



In 2011, the Ministry of Health and Long Term Care (MOHLTC) requested Critical Care Services Ontario (CCSO) to lead a planning process to develop a comprehensive neurosurgical system to meet the needs of adult and paediatric patients across Ontario. As a part of this program, the MOHLTC also committed new nursing positions, including clinical Neurosurgical Outreach Nurse and Neurosurgical Nurse Educator positions, to support the management of specialized

paediatric and adult neurosurgical patients.

The Neurosurgery Education and Outreach Network (NEON) was established in May 2013 to work in collaboration with the Provincial Neurosurgery Advisory Committee to support the educational component of recommendations to better integrate access to neurosurgical services in the province. Originally comprised of Nurse Educators and Program Directors from each of the province's adult neurosurgical centres, their work formed the foundation for an educational outreach program designed to provide a wide breadth of education to non-neurosurgical centres on neurosurgical patient's care across the continuum. The

expanded network has grown to include Clinical Nurse Specialists, Advanced Practice Nurses and Nurse Practitioners working in both adult and paediatric neurosurgery.

The OUTREACHER Newsletter will be published two to three times per year to provide regional hospitals with Neurosurgery updates and education.

NEON:

**Working towards
Provincial
improvements in
neurosurgical
service delivery**

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- IMPROVING QUALITY AND RESPONSIVENESS
- IMPROVING NEUROSURGICAL NURSING CARE ACROSS ONTARIO

Provincial Guidelines for Adult Spinal Cord Assessment

Spinal Cord Testing

Spinal cord testing is an assessment of the sensory, motor and autonomic function of the spinal cord. The American Spinal Injury Association (ASIA) and International Spinal Cord Society have published an assessment tool called the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) which is available from the [American Spinal Injury Association learning centre](#) (American Spinal Injury Association, 2015). Information obtained from this extensive motor and sensory assessment (American Spinal Injury Association, 2008). is used to classify the severity of a spinal cord injury according to the ASIA Impairment Scale (AIS). The AIS rates the injury between a Category A (complete motor and sensory loss) and Category E (no impairment). The calculation of the score is described on the second page of the ISNCSCI.

A number of different SCT tools have been developed based on the ASIA tool, but simplified for ease of use at the bedside (Tymianski, 2012). They should at a minimum include:

- Motor Assessment: Different levels of the spinal cord correspond with different muscles (myotomes); therefore testing the function of these muscles provides information on the location of a SCI.
- Sensory Assessment: Different levels of the spinal cord correspond with different areas of the skin (dermatomes); therefore testing the sensation of these areas provides information on the location of a SCI.

Procedures

Motor Assessment

- Use the motor grading scale to grade and document motor strength (see Table 1)
- Assess motor strength bilaterally (each level should be tested bilaterally before proceeding to next level). If there is a difference between right and left indicate so on the SCT record.
- SCT is usually done with the patient in the supine position (can be done sitting). Begin each segment to be tested by asking the patient to put the limb in motion.
- If the patient is able to move the limb through the full range of motion they are usually graded a 3.
- Apply mild resistance, using only one or two fingers, to attempt to return the limb to its original position. If you are able to return the limb to the original position then they remain a 3, if they are able to resist you, then they are graded a 4.
- Now apply full resistance, using your hand, if you are able to return the limb to the original position then they remain a 4, if they are able to resist you, then they are graded a 5 (normal power).
- If the nurse is unable to test a muscle group due to pain, fractured limb, splint/cast etc. he/she is to document NT (not testable) on the SCT record and provide follow up documentation in the interdisciplinary note section.

Table 1: Motor Grading Scale

Grade	Motor Grading Scale
Grade 0	Total paralysis
Grade 1	Palpable or visible contraction
Grade 2	Active movement gravity eliminated
Grade 3	Active movement against gravity
Grade 4	Active movement against some resistance
Grade 5	Active movement against full resistance

(American Spinal Injury Association, 2015)

EDUCATIONAL OPPORTUNITIES IN YOUR LHIN!

LHIN 5&6

Trillium Health Partners' Neuroscience Rounds – Every Friday 0800-0900 hrs (last webinar for 2019 is December 13th) Webcasts available for viewing via OTN

November 8th & 13th: Etobicoke General Hospital – Collar Care and Management

November 25th: William Osler ED New Hire Orientation – Neuro Day

November 25th: Credit Valley Hospital – ED Orientation – Neuro Assessment

January TBD: Georgetown Hospital – Neuro Education

January 27th: William Osler ED New Hire Orientation – Neuro Day

LHIN 9E/10

Brockville General Hospital – November 27 Spinal Assessment Inservice

December 19th: KHSC – TBI

January 23rd: KHSC – Critical Care Orientation

February 19th: KHSC – Neurosurgical Emergencies in the ER

EDUCATIONAL OPPORTUNITIES IN YOUR LHIN!

LHIN 11

November 2019 – Renfrew Victoria Hospital –
Full day Nursing Skills Fair

Glengarry Hospital – Lunch and Learn

LHIN 14

NEON/RCCR - Neuro/Critical Care Education Day

May and June 2020

Santé Manitouwadge Health

Marathon – North of Superior Health Care Group

Terrace Bay – North of Superior Health Care Group

Geraldton District Hospital

Nipigon District Memorial Hospital

September and October 2020

Red Lake Margaret Cochenour Memorial Hospital

Dryden Regional Health Centre







Sioux Lookout Meno Ya Win Health Centre





Lake of the Woods District Hospital

La Verendrye General Hospital

Atikokan General Hospital

Adult Spinal Cord Assessment continued...

SPINAL TESTING: UPPER EXTREMITIES	
C5 Shoulder Abduction (Middle Deltoid) <i>Starting Position: Patient supine, examiner at head of bed facing patient's feet, one hand under scapula, thumb on top of shoulder.</i>	
0 No contraction palpated over the lateral aspect of shoulder. 1 Contraction palpated/flicker seen or incomplete range of motion. 2 Full Range of Motion: Active abduction to shoulder level (may allow elbow to bend).	3 One finger mild resistance above elbow. 4 Two finger moderate incomplete range of motion. 5 Whole hand full resistance.
C5, C6 Elbow Flexion (Biceps, Brachialis) <i>Starting Position: Patient supine, palm up, examiner stabilizing above elbow.</i>	
0 No contraction palpated on inside of forearm above elbow. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Hand comes up to shoulder. 4 Two finger moderate resistance above wrist. 5 Whole hand full resistance.
C7 Elbow Extension (Triceps) <i>Starting Position: Patient supine, elbow pointed at ceiling, hand beside ear, examiner supporting elbow.</i>	
0 No contraction palpated on back of arm above elbow. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Extension of arm towards ceiling so elbow is straight. 4 Two finger moderate resistance above wrist. 5 Whole hand full resistance.
C7 Wrist Flexion (Flexor Carpi Radialis & Ulnaris) <i>Starting Position: Patient supine, palm up, examiner stabilizing above wrist.</i>	
0 No contraction palpated on inside of forearm below elbow. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion and palpable contraction.	3 Full Range of Motion: Hand pulls up to face. 4 Two finger moderate resistance on palm of hand. 5 Whole hand full resistance.
C6 Wrist Extension (Extensor Carpi Ulnaris, Radialis Longus & Brevis) <i>Starting Position: Patient supine, palm down, examiner stabilizing above wrist.</i>	
0 No contraction palpated below elbow on top of forearm. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Hand pulls up to face. 4 Two finger moderate resistance on back of hand. 5 Whole hand full resistance.
C8/T1 Finger Abduction (First Dorsal Interosseus) <i>Starting Position: Patient supine, arm straight, hand turned so thumb is up, examiner stabilizing bottom three fingers.</i>	
0 No contraction palpated over fleshy part of web space between the thumb and the index finger. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Index finger elevates fully towards ceiling. 4 One finger mild resistance to tip of index finger. 5 One finger moderate resistance.

SPINAL TESTING: LOWER EXTREMITIES	
L2 Hip Flexion (Iliopsoas) <i>Starting Position: Patient supine, examiner's hand placed on patient's opposite hip.</i>	
0 No contraction palpated over the lateral aspect of the groin. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Able to bend the hip to 90°. 4 Two finger moderate resistance above knee. 5 Whole hand full resistance.
L3 Knee Extension (Quadriceps) <i>Starting Position: Patient supine, examiner lifts patient's knee 8 - 10" off the bed and maintains support under the knee with his/her forearm.</i>	
0 No contraction palpated a hand's breadth above the knee. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Able to fully straighten knee. 4 Two finger moderate resistance above ankle. 5 Whole hand full resistance.
L4/5 Ankle Dorsiflexion (Tibialis Anterior) <i>Starting Position: Patient supine, examiner supports under the leg proximal to the ankle so the heel is off the bed.</i>	
0 No contraction palpated on lateral aspect of shin below the knee. 1 Contraction palpated or flicker seen. 2 Incomplete range of motion.	3 Full Range of Motion: Pulls toes up towards nose. 4 Two finger moderate resistance on top of foot. 5 Whole hand full resistance.
S1/2 Plantarflexion (Gastrocnemius, Soleus) <i>Starting Position: Patient supine, examiner supports under the ankle lifting heel off bed, other hand placed on sole and maintains full dorsiflexion.</i>	
0 No pressure felt by hand on sole of the foot. 1 Contraction palpated/flicker seen above the heel or incomplete range of motion. 2 Full Range of Motion: Full foot pointing.	3 Full foot pointing against mild resistance. 4 Full foot pointing against moderate resistance. 5 Not applicable due to supine position.

PROVINCIAL GUIDELINES FOR ADULT SPINAL CORD ASSESSMENT

Neurosurgery Education and Outreach Network (NEON)

Version 1.0 | Critical Care Services Ontario | May 2016

Outreach in Action- LHIN 11



The Neurosurgery Education and Outreach Network (NEON) is comprised of various local networks and their corresponding representatives. Local Health Integrated Network (LHIN) 11 encompasses the eastern most region of Ontario which borders along the province of Quebec. As such, it is a highly bilingual region and it has more Francophones than other LHINs. It is home to approximately 1.2 million residents and spans 18,000 sq. km. Neurosurgical services for this LHIN are located at The Ottawa Hospital (TOH). The neurosurgical team at TOH consists of 9 neurosurgeons, 3 nurse practitioners, 1 clinical nurse specialist in outreach, 1 neuroscience nurse educator and several nurses and allied health team members. The inpatient unit has 27 neurosurgical beds and the step-down unit has 13 beds.

The two NEON representatives are Dianna Hughes, Clinical Nurse Specialist-Outreach and Raizha Gramcko, the Neuroscience Nurse Educator, both provide support and guidance to LHIN 11. The aim of NEON is to support the management and care of specialized neurosurgical patients, while improving the neurosurgical skills of the nursing staff caring for these patients, at non-neurosurgical centers. As a result, these two NEON members have been working closely with the nursing staff in this LHIN to develop specialized educational opportunities, tailored to each hospital's needs. To date, they have developed numerous nursing resources and guidelines, participated in several nursing skills' fairs, provided "lunch and learn" sessions, and conducted numerous in-services. In addition, they have developed products on behalf of NEON to be used by all hospitals in Ontario that are non-neurosurgical sites. Some of the resources developed include the nursing care and management of patients who have- cervical collars, Halo devices, and craniectomy surgery. Currently, they are working on nursing guidelines for the management of braces and subarachnoid hemorrhage patients. Furthermore, they ensure that all of the work that other members of NEON have developed are disseminated and supported.

Apart from developing nursing resources, these two NEON members are also engaged in quite unique outreach activities. The outreach support provided has not been limited to the nursing staff, it involves patients and families as well. All neurosurgical patients discharged from TOH meet the clinical nurse specialist (CNS) on the morning of discharge, they are provided with the CNS' contact information and they receive a follow up call 2 days after discharge. In non-public internal "quality improvement telephone surveys", patients have reported feeling comfortable and well supported after being discharged, because they have contact with the neurosurgical team for non-urgent issues. As for patients being repatriated to community hospitals, the CNS will follow up with the nursing staff about 1 day after transfer to review the patient's nursing care needs and plan. Since initiating these two NEON positions in LHIN 11, patient's nursing care, support and management have gone beyond the bedside.

Upcoming events



2020 Traumatic Brain Injury Conference

Promoting Well-Being following TBI

February 7, 2020 | Marriott Downtown CF Toronto Eaton Centre Hotel



Conference Date

Friday February 7, 2020

Conference Location

**Marriott Downtown at CF
Toronto Eaton Centre**
525 Bay Street
Toronto, ON M5G 2L2

Registration Rates

Early Bird (ends Jan 6, 2020)	\$255.00
Regular Rate (starts Jan 6, 2020)	\$295.00
Student Rate*	\$175.00

*A valid copy of your student ID must be sent via email to conferences@uhn.ca in order to have the rate honored.

Information

Conference Services
conferences@uhn.ca
416-597-3422 ex 3448

[Click here](#) to subscribe to our communications list.



What's New!

1. Revised Basic Neurological Observation Guidelines

<https://www.criticalcareontario.ca/EN/Documents/BNO-Adult%20Guidelines-Revised-FINAL-20190507.pdf>

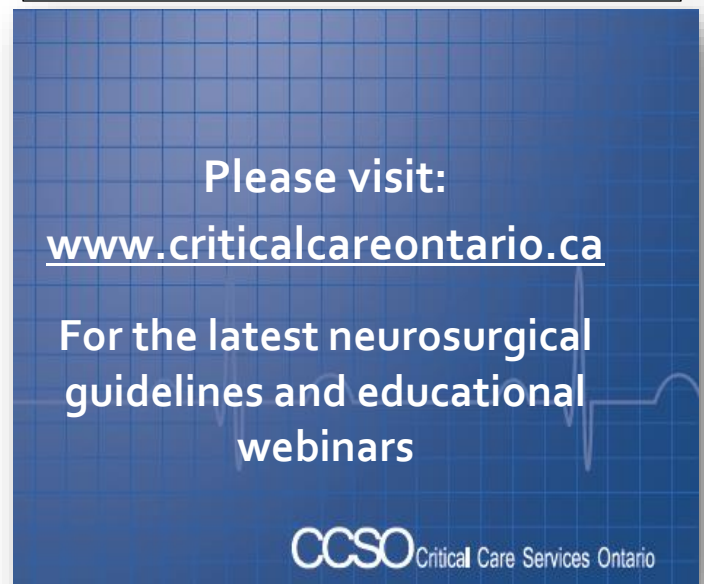
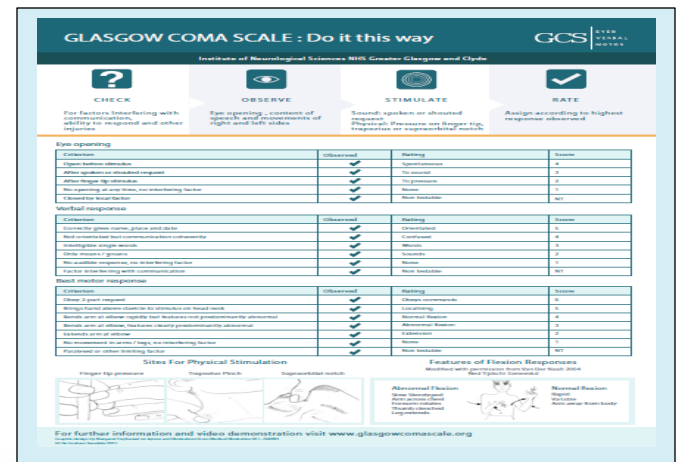
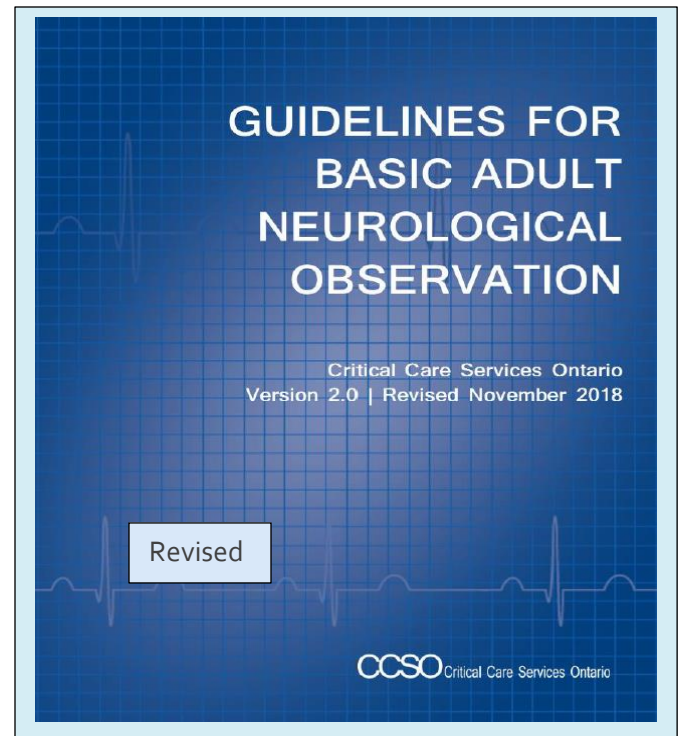
2. Neurosurgery Consultation Referral Guidelines Version 2.0

- Isolated Head Trauma
- Brain Tumour
- Intracerebral Hemorrhage
- Spine

Version 2.0 includes a QR Code that users can scan with their mobile device to access the Guidelines

Coming Soon!

- Spinal Cord Injuries Quick Reference Manual
- Braces, Jewett and TLSO Application and Management
- Brain Tumour
- Subdural Hematoma



LHIN	Organization	Neuro-Nurse Educator	Clinical Outreach Specialist
LHIN 1	Windsor Regional Hospital	Vacant	Vacant
LHIN 2	London Health Sciences Centre	Sheila Hunt	Kimberly Salway
LHIN 3/4	Hamilton Health Sciences	Brenda Bousfield	Klaudia Gogishvili Sera Nicosia
LHIN 5/6	Trillium Health Partners	Beverly Espedido	Caroline Booth
LHIN 7/8/9W/12	University Health Network	Andrew Pharbo	vacant
LHIN 7/8/9W/12	St. Michael's Hospital	Caitlin Stanton	Denise Ouellette
LHIN 7/8/9W/12	Sunnybrook Health Sciences Centre	Lars Kure	Nicole E Cross
LHIN 7	The Hospital for Sick Children	Elisabeth White	Elisabeth White
LHIN 9E/10	Kingston General Hospital	Marnie Cranston	Vacant
LHIN 11	The Ottawa Hospital	Raizha Gramcko	Dianna Hughes
LHIN 13	Health Sciences North Sudbury	Lisa Weiler	Jennifer Arsenault
LHIN 14	Thunder Bay Regional Health Sciences Centre	Kevin Halabecki	Kim Belluz

