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# Blood Smear

## What is a blood smear?

A blood smear is a sample of blood that's tested on a specially treated slide. For a blood smear test, a laboratory professional examines the slide under a microscope and looks at the size, shape, and number of different types of blood cells. These include:

- **Red blood cells**, which carry oxygen from your lungs to the rest of your body
- **White blood cells**, which fight infection
- **Platelets** [<https://medlineplus.gov/plateletdisorders.html>] , which help your blood to clot

Many blood tests use computers to analyze results. For a blood smear, the lab professional looks for blood cell problems that may not be seen on a computer analysis.

Other names: peripheral smear, peripheral blood film, smear, blood film, manual differential, differential slide, blood cell morphology, blood smear analysis

## What is it used for?

A blood smear test is used to help diagnose blood disorders [<https://medlineplus.gov/blooddisorders.html>] .

## Why do I need a blood smear?

You may need a blood smear if you have abnormal results on a **complete blood count** [<https://medlineplus.gov/bloodcounttests.html>] (CBC). A CBC is a routine test that measures many different parts of your blood. Your health care provider may also order a blood smear if you have symptoms of a blood disorder. These symptoms include:

- **Fatigue** [<https://medlineplus.gov/fatigue.html>]
- **Jaundice** [<https://medlineplus.gov/jaundice.html>] , a condition that causes your skin and eyes to turn yellow
- Pale skin
- Unusual bleeding, including nose bleeds
- **Fever** [<https://medlineplus.gov/fever.html>]
- Bone pain

In addition, you may need a blood smear if you have been exposed to **ticks** [<https://medlineplus.gov/tickbites.html>] or have traveled to a developing country, or if your health care provider thinks you have a disease caused by a parasite, such as **malaria** [<https://medlineplus.gov/malaria.html>] . Parasites may be seen when a blood smear is looked at under a microscope.

## What happens during a blood smear?

A health care professional will take a blood sample from a vein in your arm, using a small needle. After the needle is inserted, a small amount of blood will be collected into a test tube or vial. You may feel a little sting when the needle goes in or out. This usually takes less than five minutes.

## Will I need to do anything to prepare for the test?

You don't need any special preparation for a blood smear. If your health care provider has ordered other blood tests, you may need to **fast** [<https://medlineplus.gov/lab-tests/fasting-for-a-blood-test/>] (not eat or drink) for several hours before the test. Your health care provider will let you know if there are any special instructions to follow.

## Are there any risks to the test?

There is very little risk to having a blood test. You may have slight pain or bruising at the spot where the needle was put in, but most symptoms go away quickly.

## What do the results mean?

Your results will show if your blood cells look normal or not normal. You'll have separate results for red blood cells, white blood cells, and platelets.

If your red blood cell results are not normal, it may indicate:

- **Anemia** [<https://medlineplus.gov/anemia.html>]
- **Sickle cell anemia** [<https://medlineplus.gov/sicklecelldisease.html>]
- Hemolytic anemia, a type of anemia in which red blood cells are destroyed before they can be replaced, leaving the body without enough healthy red blood cells
- **Thalassemia** [<https://medlineplus.gov/thalassemia.html>]
- **Bone marrow disorders** [<https://medlineplus.gov/bonemarrowdiseases.html>]

If your white blood cell results are not normal, it may indicate:

- Infection
- Allergies
- **Leukemia** [<https://medlineplus.gov/leukemia.html>]

If your platelet results are not normal, it may indicate thrombocytopenia, a condition in which your blood has a lower than normal number of platelets.

Talk to your health care provider to learn more about your results.

Learn more about **laboratory tests, reference ranges, and understanding results** [<https://medlineplus.gov/lab-tests/how-to-understand-your-lab-results/>] .

## Is there anything else I need to know about a blood smear?

A blood smear may not provide enough information for your health care provider to make a diagnosis. If any of your blood smear results are not normal, your provider will likely order more tests.

## References

1. Bain B. Diagnosis from the Blood Smear. N Engl J Med [Internet]. 2005 Aug 4 [cited 2017 May 26]; 353(5): 498–507. Available from: <http://www.nejm.org/doi/full/10.1056/NEJMra043442> [<http://www.nejm.org/doi/full/10.1056/NEJMra043442>]
2. Hinkle J, Cheever K. Brunner & Suddarth's Handbook of Laboratory and Diagnostic Tests. 2<sup>nd</sup> Ed, Kindle. Philadelphia: Wolters Kluwer Health, Lippincott Williams & Wilkins; c2014. Blood Smear; 94–5 p.
3. Lab Tests Online [Internet]. American Association for Clinical Chemistry; c2001–2017. Blood Smear: Common Questions [updated 2015 Feb 24; cited 2017 May 26]; [about 5 screens]. Available from:

- <https://labtestsonline.org/understanding/analytes/blood-smear/tab/faq> [https://labtestsonline.org/understanding/analytes/blood-smear/tab/faq]
4. Lab Tests Online [Internet]. American Association for Clinical Chemistry; c2001–2017. Blood Smear: The Test [updated 2015 Feb 24; cited 2017 May 26]; [about 4 screens]. Available from: <https://labtestsonline.org/understanding/analytes/blood-smear/tab/test> [https://labtestsonline.org/understanding/analytes/blood-smear/tab/test]
  5. Lab Tests Online [Internet]. American Association for Clinical Chemistry; c2001–2017. Blood Smear: The Test Sample [updated 2015 Feb 24; cited 2017 May 26]; [about 3 screens]. Available from: <https://labtestsonline.org/understanding/analytes/blood-smear/tab/sample> [https://labtestsonline.org/understanding/analytes/blood-smear/tab/sample]
  6. Lab Tests Online [Internet]. American Association for Clinical Chemistry; c2001–2017. Jaundice [updated 2016 Sep 16; cited 2017 May 26]; [about 4 screens]. Available from: <https://labtestsonline.org/understanding/conditions/jaundice> [https://labtestsonline.org/understanding/conditions/jaundice]
  7. National Heart, Lung, and Blood Institute [Internet]. Bethesda (MD): U.S. Department of Health and Human Services; Types of Blood Tests [updated 2012 Jan 6; cited 2017 May 26]; [about 3 screens]. Available from: <https://www.nhlbi.nih.gov/health-topics/blood-tests#Types> [https://www.nhlbi.nih.gov/health-topics/blood-tests#Types]
  8. National Heart, Lung, and Blood Institute [Internet]. Bethesda (MD): U.S. Department of Health and Human Services; What Are the Risks of Blood Tests? [updated 2012 Jan 6; cited 2017 May 26]; [about 5 screens]. Available from: <https://www.nhlbi.nih.gov/health-topics/blood-tests#Risk-Factors> [https://www.nhlbi.nih.gov/health-topics/blood-tests#Risk-Factors]
  9. National Heart, Lung, and Blood Institute [Internet]. Bethesda (MD): U.S. Department of Health and Human Services; What is Hemolytic Anemia? [updated 2014 Mar 21; cited 2017 May 26]; [about 3 screens]. Available from: <https://www.nhlbi.nih.gov/health-topics/hemolytic-anemia> [https://www.nhlbi.nih.gov/health-topics/hemolytic-anemia]
  10. National Heart, Lung, and Blood Institute [Internet]. Bethesda (MD): U.S. Department of Health and Human Services; What is Thrombocytopenia? [updated 2012 Sep 25; cited 2017 May 26]; [about 2 screens]. Available from: <https://www.nhlbi.nih.gov/health-topics/thrombocytopenia> [https://www.nhlbi.nih.gov/health-topics/thrombocytopenia]
  11. National Heart, Lung, and Blood Institute [Internet]. Bethesda (MD): U.S. Department of Health and Human Services; What To Expect with Blood Tests [updated 2012 Jan 6; cited 2017 May 26]; [about 4 screens]. Available from: <https://www.nhlbi.nih.gov/health-topics/blood-tests> [https://www.nhlbi.nih.gov/health-topics/blood-tests]
  12. UF Health: University of Florida Health [Internet]. University of Florida; c2017. Blood Smear: Overview [updated 2017 May 26; cited 2017 May 26]; [about 2 screens]. Available from: <https://ufhealth.org/blood-smear> [https://ufhealth.org/blood-smear]
  13. University of Rochester Medical Center [Internet]. Rochester (NY): University of Rochester Medical Center; c2017. Health Encyclopedia: Blood Smear [cited 2017 May 26]; [about 2 screens]. Available from: [https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=167&ContentID=blood\\_smear](https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=167&ContentID=blood_smear) [https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=167&ContentID=blood\_smear]

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### Related Health Topics

**Anemia** [https://medlineplus.gov/anemia.html]

**Blood Count Tests** [https://medlineplus.gov/bloodcounttests.html]

**Blood Disorders** [https://medlineplus.gov/blooddisorders.html]

**Platelet Disorders** [https://medlineplus.gov/plateletdisorders.html]

### Related Medical Tests

**Complete Blood Count (CBC)** [https://medlineplus.gov/lab-tests/complete-blood-count-cbc/]

**How to Understand Your Lab Results** [https://medlineplus.gov/lab-tests/how-to-understand-your-lab-results/]

**Malaria Tests** [https://medlineplus.gov/lab-tests/malaria-tests/]

The medical information provided is for informational purposes only, and is not to be used as a substitute for professional medical advice, diagnosis or treatment. Please contact your health care provider with questions you may have regarding medical conditions or the interpretation of test results.

In the event of a medical emergency, call 911 immediately.

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