How to treat syphilis that has spread to the brain, eyes, and ears.

A shortage of alternative treatments—and patients who can't go to the ER or stay in the hospital for treatment—leaves many doctors wondering how to best treat syphilis that has spread to these organs.

The stages of syphilis can be confusing. Syphilis can spread to the brain, eyes, and ears at ANY stage of the disease.

Syphilis is a common sexually transmitted infection that develops in stages. Syphilis can spread to the brain and central nervous system, eyes, and ears at any stage and can cause permanent damage if not treated *correctly*. Syphilis can spread to these organs right away, but sometimes this doesn't happen for years—or at all.

Most cases of syphilis are easy to cure without staying in the hospital. However, syphilis that has spread to the brain, eyes, or ears needs more intense treatment. The emergency room (ER) is often the best place to diagnose and start to treat these serious conditions. Patients may need to stay in the hospital for 10 to 14 days for treatment.

Some people and providers are hesitant to use the recommended treatment because it is more intensive and costs more. However, the effects of these serious conditions can be life changing if left untreated (like losing your sight or hearing), and may require additional services and resources in the future. In some cases, syphilis that has spread to the brain can even cause death.

Syphilis can spread to the brain, eyes, and ears at any stage of the disease.

Neurosyphilis

Syphilis has spread to the brain and spinal cord (central nervous system).

Ocular syphilis

Syphilis has spread to the eyes. It can involve almost any part of the eye, but especially the back and middle part of the eye.

Otosyphilis

Syphilis has spread to the inner ear (cochleovestibular system).

How to diagnosis syphilis that has spread to the brain, eyes, or ears.

Most people who have syphilis **do not** need to see a specialist or be tested for these serious conditions. It's important to find out if someone with syphilis has symptoms of severe illness, but syphilis does not usually spread to the brain, eyes, and ears.

- Only those with symptoms of serious illness need to be seen by a specialist and need more testing.
- A doctor or healthcare provider will do an exam.
- Healthcare providers should follow normal syphilis treatment recommendations for those who do not have symptoms of serious illness. Syphilis can usually be easily treated with 1 to 3 rounds of penicillin shots.
- Those with syphilis **and** symptoms of serious illness should go to the ER.

	Neurosyphilis	Ocular syphilis	Otosyphilis
Symptoms	• Feels hard to think or make decisions • Changes in personality • Severe headache • Stiff neck • Not able to feel vibrations • Numb feeling in hands, feet, legs, or arms	• Eye pain • Vision changes • Blurry vision • Vision loss • See flashing lights or floaters	• Hearing loss • Hear a ring, buzz, roar, or hissing sound in the ears (tinnitus) • Feel dizzy or like the world moves or spins (vertigo)
Test needed to diagnose	A spinal tap (test of the cerebrospinal fluid or CSF). The spinal tap should include a CSF-VDRL test and a CSF cell count. Healthcare providers should treat patients **right away** if they think a patient has neurosyphilis (even if the patient can't get a spinal tap).	A full eye exam, as well as a cranial nerve exam. Patients **do not** need a spinal tap (test of cerebrospinal fluid or CSF) if they have a normal cranial nerve exam and no symptoms of neurosyphilis.	A full ear exam **and** a cranial nerve exam. Those with a normal cranial nerve exam and no neurosyphilis symptoms do not need a spinal tap (test of cerebrospinal fluid or CSF).
Do patients need to see a specialist?	**It depends.** Patients need a spinal tap, but may not need to see a specialist.	**Yes**. People with symptoms need to be seen by an eye specialist (ophthalmologist).	**Yes.** People with symptoms need to be seen by an ear, nose, and throat specialist (ENT).

Syphilis that has spread to the brain, eyes, or ears can all be treated with the same medicine and dose.

Recommended treatment: Aqueous crystalline penicillin G

Dose: **18 to 24 million units total each day** of aqueous crystalline penicillin G, for 10 to 14 days.

- Continuous infusion OR
- 3 to 4 million units by IV every 4 hours.
- This medicine is usually given in the hospital. Some people can go home to finish treatment after getting an IV started.
- Those with unknown duration/late syphilis should also get a 2.4 million unit dose of benzathine penicillin in the muscle (intramuscular) when they finish IV treatment.

Many providers are not sure how to treat patients who have these serious conditions—but can't go to the ER or stay in the hospital for treatment.

The emergency room or ER is often the best place to quickly get the tests needed (such as a spinal tap) to diagnose neuro, ocular, or otosyphilis. However, some people may not be able to go to the ER or stay at the hospital for 10 to 14 days. For example, people who:

- Are experiencing homelessness
- Have substance use disorder
- Can't pay
- Do not have health insurance
- Do not have child care

Hospitals may have financial assistance to help people afford testing and treatment. **However, when people are not able to get the recommended IV penicillin medication, the Utah Department of Health and Human Services (DHHS) recommends ceftriaxone.** Ceftriaxone is only a good choice in certain situations, and should not be used for most people. There is not much data showing that it cures neuro, ocular, and otosyphilis (see references). The DHHS STI program can help connect people to ceftriaxone treatment. Providers can reach the program at 801-538-6191.

Alternative treatment: Ceftriaxone

Dose: **1 to 2 grams total each day** of Ceftriaxone, for 10 to 14 days.

This medicine should **only** be used for patients who can't get the recommended IV penicillin treatment.

References

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