TEST

VDRL test

A VDRL test looks for indirect antibody signs of syphilis, usually in blood.

WHAT IT MEASURES
Antibodies to cell-damage fats that can appear with syphilis

SAMPLE
Blood; sometimes cerebrospinal fluid

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually under five minutes for a blood draw

RESULTS IN
Usually one to three days; timing varies by laboratory

USED FOR
Syphilis screening, treatment monitoring, and neurosyphilis assessment

MAIN LIMITATION
Reactive blood results need confirmation with a treponemal test

Overview

The Venereal Disease Research Laboratory test, usually called the VDRL test, helps assess whether you may have syphilis. Syphilis is a sexually transmitted infection caused by the bacterium Treponema pallidum .

The test does not look directly for the bacterium. Instead, it detects antibodies made in response to fatty substances released when cells are damaged. These are called nontreponemal antibodies. Syphilis can produce them, but so can several unrelated conditions.

For this reason, a reactive blood VDRL result usually needs confirmation with a treponemal test , which looks for antibodies directed more specifically against the syphilis bacterium.

Most VDRL tests use blood. A VDRL test can also be performed on cerebrospinal fluid, the liquid surrounding the brain and spinal cord, when neurosyphilis is being considered. Collecting this fluid requires a lumbar puncture rather than a standard blood draw.

Why the test is ordered

A VDRL test may be ordered to:

Some laboratories use the similar rapid plasma reagin, or RPR, test instead. Other laboratories begin with a treponemal antibody test and use VDRL or RPR afterward. Both testing approaches can be appropriate.

Because VDRL results can be reported as a titer , the test is useful for follow-up. A titer shows how far the sample can be diluted while remaining reactive.

- Screen for syphilis when you do not have symptoms
- Help investigate symptoms or a sexual contact associated with syphilis
- Provide a baseline antibody level before treatment
- Track whether antibody levels fall after treatment
- Help assess possible neurosyphilis when performed on spinal fluid

Who should have the test

Testing may be offered if you have symptoms that could be related to syphilis, have had sexual contact with someone diagnosed with it, or have a higher chance of exposure. It may also be included in sexual health screening.

Syphilis screening is routinely recommended during pregnancy because untreated infection can affect the pregnancy and baby. The timing and frequency of testing are based on local guidance and individual risk.

Testing may also be appropriate for people with HIV, people taking HIV pre-exposure prophylaxis, men who have sex with men, and others whose sexual history or local infection rates increase the chance of exposure.

A spinal-fluid VDRL is not a routine screening test. It may form part of an assessment when symptoms or examination findings raise concern about involvement of the brain, spinal cord, eyes, or ears.

How to prepare

You do not need to fast for a blood VDRL test. You can usually eat, drink water or coffee, exercise, and take your regular medicines as normal.

If other blood tests are being collected at the same appointment, follow any instructions given for those tests. Tell the person arranging your test about previous syphilis diagnoses and

treatment because these details affect interpretation.

A lumbar puncture requires separate preparation. You may be asked about blood-thinning medicines, bleeding problems, allergies, pregnancy, or previous difficulty with the procedure. Do not stop prescribed medicine unless the clinician arranging the procedure tells you to.

What happens during the test

For a blood VDRL test, a healthcare professional cleans the skin and inserts a small needle into a vein, usually in your arm. Blood is collected into a tube and sent to a laboratory. The draw usually takes less than five minutes.

For a spinal-fluid VDRL, you lie on your side or sit leaning forward. After the lower back is cleaned and numbed, a thin needle is placed between two spinal bones to collect a small amount of cerebrospinal fluid. The needle is inserted below the level where the spinal cord normally ends.

Understanding your results

Results are usually described as nonreactive or reactive .

A nonreactive result means the test did not detect the antibodies it measures. This often means there is no laboratory evidence of syphilis from this test. However, infection can be missed if testing occurs very soon after exposure or during some later stages.

A reactive result means the antibodies were detected. It does not confirm syphilis by itself. A treponemal antibody test is normally used to help determine whether the result is related to syphilis.

Reactive results may include a titer, such as 1:8 or 1:32. Higher second numbers represent reactivity at greater dilution. During treatment follow-up, clinicians look for meaningful changes over time. For example, a change from 1:32 to 1:8 is a fourfold fall.

Titers should ideally be followed with the same type of test, because VDRL and RPR numbers cannot be directly compared. Some people continue to have a low reactive titer despite appropriate treatment.

A reactive spinal-fluid VDRL can support a diagnosis of neurosyphilis when the symptoms, examination, and other spinal-fluid findings fit. A nonreactive result does not completely exclude neurosyphilis.

Reference wording and interpretation vary by laboratory, age, sex, pregnancy status,

medicines, previous treatment, and clinical context.

What affects the results

Several factors can make a VDRL result misleading even when the laboratory has performed the test correctly.

Testing too soon after exposure can produce a false-negative result because the antibody level has not risen enough. The test can also be less reliable during later stages of untreated infection.

Very high antibody levels can occasionally cause a falsely nonreactive result. This is called the prozone effect . If suspicion remains high, the laboratory can repeat the test using diluted samples.

Pregnancy, older age, autoimmune diseases, some infections, recent vaccination, and injecting drug use can sometimes produce a reactive nontreponemal test without syphilis. These are called biological false-positive results.

Previous treatment matters. Titers usually fall after successful treatment, but the speed and amount of change differ. Some people remain weakly reactive for a long time.

Blood contaminating a spinal-fluid sample may complicate interpretation. The spinal-fluid result must be considered alongside the cell count, protein level, blood tests, symptoms, and examination.

Food, coffee, exercise, and time of day do not usually have a meaningful effect. Most routine medicines do not directly interfere, but your full medical history can explain an unexpected result.

Accuracy and limitations

VDRL accuracy changes with the stage of syphilis. The test can miss a meaningful proportion of infections during the earliest stage, before antibodies have developed. It is more likely to detect infection during secondary syphilis, when antibody levels are often higher, and may again miss some later infections.

False-positive nontreponemal reactions are uncommon in general populations, but they do occur. This is why a reactive blood VDRL should not be treated as proof of syphilis without a treponemal test and clinical assessment.

A treponemal test is better for confirming that your immune system has encountered T.

pallidum . However, treponemal tests often remain reactive after treatment, so VDRL or RPR titers are generally more useful for monitoring change.

If there is an active sore, a test that detects the bacterium directly from the lesion may provide useful evidence where such testing is available. For possible neurosyphilis, no single spinal-fluid test answers every case. A nonreactive spinal-fluid VDRL may need to be considered alongside other tests.

Risks and complications

A blood draw may cause brief discomfort, a small bruise, or light-headedness. Serious complications are uncommon.

A lumbar puncture has additional risks. Headache afterward is the most common problem. Temporary back discomfort or minor bleeding can occur, while infection and serious nerve complications are uncommon.

Seek medical advice promptly after a lumbar puncture if you develop a severe or persistent headache, fever, increasing back pain, fluid leaking from the puncture site, weakness, or numbness.

What happens next

A nonreactive result may need no further action if there was no recent exposure or ongoing concern. If the possible exposure was recent, repeat testing may be recommended after enough time has passed for antibodies to develop.

A reactive result is usually followed by a treponemal test. Your clinician will also consider previous results, past treatment, symptoms, pregnancy status, and possible timing of exposure.

If syphilis is confirmed, treatment and follow-up testing can be arranged. Sexual partners may also need testing. Follow-up appointments are routine and are used to check that the titer changes as expected.

Contact a healthcare service promptly if you are pregnant and receive a reactive result, or if you develop new vision changes, hearing loss, ringing in the ears, severe headache, weakness, numbness, or problems with balance. Call emergency services for sudden one-sided weakness, difficulty speaking, loss of consciousness, or other stroke-like symptoms.

Common questions

Can I drink coffee before a VDRL test?

Yes. Fasting is not needed for a VDRL blood test, so plain or milky coffee does not usually affect it. Follow separate instructions if other tests are being collected.

Does the time of day matter?

No. VDRL antibody levels do not normally change enough during the day to require testing at a specific time.

Can I exercise beforehand?

Yes. Ordinary exercise is not known to meaningfully alter VDRL results. A laboratory may give different instructions if you are having other tests at the same visit.

Does a reactive VDRL mean I have syphilis?

Not by itself. Other conditions can produce the same antibodies, so a treponemal test and review of your history are usually needed.

Is VDRL the same as RPR?

They are closely related nontreponemal tests, but their methods and titers differ. Follow-up should ideally use the same test and laboratory.

Will the test become nonreactive after treatment?

It may, particularly when infection is treated early. Some people keep a low reactive result despite appropriate treatment, so the pattern of titers and treatment history matter.

Sources

- Centers for Disease Control and Prevention. Syphilis: STI Treatment Guidelines
- Centers for Disease Control and Prevention. Laboratory Recommendations for Syphilis Testing, United States, 2024 . MMWR Recommendations and Reports
- Centers for Disease Control and Prevention. STI Screening Recommendations
- MedlinePlus. Syphilis Tests
- Mayo Clinic Laboratories. VDRL, Spinal Fluid