TEST

Csf-vdrl test

The CSF-VDRL test checks spinal fluid for antibodies that may support a diagnosis of neurosyphilis.

WHAT IT MEASURES
Syphilis-related reagin antibodies in cerebrospinal fluid

SAMPLE
Cerebrospinal fluid from a lumbar puncture

FASTING NEEDED?
No

HOW LONG IT TAKES
About 30-60 minutes

RESULTS IN
Usually 1-5 days; laboratory timing varies

USED FOR
Diagnosis of neurosyphilis

MAIN LIMITATION
A nonreactive result can miss neurosyphilis

Overview

The CSF-VDRL test helps assess whether syphilis has affected the brain, spinal cord, or surrounding tissues, a condition called neurosyphilis .

CSF stands for cerebrospinal fluid, the clear fluid around the brain and spinal cord. VDRL stands for Venereal Disease Research Laboratory. The test detects reagin antibodies produced in response to cell damage associated with syphilis; it does not detect the bacterium directly.

CSF is collected through a lumbar puncture, or spinal tap. Blood tests for syphilis are usually done first. CSF-VDRL is not a routine screening test for people without symptoms or other evidence of nervous system involvement.

Why the test is ordered

A clinician may order CSF-VDRL when syphilis blood tests are positive and symptoms or

examination findings suggest nervous system involvement, including:

Testing may also be considered in some people with late-stage syphilis or when treatment has not produced the expected clinical or blood-test response.

Eye and hearing symptoms require specialist assessment. A lumbar puncture is not always needed before treating isolated eye or hearing involvement, particularly when the neurological examination is otherwise normal.

- Persistent headache with neurological findings
- Confusion, altered mental state, or changes in thinking
- Weakness, numbness, poor coordination, or altered sensation
- Cranial nerve problems, such as facial weakness
- Signs of meningitis
- A stroke possibly related to blood-vessel inflammation
- Certain eye or hearing problems associated with syphilis

Who should have the test

This test is mainly used when medical history, examination findings, and syphilis blood tests raise concern about neurosyphilis. It is not generally used to screen everyone with syphilis.

Having HIV does not automatically mean you need a lumbar puncture. HIV can affect CSF white-cell or protein levels for reasons unrelated to neurosyphilis, so symptoms, examination findings, treatment history, and blood-test patterns guide the decision.

Seek emergency care for sudden facial drooping, one-sided weakness, difficulty speaking, a seizure, severe confusion, or sudden vision loss. Do not wait for a scheduled CSF test.

How to prepare

You do not need to fast. Unless told otherwise, you can usually eat, drink water, and have coffee before the procedure.

Tell the clinical team about all medicines and supplements, especially blood thinners like warfarin or apixaban , aspirin, medicines affecting platelets, and recent antibiotics like amoxicillin or doxycycline . Do not stop prescribed medicine unless you receive specific instructions.

You may need blood tests to check your platelet count and clotting. Brain imaging may be

required first if there are signs of raised pressure inside the skull or another condition that could make lumbar puncture unsafe.

Wear comfortable clothing and arrange help getting home if advised. Sedation is not usually needed for an adult lumbar puncture.

What happens during the test

You usually lie on your side with your knees drawn up or sit leaning forward. The lower back is cleaned, and local anaesthetic is injected to numb the area. A thin needle is placed between two lower-spine bones, below where the spinal cord normally ends.

CSF drips into sterile tubes. You may feel pressure; tell the clinician immediately if you feel sharp pain or tingling down a leg. The needle is removed and a small dressing applied.

The procedure often takes 15 to 30 minutes, although the full appointment may take longer. The same sample may also be tested for cell counts, protein, glucose, or other infections.

Understanding your results

Results are usually reported as reactive or nonreactive .

A reactive result means reagin antibodies were detected. With compatible symptoms, positive blood tests, and a CSF sample not contaminated by blood, it strongly supports neurosyphilis. A reactive result may include a titre , which estimates antibody activity but should not be interpreted alone.

A nonreactive result means antibodies were not detected, but it does not rule out neurosyphilis because the test can miss genuine cases. Clinicians also consider:

Laboratory methods vary, and the complete clinical context determines what a result means.

- Syphilis blood tests
- Symptoms and neurological examination
- CSF white-cell count and protein
- Previous treatment
- Other possible causes

What affects the results

Blood entering the sample during lumbar puncture is the main cause of a misleading reactive result. This is called a traumatic tap . Antibodies from blood can enter the CSF tube and appear to have been present in spinal fluid.

Other factors include:

Food, coffee, exercise, kidney function, and pregnancy do not usually affect CSF-VDRL directly.

- Previous antibiotics: Treatment active against syphilis may reduce inflammation or antibody activity.
- Timing and infection stage: Antibody levels may be too low to detect.
- Sample handling: Delayed or incorrect storage may affect testing.
- Other nervous system inflammation: This may alter CSF white cells or protein.
- HIV and immune conditions: These can complicate interpretation of supporting findings.

Accuracy and limitations

A reactive result is usually reliable when the sample is not contaminated with blood and the clinical findings fit neurosyphilis. The main limitation is lower sensitivity: the result can be nonreactive even when neurosyphilis is present.

If suspicion remains high, a laboratory may use a treponemal CSF test such as FTA-ABS or TP-PA. These are better at detecting possible cases, but a reactive result can be less conclusive because antibodies may enter CSF from blood.

A negative CSF FTA-ABS or TP-PA makes neurosyphilis less likely, especially when symptoms are vague. No CSF test should be interpreted without blood tests, examination findings, and other CSF measurements.

Risks and complications

The laboratory test itself causes no harm, but collecting CSF requires a lumbar puncture.

A headache may occur afterward and is often worse when sitting or standing. Temporary back soreness, minor bleeding, or faintness can also occur. Infection and lasting nerve injury are uncommon.

Contact the clinical team promptly for a severe or worsening headache, fever, redness or fluid leaking from the puncture site, or increasing back pain.

Seek urgent or emergency care for new leg weakness or numbness, loss of bladder or bowel control, a seizure, severe confusion, or rapidly worsening neurological symptoms.

What happens next

If the result and other findings support neurosyphilis, treatment is usually arranged without unnecessary delay. Treatment depends on the type of involvement, allergy history, pregnancy status, previous treatment, and current guidance.

If the result is nonreactive but concern remains, further CSF antibody testing or assessment for other causes may be needed. A negative result does not automatically mean treatment is unnecessary.

Follow-up may include monitoring symptoms and repeating syphilis blood tests. Another lumbar puncture is not required for everyone; the decision depends on treatment response, blood-test trends, immune status, and the original findings.

Common questions

Can I drink coffee before a CSF-VDRL test?

Usually, yes. Fasting is not required, but follow separate instructions for sedation or other tests.

Does the time of day matter?

No. Results do not meaningfully vary by time of day.

Can I exercise beforehand?

Light activity does not directly affect the result. Avoid dehydration, and ask about strenuous exercise if you have another medical condition or will receive sedation.

Can a blood test replace the lumbar puncture?

No. Blood tests can identify current or previous syphilis but cannot confirm central nervous system involvement by themselves.

How long should I rest afterward?

Follow the facility's instructions. You may be observed briefly. Prolonged bed rest does not prevent every post-lumbar-puncture headache, but avoid strenuous activity if advised.

Why was my result negative if neurosyphilis is still being considered?

CSF-VDRL can miss genuine cases. Symptoms, examination findings, blood tests, CSF cell and

protein levels, and possibly another CSF antibody test help clarify the result.

Sources

- Centers for Disease Control and Prevention: Neurosyphilis, Ocular Syphilis, and Otosyphilis - STI Treatment Guidelines
- Centers for Disease Control and Prevention: Laboratory Recommendations for Syphilis Testing, United States, 2024
- National Institutes of Health ClinicalInfo: Syphilis-Adult and Adolescent Opportunistic Infections Guidelines
- Tuddenham S, Hamill MM, Ghanem KG. "Diagnosis and Treatment of Syphilis: A Review." JAMA . 2022;327(16):1613-1622.
- Engelborghs S, Niemantsverdriet E, Struyfs H, et al. "Consensus Guidelines for Lumbar Puncture in Patients with Neurological Diseases." Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring . 2017;8:111-126.