



EMT - Paramedic Treatment Protocol 4402

Pediatric Emergencies Hypoperfusion (Shock)

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Shock, or hypoperfusion, is decreased effective circulation causing inadequate delivery of oxygen to tissues. Signs of early (compensated) shock include tachycardia, poor skin color, cool/dry skin, and delayed capillary refill. Systolic blood pressure is normal in early shock. In late (decompensated) shock, perfusion is profoundly affected. Signs include low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status.

Shock is categorized as: 1) hypovolemic, 2) distributive, or 3) cardiogenic.

- A. Perform **Peds-MAMP Protocol 4401**.
- B. Determine most likely cause of shock.
 1. Hypovolemic (loss of fluid) is **most common**. Usually from bleeding or vomiting and diarrhea.
 2. Distributive (loss of vascular tone) is usually from sepsis (infection). Other causes include anaphylaxis, toxic chemicals, or spinal cord injury.
 3. Cardiogenic (heart pump failure) is **rare** in children. Most common cause is congenital heart disease.
- C. If hypovolemic shock is suspected (most common):
 1. If associated with trauma, refer to **Peds-TAMP Protocol 4408**.
 2. If history of vomiting and/or diarrhea and normal vital signs and minimal evidence of dehydration such as decreased tearing and dry mucous membranes, then transport and monitor vital signs.
 3. If dehydrated with signs of early shock such as tachycardia and cool/dry skin, and delayed capillary refill, then:
 - a. Begin transport.



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- b. Establish IV normal saline and administer 20 ml/kg bolus.
- c. Contact Medical Command and reassess vital signs.

d. Continue fluids **per order of Medical Command.**



- 4. If signs of late (decompensated) shock such as low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status, then:
 - a. Make one attempt on-scene to establish IV normal saline and administer 20 ml/kg bolus set to maximum flow rate.
 - b. Transport.
 - c. If still evidence of shock, repeat 20 ml/kg normal saline bolus up to two times for a maximum total of 60 ml/kg.

d. **Contact Medical Command** for further fluid management orders.



e. If unable to establish IV access and patient is unconscious and less than six years old, proceed with intraosseous access **per MCP order.** Administer same normal saline boluses as above.



D. If distributive shock is suspected:

- 1. If anaphylaxis or allergic reaction, refer to **Allergic Reaction/Anaphylaxis Protocol 4501.**
- 2. Initial treatment same as hypovolemic shock above.



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3. If hypotension, markedly increased heart rate, and mental status changes persist after administration of three 20 ml/kg normal saline boluses, then:
 - a. Reassess that shock is distributive and not from untreated hypovolemia.

- b. **Contact Medical Command** and consider dopamine IV drip infusion at 2 to 5 ug/kg per minute **per MCP order**.
- c. Titrate dopamine drip at 5 to 20 ug/kg per minute in an effort to improve perfusion **per MCP order**.



E. If cardiogenic shock is suspected:

1. Immediate transport.
2. Establish IV normal saline and administer cautious fluid bolus of 10 ml/kg.
3. Reassess appearance, vital signs, and work of breathing.
4. If there is no rhythm disturbance and patient remains poorly perfused after the initial fluid bolus:

- a. Contact Medical Command and consider dopamine IV drip infusion at 2 to 5 ug/kg per minute **per MCP order**.
- b. Titrate dopamine drip at 5 to 20 ug/kg per minute in an effort to improve perfusion **per MCP order**.



Special Notes: Patients with distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.