

## **History**

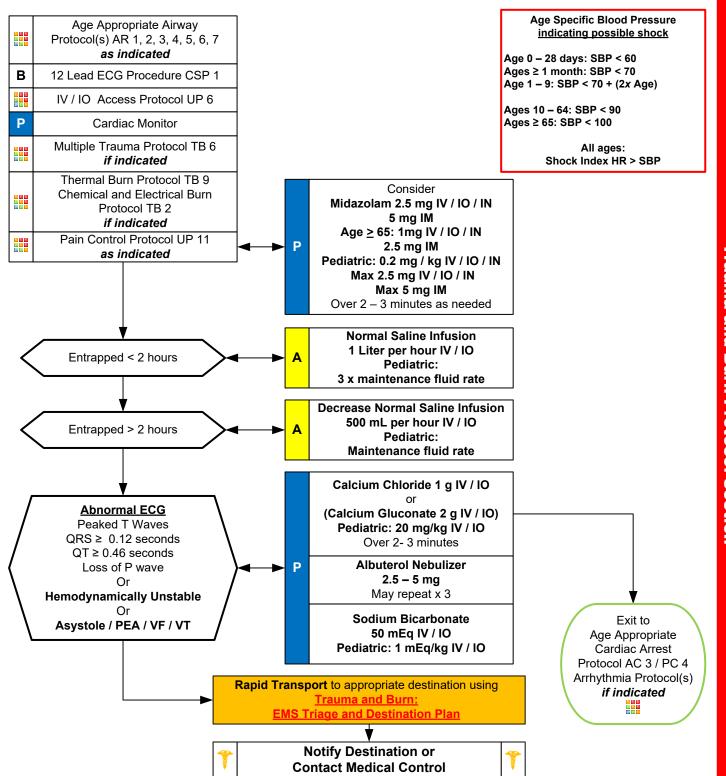
- Entrapped and crushed under heavy load
   30 minutes
- \* Extremity / body crushed
- Building collapse, trench collapse, industrial accident, pinned under heavy equipment

## **Signs and Symptoms**

- \* Hypotension
- \* Hypothermia
- \* Abnormal ECG findings
- Pain
- \* Anxiety

## **Differential**

- Entrapment without crush syndrome
- \* Vascular injury with perfusion deficit
- \* Compartment syndrome
- \* Altered mental status



# Trauma and Burn Protocol Section

# **Crush Syndrome Trauma**



\*\* Refer to Length Based Medication Tape for Medication Doses IF pediatric patients weight is unknown \*\*

### Pearls

- \* Recommended exam: Mental Status, Musculoskeletal, Neuro
- \* Scene safety is of paramount importance as typical scenes may pose hazards to rescuers. Call for appropriate resources.
- \* Crush Injury is a localized crush injury with systemic signs and symptoms causing muscle breakdown and release of potentially toxic muscle cell components and electrolytes into the circulation.
- **★** Crush syndrome typically manifests after 1 4 hours of crush injury.
- \* Fluid resuscitation strategy:

If possible, administer IV / IO fluids prior to release of crushed body part, especially with crush > 1 hour. If access to patient and initiation of IV / IO fluids occurs after 2 hours, give 2 liters of IV fluids in adults and 20 mL/kg of IV fluids in pediatrics, and then begin > 2 hour dosing regimen.

If not able to perform IV / IO fluid resuscitation immediately, place tourniquet on crushed limb until IV / IO fluids can be initiated (even if tourniquet is not being used for hemorrhage control).

\* Pediatric IV Fluid maintenance rate:

4 mL for the first 10 kg of weight +

2 mL for the second 10 kg of weight +

1 mL for every additional kg in weight after 20 kg

 Example: 28 kg pediatric

 First 10 kg:
 4 mL/kg/hr = 40 mL/hr

 Second 10 kg:
 2 mL/kg/hr = 20 mL/hr

 Final 8 kg:
 1 mL/kg//hr = 8 mL/hr

Total: 68 mL/hr rate

- \* Consider all possible causes of shock and treat per appropriate protocol.
- Majority of decompensation in pediatrics is airway or respiratory related.
- Decreasing heart rate and hypotension occur late in children and are signs of impending cardiac arrest.
- \* Shock may be present with a normal blood pressure initially or even elevated.
- Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only sign.
- Patients may become hypothermic even in warm environments. Maintain warmth.
- Hyperkalemia from crush syndrome can produce ECG changes described in protocol, but may also be a bizarre, wide complex rhythm. Wide complex rhythms should also be treated using the VF/ Pulseless VT Protocol if indicated (AC 9 VF Pulseless VT Protocol and/ or PC 7 Pediatric VF Pulseless VT Protocol).