



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**

Inside this issue

Deep Brain Stimulation for Parkinson's Disease: pp. 2

Educational Opportunities in your LHIN: pp. 2-3

Guidelines for Basic Paediatric Neurological Observation: pp. 3

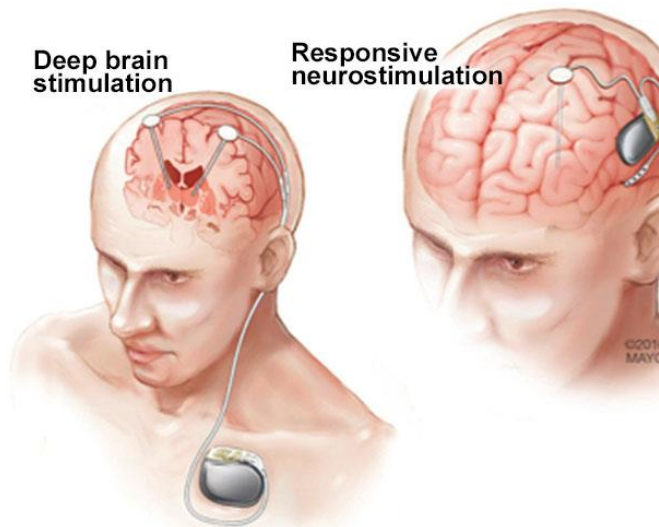
Upcoming events: pp. 4

What's New! and Coming Soon!: pp. 5

Who to contact in your LHIN: pp. 6

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

Deep Brain Stimulation for Parkinson's Disease (PD)



(Modified from Edwards, Kouzani, Lee & Ross. Neurostimulation Devices for the Treatment of Neurologic Disorders. Mayo Clin Proc 2017;92:1427-1444)

In the early stages of levodopa treatment, patients typically experience a smooth and even response to the medication but as the disease advances, however, the effect of levodopa begins to wear off approximately four hours after each dose, leaving patients anticipating the need for their next dose.

Dyskinesia consists of abnormal involuntary movements that are usually choreic or dystonic, but when more severe, may be ballistic or myoclonic. Dyskinesia usually appears when the patient is "on" but occasionally occurs in the form of painful dystonia when the patient is "off" or in a "diphasic" pattern as the dopamine levels rise and fall ("beginning" and "end-of-dose" dyskinesia).

Deep brain stimulation (DBS) is the most frequently performed surgical procedure for the treatment of advanced PD. DBS of either the subthalamic nucleus or the internal globus pallidus alleviates the motor fluctuations and dyskinesia associated with advanced PD.

DBS makes no major lesion, but it requires intensive adjustments in the postoperative period and lifelong maintenance with need for battery replacement and risk of infection and hardware complications due to mechanical disruption. Since DBS produces a safe and entirely reversible physiologic effect without destroying brain tissue, DBS has largely replaced other surgical therapies (pallidotomy and thalamotomy) for treating patients with advanced PD. The most common serious adverse event was infection at the surgical site in the DBS group.

EDUCATIONAL OPPORTUNITIES IN YOUR LHIN!

LHIN 2

Critical Care/ED Orientation Neuro Day

October 3rd, 2019 - Chatham Kent Health Alliance and Bluewater Health

LHIN 3 & 4

Critical Care Neurosurgical Education Days 8-4

September 9 – Greater Niagara General Hospital

September 16 – St. Catharines General Hospital

September 23 – Welland General Hospital

October 9 – St. Catharines General Hospital

October 16 – Greater Niagara General Hospital

October 23 – Welland General Hospital

November 5 – Greater Niagara General Hospital

November 14 – Welland General Hospital

December 5 – Welland General Hospital

Internal Medicine Repatriation Neurosurgical Educational Half Days 0830-1330

September 12 – Welland General Hospital

September 20 – St. Catharines General Hospital

October 2 – Greater Niagara General Hospital

October 18 – Welland General Hospital

Focus on Trauma Conference

September 26 – Winona Estates, Stoney Creek

LHIN 5&6

Resuming September 2019: Trillium Health Partners' Neuroscience

Rounds, every Friday 0800-0900 hrs --- Webcasts available for viewing via OTN

July 22nd & September 23rd: William Osler ED New Hires Orientation – Neuro Day

July 23rd: Credit Valley Hospital – ED Disability Day – Revised CCSO Neurological Assessment Guidelines with case studies

August 6th & 8th: Brampton Civic Hospital – Spinal Cord Assessment

August 28th: Oakville-Trafalgar Memorial Hospital – Cervical Collar Care and Management Workshop

September 12th, 19th, & 26th: Brampton Civic Hospital – Fall Education Day 2019 – Spinal Cord Assessment & Revised CCSO Neurological Assessment Guidelines with case studies

EDUCATIONAL OPPORTUNITIES IN YOUR LHIN!

LHIN 7/8/9W/12

All day Workshops

September 3 – Mackenzie Health Centre

September 6 – Lakeridge Health

LHIN 9E/10

Aneurysm Awareness in-service

August 14 - Kingston Health Science Centre

Neurological Assessment at their Skills Fair

October 25th 28th 29th - Quinte Health Care Belleville General

LHIN 11

July 2019-Carleton Place Hospital-Collar care

July 2019- Arnprior Hospital Collar care x2 days

September 2019- Nursing Skills day-Winchester Hospital

LHIN 14

NEON/RCCR - Neuro/Critical Care Education Day

September 18 Kenora – Lake of the Woods District Hospital

September 19 Fort Frances – LaVerendrye Hospital

September 20 Atikokan General Hospital

October 9 Red Lake Margaret Cochenour Memorial Hospital

October 10 Dryden Regional Health Centre

October 11 Sioux Lookout – Meno Ya Win Health Centre

Rural Trauma Team Development Course

September 12, 2019

Location: Sioux Lookout Meno Ya Win Health Centre

To register:

<https://events.eventzilla.net/e/rural-trauma-team-development-course-2138740292>

Guidelines for Basic Paediatric Neurological Observation

Guidelines for Basic Paediatric Neurological Observation

Guidelines for Basic Paediatric Neurological Observation

Assessment of Intracranial Pressure

Intracranial pressure is based upon on clinical symptoms and exam. The signs of ICP vary depending on the age of the child. The anterior fontanel is primarily used for the assessment of ICP for infants less than 12 months of age.

Signs and Symptoms of Increased Intracranial Pressure

For infants (0-12 months) and toddlers (1-3 yrs), signs of increased ICP may include:	For older children, signs of increased ICP may include:
<ul style="list-style-type: none"> • Macrocephaly 'Sun-setting eyes' Eyes that look downward and do not cross midline when assessing the vertical gaze. • Bulging and fullness of the anterior fontanel • Frontal bossing • Distended head veins • Increased sleepiness • Vomiting • Irritability • Not meeting Developmental milestones • Increasing Head Circumference 	<ul style="list-style-type: none"> • Headache • Drowsiness • Irritability • Nausea and/or vomiting • Ataxia • A change in thinking or concentration • Poor performance at school • Not meeting developmental milestones or losing milestones



Sun-setting Eyes
(Venkataramana, 2011)



Bulging Fontanel
(Beyond Achondroplasia, 2013)



Frontal Bossing
(US Federal Government, 2008)

Critical Care Services Ontario • May 2016 21

Pearl: Changes in head circumference is one key sign for increased ICP in infants and children from 0-2 years of age. In children older than 2 years of age, a head circumference should be done routinely as part of the neurological assessment but is not the primary indicator of increasing ICP.



Assessment of Pupils

- Assess pupil size, equality and reaction.
- Check pupils in ambient light prior to assessing reaction, in order to observe the size of the pupil. The size of the pupil adjusted to ambient light is the pupil size recorded.
- Since not every person has equal pupils, assess and document a baseline for each individual patient. This may be obtained by the parent/caregiver.
- Ensure that an accurate patient history has been taken, including eye/pupil abnormalities.
- Instruct the patient to look forward. If unconscious, RN to open patients eyes by lifting the eyelids looking for midline status.
- Use a concentrated light source (e.g., penlight/ophthalmoscope/otoscope/flashlight) in a dimly lit room (turn off ambient light to attain a response) and assess for:
 - Direct constriction: Move the light from the outer aspect of the eye inward toward the pupil. The pupil should constrict. Repeat for the other eye.
 - Consensual constriction: Shine the light into one pupil and observe the other pupil for constriction. Repeat for the other eye.

Examine each pupil in sequence for any constriction to direct and consensual illumination.
Record a "+" symbol if the pupil reacts, a "-" symbol if the pupil does not react.

RED FLAG: If pupils change from baseline or NO pupillary constriction is observed, this may indicate deterioration in a patient's condition. Follow up by increasing the frequency of monitoring, informing the MRP and/or calling the Rapid Response Team or equivalent as per organizational defined criteria.

Outreach in Action- LHIN 1 & 2



When it comes to neurosurgical care in the Southwestern Ontario, LHIN's 1 and 2 have a unique relationship. Sarnia's Bluewater Health is in the Erie St. Clair LHIN (LHIN 1) and patients who present there should receive their care at Windsor Regional Health (WRH). However, Bluewater Health is *geographically* closer to the Neurosurgery, Ortho-Spine and Trauma programs at London Health Sciences Centre (LHSC), which is in the South West LHIN (LHIN 2). This means that some neurosurgical-spine patients come to London.

Windsor Regional Health now has two physicians who can perform neuro-vascular procedures, such as aneurysm coiling and clot retrieval after ischemic stroke. Up until recently, WRH had only one physician with these skills. When WRH is unable to perform clot retrieval, patients are sent to Henry Ford Hospital in Detroit. Patients from Chatham-Kent Health Alliance get transferred to LHSC, where there are seven skilled MDs who perform neuro-vascular procedures. The LHSC program operates on a 24/7 basis.

Just as our hospitals and LHINs collaborate for neurosurgical services, so does the NEON team. This past spring, Bluewater Health and Chatham-Kent Health Alliance shared resources to offer education to their critical care and emergency department nursing staff. This was a first-time partnership. NEON was asked to assist with the neurological content of the education. NEON members Sheila Hunt and Kim Salway, from the South West LHIN, and Jessie McKenzie, from the Erie St. Clair LHIN, were the instructors for the Neuro Day. We enjoyed working together to create and deliver a fun and interactive learning experience. Four nurses from Chatham and five nurses from Sarnia participated.

Upcoming events

SEP
20
TO SEP 22

Canadian League Against Epilepsy 2019 Annual Scientific Meeting - Call for Abstracts

Fri, Sep 20, 2019, 8:00 AM - Sun, Sep 22, 2019, 9:00 AM



7th Annual Concussion Research Symposium & 2nd Concussion in Women and Girls Conference

Event Type:

Conference

Event Date: Nov. 2, 2019

BMO Education & Conference Centre,
Toronto

Event Address:

Canada

7th Annual Concussion Research Symposium &

2nd Concussion in Women and Girls Conference

Update on Concussion Research and Concussion in Women and Girls
Saturday November 2, 2019 | BMO Education & Conference Centre
Concussion Public Forum in association with the 7th Annual Concussion Research Conference on Friday November 1, 6:00 - 8:00 pm

Dr. Douglas H. Smith
Professor and Vice Chairman of Research and Education, Department of Neurosurgery, Director of PENN's Center for Brain Injury and Repair, University of Pennsylvania, USA
Symposium Director
Dr. Charles Tator
Scientist, Krembil Research Institute;
Project Leader, Canadian Concussion Centre, Toronto Western Hospital, University Health Network

Web Address:

<https://events.myconferencesuite.com/ConcussionSymposium2019>

Contact Name:

Dr. Joseph A. Maldjian

Company Name:

Contact Email:

conferences@uhn.ca

Contact Phone:

(416) 597-3422 ext 3448

Contact Fax:

What's New!

1. Revised Basic Neurological Observation Guidelines

2. Neurosurgery Consultation Referral Guidelines Version 2.0

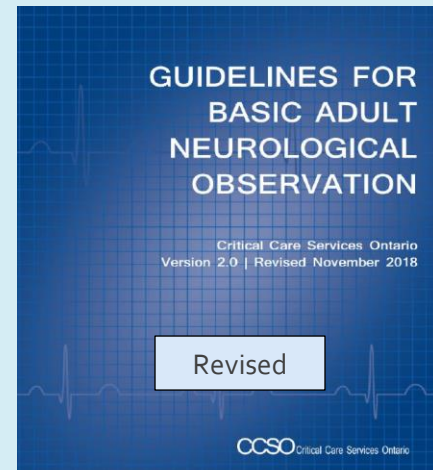
- Isolated Head Trauma
- Brain Tumour
- Intracerebral Hemorrhage
- Spine

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

3. Halo Care

Coming Soon!

- Seizure Management
- Spinal Cord Assessment video
- Cauda Equina



GLASGOW COMA SCALE : Do it this way GCS VISUAL MOTOR

Institute of Neurological Sciences NHS Greater Glasgow and Clyde

CHECK	OBSERVE	STIMULATE	RATE
For factors interfering with communication, ability to respond and other injuries	Eye opening, content of speech and movements of right and left sides	Sound: spoken or shouted request Physical: Pressure on finger tip, trapezius or supraorbital notch	Assign according to highest response observed

Eye opening

Criterion	Observed	Rating	Score
Open before stimulus	✓	Spontaneous	4
After spoken or shouted request	✓	To sound	3
After finger tip stimulus	✓	To pressure	2
No opening at any time, no interfering factor	✓	None	1
Closed by local factor	✓	Non testable	NT

Verbal response

Criterion	Observed	Rating	Score
Correctly gives name, place and date	✓	Orientated	5
Not orientated but communication coherent	✓	Confused	4
Intelligible single words	✓	Words	3
Only moans / groans	✓	Sounds	2
No audible response, no interfering factor	✓	None	1
Factor interfering with communication	✓	Non testable	NT

Best motor response

Criterion	Observed	Rating	Score
Obeys 2 part request	✓	Obeys commands	6
Brings hand above clavicle to stimulus on head neck	✓	Localising	5
Bends arm at elbow rapidly but features not predominantly abnormal	✓	Normal Flexion	4
Bends arm at elbow, features clearly predominantly abnormal	✓	Abnormal Flexion	3
Extends arm at elbow	✓	Extension	2
No movement in arms / legs, no interfering factor	✓	None	1
Paralysed or other limiting factor	✓	Non testable	NT

Sites For Physical Stimulation

Finger tip pressure Trapezius Pinch Supraorbital notch

Features of Flexion Responses
Modified with permission from Van Der Naalt, 2004
Red Tjebbe for ComaScale

Abnormal Flexion
Slow Stereotyped
Arm across chest
Forearm rotates
Thumbs extended
Leg outwards

Normal Flexion
Rapid
Variable
Arm away from body

For further information and video demonstration visit www.glasgowcomascale.org

Copyright Glasgow Royal Infirmary and Glasgow Royal Infirmary NHS Trust. All rights reserved. 2018

Please visit:
www.criticalcareontario.ca

For the latest neurosurgical guidelines and educational webinars

LHIN	Organization	Neuro-Nurse Educator	Clinical Outreach Specialist
LHIN 1	Windsor Regional Hospital	Jessie McKenzie	Jessie McKenzie
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	Vasuki Paramalingam	Denise Ouellette
LHIN 7/8/9W/12	Sunnybrook Health Sciences Centre	Lars Kure	Catherine Morash
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	Lindsay Roach
LHIN 14	Thunder Bay Regional Health Sciences Centre	Kevin Halabecki	Kim Belluz

