

# 2021 NCCEP Treatment Protocol Index

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# Introduction

The following medical treatment protocols are developed for North Carolina EMS agencies. The process has evolved since 2007 and continues with input from Medical Directors, EMS Administration, North Carolina Chapter of Emergency Physicians Protocol Committee, North Carolina Office of EMS, EMS field personnel and the public at large through on-line surveys, public meetings across North Carolina and direct communication with stakeholders. The 2017 update expands on the 2012 and 2009 version and continues to incorporate evidence-based guidelines, expert opinion and historically proven practices meant to ensure that citizens and visitors of North Carolina will continue to be provided the highest quality pre-hospital patient care available. The North Carolina Chapter of Emergency Physicians develops and provides final approval.

The purpose of the protocol section is to provide treatment protocols outlining permissible and appropriate assessment, delivery of care, reassessment and procedures which may be rendered by pre-hospital providers. The protocols also outline which medical situations require direct voice communication with medical control. In general treatment protocols are specific orders which may and should be initiated prior to contact with Medical Control.

**Please note the medical protocols are divided into three (3) to four (4) sections.** The upper section includes three (3) boxes (History, Signs and Symptoms and Differential) which serves as a guide to assist in obtaining pertinent patient information and exam findings as well as considering multiple potential causes of the patients complaint. It is not expected that every historical element or sign / symptom be recorded for every patient. It is expected that those elements pertinent to your patient encounter will be included in the patient evaluation.

**The algorithm section describes the essentials of patient care. Virtually every patient should receive the care outlined in this section, usually in the order described. However each medical emergency must be dealt with individually and appropriate care determined accordingly. Professional judgment is mandatory in determining treatment modalities within the parameters of these protocols. Circumstances will arise where treatment may move ahead in the algorithm, move outside to another protocol and then re-enter later. While protocols are written based on body systems and primary complaints the patient should be treated as a whole and therefore the protocols should be considered as a whole in providing care.**

### Professional judgment hierarchy:

The pre-hospital provider may determine that no specific treatment is needed;

Or

The pre-hospital provider may follow the appropriate treatment protocols and then consult Medical Control;

Or

The pre-hospital provider may consult Medical Control before initiating any specific treatment.

**Some protocols will encompass two (2) pages.** Protocols which exist in a single page format may have page 2 added by the local medical director. The PEARLS section will either be located at the bottom of page 1 (single page protocol) or page 2 (double page protocol). The PEARLS section provides points regarding the main protocol based on evidence to date, common medical knowledge and expert medical opinion.

**Information boxes highlighted in purple.** These areas are editable at the local level. They will mainly involve specific medications and dosages utilized by the local EMS agency. Page 2 will have a large section highlighted in purple where the local Medical Director may edit as they see fit to provide expanded points and treatment not otherwise specified in the algorithm. If the box is not to be utilized – add ***“This Space Left Blank Intentionally.”***

Finally these medical treatment protocols are established to ensure safe, efficient and effective interventions to relieve pain and suffering and improve patient outcomes without inflicting harm. They also serve to ensure a structure of accountability for Medical Directors, EMS agencies, pre-hospital providers and facilities to provide continual performance improvement. A recent report of the Institute of Medicine calls for the development of standardized, evidence-based pre-hospital care protocols for the triage, treatment and transport of patients. These protocols establish expectations of pre-hospital care in North Carolina.

# Hypotension / Shock

## History

- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

## Signs and Symptoms

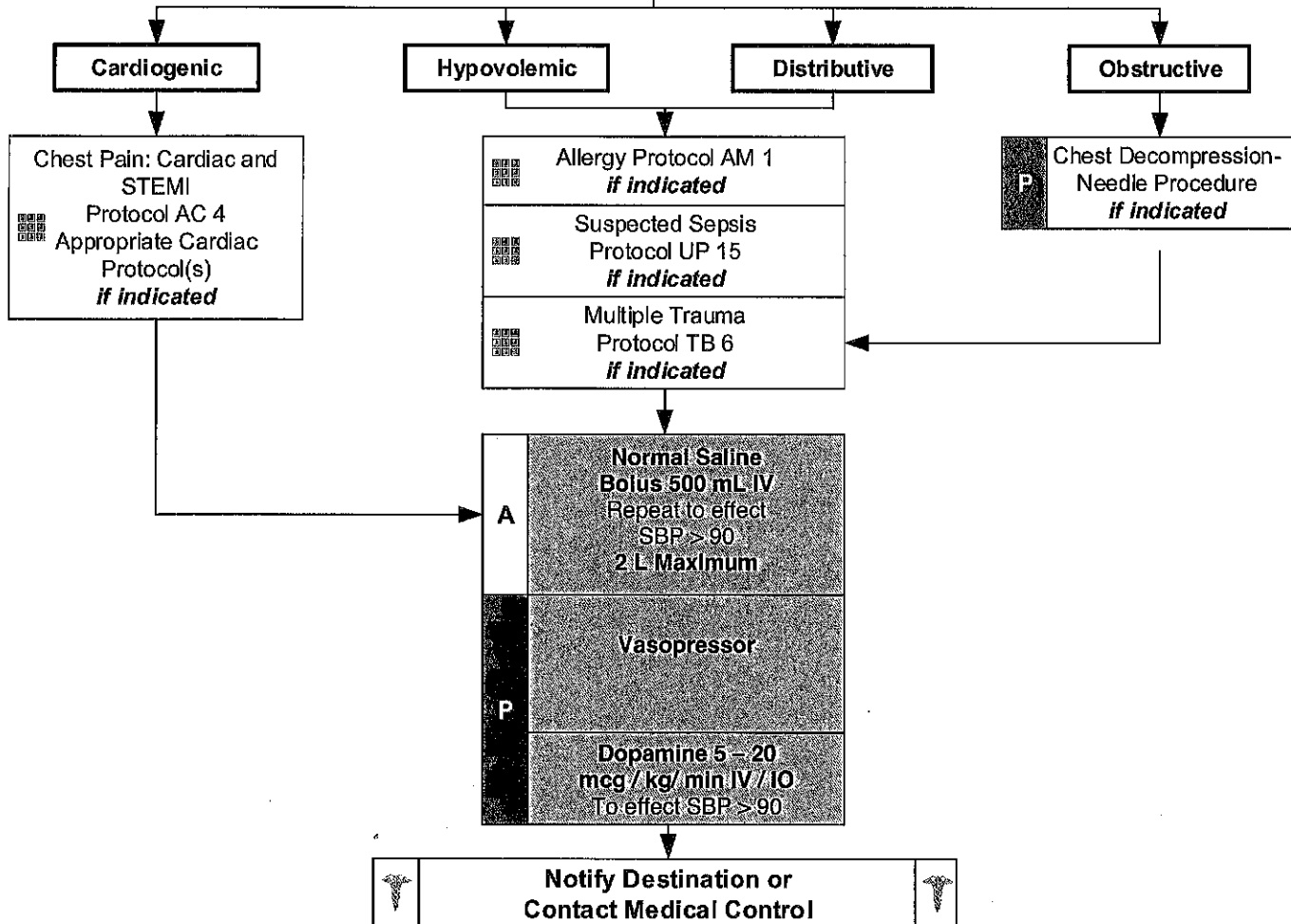
- Restlessness, confusion
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

## Differential

- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)
- Sepsis

	Blood Glucose Analysis Procedure
B	12 Lead ECG Procedure
A	IV / IO Procedure
P	Cardiac Monitor
	Airway Protocol(s) <i>if indicated</i>
	Diabetic Protocol AM 2 <i>if indicated</i>

History and Exam Suggest Type of Shock



Adult Medical Protocol Section



# Hypotension / Shock

## Pearls

- Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- **Hypotension can be defined as a systolic blood pressure of less than 90. This is not always reliable and should be interpreted in context and patients typical BP if known. Shock may be present with a normal blood pressure initially.**
- **Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.**
- **Consider all possible causes of shock and treat per appropriate protocol.**
- For non-cardiac, non-trauma hypotension, consider Dopamine when hypotension unresponsive to fluid resuscitation.
- **Hypovolemic Shock:**
  - Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding.
  - Tranexamic Acid (TXA):**
    - Agencies utilizing TXA must have approval from your T-RAC.
- **Cardiogenic Shock:**
  - Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventricular / septum / valve / toxins.
- **Distributive Shock:**
  - Sepsis
  - Anaphylactic
  - Neurogenic: Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
  - Toxins
- **Obstructive Shock:**
  - Pericardial tamponade. Pulmonary embolus. Tension pneumothorax.
  - Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart sounds.
- **Acute Adrenal Insufficiency or Congenital Adrenal Hyperplasia:**
  - Body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary or secondary adrenal disease, congenital adrenal hyperplasia, or more commonly have stopped a steroid like prednisone.
  - Injury or illness may precipitate. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. **If suspected Paramedic should give Methylprednisolone 125 mg IM / IV / IO or Dexamethasone 10 mg IM / IV / IO. Use steroid agent specific to your drug list. May administer prescribed steroid carried by patient IM / IV / IO. Patient may have Hydrocortisone (Cortef or Solu-Cortef). Dose: < 1y.o. give 25 mg, 1-12 y.o. give 50 mg, and > 12 y.o. give 100 mg or dose specified by patient's physician.**



# Pediatric Hypotension / Shock

## History

- Blood loss
- Fluid loss
- Vomiting
- Diarrhea
- Fever
- Infection

## Signs and Symptoms

- Restlessness, confusion, weakness
- Dizziness
- Tachycardia
- Hypotension (Late sign)
- Pale, cool, clammy skin
- Delayed capillary refill
- Dark-tarry stools

## Differential

- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Trauma
- Infection
- Dehydration
- Congenital heart disease
- Medication or Toxin

	Blood Glucose Analysis Procedure
<b>A</b>	IV / IO Procedure
<b>P</b>	Cardiac Monitor
	Pediatric Airway Protocol(s) <i>if indicated</i>
	Diabetic Protocol PM 2 <i>if indicated</i>

History and Exam Suggest Type of Shock

**Cardiogenic**

**Hypovolemic**

**Distributive**

**Obstructive**

Chest Pain: Cardiac and STEMI  
Protocol AC 4  
Appropriate Pediatric Arrhythmia Protocol(s)  
*if indicated*

**A** Normal Saline Bolus  
5 – 10 mL / kg IV / IO  
Titrate to age appropriate  
SBP  $\geq 70 + 2 \times \text{Age}$   
Maximum 10 mL / kg

Pediatric Allergy Protocol PM 1  
*if indicated*

Suspected Sepsis Protocol UP 15  
*if indicated*

Multiple Trauma Protocol TB 6  
*if indicated*

**A** Normal Saline Bolus  
20 mL / kg IV / IO  
Titrate to age appropriate  
SBP  $\geq 70 + 2 \times \text{Age}$   
Maximum 60 mL / kg

**P** Chest Decompression-Needle Procedure  
*if indicated*

**P** Vasopressor

Dopamine 5 – 20 mcg / kg / min IV / IO  
Titrate to age appropriate  
SBP  $\geq 70 + 2 \times \text{Age}$

**Notify Destination or Contact Medical Control**

Pediatric Medical Protocol Section



# Hypotension / Shock

## Pearls

- Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Lowest blood pressure by age: < 31 days: > 60 mmHg. 31 days to 1 year: > 70 mmHg. Greater than 1 year:  $70 + 2 \times \text{age}$  in years.
- Consider all possible causes of shock and treat per appropriate protocol. Majority of decompensation in pediatrics is airway related.
- Decreasing heart rate and hypotension occur late in children and are signs of imminent cardiac arrest.
- Shock may be present with a normal blood pressure initially.
- Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
- Consider all possible causes of shock and treat per appropriate protocol.
- **Hypovolemic Shock:**  
Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding.
- **Cardiogenic Shock:**  
Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventricular / septum / valve / toxins.
- **Distributive Shock:**
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Body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary or secondary adrenal disease, congenital adrenal hyperplasia, or more commonly have stopped a steroid like prednisone. Injury or illness may precipitate. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. **If suspected Paramedic should give Methylprednisolone 125 mg IM / IV / IO or Dexamethasone 10 mg IM / IV / IO. Use steroid agent specific to your drug list. May administer prescribed steroid carried by patient IM / IV / IO. Patient may have Hydrocortisone (Cortef or Solu-Cortef). Dose: < 1y.o. give 25 mg, 1-12 y.o. give 50 mg, and > 12 y.o. give 100 mg or dose specified by patient's physician.**