



# MASLD

FATTY LIVER DISEASE

**Metabolic  
dysfunction-associated  
steatotic liver disease**

**healthy**  
lifestyle

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# Content

This book offers a comprehensive guide to understanding Metabolic dysfunction-associated steatotic liver disease (MASLD), commonly known as Fatty Liver Disease. This condition affects liver health and overall well-being. Readers will gain practical insights into managing and improving liver health by exploring root causes, diagnostic approaches, and effective lifestyle modifications. With dedicated sections on healthy eating, tailored dietary strategies, exercise, and stress management, this resource provides actionable steps to make informed choices for better health.

Readers will also find valuable information on clinical trials and supportive services, making this book an essential tool for those seeking to effectively manage MASLD (Fatty Liver Disease) and improve their quality of life.

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# What is Metabolic dysfunction-associated steatotic liver disease (MASLD)?

This is a term used to describe the build-up of fat within the liver cells. It was previously termed non-alcoholic fatty liver disease (NAFLD) <sup>(1)</sup>.

In the clinic, **MASLD is defined by the presence of fatty liver** (hepatic steatosis) with at least one of five cardiometabolic risk factors:

- ✔ BMI > 25, >23 in Black and Asian ethnicities.
- ✔ Prediabetes or diabetes.
- ✔ High blood pressure (hypertension).
- ✔ High blood lipids (hyperlipidemia).
- ✔ Low HDL-cholesterol.

There are four stages: fatty liver (steatosis), metabolic associated steatohepatitis (MASH), fibrosis (scarring) and cirrhosis (irreversible scarring). Having cirrhosis greatly increases your risk of liver failure and liver cancer.

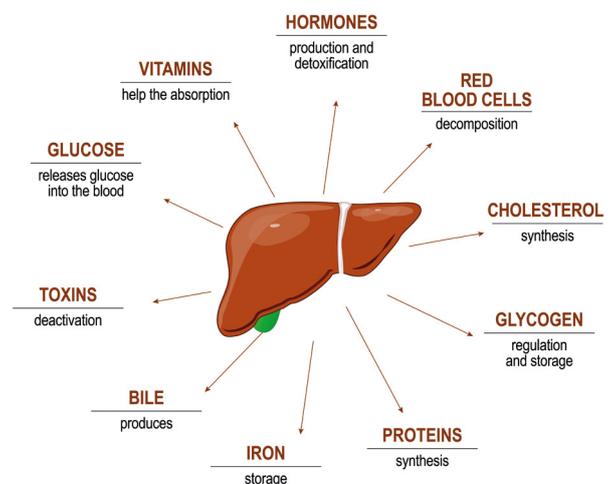
## What does the liver do?

The liver is an organ in the abdomen with multiple functions. It receives blood from the gut and processes nutrients absorbed from the gut and helps to filter out toxins, including those from drugs and other substances.

The liver also produces substances that help with blood clotting function, transport in the blood and the production of bile. Importantly for MASLD, the liver is able to store excess energy as fat that can be used when our stores are low.

There are not many pain sensors within the liver and so liver diseases are typically not painful. This means that people with chronic liver disease can have no symptoms at all unless they develop severe complications such as liver failure and liver cancer.

### Functions of the healthy liver



## What causes MASLD?

MASLD occurs when there is excess accumulation of fat in the liver. In most cases, this will happen due to eating more calories than the body needs and having an inactive lifestyle.

MASLD is typically (but not always) associated with being overweight. Additional risk factors include type 2 diabetes, excessive alcohol consumption, metabolic syndrome (which involves high blood pressure, high blood sugar, excess abdominal fat, and abnormal cholesterol or triglyceride levels), high cholesterol and triglycerides, a sedentary lifestyle, and poor dietary habits high in refined sugars, saturated fats, and processed foods. Other contributing factors are genetic predispositions, advancing age (particularly over 50), polycystic ovary syndrome (PCOS), and sleep problems, which is often linked with metabolic syndrome and obesity. By understanding and addressing these risk factors, individuals can take steps to manage and reduce their risk of developing MASLD through lifestyle changes and medical interventions.

# How does MASLD affect me?

Additional fat in the liver is not necessarily harmful. However, when liver cells containing fat are damaged and die, there is a reaction from the immune system that can cause inflammation leading to steatohepatitis (hepatitis means inflammation of the liver).

The liver is an organ that can repair itself. However, when there is a lot of damage, the liver can struggle to keep up, leading to the development of scarring (fibrosis). If you get enough scarring, this is termed cirrhosis, and is often irreversible. In a person with cirrhosis, liver function is poor, and can eventually become so poor that the liver stops working effectively. This can manifest as fluid accumulation in the belly, confusion and coma from build-up of toxins and bleeding from dilated blood vessels in the gullet (varices).

**Liver cancer (hepatocellular carcinoma or HCC) is also more common in those with MASLD.**

Those with MASLD also have a higher risk of developing type 2 diabetes (and making diabetes harder to control if you already have it), cardiovascular (heart) disease leading to heart attack and stroke, other types of cancer (e.g. bowel cancer) and kidney problems.

There can also be problems with fatigue, chronic pain (including lower back pain), breathing problems, sleep problems (including obstructive sleep apnoea/OSA) and psychological problems.

## Screening and diagnosis

MASLD can affect people of all ages. It is more likely in those who are overweight, have type 2 diabetes or other metabolic risk factors (such as high blood pressure and high cholesterol). While there is no consensus on who to screen for MASLD, it is generally recommended to consider screening individuals who have risk factors such as obesity, type 2 diabetes, metabolic syndrome, and other related condition.

Most screening tests involve a blood test score and/or a liver ultrasound and/or a liver stiffness assessment. In some situations, a liver biopsy may also be required.

## Lifestyle modification

It has been shown in studies that a weight loss of 5% in MASLD or 7-10% in MASH (Metabolic Associated Steatohepatitis) is beneficial. This should be achieved through moderate dietary restriction and 30-60 minutes of moderate-intensity activity on 3-5 days per week.

The NHS Weight Management Programme is a 12 week online programme that your GP or local pharmacist can refer you to. You must be 18 or over, with a BMI greater than 30 (or 27.5 for those from black, Asian and ethnic minority backgrounds given the higher risk for conditions such as type 2 diabetes), have diabetes or high blood pressure or both, and you must have access to the internet through, for example, a smartphone, tablet or computer.



More information can be found at: [www.england.nhs.uk/digital-weight-management](http://www.england.nhs.uk/digital-weight-management)  
However, there are also things that you can do yourself.

Healthy eating means getting the right balance between different foods. For many people this means eating more fruit, vegetables and higher-fibre starchy foods, and eating less fat (particularly saturated), sugar and salt. Crucially for MASLD, it also involves a calorie deficit (meaning eating fewer calories than you burn off over the course of a day). A calorie is a measure of energy released by food that you eat.

The following pages outline some general principles of healthy eating, along with potential strategies to reduce calories.

Healthy

Eating



# Principles of healthy eating:

## 01

### Eat regular meals

Space your meals out over the day and aim to have breakfast, lunch and supper. Try not to skip meals. By eating regularly, you can control how hungry you feel (appetite). It also has other benefits such as controlling your blood glucose levels.

## 02

### Cut the amount of fat you eat

In particular, cut the amount of saturated fat you eat – too much can increase the cholesterol in your blood. Fat is very high in calories as well, so eating less will help you to lose weight if you need to. Try eating unsaturated fats or oils, instead, especially monounsaturated fat such as rapeseed oil and olive oil.

#### How to cut the amount of fat you eat:

- ✔ **Eat less saturated fat** by having less butter, margarine, lard, dripping, full cream dairy products, fatty meat products, fried food, and items such as biscuits, cakes, pastries and pies that contain hidden fat.
- ✔ **Try using low-fat spreads**, rapeseed oil or olive oil instead. But do not use very much as these are also high in calories.
- ✔ **Choose lower fat dairy products** such as skimmed or semi-skimmed milk, yoghurt, low-fat cheese and cheese spreads – or eat less higher-fat cheeses. There is slightly more calcium (which you need for healthy bones) in skimmed and semi-skimmed milk than full-cream milk.
- ✔ **Incorporate more fish, lean chicken, and turkey into your meals**, focusing on options such as skinless poultry and a variety of seafood rich in omega-3 fatty acids. Additionally, increase your consumption of plant-based proteins like beans and lentils, which are excellent sources of fibre, vitamins, and minerals, and can help support a balanced and nutritious diet.
- ✔ **Opt for lean red meats where the visible fat can be easily trimmed off and lean mince** instead of fatty meats such as lamb, pies, and sausages.
- ✔ **Try to have oily fish twice a week** such as salmon, sardines, mackerel, pilchards, etc.
- ✔ **Avoid processed foods** such as pizza, ready-made meals such as curry and takeaways because these are usually high in fat and salt. If you do have processed meals now and again, choose low-fat ones.
- ✔ **Avoid high-fat snacks** such as crisps, doughnuts, biscuits, cakes and nuts. However, as nuts contain some good oils, you may be able to have a very small handful now and again as part of a healthy, balanced diet.
- ✔ **Cook using less fat:**
  - Grill, bake, boil or steam meals instead of frying.
  - Trim the fat you can see off meat and take the skin off poultry.
  - Remove fat from the surface of soups and casseroles.

# 03

## Incorporate wholegrain or low-GI carbohydrates into your meals

Starchy foods are a good source of energy and many contain other nutrients such as B vitamins, calcium and iron. They include pasta, rice, potatoes, yams, noodles, chapattis, bread and breakfast cereals. Choose starchy foods that are wholegrain or higher in fibre as these usually have more goodness than white or refined carbohydrates. You also digest them more slowly and they can make you feel fuller for longer, which can help you to eat less. They help your digestive system to stay healthy and may help to prevent problems such as constipation. Many higher fibre carbohydrates have a lower glycaemic index (GI), which means you usually absorb them more slowly and they can help control your blood glucose. This is particularly important if you are diabetic but it is also good for you even if you are not.

### Wholegrain and lower GI carbohydrates include:

- ✔ **Breads:** Wholegrain and wholemeal breads (for example, granary, pumpernickel and rye), pittas and chapattis.
- ✔ **Rice:** Brown, wholegrain and basmati.
- ✔ **Cereals:** Oats porridge, natural muesli and bran flakes.

# 04

## Eat more fruit and vegetables

Eating fruit and vegetables is an important way of getting the vitamins, minerals and fibre you need. They can also protect you against heart disease and some types of cancer.



Vegetables, in particular, are low in calories. Aim to have at least five portions a day.

# 05

## Eat more beans and lentils

They do not affect your blood glucose levels as much as many other foods and may help to control cholesterol (fats) in your blood. Try adding them to stews, casseroles, soups and salads. Ensure they are well-cooked and introduce them slowly into your diet, as they can cause bloating.

### Beans and lentils include for example:

- Kidney beans
- Butter beans
- Chickpeas
- Green and red lentils



# 06

## Aim to eat two portions of oily fish a week

Oily fish has a type of polyunsaturated fat called omega-3. This helps to protect your heart against disease and may help reduce raised levels of lipid (fat) in your blood. So it may help to stop your condition getting worse.

### Oily fish includes for example:

- Mackerel
- Salmon
- Pilchards
- Kippers
- Sardines
- Trout
- Herring
- Fresh tuna



# 07

## Have less sugar, sugary foods and drinks

An easy way to eat less sugar is to avoid sugary drinks (e.g. coca cola) and to drink squashes that are sugar-free, no-added-sugar or diet instead of sugary versions. Fruit juice is very high in sugar, so try not to have more than 100-200ml a day. If you are diabetic, diabetic foods and drinks are not recommended because they may still raise your blood glucose levels as they may be sweetened with sorbitol and/or fructose; they often have just as much fat and calories as non-diabetic versions; they can have a laxative effect; and they can be expensive. Sugar-sweetened beverages should be avoided.

# 08

## Drink less or stop drinking alcohol

Although MASLD is not caused by alcohol, it may make your condition worse. So it is a good idea to drink less or stop drinking altogether. Alcohol also has lots of calories so cutting down how much you drink can help you to lose weight.

Units are used to describe amounts of alcohol. The ABV (Alcohol by Volume) – written on the bottle, box or can – tells you how many units there are in a litre. For example, 6% ABV means there are six units in a litre. So if you drink 500ml (just under a pint) of this strength beer, you would have had three units.

The government recommendations are that you should drink no more than 14 units of alcohol per week, spread across 3 days or more.



Recommended alcohol limits are the same for women and men: **14 units of alcohol a week**



**6 pints  
of beer or cider**



**6 glasses  
of wine**



**14 single  
shots of spirits**

**Long-term heavy drinking also increases risk of liver disease**

### How to calculate alcohol units in any drink:

You can work out how many units you are drinking by multiplying the ABV by the size of your drink. For example, a standard 440ml can of beer with an ABV of 5% ABV:

$$440 \times 5 = 2,200; \text{ divide this by } 1,000\text{ml} = 2.2 \text{ units}$$



**The less, the better**

You can use this formula to work out the units in other drinks.

- A standard glass of wine (175ml) at 12% ABV is 2.1 units and a large 250ml glass is 3 units.
- A pint of low-strength beer (568ml) at 3.5% ABV is 2 units.
- A pint of regular cider (568ml) at 5% ABV is 2.8 units.
- A standard measure of port or sherry (50ml) is 1 unit.

# 09

## Reduce the amount of salt you eat every day to 6 grams or less

High levels of salt – more than 6 grams a day – can raise your blood pressure. High blood pressure can cause stroke and heart disease and may make fatty liver disease worse.

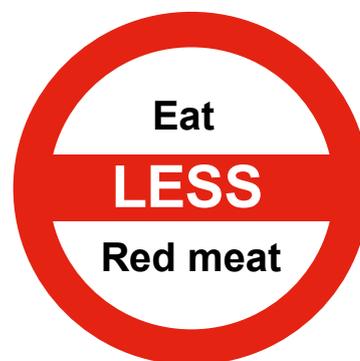
### How to cut the amount of salt you eat:

- ✓ Limit the number of ready meals and amount of processed food you eat.
- ✓ Do not add salt when you eat a meal - add a small amount when you are cooking.
- ✓ Try using herbs and spices to flavour foods as you may not need to add much salt to improve the taste.

# 10

## Eat less red and processed meat

High consumption of red and/or processed meat is associated with MASLD, liver scarring and insulin resistance. Red meat includes things like beef, lamb, mutton, pork, and venison. Processed meat is meat that has been preserved by curing, salting, smoking, drying or canning. This includes sausages, hot dogs, salami, ham, and cured bacon.



## A note on caffeine

Caffeine has been shown in some studies to be beneficial for reducing scarring in MASLD. This should come in the form of regular coffee, and note that caffeinated beverages, particularly soda drinks like coca cola, may contain a lot of additional calories.

Try not consume any caffeinated beverage 8 hours before you go to bed, as it may disturb your sleep.



# Dietary Strategies



**Interventions to lose weight should not be thought of as short-term diets, but more of a lifestyle change. This means it must be something that you are able to continue doing for years and so cannot be more restrictive than you would be willing to tolerate over a long time period. Following are options that may or may not suit you.**

## Calorie counting



Calorie counting involves tracking what you eat.

Several studies have shown that a total energy deficit of 500kcal per day resulting in 1,500kcal/day for women and 1,800kcal/day for men results in weight loss, reduction in fat and in liver inflammation.\*

The easiest way to track your calories is through one of the many apps freely available on smartphones, such as *MyFitnessPal*. These allow you to input the foods you eat (this can be manually typed in or scan the barcode).

This can also be done manually by looking at the calorie information on the label of your food and recording it in a diary.

You will often need to weigh your food to get an accurate calorie count. All food and drink must be entered, including oils/spreads you cook with, sauces (such as ketchup), any toppings (such as cheese or yoghurt), and alcohol.

**\* Please note that this is not for long term use and is best done under the guidance of a healthcare professional.**

## Low carbohydrate diet

A low carbohydrate diet can be added on top of calorie restriction for additional benefits; it may result in improvements in gut bacteria, insulin resistance (important in the development/progression of diabetes).

## Intermittent fasting



There are numerous types of intermittent fasting.

This involves eating and drinking only during a specified time window. Outside of this window, you can drink water and tea/coffee without milk, but nothing with any calories. There have been a number of studies demonstrating improvements in liver fat, inflammation, weight and cholesterol in patients with MASLD<sup>(2)</sup>. It is not yet clear whether intermittent fasting is as effective as or more effective than continuous calorie restriction.

Time restricted feeding involves caloric intake only during a specified time window (usually for 4-10 hours). Outside of this window, you can only have clear fluids (water, black tea/coffee).

- ✓ **Alternate day fasting:** Alternate-day fasting is one way to do intermittent fasting. On this diet, you fast every other day but eat whatever you want on the non-fasting days. The most common version of this diet involves “modified” fasting, where you can eat around 500 calories on fasting days. Alternate-day fasting may help promote weight loss and may help lower risk factors related to heart disease and type 2 diabetes.
- ✓ **5:2 diet:** Calorie restriction on two non-consecutive days per week (e.g. Monday and Thursday), where calories are restricted to 500-600kcal/day.

# Mediterranean diet

The Mediterranean diet is widely recognized for its health benefits, particularly in the context of cardiovascular health, weight management, and metabolic diseases. In MASLD, it has been shown to improve liver enzymes, reduce fat accumulation and improve insulin sensitivity.



## What is the Mediterranean Diet?

- ✔ High consumption of fruits, vegetables, whole grains, legumes, and nuts.
- ✔ Olive oil as the primary source of dietary fat.
- ✔ Moderate consumption of fish and poultry, limited intake of red meat.
- ✔ Low to moderate intake of dairy products (mainly cheese and yogurt).

## Benefits for MASLD

- ✔ **Reduction in liver fat:** The diet is rich in monounsaturated fats (especially from olive oil) and omega-3 fatty acids (from fish), which have been associated with reductions in liver fat.
- ✔ **Anti-inflammatory effects:** The high level of antioxidants found in fruits, vegetables, and olive oil can help reduce oxidative stress and inflammation in the liver, both of which play a role in MASLD progression.
- ✔ **Weight loss and metabolic benefits:** Although not specifically a weight-loss diet, the Mediterranean diet can help in weight management and improve metabolic markers such as insulin sensitivity, lipid profiles, and blood pressure, indirectly benefiting liver health.
- ✔ **Improved insulin sensitivity:** The diet's high fibre content and low glycemic index foods can improve insulin sensitivity, a crucial factor in MASLD management since insulin resistance is a key pathogenic factor in the disease.

## Keto (very low carbohydrate) diet



The ketogenic (keto) diet is a high-fat, low-carbohydrate eating plan designed to help the body enter a state of ketosis, where it burns fat for energy instead of carbohydrates.

For individuals with MASLD, this diet can help reduce liver fat and improve insulin sensitivity.

In various studies, participants following a ketogenic or low-carbohydrate diet experienced significant improvements in liver fat levels, insulin sensitivity, and markers of liver function.

### Key Components:

- ✔ **High fat:** The diet emphasises consuming fats from sources like avocados, coconut oil, butter, olive oil, and fatty fish. Fat typically makes up about 70% to 80% of the daily caloric intake.
- ✔ **Low carbohydrate:** Carbohydrate intake is drastically reduced to about 20 to 50 grams per day. Foods high in carbs, including sugary foods, grains, and starchy vegetables, are minimised.
- ✔ **Moderate protein:** Protein intake is moderate, making up about 20% of the daily calories. Sources include meat, poultry, fish, and eggs.

### Benefits:

- ✔ **Weight loss:** By reducing carbohydrates, the body is forced to burn stored fat for energy, which can lead to weight loss.
- ✔ **Improved blood sugar and insulin levels:** The diet can lower blood sugar and insulin levels, which is particularly beneficial for people with type 2 diabetes or prediabetes.
- ✔ **Heart health:** Some studies suggest that the keto diet can improve heart health markers like reductions in total cholesterol, LDL cholesterol, triglyceride levels, and fasting blood sugar levels, while also seeing an increase in HDL <sup>(3)(4)</sup>.
- ✔ **Brain function:** Ketones produced during ketosis can provide an alternative energy source for the brain, and some research suggests cognitive and neurological benefits.

### Considerations:

- ✔ **Adaptation period:** Switching to a ketogenic diet can come with an adaptation period (often called the “keto flu”) where individuals may feel tired, have headaches, or experience other flu-like symptoms.
- ✔ **Nutrient deficiencies:** Limiting a wide range of carbohydrate-containing foods can lead to deficiencies in essential vitamins and minerals unless careful attention is paid to nutrition.

**Consult your doctor prior to starting a ketogenic diet to ensure it is right for you and you can be monitored appropriately.**



## Plant based diet

This type of diet is centred around fruit, vegetables, whole grains, beans, nuts and seeds, whilst including lots of herbs and spices. It minimises or avoids all animal foods and ultra-processed foods. Be aware of meat replacements, which can be highly processed and often unhealthy.

### There are a number of advantages of eating a whole food plant-based diet:

- ✓ The diet is naturally lower in energy or calories. People tend to be able to eat more, without worrying about calorie counting and feel fuller for longer.
- ✓ It is high in fibre, which is associated with lower rates of heart disease, type 2 diabetes, certain cancers, whilst supporting better gut health.
- ✓ It is low in saturated fat and higher in healthy fats, which helps to keep blood cholesterol level within the healthy range and thus lowers the risk of heart disease.
- ✓ It is high in plant nutrients (phytonutrients) that have anti-inflammatory properties and help to keep blood vessels healthy. This results in a blood pressure lowering effect and reduce symptoms of inflammation such as arthritis.
- ✓ Plant sources of protein are associated with lower rates of heart disease, type 2 diabetes, and some cancers.
- ✓ Low in refined grains and sugars, which supports a healthier body weight and reduces the risk of heart disease and type 2 diabetes.
- ✓ You do not need to worry about consuming whole fruit, as the sugar in fruit comes packaged with fibre and lots of other beneficial nutrients. It's best to minimise fruit juices.
- ✓ Fibre, plant protein and healthy plant fats support better blood glucose control and can make managing type 2 diabetes easier.
- ✓ Tea and coffee are fine to include if you enjoy these drinks, as long as you are not adding lots of sugar. Coffee consumption may even be beneficial for liver health.
- ✓ It is adaptable to a wide range of traditional and cultural diet patterns, including Indian, African, Caribbean, South American and more.
- ✓ It is delicious, nutritious and more affordable. In general, a plant-based diet costs around one third less than the typical British diet.

## West African diet modification

To lose weight with a West African diet, focus on incorporating more fresh vegetables, lean proteins, and whole grains while reducing portion sizes of starchy foods. Traditional staples like yams, plantains, and rice should be eaten in moderation. Replace these with more leafy greens such as spinach, okra, and kale, and include legumes like black-eyed peas and lentils, which are high in fibre and protein. Opt for grilled or baked fish and chicken instead of fried options. Reduce the use of palm oil and switch to healthier oils like olive or rapeseed oil. Incorporating fruits like mangoes, papayas, and citrus fruits can also help improve liver health. Additionally, drink plenty of water and avoid sugary drinks and snacks. Small, gradual changes in your diet, combined with regular physical activity, can make a big difference in achieving a healthier weight.

## Southeast Asian diet modification

To lose weight with a Southeast Asian diet, focus on incorporating more vegetables, lean proteins, and whole grains while reducing portions of high-calorie foods. Include a variety of fresh vegetables like bok choy, spinach, and watercress, and opt for lean protein sources such as tofu, fish, and skinless chicken. Substitute white rice with brown rice or quinoa, and limit portions of noodles, especially those made from refined flour. Use healthier cooking methods like steaming, grilling, or stir-frying with minimal oil instead of deep-frying. Reduce the intake of coconut milk-based dishes and sugary beverages. Instead, drink plenty of water and enjoy fresh fruit for snacks. By making these adjustments, you can enjoy the flavours of Southeast Asian cuisine while managing your weight effectively.

## Asian diet modifications

To lose weight with an Asian diet, focus on reducing portions of refined carbs and high-fat foods. Replace white rice with brown rice, basmati rice, quinoa, or other whole grains. Opt for lean proteins such as grilled chicken, fish, and lentils (dal) instead of red meat. Use healthier cooking methods such as steaming, grilling, or baking instead of frying. Limit the use of ghee and butter, and opt for healthier oils like olive or canola oil in moderation. Reduce the consumption of sugary drinks, sweets (halwas), and foods high in saturated fats. By making these simple adjustments, you can enjoy the flavours of Asian cuisine while effectively managing your weight.

# Eat Better Feel Better



# 1,200 calories/day diet

A 1,200-calories/day diet for managing MASLD should be balanced and nutrient-dense. Here is a sample plan:

## Breakfast (300 calories)

### Oatmeal with fresh fruit:

- 40 grams of oats cooked in water.
- Topped with 75 grams of mixed berries.
- 1 tablespoon (15 grams) of chia seeds.

## Mid-morning snack (100 calories)

### Apple and almonds:

- 1 small apple (about 100 grams).
- 5-6 almonds (about 10 grams).

## Lunch (300 calories)

### Grilled chicken salad:

- 85 grams of grilled chicken breast.
- Mixed greens (spinach, lettuce - about 100 grams).
- 75 grams of cherry tomatoes.
- 50 grams of cucumber slices.
- 1 tablespoon (15 grams) of olive oil and lemon juice dressing.

## Afternoon snack (100 calories)

### Greek yogurt:

- 1/2 cup (125 grams) of low-fat Greek yogurt.
- A few slices of cucumber or a small carrot (about 50 grams).

## Dinner (350 calories)

### Baked salmon with vegetables:

- 85 grams of baked salmon.
- 150 grams of steamed broccoli.
- 85 grams of quinoa.

## Evening snack (50 calories)

### Herbal tea and a few nuts:

- 1 cup of herbal tea (no sugar).
- 5-6 walnuts or cashews (about 10 grams).

## Tips for MASLD diet management:

- ✓ **Increase fibre intake:** Incorporate more fruits, vegetables, and whole grains to improve digestion and liver health.
- ✓ **Choose lean proteins:** Opt for sources like chicken, fish, tofu, and legumes.
- ✓ **Healthy fats:** Use sources like olive oil, nuts, and avocados in moderation.
- ✓ **Limit sugars and refined carbs:** Avoid sweets, sugary drinks, and white bread.
- ✓ **Stay hydrated:** Drink plenty of water throughout the day.

This diet focuses on providing a balanced intake of macronutrients while keeping the calorie count low, which can help manage weight and improve liver health.



## Exercise

**Physical activity is effective at reducing liver fat. Guidelines recommend 150 minutes per week or moderate intensity physical activity over 3-5 sessions including a combination of aerobic and resistance training.**

Moderate intensity exercise refers to movement that raised your heart rate, makes you breathe faster and feel warmer. You should be able to talk but not sing at this intensity. What you need to do to achieve this state will vary among people, but can include brisk walking, riding a bike, dancing, hiking, pushing a lawnmower, water aerobics, and so on.

If you are able to perform vigorous exercise (which makes you breathe hard and fast, and you will only be able to speak a few words at a time), this counts as twice that of moderate intensity. For example, you could do 75 minutes of vigorous activity per week instead of 150 minutes of moderate intensity exercise. This includes things like swimming, running, and team sports like football.

For those who are able, running can be a great way of building up fitness and losing weight. The NHS **“Couch to 5k”** is a free programme that can help you run five kilometres without stopping (See the link at the back of this leaflet).

In addition to aerobic activity, it is also recommended to perform strengthening exercises on 2 days of the week if you have the time. Examples of this includes carrying heavy shopping bags, lifting weights, heavy gardening (such as digging), lifting/carrying children, yoga and pilates. You can also do body weight exercises such as push-ups, shoulder raise, abdominal crunches and squats. Using resistance bands and some light weights can be a useful addition. There are some exercise videos on the NHS website (See the link at the back of this leaflet). We also organise a **“Walk with a Doc”** every first Thursday of the month. Join us for an easy and safe walk, where you can learn about health and meet new friends along the way.



walk WITH a  
DOC



## Join us every first Thursday of every month

**12:50–14:00 PM - The event is FREE and all are welcome!**

**Outside the Salvation Army Headquarters (Opposite Denmark Hill Station)  
1 Champion Park - SE5 SE5 8FJ**

This doctor-led group is fun and safe place to go for a walk, learn about health, and meet new friends.



**Questions?**

shireen.kassam@nhs.net



## Sleep & Stress

**Poor sleep quality has been shown in some studies to increase the risk of MASLD, as well as increased risk of heart attack, stroke and diabetes <sup>(5)</sup>.**

Being overweight can lead to obstructive sleep apnoea (OSA), which is a condition where you temporarily stop breathing due to obstruction of the neck, which over time can lead to poor sleep quality and complications such as high blood pressure, stroke, heart attack and daytime sleepiness. If you are excessively sleepy during the daytime and are overweight, speak to your doctor about the possibility of OSA.

### **To improve your sleep, there are several things you can do:**

- ✓ Have a regular routine. Try to go to bed and wake up at fixed times. In the hours leading up to sleep, try to do the same thing each evening.
- ✓ Avoid electronic devices for at least an hour before bed.
- ✓ Reading or listening to soft music can help you to relax.
- ✓ Try mindfulness for sleep. The NHS has some self-guided cognitive behavioural therapy (CBT) techniques that you can try to help ease anxiety and worries prior to bedtime (see links at end).
- ✓ Have a good sleep environment. It is easier to sleep when it is quiet, dark and cool. Put your phone on silent and faced down, consider buying good curtains/blinds to keep the room dark, try to sleep in a well-ventilated room.
- ✓ Do not force sleep – if you cannot get to sleep, get up and sit in a comfy place doing something relaxing (e.g. reading, listening to quiet music) and then go back to bed.
- ✓ Avoid stimulants 1-2 hours prior to bedtime – things like caffeine, alcohol and nicotine.
- ✓ Exercise can help with sleep, but you should try to avoid strenuous exercise in the 1-2 hours before bed.
- ✓ If you work night shifts, try to avoid eating anything between midnight and 06:00, as this period is associated with the highest risk of adverse health effects. Instead, aim to have a meal in the early evening before your shift and another meal in the morning after you finish work.

## Stress

Psychological stress due to everyday life events can take its toll on physical health. **Make sure to incorporate activities into your routine that you enjoy and help you to relax.** This can include mindfulness activities, meditation practice, listening to music, reading, spending time in nature or with friends and loved ones.

## Medications for MASLD

With limited pharmaceutical options, the primary strategy for managing MASLD is lifestyle modification to reduce fat accumulation within the liver and prevent progression of the disease to cirrhosis. This can be achieved through weight loss, exercise and improved management of metabolic risk factors such as diabetes.

In March 2024, the U.S. Food and Drug Administration (FDA) approved Rezdiffra (resmetirom) as the first drug to treat MASH with moderate to advanced liver fibrosis. This approval marks a significant milestone in the management of liver diseases.

With limited treatment options currently available, our clinical trials aim to find new and effective therapies that can halt or reverse liver damage in MASLD patients.

### Clinical trials for MASLD patients:

#### Why participate?

- ✓ **Access to new treatments:** Be among the first to receive new therapies.
- ✓ **Expert care:** Get personalized care from leading specialist in liver diseases.
- ✓ **Contribute to research:** Help advance knowledge and treatments for MASLD.
- ✓ **Compensation:** You may be eligible for compensation for your time and travel.

#### Contact information - Liver Research Team

📞 020 3299 4313

✉️ [kch-tr.livertrials@nhs.net](mailto:kch-tr.livertrials@nhs.net)

#### How to Join?

- 1 **Contact us:** Get in touch to our trials team to express your interest.
- 2 **Initial screening:** We will schedule a screening to see if you qualify.
- 3 **Participation:** If you qualify, you will get full trial details, and we will monitor your progress closely.
- 4 **Compensation:** You may qualify for time and travel reimbursement.

## Bariatric surgery

Surgery for weight loss is currently considered for those with a BMI of 40 or more, 35 or more with complicating factors, and 30 or more with type 2 diabetes not controlled with medical therapy. This can only be provided through specialist services and will depend on a large number of factors beyond just BMI.

## Liver transplant

For individuals with cirrhosis due to MASLD that has decompensated (i.e., the liver is no longer functioning properly), a liver transplant is a potential option. However, this is a major surgical procedure that requires lifelong immunosuppressive medication afterward to prevent organ rejection. As a result, the selection criteria for liver transplants are very strict. Complications related to obesity, low muscle mass, and type 2 diabetes can significantly increase the risks associated with the operation.

## How can I tell whether treatment is working?

Your doctor will usually follow you up at regular intervals (every 2-5 years for MASLD without fibrosis, every 1-2 years if MASLD with fibrosis, and every 6 months with cirrhosis). Follow up should include lifestyle advice, blood tests, and may include ultrasound scans (to look for fat and liver cancer), liver stiffness test using a Fibroscan, weight, and waist circumference. This follow-up may be more frequent if you are enrolled onto a clinical trial.

## Where can I find more information?

- ✔ **British Liver Trust**  
<https://britishlivertrust.org.uk/information-and-support/liver-conditions/non-alcohol-related-fatty-liver-disease/>
- ✔ **The NHS Weight Management Programme**  
[www.england.nhs.uk/digital-weight-management](http://www.england.nhs.uk/digital-weight-management)
- ✔ **Couch to 5k**  
<https://www.nhs.uk/live-well/exercise/running-and-aerobic-exercises/get-running-with-couch-to-5k>
- ✔ **NHS Fitness Studio (resistance exercises)**  
<https://www.nhs.uk/conditions/nhs-fitness-studio/>
- ✔ **Plant based health professionals (plant-based recipes and nutrition advice)**  
<https://plantbasedhealthprofessionals.com>  
<https://plantbasedhealthprofessionals.com/wp-content/uploads/2024/05/MASLD-FS-240513.pdf>
- ✔ **Plant-Based Eatwell Guide (advice on plant-based diet)**  
<http://tinyurl.com/5tzc9m9m>
- ✔ **Free factsheets from Plant-Based Health Professionals UK**  
[www.pbhp.uk/factsheets](http://www.pbhp.uk/factsheets)
- ✔ **Plant-Based on a Budget**  
<http://tinyurl.com/55n4n95d>
- ✔ **NHS Self-help CBT techniques**  
<https://www.nhs.uk/every-mind-matters/mental-wellbeing-tips/self-help-cbt-techniques/>
- ✔ **The Lifestyle Club (TLC)**  
<https://www.thelifestyleclub.uk>  
The Lifestyle Club (TLC) is an HSJ award-winning and QISMET accredited online health coaching service created by the charity, Public Health Collaboration.
- ✔ **The Public Health Collaboration (resources)**  
<https://phcuk.org/resources/>

## Community services:

- ✔ **South East London Healthy Living Programme:** This is a one-year programme for patients registered with a GP in Bexley, Bromley, Lambeth, Lewisham or Southwark and includes education and advice on eating, goal setting, psychology and physical activity programmes.  
<https://www.guysandstthomas.nhs.uk/our-services/healthy-weight-programmes/south-east-london-healthy-living-programme>

In addition, there are other 12 week programmes for patients registered with GPs in South London:

- ✔ **Southwark Weight Management Services:** Includes 12 weeks of support from Weight Watchers, and group classes for patients registered with a GP in Southwark.  
<https://southwark.everyonehealth.co.uk/services/weight-management/>

✔ **Lambeth Healthy Weight Hub:**

<https://www.smartsurvey.co.uk/s/The-Lambeth-Healthy-Weight-Hub/>

✔ **Up!Up!:** A 12-week weight management programme for patients registered in Lewisham specifically tailored and intended for people of Black, African & Caribbean heritage.

<https://www.smartsurvey.co.uk/s/UpUp-self-referral/>

**The following services are some of those from outside South London:**

✔ **Central London Community Healthcare NHS Trust Specialist Weight Management:** This service helps people to make long-term, sustainable lifestyle changes to lose weight and improve their physical and emotional well-being. The team consists of specialist dietitians, a specialist physiotherapist, a clinical psychologist, and a physician. Your GP can refer you if registered with a West London GP.

<https://clch.nhs.uk/services/specialist-weight-management>

✔ **Tower Hamlets Connect:** They provide a range of support available nationally and in Tower Hamlets to help you achieve a healthy weight. Their community weight management service is for residents or those registered with a GP in Tower Hamlets or people who work or study in the borough. You must be aged 18 or over and have a body mass index (BMI) of 30 or more.

<https://www.towerhamletsconnect.org>

## Helpful apps:

✔ **MyFitnessPal:** This app allows you to track your food intake, exercise, and weight loss progress. It has a large database of foods and exercises, and it can also connect with other fitness apps and devices.

✔ **Lose It!:** This app helps you set a daily calorie budget, track your food and exercise, and stay motivated to make smarter choices and achieve your goals.

✔ **FatSecret:** This app allows you to track your food intake, exercise, and weight loss progress. It has a large database of foods and exercises, and it can also connect with other fitness apps and devices.

✔ **Fooducate:** Known for its unique feature of offering podcasts about health and wellness. *Fooducate* also provides traditional app functions like a barcode scanner, calorie counter, exercise log, and food diary. It's particularly helpful for those looking to learn about different diets, weight loss, fitness, and more.

✔ **My Diet Coach:** This app is great for reminders and motivation. It includes features like a barcode scanner, *calReforie* counter, exercise log, and food diary. *My Diet Coach* helps you stay on track with personalised reminders and tips, especially useful during meals or when you need to hydrate or weigh in.

✔ **Argus Calorie Counter & Step:** This app is ideal for those with fitness-focused goals. It tracks various activities and has unique features like heart rate monitoring using your phone's camera and a pedometer. However, it has a smaller focus on nutrition.

✔ **Lifesum:** Great for those following specialised diet patterns. *Lifesum* is user-friendly and offers features like tracking by food photos, specialised diet plans, and healthy recipes. It also provides a Life Score to track your health based on nutrition and exercise habits.

## References:

1. He L, Zheng W, Qiu K, Kong W, Zeng T. Changing from NAFLD to MASLD: The new definition can more accurately identify individuals at higher risk for diabetes. *J Hepatol.* 2024 Feb;80(2):e85-e87. doi: 10.1016/j.jhep.2023.09.035.
2. Sutton EF, Beyl R, Early KS, Cefalu WT, Ravussin E, Peterson CM. Early Time-Restricted Feeding Improves Insulin Sensitivity, Blood Pressure, and Oxidative Stress Even without Weight Loss in Men with Prediabetes. *Cell Metab.* 2018 Jun 5;27(6):1212-1221.
3. Wood, R. J., Volek, J. S., Liu, Y., Shachter, N. S., Contois, J. H., & Fernandez, M. L. (2006). Carbohydrate restriction alters lipoprotein metabolism by modifying VLDL, LDL, and HDL subfraction distribution and size in overweight men. *The Journal of Nutrition*, 136(2), 384-389.
4. Dashti, H. M., Mathew, T. C., Hussein, T., Asfar, S. K., Behbahani, A., Khoursheed, M. A., & Al-Zaid, N. S. (2004). Long-term effects of a ketogenic diet in obese patients. *Experimental and Clinical Cardiology*, 9(3), 200-205.
5. Chattu VK, Manzar MD, Kumary S, Burman D, Spence DW, Pandi-Perumal SR. The Global Problem of Insufficient Sleep and Its Serious Public Health Implications. *Healthcare (Basel).* 2018 Dec 20;7(1):1. doi: 10.3390/healthcare7010001. PMID: 30577441; PMCID: PMC6473877

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This leaflet is designed to provide general guidelines and should not replace medical advice. It's important for individuals with MASLD to work closely with healthcare professionals for tailored management of their condition.



## Join today our LIVFIT Support Group

**NHS**  
King's College Hospital  
NHS Foundation Trust

**Discover LIVFIT**, the UK's first patient support group for Metabolic dysfunction-associated Steatotic Liver Disease (MASLD), pioneered by Dr Saima Ajaz at King's College Hospital in 2019.

We offer a platform for shared experiences, learning, and active participation in advancing MASLD care. Our focus is on nutrition, exercise, medical insights, and emotional support. LIVFIT is more than a support group; it's a community committed to your well-being.



**LIVFIT (MASLD) Patient Support Group:**

**Complete your Registration/Consent Form** by scanning the QR Code or visit the link provided below:

<https://www.surveymonkey.com/r/LIVFITkch>

## **PALS**

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. They can also pass on praise or thanks to our teams. The PALS office is located on the ground floor of the Hambleton Wing, near the main entrance on Bessemer Road - staff will be happy to direct you.

### **PALS at King's College Hospital, Denmark Hill, London SE5 9RS**

Tel: 020 3299 3601

Email: [kch-tr.palsdh@nhs.net](mailto:kch-tr.palsdh@nhs.net)

**If you would like the information in this leaflet in a different language or format, please contact our Communications and Interpreting telephone line on 020 3299 4826 or email [kch-tr.accessibility@nhs.net](mailto:kch-tr.accessibility@nhs.net)**