



## Letter to the Editor

### Integrating virtual EEG sessions into fellowship programs during the COVID-19 pandemic



In March 2020, the advent of the COVID-19 pandemic changed not only the way in which clinical medicine is practiced and delivered, but also the format and perceived quality of medical education. Epilepsy training programs have been particularly impacted in the context of significant reductions in EEG/EMU availability (Albert et al., 2020). A recent survey of Epilepsy Fellowship programs in the United States revealed that the impact of the pandemic on training was rated as moderate-severe by 30% of program directors and 49% fellows. A further 20% of program directors and fellows felt as though additional training was necessary prior to graduation. Lower levels of fellow satisfaction were correlated with perceived impact on education (Nakhleh et al., 2021). As a result of social distancing and isolation requirements, there has been an increasing reliance on telemedicine and virtual learning, with varying degrees of success and user satisfaction (Cross et al., 2021). Fortunately, subspecialty programs with an emphasis on visually based learning, such as EEG reading, lend themselves particularly well to the virtual format. To our knowledge, however, there have been no reports to date of such programs being offered, either in Canada or internationally.

While the majority of EEG reading is typically undertaken through epilepsy training, some regions, including Canada, offer separate board registration in the discipline of EEG. For most Canadian training programs, this consists of approximately six months of dedicated formal EEG training. Our EEG Fellowship Program at the University of Ottawa similarly consists of six months of full-time EEG reading, which consistently prepares trainees to successfully challenge the Canadian Society for Clinical Neurophysiology (CSCN) EEG examination. Historically, one of the primary strengths of our program has been the flexible reading schedule, allowing trainees to simultaneously run their clinical practices during fellowship. Since the advent of the pandemic, our program has further adapted through transitioning to virtual EEG reading. Our fellows read their routine EEG studies independently and remotely throughout the week. For inpatients if they have questions they can review with the attending “on the spot” using a teleconferencing software with screen sharing capability. They post preliminary reports in the patients’ electronic medical records. During the review sessions, near the end of the week, fellows are joined by often many residents and all proceed to ask questions and review the studies and the reports with the attending physician.

Virtual EEG reading comes with numerous advantages, including the flexibility of working remotely, which improves not only work-life balance during a critical period in fellows lives where they are often working to balance family and financial responsibilities; but additionally provides trainees with greater opportunity to focus on clinical work and develop their own practices as a

result of less time spent in travel. This format further improves access to EEG reading programs for trainees who work away from an Epilepsy centre, and in certain cases can allow fellows to train concurrently at another university in order to broaden their educational experience. The quality of learning itself may also be enhanced. In particular, virtual EEG review sessions allow for multiple readers to have full unobstructed viewing access of their own screen, and more staff and/or trainees are able to join in to provide unique insights and feedback. This promotes exposure to various reading styles, allowing trainees to further refine their reading skills. There may be additional benefit for the program itself, as on-site computer availability, access and reading rooms are not always available for larger numbers of trainees and do not have to be provided.

There are possible limitations to the virtual format, including technical requirements on the part of the trainees (i.e., adequate and high-frequency resolution home monitors for viewing, reliable and broadband internet connection), as well as the program itself (i.e., the EEG reading platform needs to be set up to allow for remote access). Additionally, as with any form of virtual learning, increased convenience and accessibility come at the cost of relative loss of interpersonal engagement. As a result, the depth of case discussions with colleagues may be more limited. This is particularly important early on during fellowship, whereby trainees may require more close supervision to acquire the basic skillset of EEG reading. This virtual format can also result in fewer opportunities for trainees to develop technical EEG skills (i.e., attaching electrodes, running and troubleshooting the software) due to reduced in-person training with the EEG technician.

Another potentially limiting factor is the disconnect from the patients themselves. While reading virtually, trainees are not able to respond to various events in the moment (i.e., epileptic seizures, or non-epileptic attacks), which may require prompt treatment or further management. While this is less of an issue at centres where the neurophysiologists are separate from the bedside physicians, this may not be the case in all locations and would serve as a significant barrier to the virtual format.

In summary, the COVID-19 pandemic has significantly impacted the perceived educational quality of EEG and Epilepsy Fellowship programs. Visually based subspecialties such as EEG reading lend themselves well to the virtual format and can offer significant benefits for both EEG/Epilepsy programs and trainees. The added flexibility for trainees as well as the unique learning opportunities through more accessible group interaction promotes an overall enhanced reading experience, although at the cost of relative loss of interpersonal interactions with supervisors, EEG technicians, and patients themselves. To our knowledge, there is no literature to date describing the utility of virtual EEG education in response to the pandemic. We would encourage - EEG/Epilepsy Fellowship programs to consider integrating virtual reading into

their EEG curriculum. This format serves not only as a necessary adaptation in response to COVID-19, but also offers a platform for improved training experience which has the potential to enhance EEG education and training beyond the end of the pandemic.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Received 11 February 2022

Received in revised form 25 February 2022

Accepted 3 March 2022

Available online 9 March 2022