



## **Estimation of bilirubin in blood**

Bilirubin is a yellowish substance in your blood. Bilirubin is the principle pigment in bile, it is derived from the breakdown of hemoglobin .When hemoglobin is destroyed the protein , globin is reused by the body and iron enters the body's iron stores and reused. The porphyrin is broken down as a waste product and excreted. This action of the porphyrin ring and releasing iron and globin forms biliverdin then easily reduced to bilirubin.

Bilirubin is transported to the liver in the blood stream bound to proteins, chiefly albumin then separated from the albumin and take up by the hepatic cells.

### **What are the symptoms of high bilirubin?**

Jaundice is the main sign of high bilirubin levels.

Other general signs of many of the illnesses that cause high bilirubin can include:

- + abdominal pain or swelling
- + chills
- + fever
- + chest pain
- + weakness
- + lightheadedness
- + fatigue
- + nausea
- + vomiting
- + unusually dark urine



## What causes high bilirubin?

The condition of having high bilirubin levels is called **hyperbilirubinemia**.

- ❖ Gallstones
- ❖ Gilbert's syndrome is a genetic liver condition that causes your liver to not process bilirubin properly. This causes it to build up in your blood stream.
- ❖ Liver dysfunction
- ❖ Hepatitis
- ❖ Bile duct inflammation
- ❖ Intrahepatic cholestasis of pregnancy
- ❖ Hemolytic anemia

## Total bilirubin result from:

1. **Conjugated bilirubin** :which is water soluble secreted from hepatic cell, it is stored in gall bladder , any blocking in bile duct led to discharged this pigment.
2. **Unconjugated bilirubin** is not water soluble and is bound to albumin so that it is not filtered out of the blood by the kidney , therefore bilirubin will not appear in the urine in this type of jaundice.

When bilirubin concentration in the blood rises the pigment begins to be deposited in the Sclera of the eyes in the skin.

**Clinical Significance:** any irregulation of bilirubin metabolism led to jaundice.



**There are three types of bilirubin (jaundice) :**

**1. Per hepatic (hemolytic) jaundice**

It the result from excessive amount of bilirubin is presented to the liver for metabolism such as in hemolytic anemia (increasing RBC hemolytic) this type is unconjugated.

**2. Hepatic jaundice**

May be result from impaired cellular uptake from defective conjugation or from abnormal secretion of bilirubin by the liver cell (liver failure). This type is unconjugated (uniformly in fetal) and conjugated.

**3. Post hepatic jaundice**

Result from the impaired excretion of bilirubin caused by mechanical obstruction of the flow of bile into intestines. This may be due to gallstone or tumor this type is conjugated.

**Normal value:**

Conjugated	0 - 0.2 mg/dL
Un conjugated	0.2 - 0.8 mg/dL
Total	0.2 - 1.0 mg/dL