

Non-Alcoholic Fatty Liver Disease (NAFLD)

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About NAFLD

- Nonalcoholic Fatty Liver Disease (NAFLD), is the most common form of liver disease in children and has more than doubled over the past 20 years.
- Non-alcoholic fatty liver disease (NAFLD) is a very common disorder and refers to a group of conditions where there is accumulation of excess fat in the liver of people who drink little or no alcohol.
- The most common form of NAFLD is a non serious condition called fatty liver. In fatty liver, fat accumulates in the liver cells.
- Although having fat in the liver is not normal, by itself it probably does not damage the liver.
- A small group of people with NAFLD may have a more serious condition named non-alcoholic steatohepatitis (NASH).
 - In NASH, fat accumulation is associated with liver cell inflammation and different degrees of scarring.
 - NASH is a potentially serious condition that may lead to severe liver scarring and cirrhosis.
 - Cirrhosis occurs when the liver sustains substantial damage, and the liver cells are gradually replaced by scar tissue (see figure), which results in the inability of the liver to work properly.
 - Some patients who develop cirrhosis may eventually require a liver transplant (surgery to remove the damaged liver and replace it with a “new” liver).

Symptoms

- Children may exhibit symptoms such as abdominal pain, which may be in the center or the right upper part of the abdomen, and sometimes fatigue.
- However, other causes of abdominal pain and fatigue should be considered.
- On physical examination the liver might be slightly enlarged and some children may have patchy, dark discoloration of the skin present (acanthosis nigricans) most commonly over the neck and the underarm area.

Causes of NAFLD/NASH

- NAFLD is part of the metabolic syndrome characterized by diabetes, or pre-diabetes (insulin resistance), being overweight or obese, elevated blood lipids such as cholesterol and triglycerides, as well as high blood pressure.
- Not all patients have all the manifestations of metabolic syndrome.
- Less is known about what causes NASH to develop. Researchers are focusing on several factors that may contribute to the development of NASH.
- These include:
 - Oxidative stress (imbalance between pro-oxidant and antioxidant chemicals that lead to liver cell damage)
 - Production and release of toxic inflammatory proteins (cytokines) by the patient's own inflammatory cells, liver cells, or fat cells
 - Liver cell necrosis or death, called apoptosis
 - Adipose tissue (fat tissue) inflammation and infiltration by white blood cells
 - Gut microbiota (intestinal bacteria) which may play a role in liver inflammation

Risk Factors

- NAFLD is a very common disorder affecting and may affect

as many as one in three to one in five adults and around one in ten children in the United States.

- Obesity is thought to be the most common cause of fatty infiltration of the liver.
- Some experts estimate that about two thirds of obese adults and half of obese children may have fatty liver.

Prevention

To reduce your risk of NAFLD:

- **Choose a healthy diet.** Choose a healthy plant-based diet that's rich in fruits, vegetables, whole grains and healthy fats.
- **Maintain a healthy weight.** If you are overweight or obese, reduce the number of calories you eat each day and get more exercise. If you have a healthy weight, work to maintain it by choosing a healthy diet and exercising.
- **Exercise.** Exercise most days of the week. Get an OK from your doctor first if you haven't been exercising regularly.