

Letter: An International Investigation Into the COVID-19 Pandemic and Workforce Depletion in Highly Specialized Neurointerventional Units – Insights From Stroke Thrombectomy and Aneurysm Registry and Endovascular Neurosurgery Research Group

To the Editor:

The COVID-19 pandemic has imposed unprecedented challenges on health-care systems to protect providers while maintaining sufficient resources to handle emergent conditions. Endovascular thrombectomy for stroke is a time-sensitive life-saving procedure that involves highly-specialized units of neuroendovascular-trained interventionalists, nurses, and technologists. In this group, minimizing the exposure of providers to COVID-19 maintains emergency operations. We studied the impact of the COVID-19 pandemic on the functional capacity of neuroendovascular units in 35 centers globally,¹ including regions with high (>2000 cases/1 million) or low COVID-19 prevalence (<2000 cases/1 million) between 3/1/2020 and 5/10/2020. Among 592 providers, we surveyed 113 interventionalists, 251 nurses, and 228 technologists.

Elective neuroendovascular interventions were cancelled across all sites within a median of 14 d (interquartile range: 10-21) from the first case reported in the region. This delay was similar between sites of high or low COVID-19 prevalence ($P > .1$). Mitigation strategies to limit staff exposure included reducing the number of staff in physical proximity by dividing the teams into mutually exclusive groups, assuming all patients were COVID-19 positive until proven otherwise, and using COVID-19 testing as resources permit.²⁻⁴ Despite these measures, 38% of providers were required to self-quarantine due to COVID-19 exposure or confirmed or suspected infection. This percentage was similar between high and low prevalence sites (39% vs 37%, $P > .1$), but with significant variability within the same prevalence class ($\sigma = 40\%$). Due to the presence of mutually exclusive teams, high rates of self-quarantine did not force centers into diversion except for one site (<1 wk). The self-quarantine rate was higher in nurses (50%) and technologists (40%) compared to interventionalists (6%, $P < .05$). Higher relative exposure of nurses and technologists is expected given their more prolonged and more frequent physical interaction with patients. Among providers who self-quarantined, only 12% tested positive for COVID-19 using polymerase chain reaction-based testing, and were limited to high prevalence regions. A higher proportion of quarantined interventionalists tested positive for COVID-19 (28%) compared to nurses (13%) and technologists (8%) in high prevalence sites ($P < .05$). No COVID-19 infection was documented in providers in low prevalence regions during the study. We observed a strong positive correlation between the number of quarantined providers and those testing positive for COVID-19 ($R^2 = 0.56$, $P < .01$),








suggesting that quarantine efforts were implemented appropriately. In contrast, the correlation was weak between the prevalence of COVID-19 infection in the community and the number of providers positive for COVID-19 ($R^2 = 0.15$) suggests that the implemented mitigation strategies have successfully prevented the outbreak from compromising the services provided by highly specialized units.

Funding

This study did not receive any funding or financial support.

Disclosures

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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10.1093/neuros/nyaa415
