



## Letter to the Editor: Electroencephalography at the time of COVID-19 pandemic in Italy

Olga Selioutski<sup>1</sup> · Saurabh R. Sinha<sup>2</sup> · William Tatum<sup>3</sup> · Jun Park<sup>4</sup>

Received: 28 July 2020 / Accepted: 7 October 2020 / Published online: 23 October 2020  
© Fondazione Società Italiana di Neurologia 2020

To the Editor-in-Chief,

We have read the publication by Assenza et al., 2020 [1] with great interest and appreciate the opportunity to comment. We commend the group for reporting on changes involving EEG services in Italy during the COVID-19 pandemic. The results raise important issues about the potential for severe acute respiratory syndrome due to coronavirus 2 (SARS-CoV-2) transmission during EEG performance through respiratory droplets, aerosols, and equipment.

We understand the data were gathered on common practices in Italy during “Phase One (Infection) that extended from January through mid-March 2020” [2], during which time elective and non-emergent procedures were suspended. Similar practices were adopted in many locations in the USA and around the world. The authors rightfully recognize the importance of EEG as the only readily accessible non-invasive test that helps diagnose seizures and non-convulsive status epilepticus, provide insight into the degree of encephalopathy, verify cerebral inactivity, and further guide immediate patient care.

Although this publication raises many justifiable concerns that may require changes in the EEG practice under new extreme circumstances, we disagree with the authors’ interpretation and their comments stemming from the following statement included by the American Clinical Neurophysiology Society (ACNS) in “Guideline 1: Minimum technical requirements for performing clinical electroencephalography” [3]:

“...the recommendation of American Clinical Society of Neurophysiology state that “Electrodes must be disinfected with appropriate procedures and transmission-based precautions taken after recording from patients with contagious diseases... Thus, there is not a clear indication to sanitize the EEG electrodes after every single use regardless of the infectious status of the patient. In our opinion, in the present scenario, this represents a serious gap in international recommendations for EEG technical execution.”

According to the references in the published guideline [4], the Occupational Safety and Health Administration classifies disk electrodes used for routine EEG procedure as semi-critical, requiring high-level disinfection, which, if performed correctly, is sufficient to kill viruses, bacteria, and mycobacteria. We believe the sentence in the ACNS guideline was misinterpreted and should be understood to reflect “(all) Electrodes must be disinfected with appropriate procedures; and (special) transmission-based precautions taken after recording from patients with contagious diseases (e.g., viral hepatitis, Creutzfeldt–Jakob disease, acquired immunodeficiency syndrome).”

In addition, the authors indicate that “The sudden and rapid spreading of SARS-CoV-2 virus infection in Italy and in other countries out of China did not allow to produce prompt recommendations about the EEG execution during the first weeks of Covid-19 pandemic.” The role of societal guidelines is to provide directives on the best practice under non-emergent conditions. In the crisis situations, the precedence of the guidelines is overtaken by the local Department of Health whose authority supersedes any other recommendations. As our communal knowledge of the SARS-CoV-2 virus infectivity has increased, the recommendations on EEG practices have changed on nearly weekly basis. Accordingly, ACNS has created a resource webpage with updated recommendations on the neuro-physiology practices urging members to follow the policies and guidelines set by their institutions and state/federal authorities (<https://www.acns.org/practice/covid-19-resources>). Recognizing that “best practices

✉ Olga Selioutski  
olga\_selioutski@urmc.rochester.edu

<sup>1</sup> University of Rochester, Rochester, NY 14642, USA

<sup>2</sup> Department of Neurology, Duke University Medical Center, Durham, NC 27710, USA

<sup>3</sup> Mayo Clinic Hospital, Jacksonville, FL 32224, USA

<sup>4</sup> UH Cleveland Medical Center & Rainbow Babies & Children’s, Case Western Reserve University, Cleveland, OH 44122, USA

are not entirely clear and the situation is too fluid and variable among different facilities to offer specific recommendations,” the ACNS has provided a list of considerations and approaches for members to consider when developing policies and protocols for their own facilities. This includes technologists’ safety and staffing issues, equipment maintenance and cleaning, managing requests for testing, and physician staffing to name a few (<https://www.acns.org/practice/covid-19-resources>).

We agree with Assenza et al. that the rate of SARS-CoV-2 contagion among healthcare workers is disturbing. We support protection of the frontline workers using the highest possible standards. Examples of specific step-by-step instructions for performing EEG are also available on the ACNS website ([www.ACNS.org](http://www.ACNS.org); [https://www.acns.org/UserFiles/file/UMarylandEEGMachineCleaningProcedures\\_COVID19\\_draft.pdf](https://www.acns.org/UserFiles/file/UMarylandEEGMachineCleaningProcedures_COVID19_draft.pdf)).

With the reopening of epilepsy centers and epilepsy monitoring units, local practices should be established based on the available resources to maintain compliance with the appropriate health care authorities. A joint statement by the National Association of Epilepsy Centers (NAEC), American Clinical Neurophysiology Society (ACNS), American Epilepsy Society (AES), American Society of Electrodiagnostic Technologists (ASET – The Neurodiagnostic Society), and American Academy of Neurology (AAN) was published on June 1, 2020, and is also available on the ACNS website ([www.ACNS.org](http://www.ACNS.org)) for additional

information (<https://www.acns.org/UserFiles/file/FinalConsiderationsforEMUReopeningJune2020.pdf>).

## Compliance with ethical standards

**Conflict of interest** None

**Ethical approval** None

## References

1. Assenza G, Lanzone J, Ricci L, Boscarino M, Tombini M, Galimberti CA, Alvisi L, Tassi L, Brogna L, Di Lazzaro V, Mecarelli O (2020) Electroencephalography at the time of Covid-19 pandemic in Italy. *Neurol Sci*
2. George Colony. Four phases of the coronavirus pandemic. Forrester March 30, 2020
3. Sinha SR, Sullivan LR, Sabau D, Orta DSJ, Dombrowski KE, Halford JJ, Hani AJ, Drislane FW, Stecker MM (2016) American clinical neurophysiology society guideline 1: minimum technical requirements for performing clinical electroencephalography. *Neurodiagn J* 56:235–244
4. Scott NK (2013) Infection prevention 2013: review and update for neurodiagnostic technologists. *Neurodiagn J* 53:271–288

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.