

Video-EEG Telemetry for Epilepsy Surgery during COVID-19 Restrictions

Developed by the ILAE Commission for Surgical Therapy

Despite multiple disease containment measures, the COVID-19 pandemic is still uncontrolled. Yet, appropriate medical care should be maintained for all chronic diseases, including epilepsy. A “new normal” for how this care could be delivered is needed. This is particularly challenging when complex procedures, such as epilepsy surgery, are considered. This guidance put forth by the ILAE Surgical Therapies Commission focuses on a crucial aspect of the pre-surgical evaluation: video-EEG telemetry.

The procedure of Video EEG telemetry is intensely impacted by the disruptions caused by COVID-19, even as most government and public health guidance has evolved now to allow non-essential medical services¹⁻². Travel restrictions impede patients’ ability to seek expert surgical opinions in comprehensive epilepsy surgery programs, and their fear of exposure to the virus dampens their willingness to initiate an evaluation for an elective procedure- particularly if that requires a several-day hospital stay. Social distancing measures, restricted availability of personal protective equipment, and the potential of hospital bed re-allocations to care for COVID patients, constrain staffing and bed capacity in epilepsy monitoring units. Brain surgery for epilepsy is a major life decision, whereby patients need all the emotional support they can get: this support is often hindered by limits on the number of visitors or family members who can accompany patients through testing. Managing patient expectations becomes critical to prepare them for the emotional hardship of potentially long hospital stays and perioperative complications/recovery away from the support of their loved ones. Lastly, a complete surgical evaluation usually requires multiple additional tests in addition to video-EEG telemetry, magnifying the logistical hurdles that need to be overcome for a final productive goal beyond those needed to get a video-EEG telemetry done.

Recognizing that decisions and processes to obtain video-EEG telemetry are heavily influenced by local logistical and public policy considerations and resources, the ILAE Surgical Therapies Commission makes the following general recommendations:

- Ensure that the **logistical and operational considerations** to perform video-EEG telemetry are addressed. These include:
 - measures to ensure safety of patients and health care workers in the epilepsy monitoring unit, such as availability of COVID testing, adequate personal protective equipment, sufficient staffing to maintain patient safety, altered educational practices to minimize exposure to patients (reduced medical student, resident and fellow contact), and clear institutional guidance on visitation policy and masking.
 - measures to ensure flexibility in response to changing COVID epidemiology. The epilepsy monitoring unit team needs to be prepared to change admission plans and discharge patients rapidly and safely if COVID surges. This nimble response can be accomplished by close coordination with hospital operations teams monitoring local COVID 19 incidence and driving hospital decisions about hospital priorities and bed allocation.
 - change staff routines to minimize exposure of staff members to each other and to potentially infected individuals to reduce the probability of multiple team members being incapacitated at once.

- Consider the **urgency** of completing a pre-surgical evaluation. Epilepsy surgery may be life-saving, rather than an “elective procedure” in patients having:
 - frequent seizures with injuries requiring emergency room visits,
 - tonic-clonic seizures that increase the risk of Sudden Unexpected Death in Epilepsy and injury, or
 - recurrent episodes of status epilepticus.

In those patients, a video EEG telemetry should be done as soon as possible as the COVID-related risks would be outweighed by the potential benefit of expediting a potentially beneficial epilepsy surgery.

- Evaluate the **need** for video-EEG telemetry in epilepsy surgery planning: In certain situations, a high pretest probability already exists for the localization of the epileptogenic zone, reducing the decision making contribution of a new video-EEG evaluation. Examples include
 - a clear epileptogenic lesion (low-grade tumor, malformation of cortical development, vascular malformation) in non-eloquent cortex with concordant seizure semiology captured by report or on home video, and concordant interictal spiking captured in past outpatient EEG.
 - An epileptic encephalopathy or a severe childhood onset epilepsy with infantile spasms in the context of a clear underlying structural pathology where outpatient EEG or ambulatory recordings can provide electrophysiological data.

The Surgical Therapies Commission acknowledges the general merits of video-EEG telemetry in ruling out co-morbid non-epileptic psychogenic seizures, adjusting medical therapy, and counseling patients on peri-operative course and outcomes in adults and children³. However, we recognize that performing epilepsy surgery with the available data in select cases (as illustrated above) may be reasonable, when the alternative is to delay resection awaiting a video-EEG telemetry that is difficult to obtain and unlikely to change the ultimate surgical plan. Similarly, consideration of invasive EEG telemetry as part of the pre-surgical evaluation should weigh the likelihood that it would change the surgical hypothesis and operative plan as determined by non-invasive measures, versus the impact of this additional operative procedure on delays in a potentially beneficial resection, utilization of hospital resources, patient COVID-19 exposure and emotional well-being related to visitor restrictions.

Implications for resource poor countries: Global pandemics are expected to cause significant disruptions in healthcare operations of resource poor countries. Video-EEG telemetry studies are challenging to arrange in these countries, even without the added stress of COVID 19. Robust public health strategies to prioritize resources are needed.

- 1- <https://www.cms.gov/files/document/covid-flexibility-reopen-essential-non-covid-services.pdf>
- 2- <https://www.euro.who.int/en/health-topics/Health-systems/pages/news/news/2020/4/who-releases-guidelines-to-help-european-countries-maintain-essential-health-services-during-the-covid-19-pandemic>
- 3- Jayakar P, Gaillard WD, Tripathi M, et al. Diagnostic test utilization in evaluation for resective epilepsy surgery in children. *Epilepsia*. 2014;55(4):507-518. doi:10.1111/epi.12544