



## What is Fatty Liver?

**This is simply what the name suggests - too much fat in the liver!**

Fatty liver is the accumulation of fat (mainly as triglycerides) within liver cells. This happens when the fat coming into the liver is more than the fat going out (the liver makes and secretes fat). This condition is becoming more common. It is the commonest cause of abnormal liver enzyme tests (blood tests for the liver). This is because fat in the liver may cause some inflammation.

### What causes fatty liver?

Excess alcohol intake is an important underlying cause but there are an increasing number of people with fatty liver that is NOT caused by alcohol – this is called non-alcoholic fatty liver disease

Non-alcoholic fatty liver disease (NAFLD) is now the most common liver disease in the Western world. The prevalence of non-alcoholic fatty liver disease ranges from 9 to 36.9% of the general population in different parts of the world, and up to 75-95% of obese individuals depending on screening methods used. NAFLD is related to obesity and the metabolic syndrome (combined hyperlipidaemia, diabetes mellitus (type 2) and hypertension) which has an increasing prevalence in New Zealand. The prevalence of NAFLD is not known in New Zealand; however, the upward trend of obesity and type 2 diabetes is mirroring that seen in North America.

The underlying problem is considered to be “insulin resistance. This means that the body is not responding normally to the insulin hormone. This problem directly relates to the amount of fat tissue in the body. Fatty tissue is not inert. It secretes a range of hormones that control the body’s metabolism. Insulin resistance promotes increased rate of delivery of fat to the liver from the tissues. Insulin resistance (and therefore fatty liver) is primarily determined by body weight and also the level of physical activity.

Fatty liver is more common some ethnic groups. That

is, for a given weight there is more fatty liver in some groups. It is more common with Indian and Chinese compared with European groups. It is also more common in Pacific Islanders.

About 10% of people with excess fat in the liver will develop inflammatory in the liver. The medical term is called steatohepatitis. This sometimes abbreviated as NASH - non-alcohol steatohepatitis. Another abbreviation is NAFLD (non-alcoholic fatty liver disease).

This inflammatory process, if sustained over a long period of time, can lead to significant liver fibrosis and eventually to cirrhosis (severe liver damage). The risk is low (compared to other causes of liver disease). Overall only 2% will progress to cirrhosis. This is a smaller risk than for fatty liver caused by alcohol

### How is the diagnosis made?

There are two main ways in which the diagnosis can come to light - either as a result of investigation of abnormal liver tests OR incidental finding at ultrasound performed for other reasons (e.g investigation of right-sided abdominal discomfort).

Fatty liver is thought to cause no symptoms but fatigue and ill-defined discomfort in the right upper abdomen may be present (probably not a direct effect of the condition). The liver is usually of normal size.

**Fatty liver should be suspected if there are risk factors. They are :**

Being overweight (BMI more than 30 – BMI can be calculated as weight in kgs divided by height in metres (squared).

High blood lipids or fats (raised blood cholesterol and/or triglycerides).

Diabetes mellitus (or raised blood glucose but not quite diabetes - called impaired glucose tolerance).

Other features of the metabolic syndrome are

hypertension and increased waist circumference (100cms for men; 90cms for women).

There is an association with polycystic ovary syndrome – this condition is also considered to be due to insulin resistance.

Excess alcohol intake. Even 5-10 “standard” drinks per week may be significant if combined with other risk factors.

**Fatty liver can occur without any risk factors.** It is important to rule out other forms of liver disease, including viral hepatitis, autoimmune liver diseases and inherited liver diseases (this may require specialist assessment)

**Ultrasound is reasonably sensitive for detecting fatty liver.** This picks up 2/3 rds of cases - liver is echogenic or bright on ultrasound. Ultrasound is a useful screening test but fatty liver may be the cause of abnormal liver tests even if the ultrasound is normal.

Some measure of the severity of the condition in particular the degree of inflammation and fibrosis is important. There are scoring systems of risk factors that can help estimate risk. There is a non-invasive test called a Fibroscan©) transient elastography (but a very fatty liver and obesity can limit reliability). Sometimes a liver biopsy is required.

## Treatment

The treatment is weight loss.

There is no specific medication treatment for NAFLD. However, making changes to your lifestyle can help to reduce the amount of fat in your liver. Losing excess weight, targeting a sustained weight loss of >7% of initial total body weight has been shown to improve the liver biopsy features of NASH. Increasing the amount of activity you do and treating other conditions such as diabetes and high cholesterol can all help to reduce the amount of fat in your liver. Important dietary changes include limiting refined carbohydrate (sugar), especially in foods and drinks such as Coke; Lemonade, biscuits, cakes, excess fruit juice etc and reducing excessive consumption of foods high in saturated fat. The specific treatment of your metabolic risk factors and associated weight loss will reduce the risk of progressive liver disease but also reduce the risk of heart disease and stroke.

**Risk factors should be reduced.** Diabetes tablet treatment may need to be started or increased. Medication for raised cholesterol (Lipex) and

triglycerides (Bezalip) may need to be started. Alcohol intake must be reduced. It is better to stop completely. A possible safe limit is 2-3 standard drinks per week.

**Exercise is crucial to success.** Exercise has an important role in the treatment of fatty liver because it reduces insulin resistance – which is the underlying problem. i.e the effect of exercise is not just mediated through weight loss. This needs to be daily aerobic activity with a plan for gradual increase in activity levels.

**Weight loss should be gradual,** about ½ kg per 1-2 weeks is ideal. Rapid weight loss can aggravate fatty liver. Slower rates of weight loss are more likely to be the result of lifestyle changes that can be maintained for the longterm. There is no quick fix! A gradual and sustainable change in lifestyle is the goal.

**Weight – reduction surgery could be considered in severe cases.** Gastric banding or gastric bypass has some proven efficacy for severe cases. Weight loss after gastric bypass may be 40-50% of initial weight. However this comes at a price. There are post-operative problems - there may be abdominal pain after meals and nutrient deficiencies can be a problem after several years.

Links

<http://www.liverfoundation.org/abouttheliver/info/naflid>

<http://www.britishlivertrust.org.uk/home/the-liver/liver-diseases/fatty-liver-and-non-alcoholic-steatohepatitis-nash.aspx>