Bacterial Meningitis

A plain-English guide for you and your family

WHAT IS HAPPENING

Normally, a tight filter called the blood-brain barrier keeps your cerebrospinal fluid—the clear liquid that cushions your brain and spinal cord—completely sterile, free from germs. When bacteria break through this barrier (usually from the bloodstream, a nearby ear or sinus infection, a skull fracture, or brain surgery), they multiply in the fluid and trigger a fierce immune response. Your body sends white blood cells and inflammatory chemicals to fight the infection, but because the skull is a closed box, the swelling has nowhere to go. This causes fever, severe headache, a stiff neck (because inflamed membranes pull on neck muscles), and confusion or sleepiness (because the swollen brain isn't getting enough oxygen). If untreated, the pressure inside the skull can crush vital brain structures, blood vessels can clot or leak, seizures can start, and blood pressure can drop into shock. Every symptom—the fever, the stiff neck, the confusion—is your body trying to wall off the infection and keep blood flowing to the brain, but without antibiotics to kill the bacteria, these defenses will fail. That is why bacterial meningitis is a medical emergency: the clock is ticking from the moment bacteria enter the spinal fluid.

What you might feel

- Fever (often above 101°F or 38.5°C)
- Severe headache
- Stiff neck (nuchal rigidity, hard to bend the neck forward)
- Confusion, drowsiness, irritability, or coma (altered mental status)
- Sensitivity to bright light (photophobia)
- Nausea and vomiting
- Seizures (happen in 20 to 30 out of 100 people with bacterial meningitis)
- Tiny purple or red spots on the skin that don't fade when pressed (petechiae or purple bleeding blotches (purpura))
- Weakness on one side, trouble speaking, vision problems, or eye movement trouble (focal neurologic deficits)

- Signs of dangerously high brain pressure: swollen optic nerve in the back of the eye (papilledema), very slow heart rate with high blood pressure and weird breathing (Cushing triad), or abnormal body posturing (stiff arms or legs)

Call the doctor right away if...

- Tiny purple or red spots on the skin that don't fade when pressed (petechiae or purple bleeding blotches (purpura)): this means bacteria are in the bloodstream causing clotting problems and severe sepsis—antibiotics must be given immediately.
- Confusion getting worse or falling into a coma: the brain is swelling dangerously and may be starting to shift inside the skull—urgent brain imaging and ICU care are needed.
- Seizures, especially a seizure that lasts more than 5 minutes or keeps repeating (status epilepticus): the brain is severely inflamed or being damaged by lack of blood flow—emergency brain imaging, seizure medicine, and airway protection are needed.
- Very slow heart rate, high blood pressure, and irregular breathing (Cushing triad), or stiff, abnormal body positions (arms bent inward or legs straight and rigid): the brainstem is being crushed by the swelling brain—death is imminent without immediate treatment.
- Low blood pressure, fast heart rate, weak pulses, cold hands and feet, or little to no urine (signs of septic shock): the infection is overwhelming the whole body—IV fluids, blood pressure medicines, and ICU care are critical.

What the care team will do

- Draw blood cultures from two different sites, then start empiric intravenous vancomycin and ceftriaxone within 60 minutes of emergency department arrival, ideally within 30 minutes.
- Give dexamethasone 10 milligrams intravenous 15 to 20 minutes before or with the first antibiotic dose.
- Perform hourly neurologic checks including Glasgow Coma Scale (a 15-point score measuring eye opening, speech, and movement), pupil size and reaction to light, and motor strength in all four limbs.
- Place the patient in droplet isolation with a surgical mask on the patient or caregivers within three feet until 24 hours after antibiotics start.
- Keep the bed flat or head elevated only 0 to 15 degrees, avoid hip flexion above 90 degrees, and keep the neck in neutral alignment without turning the head sharply.
- Monitor temperature every hour and give scheduled acetaminophen or cooling blankets to keep temperature below 100.4°F or 38°C.

- Maintain a quiet, dark room by dimming lights, closing curtains, and limiting unnecessary noise and visitors.
- Keep intravenous access patent with at least one large-bore peripheral IV or central line, and monitor fluid balance to maintain euvolemia (normal fluid status) with isotonic saline.

Medicines you may be given — and why

Ceftriaxone plus vancomycin (started right away, before lab results)

Ceftriaxone crosses into the fluid around your brain and spinal cord (cerebrospinal fluid, or CSF) and kills bacteria by stopping them from building their protective outer shell (cell wall). It works especially well against the two most common meningitis germs: Streptococcus pneumoniae (pneumococcus) and Neisseria meningitidis (meningococcus). Vancomycin also gets into the inflamed CSF and kills bacteria that are resistant to other drugs, especially drug-resistant S. pneumoniae, by blocking a different part of the same wall-building process. If the patient is over 50 years old, has a weak immune system (from cancer, HIV, transplant medicines, or long-term steroids), is pregnant, or has a chronic illness like diabetes or kidney disease, doctors add ampicillin (a penicillin-type drug) to kill Listeria monocytogenes, a germ that sneaks in through contaminated food and causes meningitis in these groups. If the patient has confusion, seizures, or brain-scan changes that suggest herpes simplex virus (HSV) encephalitis (brain inflammation from the cold-sore virus), doctors add acyclovir (an antiviral drug that stops the virus from copying its DNA).

Where this information comes from

- IDSA Clinical Practice Guidelines for Bacterial Meningitis, 2017
- CDC Bacterial Meningitis Guidance, 2023
- Cochrane Systematic Reviews on Bacterial Meningitis Treatment
- AAN/IDSA Joint Guideline on Encephalitis and Meningitis, 2023

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