

GLOBAL NEUROSURGERY CONSENSUS DOCUMENT

Created December 15, 2015, Geneva.

Modified at:

AASNS Neurotrauma Meeting March 25, 2016, Phnom Penh,

AANS Meeting May 1, 2016, Chicago,

CAANS Meeting July 26, 2016 Cape Town,

CLAN Meeting October 30, 2016, Cancun.

ICRAN Meeting December 8, 2016, Bogota.

Recommendation levels: Essential, Highly Desirable, Desirable

Workforce

1. There is an urgent need for a substantial increase in the neurosurgical workforce, which requires consideration of the traditional training models, definition of a neurosurgeon, and new categories of limited practitioners and/or extenders. **Essential.**
2. There must be an increase in traditional neurosurgical training programs to increase numbers of neurosurgeons. **Essential.**
3. This can be achieved either by increasing the number of programs or taking more residents in countries that currently have a deficit.
4. High income countries can be utilized for support this effort through partnerships and “neurosurgical aid” activity.
5. In countries without training programs, a concerted effort should be made to initiate one. **Essential.**
6. There is a need for a paradigm shift in credentialing of skilled professionals.
7. In some settings, task sharing is necessary to achieve this aim; this may take the form of a technical surgical officer or general surgeon to perform essential neurosurgical procedures in the remote or referral hospitals. **Essential.**
8. New models of training programs will be required to enable the surgical officer or general surgeon to acquire the basic skills necessary to perform basic safe trauma neurosurgery. **Highly Desirable.**

9. Concurrent training and support from other disciplines such as nursing and anesthesia in neurosurgical care is essential to the success of this program. **Essential.**

Prehospital Care

1. Prevention strategies to reduce injuries. **Essential**
2. Expansion of EMS services and First responder system. **Highly Desirable.**
3. Establish regional trauma centers. **Desirable.**

Training and Education

1. To be able to perform neurosurgical procedures, we recommend a medical degree. **Highly Desirable.**
2. Minimum standards of training should include:
 - diagnosing,, performing basic operations, and providing appropriate hospital care for the patient. **Highly Desirable.**
 - Consider competency based standardized modular training. **Highly Desirable.**
3. Educational material resources:
 - ex: e-learning, simulation skill lab, textbooks (Neurosurgery in the Tropics, WHO Surgical Manual)
 - Guidelines (Australasia Society Guidelines, Indian Guidelines, Columbia Guidelines)
 - Other resources: International Association for Trauma Surgery and Intensive Care (IATSIC): Definitive Surgical Trauma Care (DSTC) Course, work in conjunction with other surgeons and other surgical societies.
4. Regional associations such as AASNS and CAANS neurotrauma working group on basic guidelines principles work with the WFNS neurotrauma committee for resource-stratified guidelines. **Essential.**
5. Credentialing and Monitoring - Task shifted personnel should have oversight by qualified neurosurgeons. **Highly recommended.**

Research

1. Primary research about neurosurgical workforce to more accurately describe workforce numbers, trainees, and trends in practice should be conducted. **Essential**
2. The burden of neurosurgical conditions (% of overall surgical burden and breakdown) in LMICs must be ascertained to determine appropriate guidelines for emergency procedures. **Highly Desirable.**
3. Economic modeling for productivity loss, catastrophic financial loss, Private v. public expenditures in the context of neurosurgical diagnoses, etc should be studied to better understand the health economics of implementing new guidelines and training modules. **Highly Desirable.**
4. Cost effective studies. \$/DALYs for neurosurgical conditions. **Highly Desirable.**
5. Validation studies of task shifting of neurosurgery. **Desirable.**
6. Increase research grants/support for Global Neurosurgery projects. **Essential.**

Equipment

1. What is the basic thing you need to perform neurosurgery safely? Establish minimum equipment standards. **Highly Desirable.**
2. Address maintenance and repair issues in low-resource settings. **Essential**
Includes infrastructure (ventilators, functional CT scanner, etc.).

Innovation

1. Technological innovation for task-simplifying, cost-lowering and safety enhancing for neurosurgical care in low-resource settings in LMICs (i.e. navigation systems, imaging, EHR) **Highly Desirable.**

Advocacy/Policy

1. Letters and articles on Global Neurosurgery. **Highly Desirable.**
2. Section devoted to Global Neurosurgery in neurosurgery journals. **Highly Desirable.**
3. WHO engagement. **Essential.**
4. Active presence in global surgery advocacy groups such as the G4 Alliance (WFNS Foundation has joined) **Highly Desirable.**

5. Cultivate local governmental support: Ministry of Health, Education and/or Finance. **Highly Desirable**
6. Advocate for credit and funding for residents from high income countries to be able to spend time for research in low income countries with the proper authorities (e.g. Residency Review Committee in the US). **Highly Desirable.**