For your Information

Research

The Division of Neurosurgery is actively involved in original research across basic science, translational and clinical domains. Current areas of active investigation include:

- Aneurysmal subarachnoid hemorrhage
- Clinical trials of aneurysm treatment
- Dendritic cell immunotherapy for malignant gliomas
- Quality of life measures in brain tumour patients
- Neuroanatomical impact of radiation therapy in the treatment of glial tumours
- Cervical spondylotic myelopathy
- Hydrocephalus research
- Use of diffusion tensor imaging in intra-operative MRI environment
- Neuroimaging biomarkers of response to surgical treatment in epilepsy and trigeminal neuralgia
- Neuroimaging features of treatment-resistant depression
- Impact of deep brain stimulation therapy on speech and language function
- Quantitative assessment of gait and postural instability in Parkinson's disease patients undergoing DBS

Residents in the program are offered the opportunity to pursue advanced research training culminating in a graduate degree. Recent trainees have pursued MSc (2 years) or PhD (4-5 years) degrees in Experimental Surgery through the Department of Surgery and with support from the Clinician Investigator Program (CIP). Other residents have completed a MSc degree in Clinical Epidemiology.

Quick Facts

- Residents are exposed to a robust and diverse clinical experience at three sites: University Hospital, Royal Alexandra Hospital and the Stollery Children's Hospital. (Over 2500 clinical operative cases are done annually).

- The University of Alberta Neurosurgical Residency Program offers a unique PGY-4 experience. Residents are able to explore research interests, pre-fellowship interests and/or further clinical experience (academic or community) during this year.

- A formal academic schedule exists for neurosurgery residents:
  - Weekly Neuroscience Rounds
  - Wednesday Rounds
    QA/Research/Proton and Journal Club
  - Friday Morning Academic Half-Day

- Residents gain experience in all aspects of subspecialty neurosurgery and new innovative neurosurgical equipment. (Complex spine, neuro-endoscopy, deep brain stimulation, endovascular neurosurgery, functional neurosurgery). Residents receive expense coverage for meetings, microneurosurgical symposiums and review courses.

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Neurosurgery Residency Program

UNIVERSITY OF ALBERTA

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Program Overview

The primary objective of the Neurosurgical program at the University of Alberta is to develop within a six-year time frame, graduates of excellent moral and ethical character who possess the factual knowledge, surgical technical skills and motivation required to successfully practice Neurosurgery in Canada or elsewhere. Candidates are selected and trained with a view to careers in academic neurosurgery and are made aware that this initial formal period of training represents only one phase of the evolution of a profession characterized by continuing self-evaluation and self-education.

Academic Sites

- University of Alberta Hospital
- Royal Alexandra Hospital
- Stollery Children's Hospital

Selection Criteria

Selection criteria in this program are as follows:

- Strong interest and dedication in the field of neuroscience and interest in neurosurgical research endeavors.
- An elective in neurosurgery is strongly encouraged.

Program at a Glance

PGY–1

The PGY-1 year is part of the Surgical Foundations Program at the University of Alberta. As of July 2018, the Program has started the Royal College's Competence by Design initiative.

In Neurosurgery the PGY-1 rotations are:

- 6 blocks of Neurosurgery
- 2 blocks of General Surgery
- 1 block of Coronary Care Unit
- 1 block of Emergency Medicine
- 1 block of Anesthesia
- 1 block of Pediatric Neurosurgery
- 1 block of Vacation

PGY–2

The PGY-2 year is a component of the 2-year Surgical Foundations Program with modifications for each specific discipline. A typical rotation in second year would be:

- 3 blocks of Intensive Care
- 1 blocks of Neuroradiology
- 3 blocks of Neurology
- 8 blocks of Neurosurgery

PGY–3 to 6

Each new Neurosurgical trainee is required to spend 42 months in the Clinical Neurosurgical Service at the University of Alberta Hospital and the Royal Alexandra Hospital.

This contact with clinical neurosurgery provides the opportunity for close observation of the trainee with respect to interpersonal relationships, clinical skills, judgment and general academic knowledge.

In this phase of training, each candidate is expected to demonstrate progressive development in examining, diagnosing and treating patients with common neurological diseases. In the informative years, special emphasis is placed on the diagnosis and management of head, spinal and multiple system injuries. Special technical skills such as insertion of external ventricular drains (for monitoring and treatment of intracranial hypertension), and application of skull tongs or halo jackets for the treatment of unstable cervical spine fractures are taught. In a graded fashion, each resident develops increasing surgical skills such as performing burr holes, craniectomies, craniotomies and spinal procedures.

As residents graduate into their senior years, responsibilities will include running the team at the University site, presenting cases at quality assurance rounds and case presentation rounds, organizing schedules and running the Neurosurgery Intensive Care Unit with the Neuro-Intensivist.