

Nonalcoholic Fatty Liver Disease

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Nonalcoholic fatty liver disease (NAFLD) is a condition in which excess fat builds up in the liver. The primary cause is obesity. There are 2 types of NAFLD:

1. **Nonalcoholic fatty liver (NAFL) - when there is fat in the liver but little or no inflammation or liver damage.** It typically does not progress to cause liver damage or complications. It can cause pain from enlargement of the liver.
2. **Nonalcoholic steatohepatitis (NASH) - when there is fat in the liver but also inflammation of the liver and liver damage.** It may lead to cirrhosis in which the liver is scarred and permanently damaged. Cirrhosis can lead to liver cancer and death.

How common is NAFLD? NAFLD is now the most common form of chronic liver disease. It is present in about 25% of US adults. About 20% have NAFL and 5% have NASH. These conditions were extremely rare until the obesity epidemic started in the 1980s. Unfortunately, **less than 5% of the people with NAFLD are aware that they have the disease.**

What are the symptoms of NAFLD? Fatty liver is sometimes called a silent liver disease because **most people with NAFL do not have any symptoms**, or mild symptoms such as fatigue, not feeling well or discomfort in the right upper abdomen. When it progresses to NASH and/or cirrhosis then many symptoms may occur such as itchy skin, abdominal swelling (ascites), shortness of breath, swelling in the legs, spider-like blood vessels just beneath the skin surface, enlarged spleen, red palms, yellowing of the skin and eyes (jaundice).

What is the cause of NAFLD? We do not know exactly why fat builds up in some livers and not in others, or why fat in the livers of some people does not cause damage, but progresses to cirrhosis in others. We do know that **the primary cause is obesity**. Additionally, there are **multiple risk factors for developing nonalcoholic fatty liver disease:**

1. **Obesity:** This is especially true when fat is centered at the waist (waist circumference greater than 35 inches in women and 40 inches in men). Fatty liver is present in 75% of people who are overweight and more than 90% in people who have severe obesity.
2. **Insulin resistance:** Insulin resistance is a precursor to diabetes and leads to the accumulation of triglycerides and fat in the liver.
3. **Prediabetes/diabetes:** Fatty liver is present in 60% of diabetics.
4. **Elevated triglyceride level over 150.**
5. **Elevated LDL cholesterol level over 100.**
6. **Low HDL cholesterol level below 40 in men and 50 in women.**
7. **Metabolic syndrome.**
8. **Family history of fatty liver disease or obesity.**
9. **Polycystic ovarian syndrome.**
10. **Growth hormone deficiency.**
11. **Cigarette smoking.**
12. **Obstructive sleep apnea.**
13. **Hypothyroidism.**
14. **Underactive pituitary gland.**
15. **High blood pressure.**
16. **Age:** NASH/cirrhosis typically occurs in people over 50.
17. **Race:** Fatty liver is most common in Hispanics, followed by Caucasians, then Asian, and least likely African-American.

What are the complications of NAFLD? Those with NASH can develop **cirrhosis and liver cancer**, both of which can be fatal. Other health problems related to an NAFLD include **cardiovascular disease, diabetes, metabolic syndrome, high blood pressure and hyperlipidemia**.

How to diagnose NAFLD: Fatty liver disease can happen without causing any symptoms. It is usually diagnosed when the patient has routine blood test to check their liver. **The first abnormal lab is usually an elevated ALT**, followed by slowly lowering platelet count. We typically check a liver panel and a complete blood count.

Fibrosis-4 (FIB-4) index for liver fibrosis: Based on a person's AST, ALT, platelet count and age, this calculator estimates the probability of having liver fibrosis (scarring).

Imaging tools for NAFLD: Transient elastography (e.g. FibroScan) can accurately screen for fibrosis, steatosis (accumulation of fat to the liver) and early cirrhosis. Liver biopsy is the gold standard for staging liver fibrosis.

Treatment of NAFLD:

1. **Weight loss is the most important treatment for NAFLD.** 90% of patients who lost more than 10% of their initial body weight, had resolution of NASH.
2. **Eat a healthy low sugar diet.**
3. **Intermittent fasting/timed eating.** Do not eat for 16 to 18 hours a few days per week.
4. **Physical activity** with both resistance exercise and aerobic exercise 5 days/week.
5. **Adequate sleep** of at least 7 hours per night.
6. **Lower stress** and cortisol levels with good sleep, meditation, yoga and having purpose in life.
7. **Aggressively treat underlying medical conditions** such as diabetes, high blood pressure, polycystic ovarian syndrome, elevated cholesterol, low thyroid, etc.
8. **Metformin** may help by improving insulin resistance, lowering triglycerides and increasing HDL.
9. **Glucagon-like peptide (GLP-1) medications** such as Semaglutide, Ozempic, Wegovy, etc. are quickly becoming the primary medications to treat NAFLD. They can easily help decrease body weight by over 10%, but will probably need to be taken long-term to keep the weight off.
10. **Bariatric surgery** leads to resolution of NASH in two thirds of patients.
11. **Hormone replacement therapy:** Hormone such as testosterone, estradiol, NP thyroid, and DHEA can significantly decrease insulin resistance and triglycerides, increase HDL and aid in weight loss.
12. **Supplements** such as magnesium, vitamin D, zinc, berberine and vitamin E may help.
13. **Limit alcohol intake.**
14. **Do not smoke tobacco.**
15. **If NASH is already present, consider seeing a liver specialist and starting Aspirin 81 mg daily and/or Rezdiffra, both of which have been shown to reduce liver fat.**

New terminology in 2024:

1. **Nonalcoholic fatty liver disease (NAFLD) is being renamed metabolic dysfunction-associated steatotic liver disease (MASLD).**
2. **Nonalcoholic steatohepatitis (NASH) is being renamed metabolic dysfunction-associated steatohepatitis (MASH)**