Shock and sepsis

Recognize shock, types by cause, the sepsis first hour, fluids and pressors, arterial lines

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★ high yield

CARDIOVASCULAR

1 AT A GLANCE

Shock is inadequate tissue perfusion and oxygen delivery. It can start before the pressure falls much, so don't wait for very low pressure.

Recognize shock

- Restlessness or anxiety, confusion; pale, cool, clammy skin.
- A rapid, weak pulse, shallow breathing, sweating, bluish lips, and little or no urine.
- ★ **Call for help right away**; don't wait for milder signs to get worse.

First steps

- Check airway, breathing and circulation; start CPR if needed.
- ★ Lay the client flat with the **legs raised about 12 inches, unless there's trauma, trouble breathing, or cardiogenic pulmonary edema**. If raising the legs causes pain or harm, leave the client flat.
- Keep them warm, and give nothing by mouth. Recheck breathing at least every 5 minutes until the team takes over.

Shock by cause

Type	The problem	Signs	Key treatment
Hypovolemic	Low volume: blood loss (external or hidden inside, like in the gut), or fluid lost to burns, vomiting or diarrhea. No fixed percentage defines it	The faster and larger the loss, the worse the signs: weak, thready pulse, low pressure, low temperature, little urine	Replace blood and fluids through one or more IV lines; epinephrine or norepinephrine may be needed
★ **Cardiogenic**	Pump failure, most often after a heart attack; also rhythms, fluid around the heart, valve problems, heart block	Chest pain, fast breathing and pulse; cool, pale or blotchy skin; less urine	Target the heart: drugs that raise pressure and help it pump (dobutamine, milrinone, norepinephrine), fix the rhythm, open the artery, mechanical support
★ **Septic**	Infection: toxins and the body's inflammation drop the pressure and harm the organs	Skin may be warm and flushed; fever or a very low temperature; confusion; little urine	IV fluids, antibiotics, pressure-raising drugs, oxygen
★ **Anaphylactic**	A severe allergy	Hives, a swelling throat, wheezing, a crashing pressure	**Epinephrine in the thigh muscle** is first-line, with airway support, oxygen and other drugs
Spinal injury	Lost vessel tone	A slow heart rate	Emergency care

Sepsis

- ★ **Life-threatening organ dysfunction from a dysregulated response to infection**: an emergency. Untreated, it can quickly lead to organ failure and death.
- It often starts in the lungs, urinary tract, skin or gut. Septic shock is most common in the very old, the very young, and people with weak immune systems.
- Lines and urinary catheters, recent surgery, chemotherapy, steroids and diabetes add risk.
- Signs: fever or shivering, confusion, extreme pain, clammy skin, a fast heart rate or weak pulse, breathlessness.

The first hour

- Suspect sepsis: **alert the provider at once** and follow the facility protocol.
- ★ Blood cultures first, as soon as possible, ideally before the antibiotic, **but don't let them delay it**. Results take several days: don't wait for them.
- ★ Antibiotics **immediately, ideally within 1 hour**, for septic shock or likely sepsis.
- Lactate: normal about **0.5 to 2.2 mmol/L**; high means tissues lack oxygen. Repeat lactates help guide treatment.
- A tourniquet left on too long, or a clenched fist, can falsely raise the lactate.

Fluids and vasopressors

- ★ Adults with sepsis-induced hypoperfusion or septic shock: the guideline suggests **30 mL/kg of IV crystalloid within 3 hours**. It's not a must for every sepsis client: balanced crystalloids are preferred; reassess the response and watch for overload.
- Isotonic fluids, like normal saline and lactated Ringer's, expand blood volume without shifting water into the cells, which is why they're used for shock.
- ★ The first target is a **mean arterial pressure of 65 mmHg**. Capillary refill helps judge whether perfusion is improving.
- If the pressure stays low, **norepinephrine** is the first-line vasopressor; it can start in a peripheral line. The label says to correct low volume first, dilute it, and run it into a large vein; avoid leg veins in older adults or with leg artery disease.
- ★ Check the pressure every 2 minutes until it reaches the target, then every 5 minutes. **Taper it slowly**: stopping it suddenly can drop the pressure.
- ★ A leak can cause necrosis: **stop the infusion, aspirate from the line, and follow local protocol** before the antidote, phentolamine.

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Shock and sepsis

1 AT A GLANCE, CONTINUED

Arterial lines and hemodynamic monitoring

- An arterial line, usually radial or femoral, gives a continuous pressure reading and easy blood gas samples. In adults, the CDC prefers the radial, brachial or top-of-foot site over the femoral, to cut infection.
- Insertion needs at least a cap, a mask, sterile gloves and a small sterile drape.
- Keep every part of the pressure system sterile, including the flush solution; enter it as little as possible. Use a closed, continuous flush system, and scrub an access port with antiseptic before entering.
- ★ **Never run dextrose or parenteral nutrition through the pressure line.**
- The catheter is replaced only for a clinical reason, not on a schedule. Transducers are replaced every 96 hours, with their tubing and flush; the line comes out as soon as it's no longer needed.
- In intensive care, central lines can measure central venous pressure, and a catheter in the lung artery shows how well the heart is pumping.

2 PRIORITY AND SAFETY CALLS

★ Restless, with a fast, weak pulse and cool, clammy skin: **call for help right away**; don't wait for signs to worsen.

★ Pneumonia, a fever, a fast heart rate, a low pressure and new confusion: this looks like septic shock. **Draw the cultures and start the antibiotic right away.**

★ Norepinephrine site cool, pale and swollen: **stop the infusion, aspirate, follow protocol, and notify the provider at once**.

Norepinephrine running: **taper it slowly**; stopping it suddenly can drop the pressure.

Shock with no injury and unlabored breathing: flat, legs raised about 12 inches, warm, nothing by mouth.

Two days after a large heart attack, a low systolic pressure, cool blotchy skin and falling urine: cardiogenic shock.

A septic client's lactate is high: tissues aren't getting enough oxygen. Repeat lactates help guide resuscitation.

3 EXAM ANCHORS

1. Shock is low flow: restless, cool, clammy, fast and weak, with little urine; act early.
2. Find the cause: volume, pump, infection, allergy or spinal injury.
3. Sepsis: cultures, then antibiotics ideally within the hour, lactate, fluids for low perfusion, and the mean arterial pressure goal of 65 mmHg.
4. Norepinephrine: watch the site, check pressures often, and taper.
5. Arterial lines: sterile, closed, and no dextrose.
6. Traps: waiting for signs to worsen, delaying antibiotics for cultures, stopping a pressor suddenly, and dextrose in the pressure line.

4 SELF-QUIZ

1. Shock position, if appropriate: flat, with the legs raised about _____ inches.
2. In septic shock, give antibiotics immediately, ideally within _____ hour.
3. Normal lactate is about 0.5 to _____ mmol/L.
4. The first target is a mean arterial pressure of _____ mmHg.
5. The first-line vasopressor is _____.
6. Norepinephrine: check the pressure every _____ minutes until it reaches the target, then every 5 minutes.
7. Arterial line transducers are replaced every _____ hours.
8. Anaphylaxis: the first-line drug is _____ in the thigh muscle.

ANSWER KEY 1. 12 · 2. 1 · 3. 2.2 · 4. 65 · 5. norepinephrine · 6. 2 · 7. 96 · 8. epinephrine

5 SOURCES

1. MedlinePlus, Shock. medlineplus.gov/ency/article/000039.htm
2. MedlinePlus, Hypovolemic shock. medlineplus.gov/ency/article/000167.htm
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4. MedlinePlus, Septic shock. medlineplus.gov/ency/article/000668.htm
5. Surviving Sepsis Campaign, international guidelines for sepsis and septic shock. sccm.org/clinical-resources/guidelines/guide…
6. CDC, Clinical Care of Sepsis. cdc.gov/sepsis/hcp/clinical-care/index.html
7. MedlinePlus, Lactic acid test. medlineplus.gov/ency/article/003507.htm
8. DailyMed, norepinephrine bitartrate injection label. dailymed.nlm.nih.gov/dailymed/drugInfo.cfm
9. CDC, Guidelines for the Prevention of Intravascular Catheter-Related Infections. cdc.gov/infection-control/media/pdfs/Guidel…

Built from RN PocketPal course lessons: Shock, sepsis and hemodynamic monitoring (c08-l06). Every line on this sheet comes from those lesson scripts.

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