

**McMaster Otolaryngology-Head and Neck Surgery**  
**Goals & Objectives & Competencies**  
**Neurosurgery Rotation**  
**CanMEDS 2015**

**Foundations of Discipline Stage- First Year Resident**

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**Overview**

During the first year of the Surgical Foundations Program the resident will spend 1 block on the adult Neurosurgery service at the Hamilton General Hospital. The resident will gain experience in dealing with patients in the neuroscience ambulatory care clinic and with patients on the wards (6 West, 7 West, and 7 South), intensive care unit, and operating room and in the emergency department. All residents must review their learning objectives with the Neurosurgery supervisor(s) at the beginning of the rotation so they can assist you in fulfilling them.

**Schedule of the week:**

You will be expected to make the hospital rounds with your team in the mornings before starting the day's activities. The team meets normally at 6:15 am in the Learner's Room and 7 W. You are expected to make handover of patients to the resident on call at the end of the day when indicated. Your work schedule of the week will be assigned by your team leader, the senior resident.

**Call:**

You will be assigned on home call with the Neurosurgery service. The Chief resident will make up your call schedule. Please note that call during weekdays is from 17:00 to 07:00 hrs. and weekend call is from 08:00 to 08:00 hrs. At the end of the call shift, you must make handover of patients to the team when indicated. Call will be set according to PARO guidelines.

**Overall Objectives & Competencies**

*It is recognized that the resident may not be exposed to all elements of these objectives; however at the conclusion of the rotation the resident should demonstrate knowledge or competency in the following:*

The resident is expected to gain understanding and knowledge of basic neurosurgical principles and approaches to the anatomy, physiology and pathophysiology of the brain,

skull base, spinal and cranial nerves. The resident will gain experience in the medical and surgical treatment of trauma, infections, neoplasia, vascular and other pathologies of the above areas.

Residents will be working at completing Entrustable Professional Activities (EPAs) observations from the Foundations of Discipline stage of the Surgical Foundations program. The EPAs are listed on the resident's Competence by Design road map schedule and at the end of this document. For the specific details of each EPA, please refer to the Royal College Mainport or MedSIS resident ePortfolio and to the educational resident manual located on the Otolaryngology-Head & Neck Surgery division website.

*(Please note that in brackets with SF you will find corresponding Surgical Foundations competencies when applicable; and objectives/competencies in **bold** are the ones assessed on the in training evaluation report-ITER)*

## Specific Objectives & Competencies

### Medical Expert

(1.4) Apply basic knowledge of neuroanatomy and physiology:

- Understand the basic anatomy and physiology of the brain and spinal cord
- Understand the anatomy and physiology of the cranial nerves in detail

(1.4) **Principles of clinical knowledge for evaluation of the following:**

- **Head/spine injuries** (skull, skull base, spine fracture, hematoma, CSF leak)
- Brain tumors with special attention to cerebellopontine angle, skull base and neoplasms of the anterior skull base
- **CSF leak**
- **Intracranial hemorrhage**
- **Increased intracranial pressure**
- **Intracranial infection** (brain abscess, meningitis)

(2.1) **Identify and recognize life threatening or emergent issues of patients with head and spinal trauma, or other urgent brain conditions ; act accordingly** (seek for immediate assistance)

(2.2) For the following presentations of patients with either head trauma, CSF leak, spine injury, intracranial hemorrhage, increase intracranial pressure and intracranial infection

- **Elicit complete history for neurological patient issues (SF 2.2.)** of
  - Mechanism of injury, time of injury, level of consciousness, Glasgow coma scale, headache, neck pain, nausea/vomiting, change of vision, epistaxis, CSF rhinorrhea, otorrhea, hearing loss, vertigo, focal motor deficits, paresthesia, cranial nerve functions
  - **Apply the Glasgow coma scale in a patient with altered level of consciousness**

- **Perform relevant physical examination with special emphasis on the neurological examination, including unconscious patient and explain findings: (SF 2.2.)**
  - **ABCs (ATLS guidelines) and C-spine precautions** (maintain c-spine precautions including collar until c-spine has been cleared) in head injuries (SF 1.3.13., SF 2.4.1.14.)
- **Provide initial assessment for head injuries:**
  - Assessment and maintenance of the airway, breathing and circulatory function (ABC's)
  - Look for potentially life threatening signs of herniation. If these signs are present then measures to decrease intracranial pressure should be rapidly instituted
  - Recognition of the urgency to treat patient with elevated ICP by notifying neurosurgeon / staff immediately
  - Perform neurological assessment independently and as part of trauma team.
  - Check for abnormalities in pupillary function and ocular movements as determined by spontaneous, dolls eye, light stimulus/swinging flashlight test or cold caloric testing. These are important clues to the localization of central dysfunction
  - Fundus examination for detection of papilledema
  - Motor system examination focuses on identifying posturing or flaccidity due to raised ICP or focal deficits
- **Select Neuroimaging/investigations/interpretation: (SF 2.2.1.)**
  - Order brain CT scan with contrast when urgent, MRI with MR venogram once patient is stabilized
  - Order spine CT scan and/or MRI
- Interpret findings for the purpose of diagnosis and start initial management

(2.4) **Awareness of immediate management modalities of the elevated ICP patient**

(3.4) **Provide assistance with neurosurgical procedures (SF 3.4.15.)**

Become familiar with the tools and instruments commonly used such as nerve stimulator, nerve monitoring device (NIM), image guidance system, endoscopes for anterior skull base (SF 5.3.4)

- Application of Rainey clips
- Burr hole drilling
- Craniotomy
- External ventricular drain
- Wound closure (SF 5.3.6.7)
- Application of a proper dressing (SF 5.3.6.9)
- Cervical exposure of spine (anterior and posterior)
- Endoscopic transphenoidal approach to pituitary and skull base neoplasms

- Skull base procedures in conjunction with the otolaryngologist (rhinology, neurotology, head and neck surgeon)

### **Communicator**

- (1.5) **Participate with staff or senior resident in emotionally charged conversation, including but not limited to discussion surrounding end-of-life issues with patients and families (SF 1.5.)**
- (5.1) **Document clinical encounters in an accurate, legible, complete, timely and accessible manner to adequately convey clinical reasoning and rational for decisions (SF 5.1.)**

### **Collaborator**

- (1.1) **Establish and maintain positive relationships with physicians and other colleagues (SF 1)**
- (1.2) **Consult as needed with other health care professionals, including other physicians, neurosurgeons, physician assistants, nurse practitioners, respiratory therapist and physiotherapists (SF 1.2.)**
- (3.2) **Demonstrate safe handover of care, both verbal and written (SF 3.2.)**

### **Leader**

- (1.4) **Use health informatics to improve the quality of patient care and optimize patient safety (SF 1.4.)**

### **Health Advocate**

- (1.3) **Incorporate health and preventive measures into interactions with the patient and family related to head/spine injuries in recreational activities, sports, hazardous workplaces, seatbelt safety, helmet safety etc. (SF 1.3.)**

### **Scholar**

- (1.2) **Identify opportunities for learning needs that arise in daily work and seek for feedback from staff or senior residents (SF 1.2.)**
- (3.1) **Recognize uncertainty and knowledge gaps in clinical encounters and generate questions relevant to neurosurgery safe practice while on rotation (SF 3.1.)**

### **Professional**

- (1.3) **Identify common ethical problems encountered in patients suffered head trauma (SF 1.3)**
- (4.1) **Develop a personal plan for managing stress and maintaining physical and mental well-being (SF 4.1.)**

### **Entrustable Professional Activities**

#### **Assessment:**

In training evaluation report (ITER) on MedSIS

*The following EPAs from the Surgical Foundations Program assessment forms must be completed during the rotation; however at the conclusion of the rotation it is not expected that all EPAs will be achieved:*

*Form 1-Royal College Mainport ePortfolio or McMaster MedSIS*

*Form 2-Royal College Mainport ePortfolio or McMaster MedSIS*

*Form 3-Royal College Mainport ePortfolio or McMaster MedSIS*

**During the rotation, you need to work on the following Surgical Foundations program EPAs for competencies:**

***EPA 2.2***

Providing initial management for trauma patients

***EPA 2.6***

Participate in surgical procedures

***EPA 2.7***

Managing uncomplicated postoperative surgical patients

***EPA 2.8***

Managing postoperative patients with complications

**During the rotation, you need to work on the following Otolaryngology-Head & Neck Surgery program EPAs VERSION 1 (residents starting July 1<sup>st</sup> 2018) for competencies:**

***EPA 2.11***

Assessing, diagnosing and initiating management of patients with head trauma

**Bibliography suggestions**

Greenberg's: *Handbook of Neurosurgery*

Andrew H Kaye: *Essentials of Neurosurgery*

Revised January/April 2019