General Medical:
Shock

Goals: Timely recognition of shock and the underlying cause thereof; early fluid resuscitation and/or other appropriate therapy to restore and preserve end-organ function
Inclusion Criteria: Signs/symptoms of poor perfusion and one or more possible shock etiologies
Exclusion Criteria: None – however, shock due to trauma should be managed per Trauma CPG
Refer to: Allergic Reaction, Bradycardia, Chest Pain, Head Injury/TBI, Poisoned Patient/Overdose, Sepsis, OB/Gyn, Tachycardia-Unstable and Trauma CPGs; EZ-IO® Insertion and Needle Thoracostomy Procedures

NOTES:
- The four basic categories of shock are: hypovolemic (hemorrhagic and non-hemorrhagic), cardiogenic, distributive/vasogenic (e.g. anaphylaxis, sepsis, neurogenic shock) and obstructive (e.g. tension pneumothorax, cardiac tamponade, massive pulmonary embolism).
- Patients may exhibit sign/symptoms of more than one type of shock.
- In most cases, the initial, EMS treatment consists of IV/IO fluid resuscitation, EXCEPT for tension pneumothorax and certain hemodynamically-significant dysrhythmias.
- Improved level of consciousness and perfusion are more important than a target SBP endpoint alone.
- In all cases, rapid transport to a hospital E.D. with appropriate capabilities is critical for best patient outcome.

Basic Level

1. Assess and support ABCs according to UNIVERSAL CARE – ADULT or UNIVERSAL CARE – PEDIATRIC, and to Airway Management – Adult or Airway Management – Pediatric, as clinically indicated:
    a. A (Airway): Ensure airway patency with suctioning and OPA or NPA, as needed
    b. B (Breathing): Provide supplemental oxygen to maintain SpO_2 at least 94% (continuous monitoring); assist ventilations with BVM, as needed
    c. C (Circulation): Initiate continuous ECG monitoring
    d. D (Disability): Assess and document GCS; assess pupillary size and reactivity
    e. E (Exposure/Environmental): Assess for trauma, overdose, sepsis and other etiologies; cover the patient to prevent heat loss or begin cooling measures, per Heat-Related Emergencies CPG
2. Positioning:
    a. If trauma is not suspected, position the patient supine (with legs elevated, if tolerated) or in the left lateral decubitus position, facing EMS Providers, in order to monitor and manage the airway:
        i. If trauma is suspected, refer to the Spinal Motion Restriction Policy and Trauma CPG
3. Perform and document a POC Glucose analysis and treat according to the Diabetic Emergencies CPG
4. Once advanced level care arrives on scene, give report and transfer care

Advanced Level

5. Initiate continuous $PetCO_2$ monitoring and maintain continuous ECG and SpO_2 monitoring until patient care has been transferred to hospital staff:
    a. If STEMI, acute stroke, or TBI is suspected, or during post-cardiac arrest care with ROSC, titrate FiO_2 to the minimum concentration necessary to maintain SpO_2 94-99%
    b. If etiology is unknown, continue high-flow oxygen to maintain SpO_2 at least 94%
6. Treat hemodynamically-significant dysrhythmias according to the relevant CPG
7. Establish at least one large-bore peripheral IV (preferred) or IO
8. Infuse Normal Saline according to the following guidelines:
    a. **Hypovolemic shock (NON-TRAUMA) – All patients:**
        i. Administer 20 mL/kg IV/IO (1 L maximum per bolus)
        ii. Repeat up to two more times, as needed, to maintain radial pulse or SBP 90 mmHg
        iii. PEDIATRIC patient less than 14 years of age: Target = radial pulse or SBP 70 mmHg
            1. Discontinue fluid administration if signs/symptoms of volume overload develop
            2. If DKA is suspected, administer ONLY 1 fluid bolus and contact BioTel
    b. **Hypovolemic shock (TRAUMA) – All patients:**
        i. Refer to the Trauma CPG and Head Injury/TBI CPG for specific guidelines

c. **Cardiogenic shock due to dysrhythmia, myocardial ischemia or other "pump failure":**
   i. Treat Chest Pain and hemodynamically significant dysrhythmias, per the relevant CPG
   ii. ADULT at least 14 years of age:
      1. Administer a single 10 mL/kg NS bolus IV/IO, if no signs of pulmonary edema
      2. Consider repeating once, while preparing vasoactive infusion, if no signs of pulmonary edema
      3. Norepinephrine infusion at 8 to 12 mcg/kg/min, if no response to fluid bolus(es)

iii. PEDIATRIC patient less than 14 years of age:
1. Run IV/IO fluid at TKO rate
2. Contact BioTel for vasopressor dosing and possible fluid bolus (5-10 mL/kg)

d. **All other types of shock, EXCEPT tension pneumothorax – All patients:**
   i. Administer 20 mL/kg IV/IO (1 L maximum per bolus)
   ii. Repeat up to two more times, as needed, to maintain radial pulse or SBP 90 mmHg
   iii. Discontinue fluid administration if signs/symptoms of volume overload develop

iv. PEDIATRIC patient less than 14 years of age: Target = radial pulse or SBP 70 mmHg
1. Discontinue fluid administration if signs/symptoms of volume overload develop

   v. Refer to Allergic Reaction, OB/Gyn, Poisoned Patient/Overdose, Sepsis and other symptom-specific CPGs for specific treatment guidelines for those conditions

e. **Tension pneumothorax with obstructive shock – All patients:**
   i. Presentation: respiratory distress, tachypnea, hypoxia, hypotension or PEA, decreased/absent breath sounds and chest wall excursion on affected side, and "hard to bag"
   ii. IV/IO fluid bolus does not treat the underlying cause and is not indicated unless there are other indications (e.g. hemorrhagic shock) present AFTER pleural decompression
   iii. Perform Needle Thoracostomy as soon as possible and monitor for clinical improvement
   iv. Contact BioTel as soon as possible

9. Continuously monitor vital signs, ECG, SpO_2, $PetCO_2$ and neurologic status during transport
10. For patient care considerations not covered under standing orders, consult BioTel