested to be the case for H1N1 influenza,⁴ or of synergism between SRAS-CoV-2 and other factors that might contribute to the pathogenesis of PD,⁵ but these are certainly considerations worthy of further investigation. We also do not know what impact, if any, medications used for PD may have on the response to SARS-CoV-2 or, conversely, whether coronavirus infection could modulate the response to existing treatment. Perhaps the most obvious candidate would be amantadine, which was for years used for treatment of influenza, based on its inhibition of viral replication by blockade of the influenza M2 ion channel required to deliver viral ribonucleoprotein into the host cytoplasm. Amantadine is no longer recommended for treatment of influenza in view of the high rate of resistance. Amantadine may also block a pore in the envelope protein of SARS-CoV,⁶ but the therapeutic implications of this are unknown.

Every cloud has its silver lining. Despite the undeniable challenges and fear arising from recent events, we have witnessed several reasons to feel positive. The COVID-19 pandemic has spurred us on to embrace telehealth technology and recognize the need to be flexible in the face of constantly changing information. Travel has been curtailed and this may ultimately simulate a more sustained shift to the use of digital technology for meetings, with beneficial effects on the environment. COVID-19 has raised critical scientific questions and reinvigorated interest in the potential impact of viruses on neurological illness. Perhaps most important of all, it has reminded us that we are one global community that rises and falls together, and of the importance of those things that matter most in our lives. ■

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Author Roles

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A.J.S.: A, D

K.P.B.: B, C

M.M.: B, C

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