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Title: **Platelet Counts: How Are They Done and How Useful Are They?**

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A platelet count is rarely done alone but is usually a component of the complete blood count (CBC) or full blood count (FBC). A CBC can be performed either on a sample of blood drawn from a vein or by a finger prick. The other parts of the CBC are a white blood cell (WBC) count and several measurements of the red blood cells (RBC's). The WBC count helps assess the presence or risk of infection, while the RBC measurements detect and measure the presence of anemia. The platelet count measures the number or concentration of platelets in the bloodstream. The normal platelet count is between 150 and 450 billion (or 109) per liter of blood. In some cases the platelets are expressed as the number per cubic millimeter or microliter of blood, with the normal range being between 150,000 and 450,000. For sake of simplicity, the easiest way to express the normal platelet count is 150 to 450.

Platelets are measured in two ways, electronically and visually. Electronic counting is easiest using one of a variety of expensive instruments which counts particles in the bloodstream. Since platelets are generally the smallest of the blood elements, their number is determined by the concentration of tiny particles in the blood. Most of the time this electronic measurement is highly accurate. However, when the platelet count is very low (especially below 10 or 20), the measurement is not always accurate. Additionally, when the platelets are large – as they often are in ITP – the instrument becomes "confused". It thinks that these large platelets are actually WBC's and counts them as such. Therefore, in many ITP patients, because of their large, young, and sticky platelets, the count may be higher than the machine is reporting. So even if the electronic platelet count is 3, the actual platelet count may be 10 or 15. Another situation where the electronic platelet count is mistakenly very low is a situation called "pseudothrombocytopenia" where the platelets in an otherwise normal healthy person clump or stick together excessively. The instrument thus counts only the few single platelets that are not part of the clumps. In both of these circumstances (large platelets in ITP and pseudothrombocytopenia), platelet assessment is best done visually as well. Here the physician or technician examines the blood directly under the microscope. Someone with training and experience is able to quite accurately assess the number of platelets by this method of examining the blood "film" or "smear." The large platelets in persons with ITP are readily seen under the microscope, often in greater numbers than reported electronically. Another advantage of visually examining the blood film is that one can diagnose other conditions that might cause a low platelet count.

How useful are platelet counts? First, a platelet count (along with the rest of the CBC) is needed to diagnose persons with blood conditions, including ITP. Second, knowing the platelet count helps to determine the risk of bleeding. Overall, the lower the platelet count the greater the risk of hemorrhage. Even though a platelet count below 150 is "abnormal", there is virtually no risk of bleeding (even after surgery or a major injury) until the platelet count is below 75 or so. In the absence of injury or surgery, most people with low platelets (whether they have ITP or not) have few symptoms as long as their platelet count is over 20 or 30. Others have easy bruising and petechiae but no major problems. When the platelets are under 20, the person may have nosebleeds, some bleeding from the mouth, and heavy menstrual periods. Even platelet counts under 10 cause few problems for many persons with ITP. However, serious or life-threatening bleeding may rarely occur in such a circumstance.

How often should platelet counts be performed in persons with ITP? Many patients with ITP have too many platelet counts. Decisions about treatment and activities in people with ITP should depend mainly on how much bleeding they are having, not on their platelet count. Most people with ITP can often predict what their platelet count is based upon whether or not they have bruising, petechiae, or other bleeding symptoms. It is important that platelet counts not be done too often since the levels fluctuate, sometimes quite widely. One week the platelets may be 27, the next week 51, and the week after that 18 without any change in the person's treatment or bleeding. Certainly platelet counts need to be performed at least occasionally in persons with ITP, especially in children, to confirm that their condition has remitted spontaneously and in individuals who have had a seemingly successful splenectomy. In addition, a platelet count should be checked prior to surgery or after a serious injury to be certain that it is in the safe range.

In summary, platelet counts are easy to do and they can be extremely useful in diagnosis and making decisions about treatment. However, there are some pitfalls in the performance and interpretation of the platelet count, and in many cases knowing your exact platelet count doesn't really contribute a great deal to your health care plan.