

Altered Hepatobiliary Function

The liver is an incredible and important organ that handles the majority of our body's drug and protein metabolism, bilirubin excretion, and more. The secretion of insulin is the function of the pancreas, and storage of bile is handled by the gallbladder.

Hemolytic jaundice is seen when there is an increased breakdown of red blood cells (RBCs) which produces an increased amount of a specific type of bilirubin in blood. Hemolytic jaundice is seen in sickle cell disease and blood transfusion reactions. We will discuss this concept in more detail within this lesson.

Alkaline phosphatase, bilirubin, and alanine aminotransferase are all linked to the efficiency of a client's liver. These specific laboratory tests will help the healthcare team decipher if the client has hepatobiliary dysfunction, and if so, to what extent. Sodium and bicarbonate levels are not directly linked to hepatobiliary function.

Functions of Hepatobiliary Organs

The hepatobiliary system primarily protects the body from build up of toxic waste products, generates energy through metabolism, and stores amino acids.

The Liver

- glucose, fat, and protein metabolism
- ammonia conversion
- vitamin, iron, & glucose storage
- drug metabolism
- bile formation
- bilirubin excretion
- protein metabolism of clotting factors
- cholesterol metabolism

The Gallbladder

- concentrate and store bile

The Pancreas

- contributes to digestion with production and secretion of enzymes
- secretion of insulin and glucagon

Hepatobiliary Changes in the Older Adult

As we age, the functional ability of our gastrointestinal and hepatobiliary system gradually changes.

By 50 years old, the liver decreases in size. Later, the liver decreases protein synthesis, which impacts drug and hormone metabolism. The liver's ability to regenerate is also decreased. The gallbladder also decreases in production and flow of bile, so gallstones are more likely to form.

The pancreatic ducts distend, lipase production decreases, and pancreatic reserve is impaired. This causes impaired fat absorption and decreased glucose tolerance.

The intestines have decreased motility and secretion of most digestive enzymes. This can cause indigestion and delayed absorption of vitamins and nutrition. Decreased muscular tone can create issues with incontinence, flatulence, or abdominal distention.

Recognizing Cues: Jaundice

Client	Type of
44-year-old female admitted to medical surgical unit after blood transfusion reaction in the emergency department (ED)	Hemolytic Jaun
78-year-old male with cancerous liver tumor blocking bile ducts	Obstructive Jau
Client	Type of

56-year-old male with chronic hepatitis C (HCV)	Hepatocellular
28-year-old female with sickle cell disease	Hemolytic Jaun
60-year-old female with acute pancreatitis	Obstructive Jau

Hemolytic jaundice: There is an increased breakdown of red blood cells (RBCs) which produces an increased amount of unconjugated bilirubin in blood. The liver is then unable to handle the increased load (seen in clients with blood transfusion reactions, sickle cell crises, hemolytic anemias).

Hepatocellular jaundice: This type of jaundice is from the liver's altered ability to take up bilirubin from blood or to conjugate or excrete it. The damaged hepatocytes (liver cells) leak bilirubin (seen in clients with cirrhosis, hepatitis, and liver cancer).

Obstructive jaundice: There is an obstruction of bile flow through the liver or biliary duct system (seen in clients with bile duct stones or strictures, cirrhosis, pancreatitis).