Hypovolemia, Shock and Suspected Sepsis

Note:

- Shock is a state of decreased tissue oxygenation. Significant vital organ hypoperfusion may be present without hypotension. Home medications and/or comorbidities may also limit development of tachycardia
- Goal is to maximize oxygen delivery with supplemental oxygen and assisted ventilations (if needed), and to maximize perfusion with IV fluids.
- Consider the etiology of your patient's shock state, which may have specific treatments. Consider chronic steroid users at risk for adrenal insufficiency causing their hypotension.

Priorities	***Assessment Findings***
Chief Complaint	Variable based on etiology
LOPQRST	Identify onset, duration, progression and provocation.
AS/PN	Fever/chills, chest pain (angina), trauma
AMPL	Pertinent past history and medications may provide important clues.
Initial Exam	ABCs and correct immediately life-threatening problems.
Detailed Focused Exam	**Vital Signs:** BP, HR, RR, Temp, SpO2 **General Appearance:** Does the patient appear ill? External hemorrhage? **Skin:** Pale, cool, and moist? Flushed, warm and dry? **Chest:** Labored breathing? **Lungs:** Wheezes, rales or rhonchi? **Heart:** Rate and rhythm? **Abdomen:** Internal hemorrhage? Tender? Distended? GI blood loss? **Extremities:** Trauma? Edema? **Neuro:** ALOC?
Data	SpO2, 12-lead EKG, Blood glucose
Goals of Therapy	Maintain adequate perfusion
Monitoring	Blood pressure, heart rate, cardiac monitoring, capnography and SpO2

EMERGENCY MEDICAL RESPONDER/ EMERGENCY MEDICAL TECHNICIAN

- Routine Medical -or- Trauma Care
- Control external hemorrhage
- Secure and maintain airway
  - Place non-visualized airway, if indicated
- Administer oxygen 2 – 4 LPM per nasal cannula if SpO2 < 94%. Increase flow and consider non-rebreather mask to keep SpO2 > 94%
- Keep patient flat with lower extremities elevated (if possible)
  - Place patient in left lateral recumbent position if in third trimester of pregnancy
- Splint fractures
- Conserve body temperature, and reassure patient
- Remove all transdermal medication patches using gloves

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

ADVANCED EMERGENCY MEDICAL TECHNICIAN

- IV/IO normal saline
- 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
  - Contraindicated in patients with signs or symptoms of pulmonary edema

Contact Medical Control for the following:

- Need for additional fluid boluses

INTERMEDIATE

- Obtain and interpret 12-lead EKG. Transmit to receiving facility.
- Identify possible septic shock[1]
  - The initial treatment of septic shock involves maximizing perfusion with IV/IO fluid boluses, not vasopressors

Contact Medical Control for the following:

- Additional orders

PARAMEDIC

- Consider RSI/RSA[2]
- Consider **norepinephrine** (preferred) in the non-trauma patient for persistent hypotension or MAP[3] < 60 mmHg after the administration of a reasonable fluid bolus (minimum of 250 ml).
  - Start at 0.5 – 2 mcg/kg/min and titrate in 5 mcg/min increments to a systolic BP > 90 mmHg or a MAP ≥ 60 mmHg with good patient mentation
  - Continue fluid administration and norepinephrine titration.
  - If signs of pulmonary edema develop, decrease fluids to KVO.
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Contact Medical Control for the following:

- Consider **dopamine** for persistent hypotension after maximum dose of norepinephrine
  - Start at 10 mcg/kg/min and titrate in 5 mcg/kg/min increments to a systolic BP > 90 mmHg or a MAP ≥ 60 mmHg with good patient mentation, to a maximum of 20 mcg/kg/min
  - Continue fluid administration and dopamine titration.
- If signs of pulmonary edema develop, decrease fluids to KVO.
- Additional orders

FOOTNOTES:

[1] Septic shock is defined by:

- Suspected infection AND
- Signs of hypoperfusion (hypotension or elevated venous lactate) AND
- Presence of 2 or more Systemic Inflammatory Response Syndrome (SIRS) criteria:
  - HR > 110
  - RR > 24
  - Temp > 100.4° or < 96.8° F

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

[3] MAP = (SBP + 2*DBP)/3

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