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In Reply to the Letter to the Editor Regarding “Impact of COVID-19 on an Academic Neurosurgery Department: The Johns Hopkins Experience”



We thank Dr. Venkataram and colleagues for their thoughtful and thorough analysis of our recent study “Impact of COVID-19 on an Academic Neurosurgery Department: The Johns Hopkins Experience.”<sup>1</sup> As stated in our study, we believe that reporting the unique experiences of different academic medical centers during the coronavirus disease 2019 (COVID-19) pandemic is essential to clarifying the many challenges facing both American neurosurgery, as well as neurosurgery across the world, and we also believe that sharing such information is important for establishing a consensus regarding the best practices as the situation continues to evolve. In their response to our study, the authors shared important information about the pandemic’s effect on Indian neurosurgery, comparing and contrasting their findings with our results. We thank the authors for their contribution, and we appreciate their comments on what a “way forward” might look like as travel restrictions and lockdown mandates are eased, and as neurosurgeons aim toward returning to pre-pandemic caseloads. We agree that it is crucial for neurosurgeons to begin clearing patient backlogs of canceled elective cases to avoid disease progression and a worse prognosis among high-risk patients. We would like to reply to their letter by briefly commenting on hospital reopenings and discussing recent neurosurgical data examining the easing of lockdown restrictions both within the United States and abroad.

The most salient risk associated with relaxing current lockdown restrictions would be the reemergence of another wave of COVID-19 infections. In a recent study, López and Rodó<sup>2</sup> examined various postconfinement scenarios using mathematical modeling. They emphasized the overwhelming importance of public behavior, such as social distancing, handwashing, and properly using face masks, in mitigating the possibility of repeated viral outbreaks.<sup>2</sup> Another study by Di Domenico et al.<sup>3</sup> used mathematical modeling within a French population to explore possible scenarios after the lifting of lockdown restrictions. They concluded that an immediate return to prelockdown conditions would likely lead to a rebound in the COVID-19 infection rate, which could, again, overwhelm healthcare systems.<sup>3</sup> The investigators stressed that gradual lockdown restraints must be coupled with social distancing measures, aggressive testing protocols, and contact tracing efforts to avoid saturating healthcare system capacities.<sup>3</sup> Regarding hospital operations specifically, institutional exit strategies such as that proposed by Hill et al.<sup>4</sup> for resuming nonemergency neurosurgical operations will likely prove crucial in gradually moving toward prepandemic caseloads and maintaining the necessary precautions required to ensure both patient and hospital staff safety. Although such guidelines will most likely vary between different institutions, the common themes that have been consistently described in reported studies have included ensuring the availability of personal protective equipment for healthcare workers, continuing the use of telemedicine within neurosurgical workflows, and working to balance the increased surgical demand with the available

hospital resources.<sup>4-9</sup> As pandemic restrictions are eased and surgical volumes increase, it will also be important to identify those patients requiring urgent neurosurgical intervention. Guides for prioritizing neurosurgery cases, such as that proposed by Thomas et al.,<sup>10</sup> using the Delphi method, will likely become increasingly important as surgeons aim to clear the case backlogs that have accumulated during the height of the pandemic. Furthermore, a study by Jain et al.,<sup>11</sup> forecasting the postpandemic volume of orthopedic surgery cases, estimated that it would require 7–12 months to return to the prepandemic surgical volumes and that a backlog of >1 million surgical cases would likely still exist 2 years after the end of the restrictions on elective surgery. Such predictive modeling and forecasting will undoubtedly be important within neurosurgery as well to expand healthcare resources and efficiently clear the backlog of surgical cases.

Overall, we agree with Venkataram and colleagues that the treatment of elective cases should resume as soon as possible, while ensuring both patient and provider safety to the maximum possible extent. Continued collaboration to establish best practices for a return to “normal” operations and continued research into the unique experiences of neurosurgical departments navigating the pandemic are imperative for ensuring that neurosurgery is prepared for a second wave of the coronavirus that could result from an easing of lockdown restrictions and social distancing measures.

#### CRedit AUTHORSHIP CONTRIBUTION STATEMENT

**Adham M. Khalafallah:** Conceptualization, Writing - original draft, Writing - review & editing, approval of final manuscript. **Adrian E. Jimenez:** Conceptualization, Writing - original draft, Writing - review & editing, approval of final manuscript. **Debraj Mukherjee:** Conceptualization, Writing - review & editing, Supervision, approval of final manuscript.

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