Ontario Health

Memo

Date: July 16, 2026

Issued To: Chief Executive Officers

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Subject: **Updated Neurosurgical Guidelines for Emergency Department Patients with Traumatic Brain Injuries**

For distribution to: Vice Presidents of Medicine, Emergency Department leadership, Chiefs of Medical Imaging, hospitalists, Internal Medicine teams, Chiefs of Neurosurgery, and other clinicians involved in the care of adult patients with traumatic brain injuries

Ontario Health, in collaboration with CritiCall Ontario, is providing updated neurosurgical guidelines for the management of adult traumatic brain injury (TBI) for adoption across all Ontario emergency departments (EDs).

The implementation of the modified Brain Injury Guidelines, adapted for use in Ontario (Ontario mBIG), represents an important step toward standardizing care, supporting evidence-based clinical decision-making, and reducing unnecessary consultations, imaging, admissions, and transfers for eligible lowest-acuity adult patients.

The modified Brain Injury Guidelines (mBIG) are evidence-base guidelines and reflect the consensus opinions of The Ontario Health Neurosurgery Clinical Leadership group. The guidelines classify patients by injury severity and provide clinical guidance for assessment, CT imaging, observation and neurosurgical referral or consultation. The Ontario mBIG will replace the current Neurosurgery Consultation Referral Guidelines on CritiCall Ontario for care of adult patients with TBI.

Adult patients classified as lowest-acuity (mBIG 1) can often be safely managed within the local emergency department, without routine neurosurgical consultation or repeat imaging.

Implementation

Effective Wednesday, July 22 at 07:00 hrs, CritiCall Ontario will begin the first phase of the Ontario mBIG implementation with a revised case-facilitation process for eligible adult low-acuity (TBI) patients. ED physicians will use the radiologic mBIG category from radiologist report, together with their clinical assessment, to guide patient management and disposition decisions. When consulting through CritiCall Ontario for appropriate patients, referring ED physicians will be connected with an ED Peer Physician from the ED Peer-to-Peer Program rather than a neurosurgeon. Additional information for Emergency Departments and Medical Imaging Departments follows.

Emergency Departments

The first phase of this initiative focuses on the introduction of the Ontario mBIG for lowest-acuity adult patients presenting to the ED with traumatic subdural hematoma (tSDH) and traumatic subarachnoid haemorrhage (tSAH). For these patients, ED physicians contacting CritiCall Ontario will be connected to an ED Peer Physician, who will provide guidance on the application of Ontario mBIG for specific and appropriate, lowest-acuity adult TBI patients. EDs at neurosurgical centres should also utilize the Ontario mBIG to help guide consultation and management decisions for adult TBI patients, recognizing that these sites typically manage consultations directly and do not access specialty support through CritiCall Ontario.

The ED Peer-to-Peer Program is a well-established provincial resource available through CritiCall Ontario that provides 24-7 clinical coaching, mentoring and support for ED physicians. During these calls, the CritiCall Ontario operators will remain on the line with both physicians and when clinically appropriate, escalate the case to a neurosurgeon.

Medical Imaging Departments:

Consistent, structured neuroradiology reporting of head CT is a key enabler to the safe and successful implementation of mBIG. Elements of the structured CT head reports should include:

- Clear, standardized, and complete findings, with measurements
- A radiologic mBIG tier, aligned with the highest-risk imaging feature

Based on the radiologic measurements with mBIG category and clinical examination, ED physicians will determine a final mBIG classification and follow a standardized clinical pathway.

An Ontario mBIG Radiology Classification Reference Guide has been included in this Memo as a resource for radiologists.

Looking Ahead

Following an evaluation of the initial phase, Ontario Health, in collaboration with system partners, will continue to advance the implementation of the updated neurosurgical guidelines through several initiatives including:

- Developing a structured reporting template for CT head in patients with trauma, in collaboration with imaging experts in the field. The template will include mBIG features and will be prepared for integration within radiology reporting systems.
- Expanding of CritiCall Ontario case facilitation to support adult patients with higher acuity mBIG classifications
- Updating the neurosurgical consultation guidelines for intra-cranial hemorrhage (ICH) and brain tumours
- Engaging health system partners to support province-wide implementation of standardized clinical pathways for community-based management and follow-up care

Resource for Radiologists: mBIG Radiology Category Reference Guide

Radiologists should classify each scan into the highest applicable mBIG tier based on objective imaging findings. All imaging findings as per the table below, including measurement(s) and mBIG radiology category, are required in the report to support final clinical mBIG stratification.

If multiple findings are present, assign the highest tier, (ex. SDH 6 mm (mBIG 2) + IPH 3 mm (mBIG 1) → Final: mBIG 2)

mBIG guidelines provide recommended patient management according to both imaging findings and clinical assessment, **recommendations for neurosurgery consult are not required in the radiology report and should not be included.**

Imaging Finding	mBIG 1 (Low Risk)	mBIG 2 (Mod Risk)	mBIG 3 (High Risk)
Subdural Hematoma (SDH)	≤ 4 mm	5 – 7.9 mm	≥ 8 mm
Intraparenchymal (IPH)	≤ 4 mm	5 – 7.9 mm	≥ 8 mm (or multiple)
Subarachnoid Haemorrhage (SAH)	≤ 3 sulci AND < 1 mm	Localized (1 hemisphere; 1–3 mm)	Scattered (≥ bi-hemispheric or > 3 mm)
Epidural Hematoma (EDH)	None	None	Any EDH (automatic Tier 3)
Intraventricular (IVH)	None	None	Any IVH (automatic Tier 3)
Skull Fracture	None	Non-displaced	Displaced or Depressed
Midline Shift / Mass Effect	None	None	Any present (automatic Tier 3)

Thank you for your support in communicating this important clinical initiative to improve access and care for Ontario ED patients.