Bilirubin Test

Bilirubin Test: Understanding High vs. Low Levels & Causes

A bilirubin test measures bilirubin levels in your blood. Bilirubin is the yellow pigment in bile. You might have high bilirubin levels if your liver is having trouble processing bilirubin into bile, or if your bile ducts are blocked.

Overview

What is bilirubin?

Bilirubin is a byproduct of broken-down old red blood cells. When red blood cells finish their life cycles in your body, they break down and pass through your bloodstream to your liver for processing. Your liver sorts bilirubin with other waste products into a fluid called bile. Bile exits your body through your intestines. Bilirubin is the pigment that gives bile its distinctive yellow color. It also colors your poop.

What is a bilirubin blood test?

A bilirubin blood test measures bilirubin levels in your blood. A healthcare provider draws a small sample of your blood from a vein and sends it to a lab to analyze. The lab will measure your bilirubin levels to determine whether they're in the normal range. High or low bilirubin levels might indicate that some part of the process of breaking down and clearing old red blood cells isn't working correctly.

What do bilirubin levels in your blood indicate?

Healthcare providers often give bilirubin tests to check on the health of your liver. The bilirubin test is one of a comprehensive panel of liver function tests that measure different liver products in your blood. If these values are high or low, they might indicate that your liver is struggling in some way. But abnormal bilirubin levels don't always indicate a problem in your liver. Sometimes it's somewhere else.

What causes high bilirubin levels (hyperbilirubinemia)?

Bilirubin might build up in your blood if:

- **Your body breaks down too many red blood cells too fast**. You might be overproducing bilirubin if you have a blood disorder, such as hemolytic anemia, that destroys red blood cells.
- **Your liver is struggling to process its normal load of bilirubin**. Your liver might struggle with occasional toxic overload, or it might have a chronic liver disease that affects its functioning.
- **Your biliary system isn't clearing bile efficiently**. There might be a blockage in your bile ducts or your gallbladder that's causing bile to back up and leak into your bloodstream.

What causes low bilirubin levels (hypobilirubinemia)?

Certain medications can lower your bilirubin levels, including antibiotics, birth control pills, sleeping pills and seizure medications. Low levels aren't generally a cause for concern.

What does bilirubin do in your body?

Bilirubin is a waste product of expired red blood cells. Normally, your body expels it through your intestines. On its way out, though, it may provide some benefits. Current studies suggest it may act as an antioxidant that helps protect against cardiovascular disease. However, too much can be toxic. If it builds up in your blood, it can make you feel ill. It can also irritate nerves under your skin, making it itch.

What are symptoms of high bilirubin?

High bilirubin leads to jaundice, a yellow cast to your skin and the whites of your eyes. Jaundice is often the first symptom that would prompt a healthcare provider to check your bilirubin levels. High bilirubin in your blood can also leak out in your pee, making it darker. If bilirubin isn't coming out in your poop as it should, your poop might be lighter or clay-colored. Very high bilirubin can make you itch (pruritus).

Test Details

What happens during a bilirubin blood test?

A healthcare provider will usually take a blood sample from a vein in your arm. They might ask you not to eat or drink for a few hours beforehand. They'll insert a hollow needle and draw out a small sample into a vial. You might feel a quick prick or sting when the needle goes in or out. This part only takes a few minutes. Afterward, they'll send the sample to a lab for testing. You'll get these results back later.

If your newborn has jaundice, a healthcare provider will check their bilirubin levels to make sure they aren't too high. Newborn jaundice is common and usually nothing to worry about, but very high bilirubin levels in newborns can be toxic. A provider will usually take a blood sample from a newborn by pricking their heel with a sterile lancet. This "heel stick" is a common way of screening newborns for diseases.

Results and Follow-Up

What type of results will I get and what do the results mean?

The test results will show measurement values for the bilirubin in your bloodstream. There are actually two different types of bilirubin in your bloodstream: the bilirubin that goes to your liver for processing, and the bilirubin that comes out of your liver. Your test will show these values separately, as well as your total bilirubin. It'll usually show them as milligrams of bilirubin per deciliter of blood, or mg/dL.

Direct vs. indirect bilirubin (or conjugated vs. unconjugated)

The bilirubin that goes to your liver for processing is "unconjugated," which means it's not water-soluble (dissolvable in water). It's bound to a protein in your blood called albumin that helps carry it to your liver. When your liver processes the bilirubin, it unbinds it from the albumin and binds it to a sugar molecule, making it water-soluble. This allows it to mix with bile and pass through your intestines.

"Conjugated" bilirubin is the bilirubin your liver processed. Sometimes it's called "direct" bilirubin on your test results. That's because this type can be measured directly. Unconjugated bilirubin can't be measured directly. It's measured by subtracting the value of conjugated bilirubin from the value of total bilirubin in your blood. Unconjugated bilirubin may be called "indirect" bilirubin on your test results.

At what level is bilirubin a concern?

Different labs may have slightly different ranges for what they consider normal bilirubin levels. On average, total bilirubin levels between 0.2 and 1.3 mg/dL are considered normal for children and adults. If your levels are higher, your healthcare provider may

want to investigate further to look for the cause. It may suggest a problem that needs attention. But high bilirubin itself won't usually need treatment.

It's a little different for newborns. Normal levels for newborns can range anywhere between 1.0 and 12.0 mg/dL. Most of the time, hyperbilirubinemia in newborns is predictable and self-limited. But healthcare providers continue to monitor these cases to make sure bilirubin levels don't rise too far or too fast. This could indicate a more serious condition, and it could also be toxic to the newborn.

What level of bilirubin is dangerous?

Healthcare providers recommend treatment for newborns when bilirubin levels rise above 15 mg/dL in the first 48 hours or 20 mg/dL after 72 hours. At these levels, unconjugated bilirubin exceeds the amount of available albumin to bind it. The unconjugated bilirubin can cross the blood-brain barrier in newborns and harm their developing brains. It can cause varying degrees of brain damage, called kernicterus.

This risk isn't the same for children and adults. Adult brains aren't as vulnerable, and adults aren't as likely to have such high levels of unconjugated bilirubin. Newborns produce bilirubin faster than adults do, and they conjugate it much slower. There are many more causes of conjugated hyperbilirubinemia in adults. For adults, hyperbilirubinemia might signal a dangerous condition, but the bilirubin itself isn't dangerous.

What does it mean when your bilirubin is high?

You might have higher levels of unconjugated (indirect) bilirubin if your body is breaking down red blood cells faster than your liver can keep up with. This might indicate:

- Hemolytic disease.
- Sickle cell disease.
- Adverse reaction to a blood transfusion.

Common causes of unconjugated bilirubinemia in newborns include:

- Premature birth.
- Mismatched blood type between the baby and mother.
- Reactions to substances in breast milk.

You might have higher levels of conjugated bilirubin (direct) if your body is having trouble clearing it. This might indicate a biliary disease or gallstone disease, such as:

- Gallstones.
- Cholecystitis.
- Cholangitis.

Conditions that affect your liver's ability to process bilirubin will cause high levels of both types to build up in your blood.

You might have a higher total bilirubin count if something is temporarily stressing your liver, such as a new medicine or a high dose of alcohol. It could also indicate an acute or chronic liver disease. Some causes include:

- Infections such as viral hepatitis and mononucleosis.
- Genetic conditions that affect bilirubin metabolism, such as Gilbert's syndrome, Wilson disease and Crigler-Najjar syndrome.
- Toxic hepatitis (alcohol-induced or drug-induced).
- Cirrhosis and chronic liver failure.

If my test results are abnormal, what happens next?

A healthcare provider will review your symptoms and health history to try and identify likely causes. Different causes will have different treatment options. They may suggest further blood tests or imaging tests to help diagnose your condition. They may also test your bilirubin levels again to make sure they aren't rising. If bilirubin rises too high in your newborn, they'll recommend treatment to reduce it.

How do you lower your own bilirubin levels?

Your bilirubin levels will go down if you can effectively treat or manage the condition that's causing them to rise. This depends on the condition. Your healthcare provider will discuss your options for either curing or reducing its effects. In general, you can reduce overall stress on your liver by eliminating alcohol and drugs — including over-the-counter (OTC) medications, if possible — and maintaining a healthy diet.