Lifestyle and your Liver

A Guide to Non-Alcoholic Fatty Liver Disease

Liver NORTH
LIVER PATIENT SUPPORT

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Mission Statement

The Newcastle upon Tyne Freeman Hospital Fatty Liver Clinic @CRESTA is an internationally recognised clinical service dedicated to the diagnosis and management of Non-Alcoholic Fatty Liver Disease (NAFLD). Our multidisciplinary team of specialists including doctors, nurses, dietitians and physiotherapists use state of the art techniques and treatments to deliver medical care.

We have produced this booklet to help you understand NAFLD and the current treatments; it will also allow you to track your treatment and achieve your personal goals towards a healthier life. This booklet provides general advice on lifestyle changes. If you are unsure whether these changes are suitable for you, please discuss with your doctor or healthcare professional.

Professor Quentin Anstee

Dr Stuart McPherson

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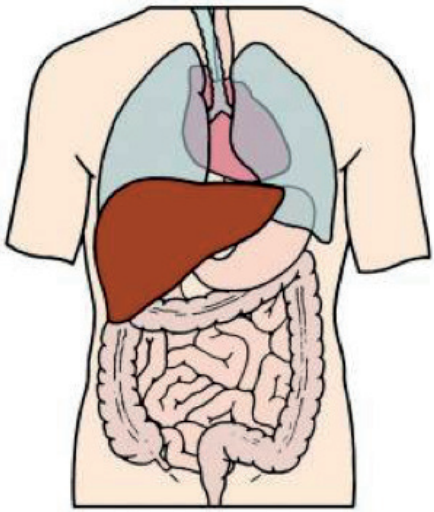
The liver



The Liver is a large organ, just under your ribcage on the right hand side of the body. It is the main power plant and factory of your body's metabolism.

What does it do?

It handles the nutrients that have been absorbed from food and makes proteins that your body needs. It also helps your body to fight infection.

Non-Alcoholic Fatty Liver Disease

Non-Alcoholic Fatty Liver Disease (NAFLD, 'fatty liver') is caused by a build-up of fat within the liver. It usually happens in people who are overweight, have diabetes or have high cholesterol. NAFLD has 4 'steps' from simple fatty liver to severe scarring. Each step is described below:

Step 1: Simple fatty liver (steatosis)

This is the most common form of NAFLD. This is where excess fat builds up in the liver cells.

Step 2: Non-alcoholic steatohepatitis (NASH)

Some people with simple fatty liver go on to develop inflammation, called non-alcoholic steatohepatitis (NASH). This occurs in people even if they feel well.

Step 3: Fibrosis

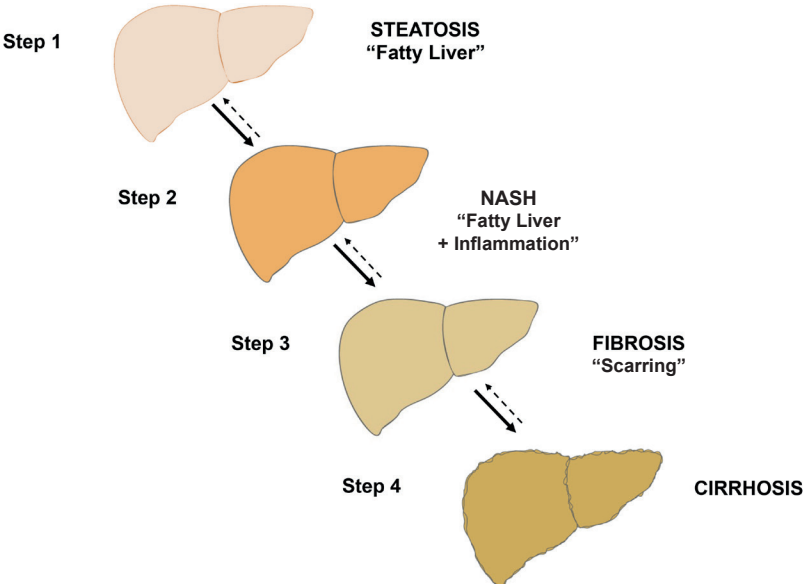
If inflammation carries on for a long time, then the liver becomes scarred. This fibrous tissue replaces some of the healthy liver tissue, but there is still enough healthy tissue for the liver to function normally.

Step 4: Cirrhosis

This is the most severe stage, where bands of scar tissue and clumps of liver cells develop. The liver shrinks and becomes lumpy (known as cirrhosis). When these changes take place the liver can stop working normally and the patient can become very unwell.

People who are overweight, have diabetes or high cholesterol are at the greatest risk of developing cirrhosis due to NAFLD. This increases the risk of developing liver cancer, internal bleeding and liver failure.

Non-Alcoholic Fatty Liver Disease
continued



Based on information available so far, we know that in the majority of patients with simple fatty liver, the liver remains stable over time. In contrast, patients with NASH are at a relatively high risk of worsening liver injury, with approximately 10% developing irreversible liver scarring or cirrhosis over 8-10 years.

NAFLD is not caused by alcohol, although high alcohol consumption can worsen the problem.

Cardiovascular Disease

People with NAFLD have an increased risk of heart attacks and strokes. The team will work with you to help reduce this risk.

How is Non-Alcoholic Fatty Liver Disease identified?

Most patients with NAFLD do not have specific symptoms. NAFLD is often picked up incidentally whilst having blood tests for another reason, such as a well-person check or during tests for other diseases. The liver blood tests are usually abnormal, but not always. Surprisingly, the degree of abnormality of the blood tests does not reliability predict the severity of liver injury.

When a patient is suspected of having NAFLD on the basis of clinical history, examination and blood tests, the next step is an ultrasound scan. A fatty liver usually looks brighter-than-normal on the scan. Unfortunately, neither the blood tests nor routine scans can reliably distinguish between simple fatty liver ("step 1") and more severe disease with inflammation ("step 2") or scarring/cirrhosis ("steps 3/4").

Accurate diagnosis and exclusion of other liver conditions, requires a sample of liver tissue to be examined under the microscope. This sample is obtained by liver biopsy. The risk of liver biopsy has to be weighed against the benefits of diagnosing the liver disease accurately. For these reasons physicians currently differ over if and when to perform liver biopsies in patients with suspected NAFLD.

How is Non-Alcoholic Fatty Liver Disease treated?

At present there are no specific medicines to treat NAFLD. The best evidence of benefit is for weight reduction by diet and exercise. Studies have shown that good glucose control in patients who have diabetes may help the liver to improve. There is some preliminary evidence that treatment with certain anti-diabetic medicines may help reduce the severity of liver damage. Patients with high cholesterol should be treated to reduce the risk of heart disease and stroke.

Studies are in progress aimed at increasing our understanding of the precise cause of NASH and trials of new drugs based on this increased understanding are currently underway. As a result, it is hoped that in a few year's time we will have better medicines to treat NAFLD.

How do I look after my liver?

Managing my weight and shape

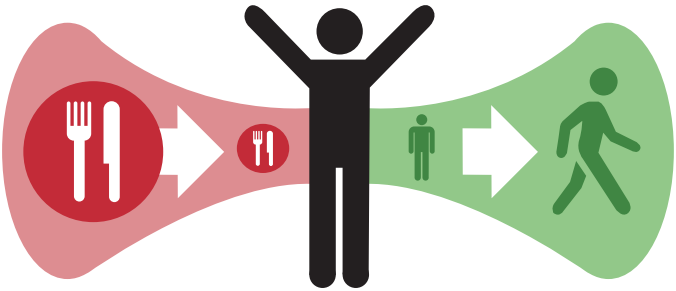
There is good evidence that the most important things that people with NAFLD can do are to go on a gradual weight loss programme and exercise regularly. This can help to:

- Reduce the amount of fat in your liver, helping to reduce inflammation. Even if your liver is scarred there can be some improvement.
- Lower your risk of stroke and heart attack

What can I do to start losing weight?

You need to eat and drink fewer calories

And do more physical activity or exercise



This forces your body to use up some of its fat stores and leads to:

Weight loss

Healthier liver

Less risk of heart attack and stroke

How can I improve my diet?

Eating well with NAFLD

A well-balanced and healthy diet is essential for all steps of your NAFLD condition. The following advice can help:

- Control your calorie intake
- Make healthy food, snack and drink choices

We recommend that you avoid crash diets as they can worsen liver function and lead to future weight regain.

Calorie controlled diet

Calories are a measure of the amount of energy in food. Counting your daily calories is one of the easiest ways to track the amount of food you eat. There are different options you can use:

1. Paper, pen & lifestyle diary
2. Smartphone apps
3. Internet websites

Nutrition labels

It's a good idea to get used to reading nutrition labels on packaged food and drinks:

- **Check** what it contains - find calories, fat, sugar and salt levels
- **Compare** similar foods to find the healthy option
- **Choose** the foods that best suit your needs to maintain a healthy weight.

For further information and a food shopping guide visit:
http://www.nhs.uk/livewell/goodfood/pages/food-labelling.aspx

Safer drinking

NAFLD is not caused by alcohol. However it is important to stay within the current guidelines for health

The new (2016) maximum alcohol limit for both men and women is **14 units per week.**

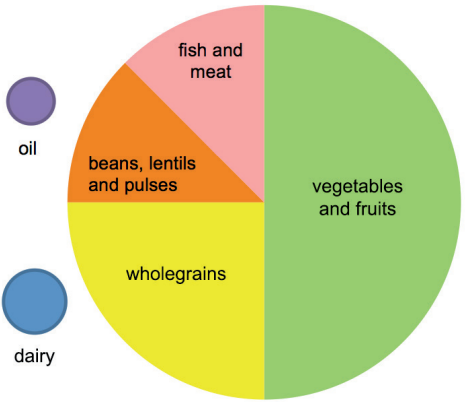
Have at least 2 alcohol-free days every week and avoid binge drinking

If you have scarring of the liver or cirrhosis, alcohol may make the condition worse and it's advisable to stop drinking alcohol completely.

The Mediterranean Diet

The Mediterranean diet is a lifestyle approach to healthy eating. The closer we get to this diet the greater the health benefits including a healthier heart, a longer lifespan and good weight management.

The model below shows the different types of food that make up our diet, and the proportions we should eat them in:



Move towards a way of eating that contains:

MORE home-prepared options, plant-based foods (cereals, fruits, vegetables, beans and pulses), fish and seafood with olive oil as the main source of added fat

LESS shop-bought or processed foods, options high in fat and / or sugar and meat.

Pastries, cakes, biscuits and sugar-sweetened beverages, should not be taken frequently and left only for special occasions.

The Mediterranean Diet: Guidelines

Every main meal

- One serving of starchy carbohydrate foods: cereal, porridge, wholegrain bread, potatoes, pasta, rice or couscous
- One portion of fruit
- Two or more portions of vegetables
- Olive oil for cooking or as a salad dressing

Every day

- Eat breakfast
- Two portions of low fat milk, cheese or yoghurt
- Use fragrant herbs/spices/garlic/onions instead of salt for flavour
- 30g of olives/nuts/seeds as a snack or in a meal
- Drink at least 6-8 glasses of fluid (water, lower-fat milks and lower-sugar or sugar-free drinks including tea and coffee all count)

Every week

- Three or more portions of legumes (beans, peas or lentils)
- Three or more portions of fish (one to be oily fish)
- Two portions of white meat (chicken, turkey)
- Less than two portions of red meat (beef, lamb, pork)
- No more than one portion of processed meat (ham, bacon and sausages)
- Up to four eggs

The Mediterranean Diet: Portion sizes

(1oz equivalent to 25–30g)

Oils and spreads

- Use olive oils and spreads each day (drizzle or spray)

Fruit and vegetables

(1 portion is 80g or a handful)

- A small dessert bowl of mixed salad
- 6 cherry tomatoes or 1 large tomato
- 3 heaped tablespoons of peas, carrots, sweetcorn, tinned tomatoes
- 1 leek or onion
- 3 florets of broccoli or cauliflower
- 2 ladles of vegetable soup
- 1 medium apple, orange, pear, banana, peach
- 2 smaller fruits such as kiwi, satsuma, plums
- Palm full of grapes, cherries, strawberries
- 1 slice of a large fruit such as pineapple or melon
- 3 tablespoons of tinned fruit in natural juice
- 1 tablespoon of dried fruit e.g. raisins, apricots
- 1 small glass of fruit juice (150ml)

Nuts, seeds and olives

- 30g plain nuts include almonds, brazils, cashew, walnuts
- 30g seeds include pumpkin, sunflower, and linseed
- 12 (30g) olives

The Mediterranean Diet: Portion sizes

(1oz equivalent to 25–30g)

Potatoes, bread, rice, pasta and other starchy carbohydrates (an average serving at each meal)

- 2 slices medium wholegrain bread
- 1 large pitta bread, chapatti, bagel, muffin or tortilla wrap
- 1 medium bread roll
- 2 crumpets
- 4 crackers, crisp breads or oatcakes
- 6 tablespoons of uncooked oats (½ teacup)
- 6 tablespoons of wholegrain breakfast cereal
- 2 cereal biscuit e.g. Weetabix or shredded wheat
- 2 tablespoons unsweetened muesli
- 6 tablespoons of cooked rice, pasta, couscous or noodles
- 4 egg size potatoes or 1 medium jacket or sweet potato

Beans, pulses, fish, eggs, meat and other proteins

- 3 tablespoons (120g) or ½ large tin of baked beans, chick peas, haricot, cannellini or kidney beans
- 50g dried weight lentils
- 80-100g lean red or white meat the size of computer mouse
- 100 -140g fish
- 100g Quorn
- 150g tofu
- 2 medium eggs
- 50g processed meat

Dairy and alternatives

- 200ml of semi-skimmed or skimmed milk
- Small pot (125g) of yoghurt or fromage frais (preferably natural or low fat, low sugar)
- A small piece of cheese, 30g about 2.5cm/ 1" cube (preferably goat or sheep varieties)
- 150g pot of cottage cheese

How are you going to make the change?

1. Set a personal weight loss target to help reduce the amount of fat in your liver.

Weight	Height	Body Mass Index (BMI)

Target weight

2. A daily calorie allowance of 1,900kcal for most men and 1,400kcal for most women will promote weight loss.

Meal pattern	1400 calories	1900 calories
Breakfast	300	400
Light meal	400	500
Main meal	500	600
Drinks & snacks	200	400

If you go over your limit one day, simply reduce your calorie intake on the following days.

The NHS Choices '**Losing weight: Getting started**' guide promotes safe and sustainable weight loss: www.nhs.uk/LiveWell/Loseweight

Check what's on offer in terms of weight management support locally - speak to your GP or practice nurse.

Steps to success

To lose a stone in a year an 80kg (12st 8lb) person would only have to eat 100 calories less each day (the amount of calories in 1½ plain digestive biscuits).

Of course if they were to overeat by just 100 calories a day, they would gain a stone in weight over this time!

Take the first step

What should my target weight loss be?

0.5kg-1kg (or 1lb-2lb) a week until you are a healthy BMI

What steps can I take?

How can I achieve my weight loss?

What can I change to make this happen?

How will I track my progress?

Start a lifestyle diary and set goals that you can tick off

Calorie counting revisited

Stay on top of your day's calorie intake.

1 Lifestyle diary

Your dietitian will provide you with a food diary.

2 Smartphone apps

Check that the app you use comes from a credible UK source: http://apps.nhs.uk/

3 Internet websites

The calorie checker on NHS Choices can search over 150,000 different foods and drinks quickly and simply:
http://www.nhs.uk/Tools/Pages/Calorie-checker.aspx

Physical activity, exercise and NAFLD

What is physical activity?

Physical activity is any body movement that requires you to use more energy than resting, and it incorporates many of the activities carried out as part of the daily routine

Exercise is a subcategory of physical activity in which planned, structured and repetitive movements are performed to maintain or improve fitness, e.g. cycling, swimming, lifting weights and dancing

How can physical activity/exercise benefit my liver?

- Exercise has been shown to decrease liver fat
- Exercise can reduce whole body fat and increase muscle mass
- Exercise can increase the body's ability to burn fat
- Physical activity can help you to lose weight alongside changes in your diet
- **Importantly:** exercise can help you to maintain weight loss in the long term

How can physical activity/exercise improve my general health?

- Stronger muscles and bones
- Improved fitness of heart and lungs
- Reduced blood pressure
- Improved blood glucose control
- Improved mood
- Higher energy levels
- Improved sleep patterns
- Improved esteem and self confidence

How much physical activity do I need to do?

Public health guidelines promote at least 30 minutes of moderate intensity exercise a day. This can be broken down into 10 minute bouts, if this is more manageable.

It is important to set yourself an achievable goal and try and gradually build up to this – the more physical activity/exercise you can do, the better!

Moderate intensity activity should:

- Raise your heart rate
- Make you breathe faster and harder
- Make you feel warmer
- You can talk, but are not able to sing

Moderate intensity is NOT just going to the gym, running or an exercise class - although these would be included.

What type of exercise should I do to help my liver?

Aerobic (e.g. jogging, swimming, walking) and resistance (e.g. weight training) exercise have both proved beneficial in reducing liver fat and improving liver health. A combination of both types of exercise is likely to have the greatest effect.

Ideas for increasing your activity levels

Walk for part of the route to work
(for example, get off the bus 1 stop earlier)

Break up sitting time by standing up &
walking for 1 minute every hour

Take the stairs instead of the lift

Walk the dog once a day

Join a walking group

Try a new exercise class

Do some gardening or mow the lawn

Lots of short bouts of physical activity can be just as good for you as long periods of activity - the more you do overall throughout the day, the better!

Walking is a good place to start and has been linked with a number of health benefits

1. Walking can strengthen your heart, bones and muscles and also help with weight loss.
2. Walking is easy on the joints.
3. Walking reduces anxiety and depression and can improve mood.
4. If you walk as part of a walking group, it can be a great way to socialise.
5. Best of all - it's free!

Guidelines recommend 10,000 steps a day. You can use a pedometer or app on your phone to track your step count.

No matter how slow you move, you are still moving faster than a person who is sitting down!

How much activity does it take to burn off calories?

10 calorie-dense food and drinks and their activity equivalence			
FOOD TYPE	**CALORIES APROX.**	**WALK OFF KCAL** (medium walk 3-5mph)	**RUN OFF KCAL** (slow running 5mph)
 Sugary soft drink (330ml can)	**138**	**26 min**	**13 min**
 Standard chocolate bar	**229**	**42 min**	**22 min**
 Sandwich (chicken & bacon)	**445**	**1 hr 22 min**	**42 min**
 Large Pizza (1/4 pizza)	**449**	**1 hr 23 min**	**43 min**
 Medium mocha coffee	**290**	**53 min**	**28 min**
 Packet Crisps	**171**	**31 min**	**16 min**
 Dry roasted peanuts (50g)	**296**	**54 min**	**28 min**
 Iced cinnamon roll	**420**	**1 hr 17 min**	**40 min**
 Cereal (1 bowl)	**172**	**31 min**	**16 min**
 Blueberry muffin	**265**	**48 min**	**25 min**

Activity planner

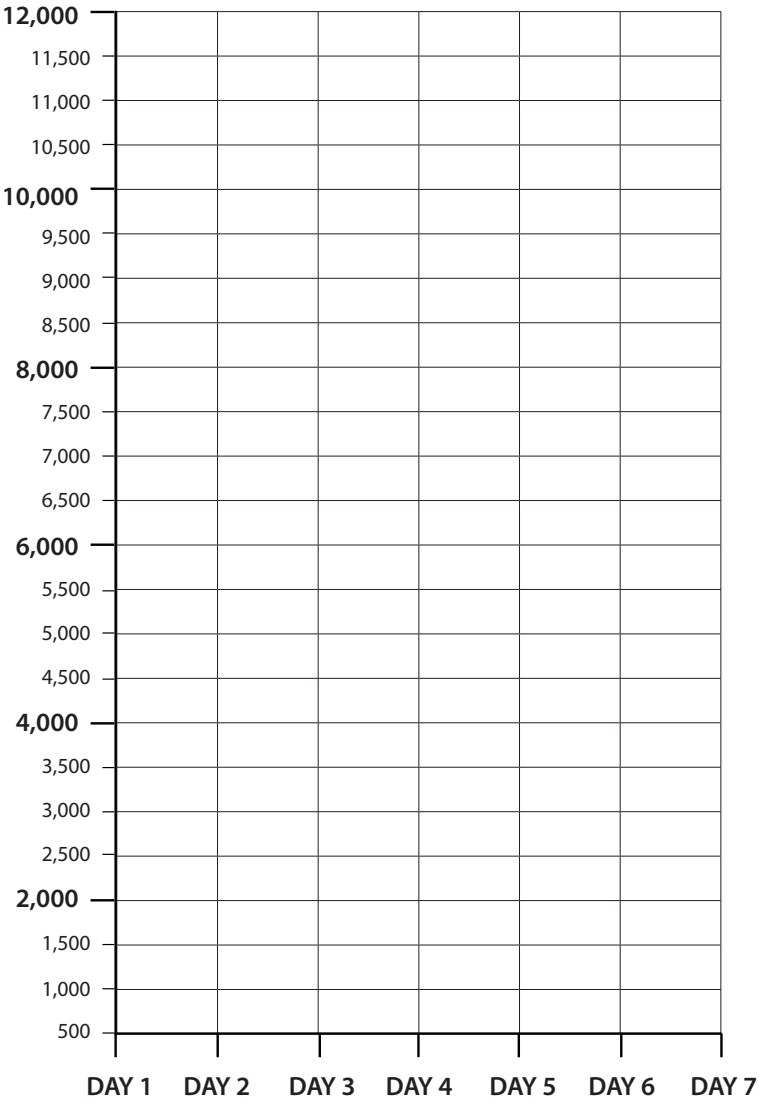
An activity planner can be useful for setting goals and recording your activity.

Day	**Goal** Minutes / steps / other	**Activity** When? Where? Who with? How long for?	**Achieved** Minutes / steps / other
Mon			
Tues			
Wed			
Thu			
Fri			
Sat			
Sun			

Activity tracker

This can be helpful for monitoring your progress.

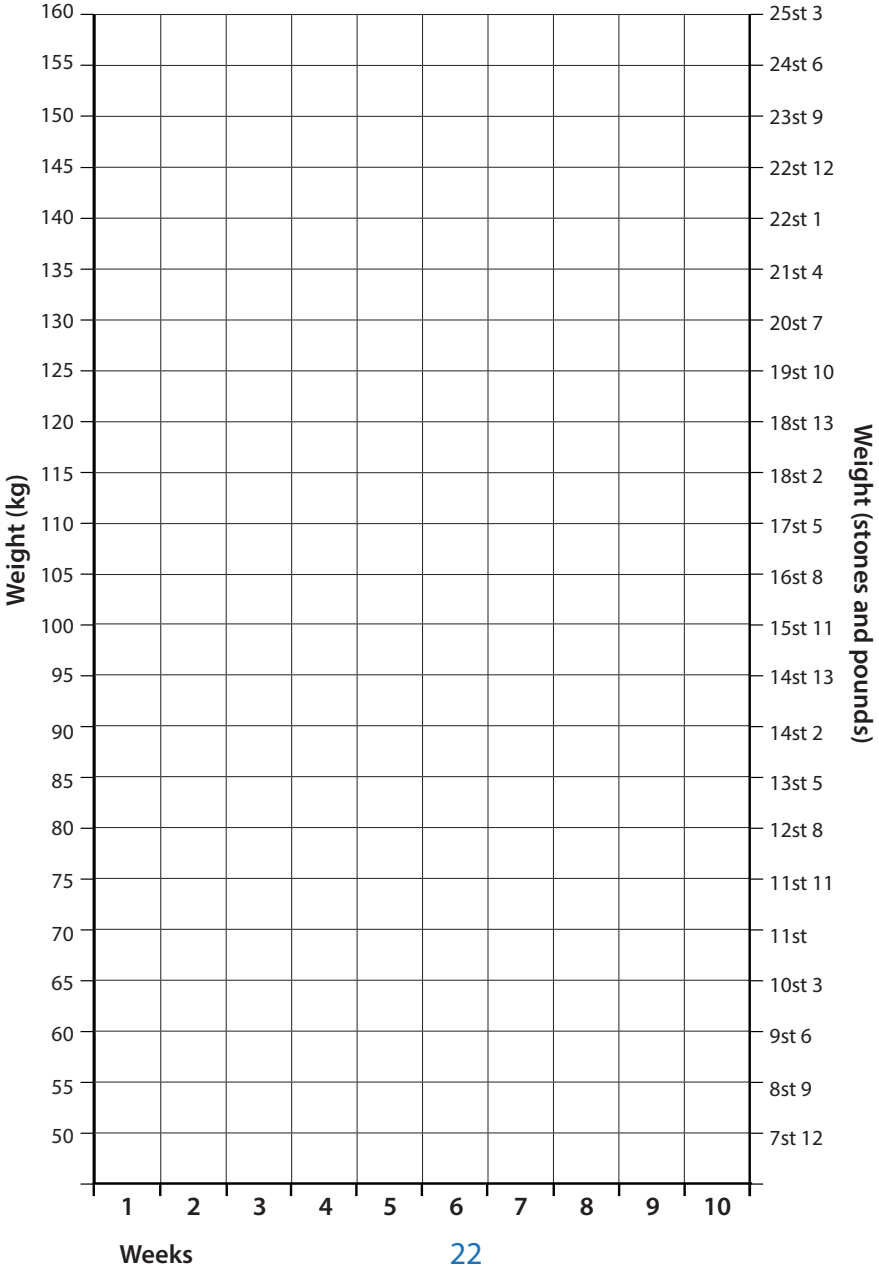
Steps



If you find these useful please ask a member of the Team for further copies to allow you to monitor your progress.

Monitoring your weight

You may find it useful to measure your weight at home each week to track your progress.



Several promising new medicines to treat NAFLD are now entering clinical trials.

If you might be interested in participating in these studies and would like to know more, please speak with your doctor at your next clinic appointment.

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