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Blood Test Results [1]

A complete blood count (CBC) is a common blood test that is used to help diagnose some blood cancers, such as leukemia and lymphoma, tell if a cancer has spread to the bone marrow, and help determine how your body is tolerating cancer treatments. If you are being treated with chemotherapy, your doctor will likely monitor your blood cell counts regularly using CBCs.

A CBC provides important information about the amount of three types of cells in your blood: white blood cells, red blood cells, and platelets. Each of these measurements has a normal range that will be noted on your CBC. Typical test values are given as a range (called a reference range) instead of a specific number because they vary from person to person.

White blood cell (WBC) count. A white blood cell count, also called a leukocyte count, measures the number of WBCs in a sample of blood. WBCs protect the body from infection by attacking invading bacteria, viruses, and other foreign materials in the body. Some WBCs can also attack cancer cells. A normal range for a WBC count is 3,300 to 8,700 WBCs per microliter (mcL).

White blood cell (WBC) differential. A WBC differential is a test that measures the number of each type of WBC. There are five major types of WBCs: neutrophils, lymphocytes, monocytes, eosinophils, and basophils. Each type of cell plays a different role in protecting the body and helping you stay healthy. People with some types of cancer may have higher-than-normal numbers of lymphocytes or monocytes.

Some cancer treatments, especially chemotherapy, may cause a decrease in your body's WBCs. Cancers that affect the blood and bone marrow, such as leukemia, lymphoma, or multiple myeloma, can cause a decrease in the WBC count. These cancers and cancer treatments may cause a condition called neutropenia [2], an abnormally low level of neutrophils. Neutrophils are measured by a number called the absolute neutrophil count (ANC). A normal ANC range is 2,500 to 6,000 neutrophils.

A noticeable decrease in the number of neutrophils increases the chances of developing a bacterial infection [3]. At times, your doctor may choose to lower the dose of chemotherapy you receive to decrease your chance of developing low neutrophil counts. Your doctor may also recommend medication, such as white blood cell growth factors, to increase your body's production of neutrophils, especially if you develop a fever. Learn more about ASCO's recommendations for white blood cell growth factors

[4].

Red blood cell (RBC) count. RBCs carry oxygen throughout your body, and the number of RBCs can be described in a few different ways. An RBC count, also called an erythrocyte count, measures the number of RBCs in a sample of blood. A normal range for an RBC count is approximately 4 to 6 million RBCs per mcL. The hematocrit is the percentage of your blood that is made up of RBCs. A normal hematocrit range is 38% to 48%. The hemoglobin (HgB) level measures the amount of the protein in RBCs that actually carries the oxygen. If the level of hemoglobin is low, your body works much harder to deliver oxygen to tissues throughout the body. A normal HgB range is 12.6 to 16.1 grams per deciliter.

Some cancer treatments, especially chemotherapy and radiation therapy, may cause a decrease in your body's RBCs. This condition is known as anemia [5]. Blood loss, either from surgery or from specific cancers, can also cause or worsen anemia. Cancers that directly involve the bone marrow, such as leukemia, lymphoma, or multiple myeloma, can also interfere with the production of RBCs and cause anemia. People whose RBC count falls too low may need a blood transfusion or medication to help increase the body's RBCs.

Platelet count. A platelet count measures the number of platelets in a sample of blood. Platelets help to stop bleeding by forming blood clots. A normal range for a platelet count is approximately 150,000 to 350,000 platelets per mcL.

Some cancer treatments, such as chemotherapy or radiation therapy, may cause a decrease in platelets, which may result in a condition called thrombocytopenia [6]. Cancers that involve the bone marrow directly, such as leukemia, lymphoma, or multiple myeloma, can also cause a decrease in the production of platelets. Patients with low platelet levels have a greater risk of serious bleeding or bruising. If your platelet count falls to very low levels, your doctor may give you platelet transfusions.

What the results mean

Blood test results must be interpreted carefully by your doctor and other members of your health care team. Keep in mind that many factors, including noncancerous conditions, can lead to results that fall out of the reference range. In addition, neutrophil and platelet counts have to fall to very low levels before infections and bleeding become major risks. Ask your doctor to help you better understand what your results mean and how they compare to the reference range.

Questions to ask your doctor

Consider asking your doctor the following questions about your blood tests.

- Why am I having this test?
- How and where is this test done?
- Do I need to avoid eating and drinking before the test? If so, for how long?
- What do the test results mean?
- If my results are within the reference range, what are the next steps?
- If my results are outside of the reference range, what are the next steps?
- How do these test results compare with my previous results?

- Will I need additional tests? If so, when?

More Information

ASCO Answers[7] Fact Sheet: Blood Tests (PDF) [7]

Tests and Procedures [8]

Diagnosing Cancer [9]

Additional Resources

MedlinePlus: Laboratory Tests [10]

Links:
[1] http://www.cancer.net/navigating-cancer-care/diagnosing-cancer/reports-and-results/blood-test-results
[2] http://www.cancer.net/node/25053
[3] http://www.cancer.net/node/25256
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