Portage County EMS
Patient Care Guidelines

Routine Trauma Care

Priorities	***Assessment Findings***
Chief Complaint	Various depending on incident.
LOPQRST	Identify specific cause of traumatic injury
AS/PN	Significant mechanism, loss or altered level of consciousness. Evidence of intoxicant use.
AMPL	Identify medical conditions that may have led to the event (e.g. Alzheimer's, CVA, Diabetes, Seizures,)
Initial Exam – Rapid Trauma Assessment	Check ABC's and correct any immediate life threats. Manual C-spine stabilization. Perform rapid trauma assessment as appropriate.
Detailed Focused Exam	**Vitals:** BP, HR, RR, Temp, SpO_2, $ETCO_2$ **General Appearance:** Unresponsive, pale, diaphoretic? Signs of trauma? **HEENT:** PERRL? Pupils constricted or dilated? Drainage from ears or nose? **Lungs:** Signs of respiratory distress, hypoventilation, diminished or absent lung sounds? **Heart:** Rate and rhythm? Signs of hypoperfusion? **Neuro:** Loss of movement and/or sensation in extremities? Unresponsive? Focal deficits? Incontinence?
Data	SpO_2, cardiac monitor, capnography, pain assessment
Goals of Therapy	Maintain ABC's; early identification of decompensation; reduce pain; transport to an appropriate facility by the appropriate mode
Monitoring	SpO_2, capnography, cardiac monitoring, repeat vitals

EMERGENCY MEDICAL RESPONDER/ EMERGENCY MEDICAL TECHNICIAN

- Scene size-up (safety, extrication and transportation resources, events, mechanism, scene conditions)
- Body Substance Isolation (BSI)
- Airway: Relieve airway obstruction
    - Open the airway with a jaw-thrust (No head tilt – chin lift in trauma patients)
    - Suction the airway to remove foreign material, emesis and blood
    - Consider oropharyngeal airway or nasopharyngeal airway
    - Consider non-visualized airway
- Breathing:
    - Administer oxygen 2 – 4 LPM per nasal cannula if SpO2 < 94%. Increase flow and consider non-rebreather mask to keep SpO2 > 94%
    - Ventilate or assist ventilations (6 – 8 breaths per minute) with a bag-valve-mask connected to high-flow oxygen
    - Cover sucking chest wounds
- Circulation:
    - Control major external hemorrhage with direct pressure
    - If severe bleeding is on an extremity and still uncontrolled, consider the use of a tourniquet proximal to the bleeding site
    - If the patient arrests,
        - Re-assess the airway and oxygen delivery

        - Consider initiating the *Cardiac Arrest Guidelines*.
        - Consider terminating efforts per the *Determination of Death/ Termination of Resuscitation Guidelines*
- If there is altered level of consciousness
    - Check blood glucose; refer to *Altered Level of Consciousness Guidelines*
- Consider spinal immobilization in patients with:
    - Blunt trauma and altered level of consciousness
    - Spinal pain or tenderness
    - Neurologic complaint (e.g., numbness or motor weakness)
    - Anatomic deformity of the spine
    - High-energy mechanism of injury[1] and any of the following:
        - Drug or alcohol intoxication
        - Inability to communicate
        - Distracting injury
- Splint obvious extremity fractures
- For a completely amputated appendage
    - Rinse amputated part with saline
    - Wrap in saline moistened sterile gauze
    - Place in a sealed bag
    - Place bag on ice packs for transport
- Refer to *Pain Management Guidelines*
- Begin other interventions as needed according to specific protocols

Give a status report to the ambulance crew by radio ASAP.

ADVANCED EMERGENCY MEDICAL TECHNICIAN

- IV (preferably 18 ga or larger) NS @ at an appropriate rate
- Consider intraosseous (IO) access if a peripheral IV cannot be established
- Consider 2nd IV where hypovolemia is suspected
- If SBP < 90 mmHg, initiate a fluid bolus of normal saline: 1 liter (PEDS 20 ml/kg)
    - Repeat boluses (Max 3 boluses) to maintain a SBP of 90 mmHg

Contact Medical Control for the following:

- Additional fluid orders

INTERMEDIATE

- Consider endotracheal intubation
    - If the airway is obstructed or obstruction is imminent and 2 attempts to intubate the trachea have failed, consider a non-visualized airway
    - Consider gastric decompression with orogastric tube, unless contraindicated by facial trauma or skull fracture
- If tension pneumothorax is suspected, perform needle decompression.
- Selective Spinal Immobilization – per *Selective Spinal Immobilization Procedure*
- In patients where Selective Spinal Immobilization is not indicated, spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher without a long backboard, and may be most appropriate for:
    - Patients who are found to be ambulatory at the scene prior to EMS arrival

    - Patients who must be transported for a protracted time, particularly prior to interfacility transfer
    - Patients for whom a backboard is not otherwise indicated or may be detrimental
- Refer to *Pain Management Guidelines*
- Consider acquiring, interpreting and transmitting a 12 lead EKG
- Transport to an appropriate hospital[2]

Contact Medical Control for the following:
- Additional pain control orders

PARAMEDIC

- Consider gastric decompression with nasogastric tube, unless contraindicated by facial trauma or skull fracture
- Consider sedation for combative patients, refer to *Agitation and Combativeness Guidelines*
- Consider RSI/RSA[3] in trauma patients with the following indications:
    - Respiratory failure with hypoventilation or persistent hypoxia on high-flow oxygen
    - Severe head injury:
        - Glasgow Coma Scale < 8
        - Agitation/combativeness that jeopardizes the well-being of the patient or the safety of the crew
    - Inability to protect the upper airway due to loss of gag reflex or ALOC
    - Flail chest with respiratory insufficiency
    - Sucking chest wound
    - Threat of imminent airway compromise
- Surgical or needle cricothyroidotomy
- Consider pericardiocentesis
- Consider Tranexamic Acid for Patients with multi-system injuries include head injuries (**not** isolated head injuries)
    - Ongoing significant hemorrhage, or strong clinical suspicion of hemorrhage (systolic blood pressure less than 90 mmHg and/or heart rate greater than 110 beats per minute.)
    - Patients who are considered to be at risk of significant hemorrhage based on their mechanism of injury.
    - Trauma patients **within 3 hours** of injury
-

Contact Medical Control for the following:
- Additional orders

FOOTNOTES:

[1] High energy mechanisms of energy for consideration of spinal immobilization:
- Any mechanism that produced a violent impact to the head, neck, torso, or pelvis
- Incidents producing sudden acceleration, deceleration, or lateral bending forces to the neck or torso (e.g. moderate- to high-speed MVC, pedestrian struck, involvement in an explosion, hanging, etc.)
- Any fall, especially in elderly persons

- Ejection or fall from any motorized or otherwise-powered transportation device (e.g. scooters, skateboards, bicycles, motor vehicles, motorcycles, or recreational vehicles)
- Victim of shallow-water diving incident

[2] Definition of Major Trauma/ Destination Determination

When associated with an appropriate mechanism of injury, the following criteria are indicative of major trauma. When possible, these patients should be transported directly to a Level II trauma center (via helicopter or ground transport if < 45 minute ground transport time)

- GCS ≤ 13
- SBP < 90
- Respiratory rate < 10 or > 29 or < 20 in peds under 1 year of age or need for ventilatory support
- Peds: 1 or more abnormality in the Pediatric Assessment Triangle (see below)
- Penetrating injuries to head, neck, torso or extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g. Flail chest)
- Two or more suspected fractures involving the femur or humerus
- Pelvic fracture/unstable pelvis
- Open or depressed skull fracture
- New onset paralysis (paraplegia, quadriplegia)
- Provider judgment of major trauma

The following criteria indicate that the patient is at an increased risk of major trauma but do not mean that the patient should automatically go directly to the highest level trauma center available. Consult medical control.

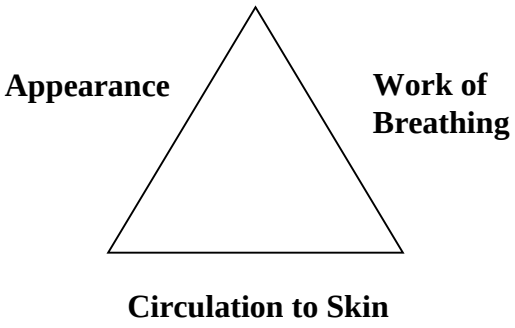
- Complete or partial amputation proximal to wrist or ankle
- Falls: Adults > 20 ft. and children > 10 ft. or 2 – 3 times their height
- High-risk auto crash: Intrusion, including roof > 12 in. at occupant site; > 18 in. at any site; Ejection (partial or complete) from automobile; Death in same passenger compartment; Vehicle telemetry data consistent with high risk of injury
- Auto v. pedestrian/bicyclist thrown, run over or with significant (> 20 MPH) impact
- Motorcycle crash > 20 MPH
- Age (Older adults): Risk of injury death increases after age 55
    - SBP may represent shock after age 65
    - Low impact mechanisms (e.g. ground level falls) may result in severe injury
- Age (Children): Consider transport to a pediatric trauma center within the region
- Anticoagulation and bleeding disorders: patients with head injuries are at high risk for rapid deterioration
- Pregnancy > 20 weeks

Notes:

- If a Level II trauma center is greater than 45 minutes away by ground ambulance, and helicopter transportation is not available, transport patient to the closet Level III trauma center.
- Level III facilities (Ministry Saint Michael's, Riverview, and Riverside) are able to provide some stabilizing interventions to critically injured patients and should be considered if the patient is unstable and the Level III is close.
- Ministry Saint Michael's Hospital is the medical control hospital and will accept all trauma patients if other destinations are not available/appropriate.

- Patients with a crushed, degloved or mangled extremity or patients with burn injuries need not be transported directly to a Level II trauma center unless the injuries are associated with other indicators of major trauma.
- Pediatric patients should preferentially be transported to Ministry Saint Joseph's Hospital.

Pediatric Assessment Triangle



Appearance
- Tone, interactiveness, consolability, look/gaze and speech/cry

Work of Breathing
- Abnormal sounds, increases breathing effort, retractions, nasal flaring

Circulation to Skin
- Pallor, mottling, cyanosis

[3] RSI/RSA requires 2 paramedics at the patient's side

References:

- State of Wisconsin Trauma Field Triage Protocol, 2012
- Am Acad of Pediatrics, Pediatric Education for Prehospital Professionals. 2006. Sudbury: Jones and Bartlett.
- "EMS spinal precautions and the use of the long backboard "A joint position paper from the National Association of EMS Physicians Standards and Clinical Practice Committee and the American College of Surgeons Committee on Trauma." Prehospital Emergency Care 2013; 17:392-393
- Salomone, JP & Pons PT. (2011). Prehospital trauma life support. (7th ed., p. 257). St. Louis: Elsevier Mosby JEMS.

Date of Origin: 3/25/14	Medical Director Approval:
Date of This Revision:	Electronically Signed
Date of Review:	M. Sarah Brandt, MD