TEST

Methylene blue test

A methylene blue test uses blue dye to look for a leak, blockage, or abnormal connection

WHAT IT MEASURES
Whether blue dye passes through or leaks between body spaces

SAMPLE
None; the procedure tracks dye placed inside the body

FASTING NEEDED?
Sometimes, when sedation or surgery is planned

HOW LONG IT TAKES
Minutes to hours, based on the procedure

RESULTS IN
Often immediate; reporting time varies by laboratory or facility

USED FOR
Diagnosis and checking repairs during surgery

MAIN LIMITATION
Small or intermittent leaks can produce a negative result

Overview

"Methylene blue test" does not describe one standard test. It is a name used for several procedures that use methylene blue, a strongly colored dye, to trace where fluid travels.

For example, dye may be placed into the bladder to look for a leak into the vagina, a surgical drain, or nearby tissue. During keyhole surgery, it may be passed through the cervix to see whether the fallopian tubes are open. Surgeons may also use it to check a repair or locate an abnormal passage called a fistula.

The way the test is done, its preparation, and its risks therefore depend on where the dye is placed. Ask for the full name of your planned procedure if your appointment letter says only "methylene blue test."

This is not usually a blood test for the amount of methylene blue in your body. Methylene blue is also used as a medicine for certain blood conditions, but that is a different use.

Why the test is ordered

A clinician may order a methylene blue test when they need to see whether fluid follows an expected route or escapes somewhere it should not.

Possible reasons include:

The dye test may be only one part of the investigation. Imaging, endoscopy, examination under anesthesia, or laboratory testing may still be needed.

- Looking for an abnormal connection between the bladder and vagina
- Checking for a urine leak after surgery or injury
- Testing whether the fallopian tubes appear open during laparoscopy
- Finding the path of a sinus or fistula
- Checking whether a surgical repair is watertight
- Helping identify particular tissue during an operation

Who should have the test

This test may be considered if your symptoms, examination, operation, or imaging suggest a possible leak, blockage, or abnormal connection. It may also be used during surgery even when you do not have symptoms, such as to check that the bladder has not been injured.

It is not a general screening test. Whether it is suitable depends on the body area being examined and whether a different test would give clearer information.

Tell the healthcare team before the procedure if you:

These details may affect the choice of dye, the amount absorbed, or the safety plan. Do not stop a prescribed medicine unless the team arranging the procedure tells you to.

- Are pregnant, could be pregnant, or are breastfeeding
- Have glucose-6-phosphate dehydrogenase deficiency, called G6PD deficiency
- Have kidney problems
- Previously reacted to methylene blue or another dye
- Take antidepressants like sertraline or fluoxetine , certain pain medicines, or other serotonergic medicines
- Recently had surgery involving the area being tested

How to prepare

Follow the instructions for the specific procedure rather than the dye alone.

You may not need to fast for a simple office test using a catheter. If the test is being done during surgery, endoscopy, or a procedure with sedation, you will usually receive instructions about when to stop eating and drinking.

Bring an up-to-date list of your medicines and supplements. Include antidepressants, medicines for migraine or pain, cough medicines containing dextromethorphan, and any medicines that affect serotonin. Systemically absorbed methylene blue can interact with some of these medicines.

You may be asked for a urine pregnancy test before certain procedures. Depending on the reason for testing, you may also need blood tests, urine tests, or imaging beforehand.

Methylene blue can stain clothing and may temporarily color urine or other body fluids blue or green. The team may provide a pad or protective covering.

What happens during the test

The steps depend on what is being checked.

For a suspected bladder or urinary leak, a thin flexible tube called a catheter may be passed through the urethra into the bladder. Diluted dye is placed into the bladder. The clinician then watches for blue fluid in the vagina, a drain, a wound, or another unexpected location.

To test the fallopian tubes during laparoscopy, dye may be passed through the cervix and uterus while a camera views the tubes from inside the abdomen. Free flow from the ends of the tubes suggests that they are open.

During surgery, dye may be placed into an organ or passage while the surgeon watches the repair and nearby tissues. The procedure may take only a few minutes, but the full appointment can be much longer if anesthesia, imaging, or surgery is involved.

The dye is sometimes injected into a vein for other medical purposes. Intravenous methylene blue has different risks and should not be treated as equivalent to a small amount placed locally.

Understanding your results

Methylene blue results are usually described by what the dye did rather than by a numerical reference range.

A positive result generally means dye appeared somewhere it was not expected. This can

support the presence of a leak or fistula. The location and timing help the clinician work out where the abnormal route may be.

A negative result means no dye was seen in the area being observed. This can be reassuring, but it does not always exclude a small, temporarily closed, or intermittent leak.

For a fallopian tube test, dye seen flowing from a tube suggests that the tube was open at that moment. No visible flow can mean a blockage, but temporary muscle spasm, catheter position, pressure, or technical problems can also prevent flow.

There is no universal normal range. Interpretation varies with the exact procedure, laboratory or facility, age, sex, pregnancy status, medicines, recent surgery, and the wider clinical context.

What affects the results

Several factors can make the result misleading even when the dye and equipment work correctly.

The amount and concentration of dye matter. Too little dye may be difficult to see. Dye that is too concentrated can obscure fine detail or stain surrounding tissue.

A small leak may open only with movement, coughing, bladder filling, or higher pressure. If it is closed during the test, the result may be negative. Swelling, scar tissue, mucus, blood clots, or temporary muscle spasm can also block dye flow.

Catheter position is important. Dye placed in the wrong position may not reach the area being tested. Accidental spilling or contamination can cause blue staining that looks like a leak.

Blood, surgical antiseptics, lighting, dressings, and already discolored urine can make the dye harder to identify. Recent surgery can change the anatomy and the route fluid takes.

Kidney function may affect how long blue or green urine lasts if dye reaches the bloodstream. Methylene blue can also interfere with some oxygen-monitor readings and laboratory methods after systemic use. A recent dose should be reported if blood or urine tests are being interpreted.

Pregnancy and medicines are more important for safety than for whether the dye is visible. However, they may change which procedure or alternative dye is appropriate.

Accuracy and limitations

There is no single accuracy figure for a "methylene blue test" because the name covers different procedures. Accuracy changes with the body site, technique, amount of dye, size of

the opening, and experience of the person performing the test.

The test can miss a problem when a leak is tiny, intermittent, blocked by swelling, or not connected to the area where dye was placed. This is a false-negative result: the test appears normal even though a problem is present.

It can also appear positive when dye was spilled, transferred on an instrument, or spread over tissue from another source. This is a false-positive result: blue dye is seen even though there is no true abnormal connection.

A different test may be better in some situations. CT cystography or conventional cystography can show bladder injury in more detail. Cystoscopy uses a camera to examine the bladder. Hysterosalpingography uses X-rays and contrast material to assess the uterus and fallopian tubes. MRI, ultrasound, or endoscopy may be more useful for deeper or complex fistulas.

A negative dye test should therefore be interpreted alongside your symptoms, examination, imaging, and surgical findings.

Risks and complications

A locally applied dye test may cause temporary blue or green urine, staining, mild irritation, or discomfort from a catheter. Catheter placement can occasionally cause minor bleeding or a urinary infection.

If the test is part of laparoscopy, endoscopy, or surgery, most risks come from that procedure and its anesthesia rather than from the dye alone.

Methylene blue absorbed into the bloodstream can have more important effects. It can damage red blood cells in people with G6PD deficiency. It can also cause serotonin syndrome when combined with certain medicines that raise serotonin levels. The risk depends on the route and amount used, so tell the team about all medicines before the procedure.

Seek urgent medical advice after the test if you develop worsening pain, fever, difficulty passing urine, persistent bleeding, or signs of infection.

Call emergency services for difficulty breathing, swelling of the face or throat, fainting, severe confusion, marked agitation, high fever with stiff muscles, or rapidly worsening weakness. These are not expected routine effects.

What happens next

If no leak or blockage is found and your symptoms improve, you may need only routine

follow-up. The clinician may still review other test results or monitor how you recover after surgery.

If dye identifies a leak, fistula, or blocked pathway, the next step depends on its location and cause. Options may include more detailed imaging, endoscopy, temporary drainage, observation, or a planned repair. A positive dye result does not by itself determine which treatment is appropriate.

If the result is negative but symptoms continue, contact the team that arranged the test. They may repeat the examination under different conditions or choose a test that provides a more detailed view.

Common questions

Can I drink coffee before a methylene blue test?

Usually yes for a simple test without sedation. Do not drink coffee if you have been told to fast for surgery, anesthesia, or sedation. Follow the fasting instructions from your facility.

Does the time of day matter?

Usually not. Timing may be chosen around surgery, bladder filling, laboratory availability, or other tests rather than because the dye works better at a particular hour.

Can I exercise beforehand?

Gentle activity does not usually affect the dye. If the test follows recent surgery or involves anesthesia, follow your activity restrictions. Strenuous exercise could also change leakage that occurs only with pressure or movement, so mention this pattern to the team.

Will my urine turn blue or green?

It can. The color is usually temporary and may occur when dye enters the urinary system or bloodstream. Ask how long it is expected to last for your procedure.

Is methylene blue the same as contrast dye used for a CT scan?

No. Methylene blue is a visible dye. CT contrast materials are different substances used to make structures appear on scans, although both may be used to investigate leaks.

Can I drive home afterward?

You may be able to drive after a simple office procedure. You must not drive if you received sedation or anesthesia, and you may need someone to take you home.

Sources

- U.S. Food and Drug Administration. PROVAYBLUE (methylene blue) injection: Prescribing Information . Current prescribing information accessed for warnings, interactions, G6PD deficiency, pregnancy, and test interference.
- U.S. Food and Drug Administration. FDA Drug Safety Communication: Serious central nervous system reactions possible when methylene blue is given to patients taking certain psychiatric medications . Updated guidance on serotonergic medicine interactions.
- American Society for Reproductive Medicine. Fertility evaluation of infertile women: a committee opinion . Fertility and Sterility. 2021;116(5):1255-1265.
- Morey AF, Brandes S, Dugi DD III, et al. Urotrauma: AUA Guideline . Journal of Urology. 2014;192(2):327-335, with subsequent American Urological Association amendments.
- Stamatakos M, Sargedi C, Stasinou T, Kontzoglou K. Vesicovaginal fistula: diagnosis and management . Indian Journal of Surgery. 2014;76(2):131-136.
- Ginimuge PR, Jyothi SD. Methylene blue: revisited . Journal of Anaesthesiology Clinical Pharmacology. 2010;26(4):517-520.