NB Trauma Program
Programme de traumatologie du NB

Horizon Health Network | Réseau de santé Horizon | Vitalité Health Network | Réseau de santé Vitalité | Ambulance NB | New Brunswick Department of Health | Ministère de la santé du Nouveau-Brunswick

# Consensus Statement for Traumatic Brain Injuries
# May 2020

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**EVIDENCE CONSIDERED IN REACHING THE CONSENSUS STATEMENT:**


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**PREAMBLE:**

This consensus statement summarizes recommendations for the care of acute traumatic brain injury (TBI) patients. Recommendations are based on current best practice and are adapted from medical literature. It is recognized that the geography, population, and availability of specialized services in New Brunswick provide a unique context to be considered in any overall recommendations for the care of the TBI patient.

**SCOPE:**

The statement outlines the preferred guidance for all patients ≥ 16 years of age who have experienced an acute TBI including:

- Prehospital guidance
- Emergency/resuscitative care
- Transfer criteria and guidance

The consensus statement does not apply to atraumatic strokes or hemorrhages. Pediatric TBI patients less than 16 years of age will be evaluated on a case by case basis in consultation with the Trauma Control Physician (TCP). Refer to guidance offered in the Management of Pediatric Trauma Transfers policy, available on Skyline/Boulevard.

**BACKGROUND:**

- Traumatic brain injury “occurs as a result of blunt or penetrating trauma or force. Brain function can be temporarily or permanently impaired.”
- Advanced Trauma Life Support (ATLS) principles guide the initial assessment and resuscitation of the trauma patient using the mnemonic ABCDE in a systematic approach.
- **The primary goal of treatment for patients with suspected TBI is to prevent secondary brain injury.** Secondary brain injury can occur minutes, hours or days after the initial brain trauma. It is essential to ensure appropriate clinical management to lessen or offset any further damage. The principal way to limit a secondary brain injury and thereby improve a patient’s outcome is to ensure adequate oxygenation, ventilation and cerebral perfusion.
- Mortality rate is more than double for patients with severe TBI who are hypotensive on admission to the emergency department as compared to patients who have not had an episode of hypotension.
- Maintaining pulse oximetry measuring at ≥ 95 % and a systolic blood pressure at ≥110 or ≤180 mmHg for patients decreases mortality and improves patient outcomes.
- Permissive hypotension does not apply to TBI patients even in the presence of other injuries. Avoid hypotension, hypoxia, hypoglycemia and maintain euglycemia and normocarbia.

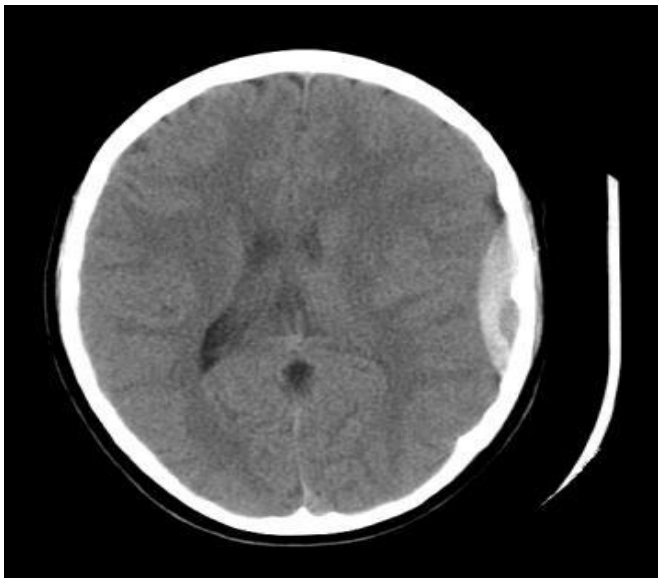
- The **Glasgow Coma Scale (GCS)** is the most widely used tool for reporting global brain function after injury. In the context of serial evaluations, it provides an objective clinical measure of the severity of brain injury. The GCS scale was revised in 2014 and pupillary reactivity as a reflection of brainstem function was added in 2018.
    a. This consensus statement uses the 2014 revised GCS exclusively when assessing the TBI patient (Table 1).
    b. Mild brain trauma is defined as a witnessed loss of consciousness, definite amnesia, or witnessed disorientation in a patient with a GCS of 13-15.
    c. A GCS of 13-15 is considered a mild TBI (mTBI**),** a GCS of 9-12 is categorized as a moderate TBI and a GCS of 8 or less is considered a severe TBI.
    d. Maintain a high index of suspicion for TBI in the elderly person as they may present with higher GCS than a younger patient with similar injury severity.
    e. Reporting GCS as three components: Eye opening (E)- Verbal response (V)-**Best Motor Response (M) is essential** as this has a strong influence on neurosurgical decision making.
    f. It is essential that when assessing the GCS score that the **best motor response** be documented including any anomalies in right/left extremities or any upper/lower asymmetry as this information is the most reliable predictor of outcome.
    g. Pupillary size and reactivity should be documented on all patients post injury.
- Neurosurgical consultation via the Toll-Free Trauma Referral System (TFTRS) is recommended for patients with suspected intracranial or skull injury or positive CT head imaging and for whom the physician is concerned.
- Following imaging and neurosurgical consultation, if transfer is deemed not necessary for a non-operative head injury, ongoing liaison with the neurosurgeon for clinical management is crucial. Verbal and written guidance on clinical care is recommended for facilities with no neurosurgical unit and should be prompted by the TCP via the TFTRS. Consideration for a three-way call between the TCP, attending physician and neurosurgeon is an option during the emergency phase of care when the facility has questions on observation and care of the TBI patient.
- Conferencing with the TCP and neurosurgeon is appropriate if the decision to not transfer is questioned.

**CLASSIFICATION OF HEAD INJURIES:**

| Focal Intracranial lesions |
| --- |

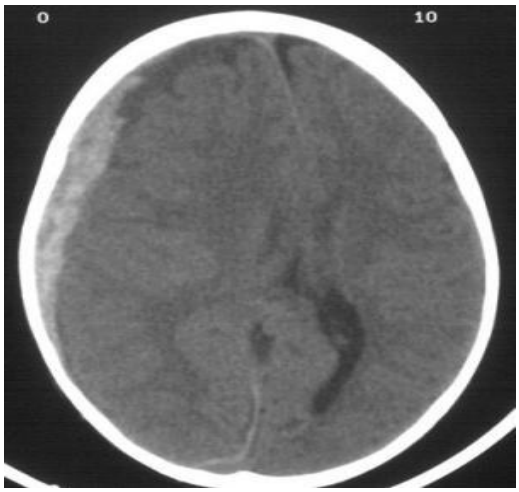
**Epidural Hematoma**

- Relatively uncommon, however, specific mortality has been described to be approximately 10% in adult patients.
- Classic presentation is a transient loss of consciousness (LOC) at time of injury followed by a lucid interval lasting minutes to hours until neurologic deterioration.
- The source of bleeding is usually arterial after trauma to the temporal or parietal bone and a resulting tear of the middle meningeal artery.
- Venous sources of an epidural hematoma are described as slower to expand than an arterial bleed.



**Subdural Hematoma (SDH)**

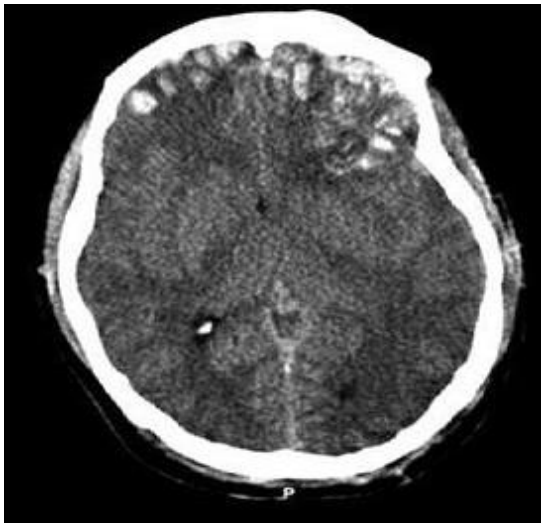
- More common than epidural hematomas occurring in approximately 30% of severe TBI.
- Bleeding source is usually venous due to damaged bridging veins or shearing of small surface of the cerebral cortex.
- SDHs can be **acute** with signs and symptom onset in ≤ 72 hours after the trauma or **chronic** developing over time and may manifest signs and symptoms at ≥ 20 days.




**Contusion and Intracerebral Hematoma**

- Contusions are relatively common in severe brain injury and are usually located in the frontal and temporal lobes.
- Contusions may evolve to form an intracerebral hematoma. This has been noted in approximately 20% of patients who show contusions on the initial CT of the head.

Contusions

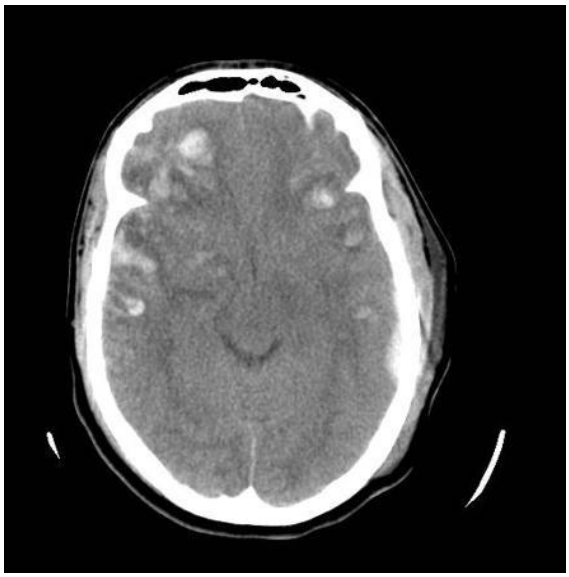


Intracerebral hematoma

## Diffuse Brain Injuries

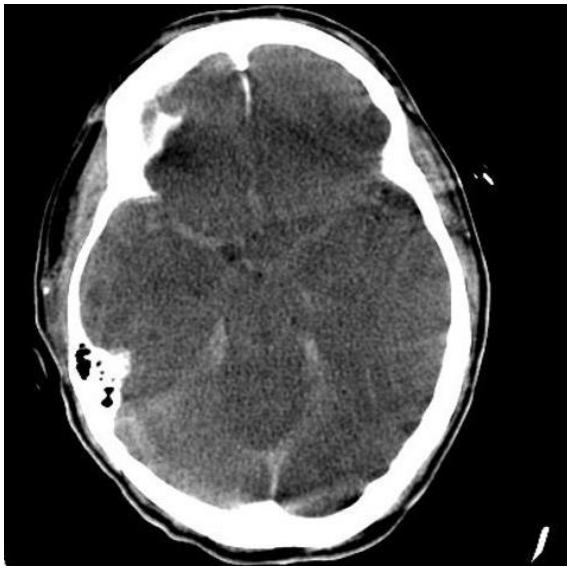
### Multiple contusions

- Typically, due to high velocity impact or deceleration injuries.
- Seen as multiple punctate hemorrhages throughout the cerebral hemispheres.



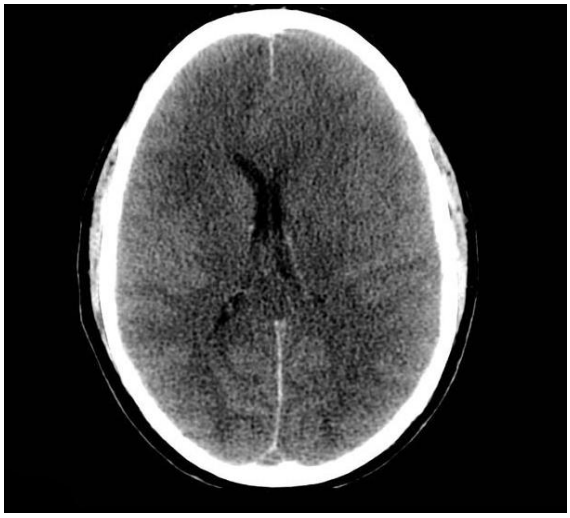
### Hypoxic / ischemic injury

- Results from prolonged shock or inadequate oxygenation and ventilation post trauma with the resulting hypoxia and ischemia causing secondary brain injury.



**Axonal injury**

- Acceleration and deceleration motion causing shearing injuries that result in microscopic and gross damage to the axons in the brain at the junction of the gray and white matter.



**Concussion**

- Transient impairment of neurologic function following a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head.
- Results in a wide range of clinical signs and symptoms that may include: transient loss of consciousness, anterograde and/or retrograde amnesia, disorientation, headache or vomiting.
- Given the lack of structural injury, concussions have no findings on routine structural neuroimaging studies (CT, structural MRI).
- The NB Trauma Program has developed comprehensive guidance on the management of concussion, all of which is available on the NB Trauma Program website (www.nbtrauma.ca).

**PRE-HOSPITAL CARE**

- Field Trauma Triage Guidelines continues to reflect preferential transport to Level III, II and I designated centres for qualifying traumatic brain injuries.
- Reporting the three components (E-V-M) of the GCS as well as reporting the best and worst GCS score when providing patient history is recommended.
- Endotracheal intubation is not recommended for isolated TBI as it is known to increase mortality.
- Supraglottic device or bag valve mask support is advised for airway control.
- Maintain pulse oximetry $\geq$95%.
- Maintaining a systolic B/P $\geq$110 mmHg &$\leq$180 mmHg is recommended for all moderate to severe TBI.

**EMERGENCY/RESUSCITATIVE CARE**

**PRIMARY SURVEY:**

- All trauma patients should undergo a primary survey and resuscitation adhering to the mnemonic ABCDE. The prioritized sequence is based on the degree of life threat.
    - **A** Airway maintenance with restriction of cervical spine motion
    - **B** Breathing & ventilation
    - **C** Circulation with hemorrhage control
    - **D** Disability (assessment of neurologic status)
    - **E** Exposure & Environmental control
- If the patient requires intubation GCS assessment should be performed prior to administering any drugs for intubation.
- Documentation of the baseline view of the patient's neurological status and noting the best motor score of GCS is essential as is pupillary size and reactivity.

**SECONDARY SURVEY:**

During the secondary survey, it is crucial to determine the mechanism of injury and any loss of consciousness, confusion and/or amnesia. Details on the length of time the patient was unresponsive with the level of alertness that followed, any seizure activity and any episodes of vomiting are essential.

- A thorough physical examination is completed during the secondary survey as is a full neurological assessment.
- The AMPLE mnemonic (**A**llergies, **M**edications, **P**ast medical history, **L**ast meal or other intake, **E**vents leading to presentation) is useful in capturing the history of the injury and past medical history of the patient.
- Signs of or measured values of drug or alcohol misuse requires the clinician to evaluate for evidence of head trauma.

**GLASGOW COMA SCALE: 2014 Revisions**

- In 2014, minor alterations were made to the GCS scale. The use of simplified words to create clear definitions replaced certain terms in each component of the scale.
- The addition of the term non-testable is notable, ensuring that a limiting factor interfering with eye opening (E), verbal response (V) and/or movement (M) is captured and therefore not given a score.
- It is recommended to utilize a standard approach to the assessment enhancing the consistency of the scales' use.

- Reporting the three components rather than a total score is recommended. Documentation and communication of the scores for each component as E-V-M is considered best practice.
- Supraorbital pressure, earlobe pressure and trapezius squeeze are advised to elicit a response. Sternal rub is no longer recommended.

**TABLE 1: GLASGOW COMA SCALE**

The **revised GCS scale** is recommended. Revised terms are highlighted in red in the table.

| Eye Opening (E) | Score | Verbal Response (V) | Score | Best Motor Response (M) | Score |
|---|---|---|---|---|---|
| Spontaneous | **4** | Oriented | **5** | Obeys commands | **6** |
| To sound | **3** | Confused | **4** | Localizes | **5** |
| To pressure | **2** | Words | **3** | Normal flexion | **4** |
| None | **1** | Sounds | **2** | Abnormal flexion | **3** |
| Non-testable | **NT** | None | **1** | Extension | **2** |
| | | Non-testable | **NT** | None | **1** |
| | | | | Non-testable | **NT** |

- If an area cannot be assessed, no numerical score is given, and it is considered non-testable (NT).
- The reason the component is NT should be documented within the patient chart.

**DIAGNOSTIC IMAGING RECOMMENDATIONS:**

- For mild TBI, it is recommended that the Canadian CT Head Rule be followed for imaging criteria. (Appendix A).
- A non-contrast head CT scan should be performed with suspected brain injury.
- Maintain a low threshold for non-contrast cervical spine imaging in blunt/penetrating head trauma.
- Maintain a low threshold for whole body CT for multi-region trauma or dangerous mechanisms of injury.
- Although the pediatric population under the age of 16 is not included in this consensus statement it is recommended that the PECARN be utilized as guidance for a mild TBI in children under the age of 16 (Appendix B).
- Do not limit CT for pediatric or pregnant trauma patients when indicated.
- Preliminary verbal report for major findings should be provided within 30 minutes for emergent trauma imaging requests.

**RECOMMENDATIONS FOR THE INITIAL MANAGEMENT OF THE ISOLATED TBI PATIENT BASED ON NEUROLOGICAL ASSESSMENT AND GCS SCORE:**

The following are clinical signs, symptoms and history that are considered **RISK FACTORS** that may place the TBI patient at an additional risk for neurosurgical intervention and require an elevated index of suspicion and lower threshold for imaging:

- Patients with GCS score less than 15 at 2 hours after injury.
- Clinical signs of open or depressed skull fracture.
- Any sign of basilar skull fracture.
- Anti-coagulant, anti-platelet therapy and bleeding disorders.
- Age 65 or older.

- Significant mechanism of injury (high velocity mechanisms).
- Vomiting (two or more episodes).
- Loss of consciousness > 5 minutes.
- Retrograde amnesia > 30 minutes prior to injury.

**MONITORING & TREATMENT RECOMMENDATIONS:**

Goals of treatment include the following clinical and laboratory parameters:

| | |
|---|---|
| **Systolic B/P** | **≥110mmHg ≤180mmHg** |
| **Temperature** | **35-37°C** |
| **Pulse oximetry** | **≥ 95%** |
| **End tidal CO2** | **35-45 mm Hg** |
| **Glucose** | **3.5-7.7mmol/L** |
| **Hemoglobin** | **>90 g/L** |
| **INR** | **≤ 1.4** |
| **Na** | **135-160 mmol/L** |
| **PaCO2** | **35-45 mm Hg** |

- Mild head injury: Perform serial neurological examinations until GCS is 15 (or at baseline) and patient is clinically appropriate for discharge.
- Moderate to severe head injury: Perform serial neurological examinations & **GCS every 15 minutes (min) x 2 hours then q30 min x 2 hours afterword** or as per physician orders.
- Frequent reassessment of all clinical parameters such as vital signs, pulse oximetry, urine output must be completed on all acutely injured patients.
- Upon normalization of vital signs and confirmation of no C-spine or thoracolumbar injuries, elevating the head of bed to 30° while maintaining neutral spine alignment is recommended. Elevation of the head of the bed has been shown to reduce intracranial pressure and promote venous drainage.
- Maintain normothermia in all TBI patients.
- The use of high-dose steroids in severe TBI is not recommended or indicated.
- Consultation with TCP and neurosurgery is recommended for any positive CT head imaging associated head trauma.
- Seizure activity in a post injury patient with normal CT head results and a GCS 15 does not require neurosurgical consult. Consultation with TCP is recommended as consideration of other causes for seizures should be explored.
- Consult the NB Trauma Program Consensus Statement on RSI and Post-Intubation Analgesia and Sedation for Major Trauma Patients in TBI patients requiring advanced airway control and post intubation pharmacological support. (www.nbtrauma.ca)
- For TBI patients who are intubated, sedation should be restricted to short acting infusion agents. This allows the receiving neuro-team (neurosurgeon and intensivist) to do serial neuro-exams without the confounding hangover influence of longer acting agents.
- Additional guidance for intubated TBI patients includes avoiding benzodiazepines if possible.

- Ensure neuroprotective ventilation to mitigate influence on intracranial pressure particularly in the acute phase and during transport is recommended. Neuroprotective ventilation refers to ventilator strategies in the already intubated patient with a traumatic brain injury to mitigate the effects of rising ICP and secondary brain injury. For the patient in transit to a neurosurgical center this specifically involves the following:
    - Target an SPO2 ≥ 95%. Adjust PEEP and FiO2 accordingly.
    - Use PEEP conservatively as it may prevent CNS venous drainage and contribute to increasing ICP.
    - Target PaCO2: 35-40mmHg (low normal). Use end tidal CO2 monitor as a guide to the CO2 trend.
    - The patient should have adequate analgesia and sedation and should be in a controlled mode of ventilation and not pressure support.
    - Hyperventilate only if signs of impending herniation i.e. Cushing's reflex, asymmetric pupils, seizures, posturing (decerebrate/decorticate).
    - In certain situations, use of paralytics may be recommended by TCP and/or neurosurgeon to facilitate controlled ventilation.
- In threatened intracranial hypertension or signs of brain herniation, a bolus of 250mL of 3% Hypertonic saline over 20 minutes is recommended. Monitoring fluid, sodium and chloride balance is necessary. Consultation with the TCP and neurosurgeon is available if required for shared decision making.
- Mannitol use is recommended only when specifically requested by consulting neurosurgeon as it may cause hypotension.
- Clinicians should have a low threshold for reversal agents or factor replacement in patients receiving anticoagulation or anti-platelet therapy or those with a bleeding disorder.
- Consider Labetalol when systolic blood pressure >180mmHg. Use with care as it can cause hypotension.
- Tranexamic acid (TXA) is recommended within 3 hours of injury as it has shown a reduction in head-injury related deaths. TXA is given as a loading dose of 1 g over 10 minutes then an infusion of 1 g over 8 hours.

**CLINICAL INVESTIGATIONS:**

Recommended laboratory investigations for the TBI patients include:

| Laboratory testing |
|---|
| CBC |
| Electrolytes |
| Creatinine & BUN |
| Glucose |
| Creatine kinase (CK) |
| Lactate |
| Type & screen |
| INR, Pt, PTT |
| Fibrinogen-if available |
| Venous blood gas or arterial blood gas |
| Alcohol and/or drug screen (urine and/or serum) if clinically indicated |
| Pregnancy test: urine or serum hCG on all women of childbearing age |

- Complete baseline 12 Lead ECG.

**PATIENT DISPOSITION / TRANSFER CRITERIA:**

TBI patients who meet the following criteria should be considered for transfer via the TFTRS:

- May require neurosurgical intervention.
- Polytrauma patient with neurological signs and symptoms.
- Closed head injury with GCS ≤12.
- Penetrating head injury.
- Patient with one or more risk factors (page 10).
- Catastrophic injury: transfer if organ donation being considered.
- Family requests additional neurosurgical assessment/opinion.

Other considerations:

- Moderate and severe TBI patients should be transferred to neurosurgical centre for at least the initial 48 hours post injury.
- When deemed clinically appropriate repatriation to the sending facility is expected.
- When patients are deemed as not requiring transfer to a neurosurgical center, it is understood that clinical support from the on-call neurosurgeon be available to the admitting physician for neurosurgical questions.
- In situations when the patient has written documentation for DNR or Health Care Directive regarding resuscitation, it may be agreed through consultation with next of kin or substitute decision maker that transfer to a higher-level facility would not be appropriate.
- The TCP will determine the most appropriate destination for pediatric patients. Pediatric patients < 16 years whose care exceeds that available in New Brunswick will be transferred to the IWK or in some situations to Ste. Justine (Montreal) or Montreal Children's if recommended by the consulting neurosurgeon.
- **Level 3:** Early contact with the Toll-Free Trauma Referral System (TFTRS) is encouraged when it is determined the facility's capacity for care is exceeded. Neurosurgical consult may then be facilitated via the TFTRS.
- **Level 5:** facilities are strongly encouraged to contact the TFTRS in patients assessed as having a TBI.

Neurosurgical management continues to evolve, and the following abnormal CT findings **may not** necessarily require transfer to a neurosurgical facility however, neurosurgical consult is recommended.

- Non-depressed skull fracture open or closed
- Solitary cerebral contusion<10mm
- Multiple cerebral contusions < 5mm
- Subarachnoid hemorrhage < 5mm
- Isolated pneumocephalus
- Subdural hematoma < 5mm

**KEY INFORMATION REQUIRED FOR ALL NEUROSURGICAL CONSULTATIONS:**

- Patient age
- Mechanism & time of injury
- Respiratory & cardiovascular status: Blood pressure & oxygen saturation are critical as is any treatment of hypotension or hypoxia
- Neurological examination findings: Any loss of consciousness, subsequent level of alertness, GCS scale noting best, worst and most recent E-V-M score, pupil size & light response, vomiting
- Focal neurological deficits if any
- Any suspected abnormal neuromuscular status including seizures
- Any associated injuries
- Results of any diagnostic studies if completed
- History of anticoagulant use, bleeding disorder

**INTER-FACILITY CARE:**

During all phases of care with suspected TBI, efforts should focus on preventing secondary brain injury. The following clinical and monitoring parameters are indicated during the interfacility phase of care:

- Perform GCS examinations every 15 minutes or as per physician orders.
- Maintain systolic **B/P ≥110 & ≤ 180mmHg.**
- Maintain pulse **oximetry ≥95%**.
- Monitor and maintain **end tidal CO2**: **35-45mmHg.**
- Prevent hypothermia.
- Monitor glucose.
- Ensure adequate sedation & analgesia aiming for Richmond Agitation-Sedation Scale (RASS)-4 for intubated patients. (Appendix C)
- For TBI patients who are intubated, sedation should be restricted to short acting infusion agents. This allows the receiving neuro-team (neurosurgeon and intensivist) to do serial neuro-exams without the confounding hangover influence of longer acting agents.
- Additional guidance for intubated TBI patients includes avoiding benzodiazepines if possible.
- Ensure neuroprotective ventilation to mitigate influence on intracranial pressure particularly in the acute phase and during transport is recommended. Neuroprotective ventilation refers to ventilator strategies in the already intubated patient with a traumatic brain injury to mitigate the effects of rising intracranial pressure (ICP) and secondary brain injury. For the patient in transit to a neurosurgical center this specifically involves the following:
    - Target an SPO2 ≥95%. Adjust Positive End Expiratory Pressure (PEEP) and FiO2 accordingly.
    - Use PEEP conservatively as it may prevent central nervous system (CNS) venous drainage and contribute to increasing ICP.
    - Target PaCO2: 35-40mmHg (low normal). Use end tidal CO2 monitor as a guide to the CO2 trend.

- The patient should have adequate analgesia and sedation and should be in a controlled mode of ventilation and not pressure support.
- Hyperventilate only if signs of impending herniation i.e. Cushing's reflex, asymmetric pupils, seizures, posturing (decerebrate/decorticate).
- In certain situations, use of paralytics may be recommended by TCP and/or neurosurgeon to facilitate controlled ventilation.

- In threatened intracranial hypertension or signs of brain herniation, administering 250mL of 3% Hypertonic saline over 20 minutes is recommended. Monitoring fluid, sodium and chloride balance is necessary.
- Consider Labetalol when systolic blood pressure >180mmHg. Use with care as it can cause hypotension.
- Traumatic brain injuries are not, on their own, a contraindication to air transport. The only contraindication to air transport would be the presence of trapped air (pneumocranium).

**DISCHARGE CONSIDERATIONS:**

- Admitted trauma patients who have negative CT head results should receive follow up assessment by an identified designated discipline prior to discharge to identify any mild traumatic brain injury with resulting balance impairment and/or cognition issues.
- Patients confirmed to have a TBI should receive follow up assessment by an identified designated discipline prior to discharge to identify any mild traumatic brain injury with resulting balance impairment and/or cognition issues.
- A multi-disciplinary approach is recommended in the care of the multisystem injured patient.

**ORGAN DONATION:**

Donation should be viewed as an integral part of quality end-of-life care. Identifying and referring all potential donors to the NB Organ and Tissue Program is key to achieving the optimal conversation with families regarding donation.

The Organ Donation Resource Nurses (ODRN) can be reached at **1-506-643-6848** (or via the Organ and Tissue Donation (OTD) line at: 1-888-553-6667) to assess potential organ donors who meet the GIVE criteria (Appendix D):

- **G**lasgow ≤ 5,
- **I**ntubated,
- **V**entilated,
- **E**nd of Life Discussion

The ODRN can also be reached for patients with severe irreversible brain injuries and a non-recoverable injury or illness once a decision has been made to withdraw all life-sustaining treatment.

In addition to assessing potential donors for eligibility and providing support to the health care team (e.g.: medical management), the ODRNs will meet with families or next of kin regarding the opportunity for donation, giving them the ability to make an informed decision regarding organ donation.

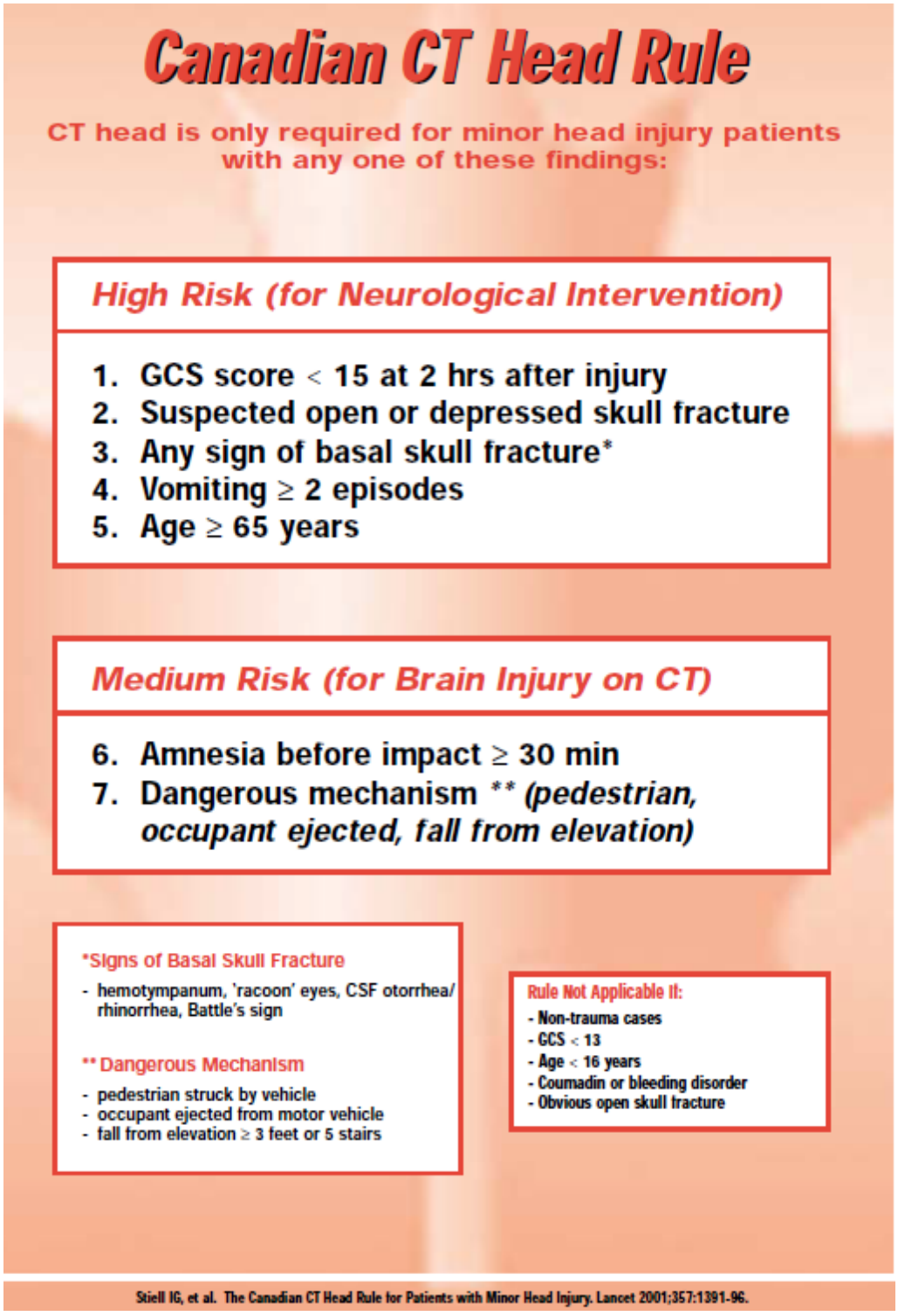
In instances of catastrophic non-survivable brain injury, family or next of kin may also acknowledge that the patient expressed their wish for organ donation.

**GRADE LEVEL OF EVIDENCE:**

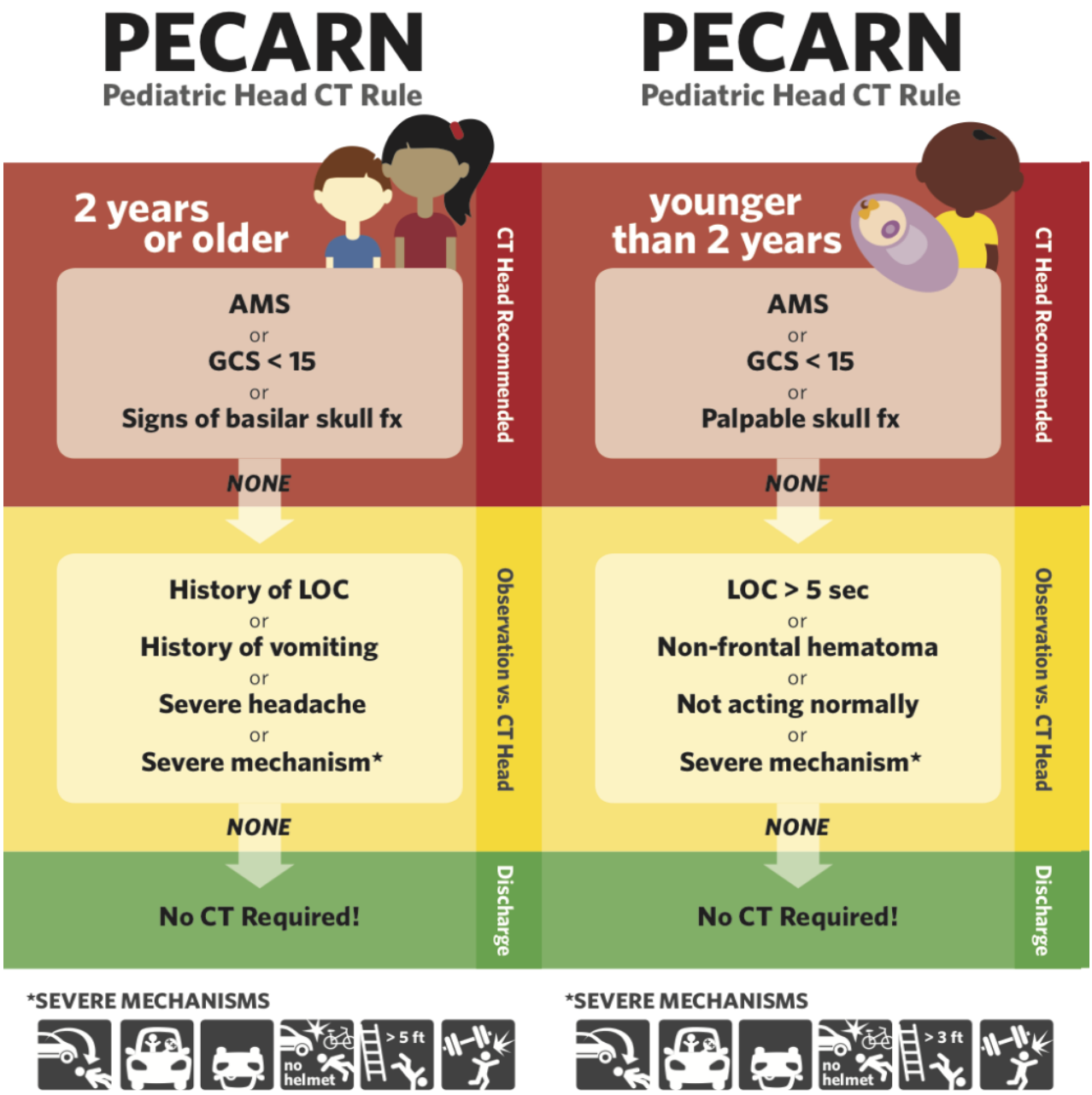
Grade B Practice Recommendations

Generally, clinicians should follow a recommendation but should remain alert to new information and sensitive to patient preferences.

## Appendix A


Canadian CT Head Rule
CT head is only required for minor head injury patients with any one of these findings:
High Risk (for Neurological Intervention)
1. GCS score < 15 at 2 hrs after injury
2. Suspected open or depressed skull fracture
3. Any sign of basal skull fracture*
4. Vomiting ≥ 2 episodes
5. Age ≥ 65 years
Medium Risk (for Brain Injury on CT)
6. Amnesia before impact ≥ 30 min
7. Dangerous mechanism ** (pedestrian, occupant ejected, fall from elevation)
*Signs of Basal Skull Fracture
- hemotympanum, 'racoon' eyes, CSF otorrhea/ rhinorrhea, Battle's sign
** Dangerous Mechanism
- pedestrian struck by vehicle
- occupant ejected from motor vehicle
- fall from elevation ≥ 3 feet or 5 stairs
Rule Not Applicable If:
- Non-trauma cases
- GCS < 13
- Age < 16 years
- Coumadin or bleeding disorder
- Obvious open skull fracture
Stiell IG, et al. The Canadian CT Head Rule for Patients with Minor Head Injury. Lancet 2001;357:1391-96.

# Appendix B




AMS: Altered mental state

# Richmond Agitation-Sedation Scale

| | Target RASS Value | RASS Description |
|---|---|---|
| +4 | Combative | Combative, violent, immediate danger to staff |
| +3 | Very Agitated | Pulls or removes tube(s) or catheter(s); aggressive |
| +2 | Agitated | Frequent non-purposeful movement, fights ventilator |
| +1 | Restless | Anxious, apprehensive but movements are not aggressive or vigorous |
| 0 | Alert and Calm | |
| -1 | Drowsy | Not fully alert, but has sustained awakening to voice (eye opening & contact **greater** than 10 seconds) |
| -2 | Light Sedation | Briefly awakens to voice (eye opening & contact **less** than 10 seconds) |
| -3 | Moderate Sedation | Movements or eye opening to voice (but **NO** eye contact) |
| -4 | Deep Sedation | No response to voice, but has movement or eye opening to physical stimulation |
| -5 | Unarousable | No response to voice or physical stimulation |

# Have you given your patient the opportunity to G.I.V.E their organs?

## If your patient meets the following criteria, investigate their potential to be an organ donor.

| G | I | V | E |
|---|---|---|---|
| **Glasgow ≤ 5** | **Intubated** | **Ventilated** | **End of Life Discussion** |
| Brain insult | Unable to maintain an airway independently | No respiratory effort | Discussion of withdrawal of care initiated by health-care providers or family members |

**NB Organ and Tissue Program**
**Le Programme D'Organes et de Tissus du NB**

**Consult with an Organ Procurement Officer for more information at:**

**(506) 643-6848**