

Sepsis bundle

A plain-English guide for you and your family

WHAT IS HAPPENING

Sepsis happens when your body's defense system overreacts to an infection and starts hurting your own organs. Normally, your immune system releases just the right amount of fighter cells and chemical signals to kill germs without harming you. But in sepsis, those same signals flood your bloodstream, damaging the lining of your blood vessels so they leak fluid and widen too much. Blood pressure drops, organs don't get enough oxygen, and waste acid called lactate builds up. You might see a high fever or a dangerously low temperature, a racing heart, fast breathing, confusion, and eventually shock. The treatment bundle is a race against time: within the first hour, doctors measure lactate to see how starved your organs are, draw blood to identify the germ, give a powerful antibiotic to kill it, pour in IV fluids to fill the leaky pipes, and if pressure is still low, start medicines called vasopressors that squeeze the vessels tight again. Every minute counts, because early treatment stops the spiral and gives your body a chance to heal.

What you might feel

- Fast breathing (22 breaths per minute or more)
- Confusion or being much sleepier than usual
- Low blood pressure (systolic, the top number, below 100)
- Very high or very low body temperature (above 101°F or below 96.8°F)
- Heart racing (more than 90 beats per minute)
- Making very little urine or none at all
- Skin that is cold, clammy, or has purple blotches (mottling)
- Trouble breathing or feeling short of air

Call the doctor right away if...

- Systolic blood pressure below 90 despite giving fluids through an IV — the patient may need medicines (vasopressors like norepinephrine) to squeeze blood vessels and raise pressure.

- Urine output less than 0.5 mL per kilogram per hour for two hours — kidneys are failing and the patient may need dialysis (a machine that cleans the blood).
- Lactate (a waste chemical that builds up when cells burn fuel without enough oxygen) above 4 mmol/L — tissues are starving for oxygen and death risk is very high.
- New confusion, extreme sleepiness, or inability to wake the patient — the brain is not getting enough blood and oxygen.
- Breathing rate above 30 or needing a machine to breathe (mechanical ventilation) — the lungs are failing.

What the care team will do

- Draw blood cultures from two sites and serum lactate level before giving any antibiotics
- Administer broad-spectrum IV antibiotics within 1 hour of sepsis recognition
- Start 30 mL per kg crystalloid IV fluid bolus within 3 hours using normal saline or lactated Ringer solution
- Reassess blood pressure, heart rate, urine output, and mental status every 15 to 30 minutes during initial resuscitation
- Start norepinephrine IV drip if MAP (mean arterial pressure) stays below 65 mmHg after fluid bolus
- Monitor lactate level again at 2 to 4 hours; goal is clearance below 2 mmol per L or decrease by 10 percent per hour
- Identify and prepare to remove infection source—notify provider about need for abscess drainage, line removal, or surgical consultation
- Place urinary catheter to measure hourly urine output accurately during resuscitation

Medicines you may be given — and why

Broad-spectrum antibiotics (examples: piperacillin-tazobactam, meropenem, vancomycin)

These medicines kill the bacteria causing the infection. In sepsis, germs have spread into the blood or are releasing poisons that trigger a dangerous immune overreaction. Antibiotics attack the germs' ability to build their protective walls or make the proteins they need to survive, so the bacteria die and stop releasing toxins. This breaks the chain that is making the body so sick.

IV crystalloid fluids (lactated Ringer's or normal saline)

Sepsis makes blood vessels widen and leak, so fluid escapes from the blood into the tissues. This leaves less blood flowing through the vessels, and blood pressure crashes. The heart and

organs do not get enough oxygen. IV fluids are saltwater solutions pumped directly into the veins to rapidly fill the blood vessels back up, restore blood pressure, and get oxygen-rich blood moving to the organs again.

Norepinephrine

Sepsis releases chemicals that make blood vessels relax and widen, causing blood pressure to drop dangerously low even after giving fluids. Norepinephrine is a hormone-like drug that tightens the smooth muscle wrapped around blood vessels, squeezing them narrower. This raises blood pressure and pushes blood forward to the brain, heart, and kidneys, keeping organs alive while the infection is treated.

Vasopressin

When sepsis is severe, the body's natural vasopressin (a hormone that squeezes blood vessels) runs low, and the vessels stop responding well to norepinephrine alone. Giving vasopressin as a drug adds back this missing hormone. It tightens blood vessels through a different pathway (V1 receptors), helping raise blood pressure without overloading the heart or using dangerously high doses of norepinephrine.

Hydrocortisone

In severe septic shock, the adrenal glands (small glands above the kidneys that make stress hormones) may be too damaged or exhausted to release enough cortisol, the body's natural stress hormone. Cortisol helps blood vessels tighten in response to pressors and calms runaway inflammation. Hydrocortisone replaces the missing cortisol, making blood vessels respond better to norepinephrine and tamping down the immune system's dangerous overreaction.

Where this information comes from

- Surviving Sepsis Campaign 2021 guideline
- CDC Sepsis Fact Sheet
- Society of Critical Care Medicine (SCCM)
- Infectious Diseases Society of America (IDSA)

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