

EANS advice: Triage non-emergent neurosurgical procedures during the COVID-19 outbreak

European neurosurgeons face uncharted waters because of the Coronavirus Disease 2019 (COVID-19) outbreak. On the one hand, there is a broad call to cut down “elective” neurosurgical operations, on the other hand, we have to minimize harm to patients with other diseases than COVID-19. In reply to this call, the European Association for Neurosurgical Societies (EANS) provides the following direction on how to triage non-emergent neurosurgical procedures.

The fact that a case is planned does not define its medical urgency. Even though some surgeries could be postponed for a significant period of time, others are scheduled for progressive diseases including those for malignant brain tumors and vascular diseases. These diseases will progress in the absence of a neurosurgical procedure, with consequences for the patients. Therefore, we need to recognize that the decision to cancel an operation must be made in the context of medical and logistical considerations. In addition, as one cannot predict the impact of COVID-19 over the next months, it cannot be ruled out that as a consequence of postponing a case, patients might present as more severe emergencies at times that might even be more stressful or don't allow for easy handling of the cases. Therefore, we recommend the following:

- Neurosurgical centers should consider – in real time- the needs of patients and their logistical capability to meet those needs.
- A neurosurgeon with specific expertise should establish the medical need for a specific operation and the risks associated with delaying the case.
- Taking into account facility resources (beds, staff, equipment, supplies, etc.) **and** provider and community safety and well- being, logistical feasibility for an operation should be established by administrative personnel with a thorough understanding of hospital and community limitations.
- Decisions about how to proceed should be made on the basis of a merger of these assessments using contemporary knowledge of the evolving local, regional and national conditions. This could result in significant differences in decision-making between regions.
- Risks for patients should be determined by weighing the risks of proceeding versus delaying surgery. It should be kept in mind that a delay of six months or more can be expected before COVID-19 will cease exerting heavy pressure on the capacity of healthcare systems.
- For the near future, a day-by-day assessment of the changing risk-benefit analysis based on the available data will need to influence clinical care delivery.
- All plans for triage of neurosurgical operations should rely on data and expert opinion from qualified neurosurgeons as well as guidelines from national neurosurgical societies. Moreover, institutional capacity and logistics should be well understood and weigh into decision-making. Priority of care should be based on both COVID-19 associated and other risks, given the competing risks that many neurosurgical emergencies may come with.

The EANS advises triages of neurosurgical procedures based on a categorization of emergency as outlined below. This tool is based off the Elective Surgery Acuity Scale (ESAS) from St. Louis University (below). While the tool gives examples of neurosurgical procedures in each category, it is up to national neurosurgical societies to create more granular triage schemes based on regional capacity.

The EANS will continue to follow up with additional recommendations and refinements, as needed.

Adapted Elective Surgery Acuity Scale (ESAS)

Tiers/ Description	Definition	Locations	Examples	Action
Tier 1	Low acuity surgery/healthy patient Outpatient surgery Not life threatening illness	HOPD Hospital with low/no COVID-19 census	Carpal tunnel release Benign intracranial tumors (meningioma, schwannoma, pituitary adenoma etc.); asymptomatic or mildly symptomatic Degenerative spinal pathology (lumbar stenosis, spinal deformity) Deep brain stimulation Microvascular decompression of cranial nerves	Postpone surgery
Tier 2	Intermediate acuity surgery/healthy patient Not life threatening but potential for future morbidity and mortality. Requires in hospital stay	HOPD Hospital with low/no COVID-19 census	Benign intracranial tumors; symptomatic Low grade glioma Unruptured aneurysm Arteriovenous malformation Deep brain stimulation for progressive parkinsonism Refractory epilepsy Craniosynostosis	Postpone surgery if possible
Tier 3	High acuity surgery/healthy patient	Hospital	Malignant brain or spine tumors	Do not postpone

			Brachial plexus injury	
			Chronic subdural hematoma	
			Progressive cervical myelopathy	
			Congenital defect surgery	

HOPD: Hospital Outpatient department

This document is an adaptation of the American College of Surgeons recommendations for triage of non-emergent surgical procedures.