TEST

Gram stain of urethral discharge

This microscope test checks urethral discharge for bacteria and signs of inflammation

WHAT IT MEASURES
Bacteria shapes and inflammatory cells in urethral discharge

SAMPLE
Urethral discharge collected on a swab

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually a few minutes

RESULTS IN
Often same day; turnaround varies by laboratory

USED FOR
Helping diagnose urethritis and gonorrhea

MAIN LIMITATION
A negative smear cannot rule out gonorrhea or chlamydia

Overview

A Gram stain of urethral discharge is a microscope test. It looks for bacteria and white blood cells in fluid from the urethra, the tube that carries urine out of the body.

The sample is spread onto a glass slide and treated with special dyes. Bacteria take up the dyes in different ways, helping laboratory staff describe their shape and whether they are "Gram-positive" or "Gram-negative."

In someone with symptoms, Gram-negative bacteria seen in pairs inside white blood cells may strongly suggest gonorrhea. These bacteria are called Gram-negative intracellular diplococci. "Diplococci" means round bacteria arranged in pairs.

White blood cells can support a diagnosis of urethritis, meaning inflammation of the urethra. However, they do not show what caused the inflammation. Chlamydia, for example, is not reliably visible on a routine Gram stain.

A Gram stain can sometimes provide a quick preliminary result. Nucleic acid amplification tests, or NAATs, are usually more reliable for detecting gonorrhea and chlamydia. A NAAT looks for genetic material from the infection.

Why the test is ordered

The test may be ordered when you have discharge from the penis or urethra, pain or burning when urinating, or irritation at the urethral opening.

It can help answer two immediate questions:

Because microscopy may be performed while you are still at a clinic, it can sometimes guide same-day decisions. Availability differs between clinics and laboratories.

A Gram stain does not test for every sexually transmitted infection. It does not reliably identify chlamydia, trichomoniasis, herpes, syphilis, HIV, or Mycoplasma genitalium . Separate tests are needed when these infections are possible.

- Are there enough white blood cells to support urethral inflammation?
- Are bacteria with the typical appearance of gonorrhea visible?

Who should have the test

A healthcare professional may offer the test if you have visible urethral discharge or symptoms that suggest urethritis. It is most useful when discharge is present and microscopy can be performed promptly.

It is not usually the main screening test for someone without symptoms. Urine or swab NAATs are generally better suited to screening for gonorrhea and chlamydia.

The value of Gram staining also differs by anatomy and sample site. It performs best for visible urethral discharge in symptomatic men. It is less reliable for diagnosing gonorrhea from cervical, vaginal, throat, or rectal samples. Tests chosen for you should reflect your symptoms, sexual contact sites, pregnancy status, and local laboratory services.

How to prepare

You do not need to fast. You may eat, drink water, and take your usual medicines unless you have been given different instructions.

You may be asked not to urinate for at least an hour before collection. Urination can wash away some discharge and reduce the amount available for the slide. Follow the timing instructions from the clinic collecting your sample.

Tell the healthcare professional if you have recently taken antibiotics, including antibiotics like amoxicillin or doxycycline prescribed for another reason. Treatment can reduce the number of

visible bacteria and may make the result less reliable.

Avoid cleaning inside the urethral opening or applying creams immediately before the appointment. If the clinic has given specific instructions about sex, washing, or medicines, follow those instructions.

What happens during the test

You will usually be asked to expose the urethral opening. If discharge is visible, it may be collected directly with a small sterile swab. If there is no visible fluid, the swab may need to be placed a short distance into the urethra and gently rotated.

Collection takes only a few seconds. It can cause brief discomfort, stinging, or an urge to urinate.

The sample is rolled onto a glass slide. After staining, laboratory staff examine it under a microscope. They look for white blood cells, bacteria, and the location and arrangement of any bacteria seen.

Understanding your results

The report may describe white blood cells, Gram-negative intracellular diplococci, other bacteria, or no significant findings.

Gram-negative intracellular diplococci seen means paired bacteria were found inside white blood cells. In a symptomatic man with urethral discharge, this is strong preliminary evidence of gonorrhea. A NAAT or culture may still be performed to confirm the infection or provide additional information.

White blood cells present, but no typical gonococcal bacteria seen supports urethral inflammation but does not identify its cause. Chlamydia, Mycoplasma genitalium , trichomoniasis, partially treated gonorrhea, and non-infectious irritation are among the possibilities that may require other testing.

No white blood cells or typical bacteria seen does not fully exclude an infection. The sample may contain too little discharge, the infection may be at an early stage, or the organism may not be visible with this method.

There is no single universal "normal range" for this test. Reporting thresholds and interpretation vary by laboratory, age, sex, pregnancy status, medicines, and clinical context.

What affects the results

Several factors can make the slide look negative or unclear even when the laboratory has processed it correctly.

Recent antibiotics can lower the number of bacteria. This includes antibiotics taken for an unrelated infection. Urinating, washing the urethral opening, or applying a cream shortly before collection can reduce or alter the available discharge.

Sample quality is important. Too little fluid, a swab taken from the wrong area, or a thick or damaged smear can make cells and bacteria harder to recognize. The result also relies on correct staining and an experienced person reading the slide.

Timing matters if symptoms are mild or discharge is intermittent. A sample taken when little discharge is present may miss inflammation or bacteria.

Pregnancy and age do not usually change how the bacteria stain, but they can affect which samples and follow-up tests are appropriate. Medicines, sexual history, symptoms, and the body sites exposed during sex also affect how the result should be interpreted.

Accuracy and limitations

In symptomatic men with urethral discharge, seeing Gram-negative intracellular diplococci is usually a reliable sign of gonorrhea. The test is less likely to be right when symptoms are absent, the sample is small, or it comes from another body site.

The test can miss gonorrhea. This may happen after antibiotics, after recent urination, or when few bacteria are present. A negative result therefore does not safely rule it out.

The test can also occasionally suggest gonorrhea when gonorrhea is not present. Bacteria or staining material can be mistaken for the expected appearance, particularly in a poor-quality sample or at sites where related bacteria normally live.

A Gram stain cannot reliably detect chlamydia and cannot show whether gonorrhea bacteria are resistant to antibiotics. A NAAT is usually the better test for detecting gonorrhea and chlamydia. Culture is the better test when antibiotic resistance or treatment failure is a concern because living bacteria can be tested against antibiotics.

Risks and complications

Swab collection can cause short-lived stinging, discomfort, or minor spotting. Serious

complications are not expected from routine collection.

Tell the person collecting the sample if you have severe pain or have recently had urethral surgery or injury.

What happens next

Your next step depends on the microscopy result, your symptoms, and any NAAT or culture results. Treatment may sometimes begin before all results return when the findings and clinical situation strongly suggest infection.

If an infection is found, you may be advised about treatment, avoiding sexual contact for a specified period, and testing or treatment for recent partners. Follow the instructions you receive because the details depend on the infection and treatment used.

Routine follow-up is appropriate if symptoms continue after treatment, return later, or your laboratory results are unclear. Further tests may look for chlamydia, gonorrhea, Mycoplasma genitalium , trichomoniasis, or non-infectious causes.

Seek urgent medical care for fever with worsening genital symptoms, increasing testicular pain or swelling, severe pelvic or lower abdominal pain, or difficulty passing urine. Sudden severe testicular pain is an emergency because causes other than urethritis may require immediate treatment.

Common questions

Can I drink coffee before the test?

Yes. Coffee does not directly affect the Gram stain. However, avoid urinating during the period specified by the clinic, even if drinking coffee makes you need to go.

Does the time of day matter?

Usually not. The amount of discharge matters more than the clock time. Attend when instructed and avoid urinating beforehand for the requested period.

Can I exercise beforehand?

Normal exercise does not change how bacteria stain. Showering or urinating immediately after exercise may reduce visible discharge, so consider the clinic's preparation instructions.

Can I have sex before the test?

Sex does not automatically prevent testing, but recent sexual activity may change the amount

or appearance of discharge. Some clinics may ask you to avoid sex beforehand. Tell the healthcare professional when your symptoms began and about recent exposure.

Will the swab hurt?

It may sting or feel uncomfortable for a few seconds, especially if the urethra is inflamed. Discomfort usually settles quickly after the swab is removed.

Why do I need another test if the Gram stain suggests gonorrhea?

A NAAT can provide more reliable confirmation and test for chlamydia at the same time. A culture may be needed if treatment has failed or antibiotic resistance is suspected.

Sources

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