

Trauma Center Practice Management Guideline

Mayo Clinic -Rochester

Traumatic Blunt Agonal / Arrest Algorithm

Adult Practice Management Guideline	Effective: 07/2009
Contact: Trauma Center Medical Director/Trauma Center Nurse Manager	Last Reviewed: 10/2012

Purpose

To provide a framework for rapid, systematized patient assessment and intervention in the setting of clinical deterioration as the result of a blunt traumatic mechanism.

Policy Statements

The evaluation and resuscitation of the trauma patient who is agonal or arrests as a result of a blunt mechanism constitutes a special subset of patients. The resuscitation is a rapid assessment and treatment of the various measures of a Pulseless Electrical Activity (PEA) that may be caused by a traumatic etiology (i.e. profound hypovolemia, airway compromise, tension pneumothorax, and pericardial tamponade).

The utilization of Advanced Cardiac Life Support (ACLS) and Basic Life Support (BLS) measures (i.e. Epinephrine, Atropine, and closed Cardiopulmonary Resuscitation) in the setting of Advanced Trauma Life Support (ATLS) Resuscitation is of limited benefit in the setting of traumatic patient arrest.

Procedures (including airway assessment, needle decompression, chest tubes, etc.) take priority over chest compressions in the **trauma** patient in agonal or arrest states.

* Note: There is an extremely limited role for Resuscitative (Emergency Department) Thoracotomy in the management of the agonal trauma patient as a result of *blunt* mechanism of injury. The use of this maneuver should therefore be considered *contraindicated* in this patient population

Definition

Blunt agonal arrest – A severely injured patient in extremis (Class IV Shock) who is a non-responder to fluid resuscitation.

Markers – Heart rate less than 60

Systolic blood pressure less than 80

Any ventricular fibrillation, ventricular tachycardia, or pulseless electrical activity (PEA)

Loss of signs of life – absent respirations, absent pupil response, GCS 3

Goals

1. Rapid assessment of signs of life
2. Early and appropriate identification of patients in whom withholding or termination of resuscitation is appropriate
3. Rapid identification and control of life-threatening injuries in the Trauma-Resuscitation Bay
4. Safe introduction and maintenance of life-sustaining measures

Procedure

Pre – Patient Arrival

1. Assemble Trauma Team and Assign Roles (Level 1 trauma page)
2. Ready Supplies
 - a. Airway Supplies (Endotracheal Tubes, Laryngoscope, colorimetric CO2 detector, Tracheostomy Tray, Bivona Tracheostomies, Rescue Airway Devices)
 - b. Cordis Introducer
 - c. EZ-IO Kit
 - d. 2 large-bore IVs for needle decompression of chest
 - e. 2 Chest tube trays with large chest tubes (32-36Fr)
 - f. Ranger Pressure Infusion System
 - g. Underbody Bair Hugger
3. Blood Bank Personnel on standby for delivery of Blood and Blood Products
 - a. Consider activation of Massive Transfusion Protocol
4. Operating room personnel on standby
5. Review of known Pre-hospital Patient Information (including CTs on Outside Server on PACS system if patient is a transfer).

On Patient Arrival

Note - Procedures (including airway assessment, needle decompression, chest tubes, etc.) take priority over chest compressions in the trauma patient in agonal or arrest states.

1. Succinct Report by Pre-hospital Providers
 - a. Report
 - Vital signs (include lowest BP and highest heart rate)
 - Oorigin (scene or outside hospital)
 - Mechanism of injury (include significant medical history such as on anti-coagulation)
 - Injuries found or suspected
 - Treatments given with results
 - b. Last Vital Signs
 - c. Time of Loss of Vital Signs
 - d. Witnessed Signs of Life
 - e. IV Access
 - f. Fluid Administered (Type and Volume)
2. Airway
 - a. Non-Intubated Patient
 1. Obtain Definitive Airway (Orotracheal versus Surgical)

2. Confirmation of Airway Placement
 - i. Visualization of ETT placement through vocal cords
 - ii. Colorimetric CO2 detector (may not be reliable in arrest)
 - iii. Auscultation of bilateral breath sounds; absence of delivered breath sounds over epigastrium
 - iv. Appropriate O2 Saturation
- b. Intubated Patient
 1. Clear Communication of Assessment to Trauma Team Leader
 2. Confirmation of Airway Placement by Airway provider
 - i. Colorimetric CO2 detector (may not be reliable in arrest)
 - ii. Direct laryngoscopy with visualization of ETT placed through vocal cords. (Consider adjunctive endoluminal confirmation with bronchoscopy if direct laryngoscopy not technically possible or inconclusive.)
 - iii. Auscultation of bilateral breath sounds; absence of delivered breath sounds over epigastrium
 - iv. Appropriate O2 Saturation

Any difficulty with airway mandates a hard stop in the trauma resuscitation

3. Breathing
 - a. Bilateral Needle Thoracostomy
 - b. Formalize with Bilateral Tube Thoracostomy when able
4. Circulation
 - a. Rapid Assessment of Central (Femoral) and Peripheral Pulses (Radial, Pedal)
 - b. Clear Communication of Assessment to Trauma Team Leader
 - c. Control of Life-Threatening External Hemorrhage
 - d. Obtain Manual Blood Pressure (will not be present if no pulse)
 - e. Confirmation of in-place Intravenous Access
 - f. If no Intravenous Access:
 1. EZ-IO followed by
 2. Cordis Introducer
 - i. Subclavian Venous Access Preferred to Femoral Access
 - g. Rapid, early delivery of Packed Red Blood Cells
 1. Consider initiation of Massive Blood Transfusion (MBT) Protocol
 - h. Attach cardiac leads
 - i. Check Cardiac Window on Focused Assessment with Sonography in Trauma (FAST)
 1. Assess for pericardial effusion
 2. Assess cardiac kinetic activity
5. Disability
 - a. Glasgow Coma Scale (GCS) Measurement
6. Exposure
 - a. Rapid and complete patient exposure
 - b. Rapidly cover the exposed patient with warmed blankets (allow above assessment and procedures)
 - c. Ensure underbody Bair Hugger functional (43 C)
7. Imaging / Investigation
 - a. Chest X-ray
 - b. Pelvis X-ray
 - c. Completion of FAST Examination
 1. Hepatorenal Recess

2. Splenorenal Recess

3. Retrovesical Recess

Note: FAST may be repeated as clinical situation warrants

d. Diagnostic Peritoneal Aspirate / Lavage (DPL) if FAST negative or indeterminate

8. Secondary Survey (if patient conditions allows)

9. Triage

a. Operating Room

b. Surgical Intensive Care Unit

c. Computed Tomography/Interventional Radiology (if patient condition allows)

****NOTE: Post-resuscitative therapeutic hypothermia is not indicated in this population.****

Prepared by: Trauma Operations Management Team 07/2009

Approvals: Trauma Executive Committee 7/2009 Trauma Subcommittee 11/2012
