What is NAFLD?
Nonalcoholic fatty liver disease (NAFLD) is a condition in which fat builds up in your liver. It is not caused by alcohol use. When alcohol use causes fat to build up in the liver it is called alcoholic liver disease. There are two types of NAFLD and they are separate conditions.

**Simple Fatty Liver**
This is also called nonalcoholic fatty liver (NAFL) and is a form of NAFLD. Patients with simple fatty liver have fat in the liver but little or no inflammation or liver cell damage. Although NAFL generally does not progress to worse stages or cause liver damage; it can progress in some people.

**Nonalcoholic Steatohepatitis**
Nonalcoholic steatohepatitis (NASH) is a progressive form of NAFLD. In patients with NASH, the fat in the liver causes inflammation and liver cell damage. NASH can lead to cirrhosis and liver cancer.

How common are NAFLD and NASH?
NAFLD is now one of the most common causes of liver disease in the United States (US), affecting between 30-40% of adults. Most people with NAFLD have simple fatty liver. However up to 12% of US adults (~20 percent of people with NAFLD) will have NASH. Approximately 10% of children under the age of 19 have NAFLD.

What causes NAFLD and NASH?
NAFLD is more common in those who have certain risk factors, including obesity, type 2 diabetes, or elevated cholesterol levels. Up to 80% of diabetics and up to 90% of obese persons have NAFLD. NAFLD can affect people at any age. It can develop in all races; however, it is most common in Hispanics, followed by non-Hispanic whites. It is less common in African Americans. Asian Americans are more likely to develop NAFLD even if their weight is normal. Experts are not entirely sure why some people develop NAFL and some people develop NASH.

NAFLD is more likely to develop if:

- you are overweight or obese and/or
- you have insulin resistance (prediabetes) or type 2 diabetes and/or
- you have abnormal levels of fats in the blood and/or
  - high levels of triglycerides
  - abnormal cholesterol – high total cholesterol, high LDL cholesterol, low HDL cholesterol
- you have a metabolic syndrome – a group of traits and medical conditions linked to obesity
  - large waist size
  - high levels of triglycerides in the blood
  - low levels of HDL cholesterol in the blood
  - high blood pressure
  - higher than normal blood glucose levels

Research also suggests that certain genes make you more susceptible to NAFLD.

People are more likely to have NASH (than NAFLD) if they have one or more of the following conditions:

- obesity, especially with a large waist size
- high blood pressure
- High levels of triglycerides or abnormal levels of cholesterol in their blood
- Type 2 diabetes
- Metabolic syndrome

Less common causes of NAFLD and NASH include:
- Disorders that cause the body to use or store fat improperly
- Rapid weight loss, such as that caused by following weight loss surgery
- Certain infections, such as hepatitis C virus infection
- Exposure to some toxins
- Certain medications (amiodarone, diltiazem, glucocorticoids, HIV therapy, methotrexate, synthetic estrogens, tamoxifen and valproic acid)

What are the symptoms of NAFLD and NASH?
NAFLD and NASH are considered “silent diseases.” They usually have no symptoms until disease is advanced. Patients may experience fatigue or discomfort in the upper right side of the abdomen.

How are NAFLD or NASH Diagnosed?
The medical history is helpful in determining who is at risk of having NAFLD or NASH. On physical examination, you may have an enlarged liver or signs of cirrhosis. Blood tests show increased levels of the liver enzymes (AST, ALT, alkaline phosphatase) or signs of insulin resistance. Imaging tests, such as ultrasound, CT or MRI may be helpful in determining if there is fat in the liver. Imaging; however, cannot tell if there is liver inflammation, fibrosis/scarring or early cirrhosis. A liver biopsy may be needed to determine the degree of damage. Sometimes a special blood test or ultrasound is used to help tell how much damage has occurred in the liver.

What are the complications of NAFLD and NASH?
Those with simple fatty liver (NAFL) generally do not develop complications. NASH can lead to complications of cirrhosis and liver cancer. Persons with NASH have an increased chance of dying from liver-related complications. Those with NASH have a greater risk of developing heart disease, which is the most common cause of death in people with either form of NAFLD. In the United States, more people get a liver transplant because of NASH cirrhosis than any other liver disease.

How are NAFLD or NASH Treated?
Treatment of the underlying conditions (like diabetes or high cholesterol) is crucial. Unfortunately, there are no currently medications for NAFLD/NASH. Weight loss with diet and exercise will reduce body fat. That can help reduce inflammation and scarring in the liver. Your diet should be low-carbohydrate, low-fat, and restricted in calories. In addition, you should perform at least 20-30 minutes of regular exercise per day. Studies have shown that loss of 3-5% of body weight can help improve the fatty liver; however you must lose as much as ~10% of your body weight to have improvement in the inflammation in the fatty liver. Weight loss should not be too rapid – this can worsen the disease. Weight loss of about 7-10% of body weight over a year is recommended. There are many research studies looking at different types of medications that may help. Ask us if you are interested in participating in a research study.

How do you treat the complications of NASH?
The complications of NASH are similar to cirrhosis and liver failure caused by other diseases. NASH is managed the same way.

How can I prevent NAFLD or NASH?
You may be able to prevent these by eating a healthy balanced diet, limiting portion sizes, and exercising.