General Crush Injury

Purpose:

This protocol should be considered when the patient has been entrapped at the scene for more than one hour, one or more full extremities trapped by an object capable of causing a crush injury, including machinery, dirt, rock, and rubble or there is entrapment of patient with history of previous cardiac or renal disease or dialysis treatment.

Crush Syndrome:

Should be suspected in patients with entrapment/compression of greater than one hour, especially when a large muscle mass/group is involved. Treatment of the patient at risk for Crush Syndrome **should begin before the patient is removed when practical.**

Treatment:

1. Follow **General Trauma-Treatment Protocol**, identify and treat life threats.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. Assess for signs of Compartment Syndrome or Crush Syndrome.
4. Use tourniquet as indicated (see **Tourniquet Application-Procedure Protocol**.
5. Administer oxygen to patient if environment allows.
6. Administer **albuterol** 2.5 mg/3ml **NS** nebulized per **Medication Administration-Medication Protocol** continuous if IV access is not immediately available. (Per MCA selection may be EMT skill). **Albuterol** may be continued to a maximum dose of 20 mg

Nebulized **albuterol** administration
☑ EMT

7. Establish large bore IV(s) and/or IO (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**) and administer **Normal Saline** bolus prior to removal of patient, when practical.
   a. AVOID **LR** solution as it contains potassium
   b. Adults: 1 liters **NS** IV/IO wide open followed by 500-1,000 mL/hr
   c. Pediatrics: 20 ml/kg **NS** IV/IO wide open followed by 10/mL/kg/hr
8. Treat patient pain per **Pain Management-Procedure Protocol**.
9. Initiate cardiac monitoring and assess for hyperkalemia, i.e., wide QRS or peaked T waves. Monitor continuously for changes.
10. If extrication is prolonged, and/or hyperkalemia is suspected (peaked T waves, widened QRS, hypotension):
    a. Administer **sodium bicarbonate**

i. Adults: 100 mEq IVP prior to extrication and 50 mEq/hr IVPB or slow IVP

ii. Pediatrics: 1 mEq/kg (max dose 50 mEq) IVP

NOTE: Flush IV lines between sodium bicarbonate and calcium chloride

b. Administer **calcium chloride**

i. Adults: 1 gram slow IVP over 5 minutes

ii. Pediatrics: 20 mg/kg slow IVP over 5 minutes, max dose 1 gram over 5 minutes

11. Perform repeated 12-Lead ECG, if conditions allows. (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**

Medication Protocols
Albuterol
Calcium Chloride
Sodium Bicarbonate