



# Liver and heart health: A David and Goliath story

**Dr David Unwin FRCGP.**  
RCGP Clinical expert in diabetes



@lowcarbGP



heart disease



Images

Types

Symptoms

Treatment

Test

News

Reasons

Videos

Atherosclerotic

About 4,370,000,000 results (0.41 seconds)

**Number of journals:  
Cardiology 381  
Hepatology 80**



liver disease



Images

Symptoms

Treatment

Test

List

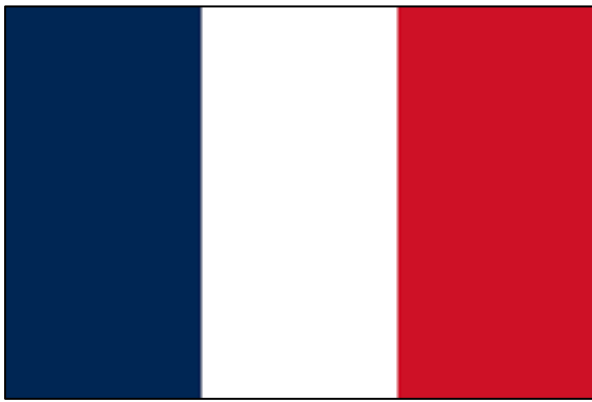
Diet

Reasons

End-stage

Videos

About 1,300,000,000 results (0.33 seconds)



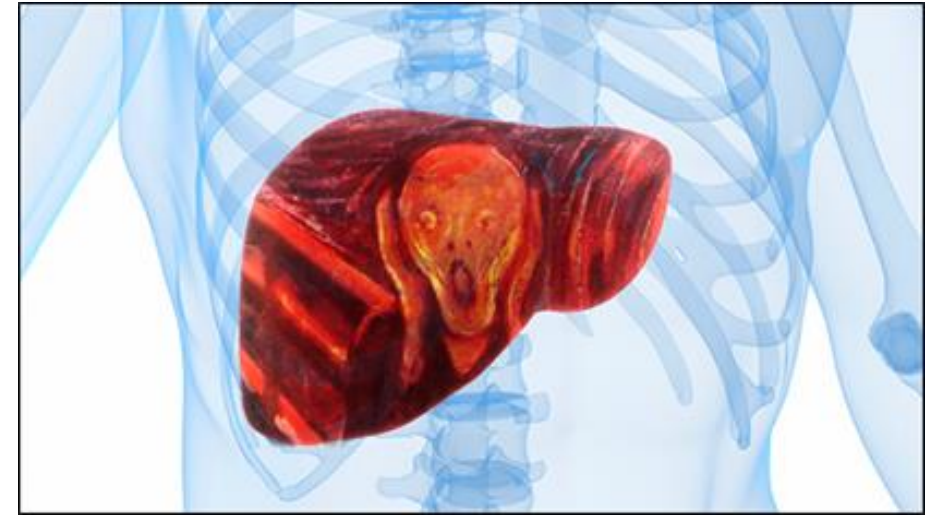
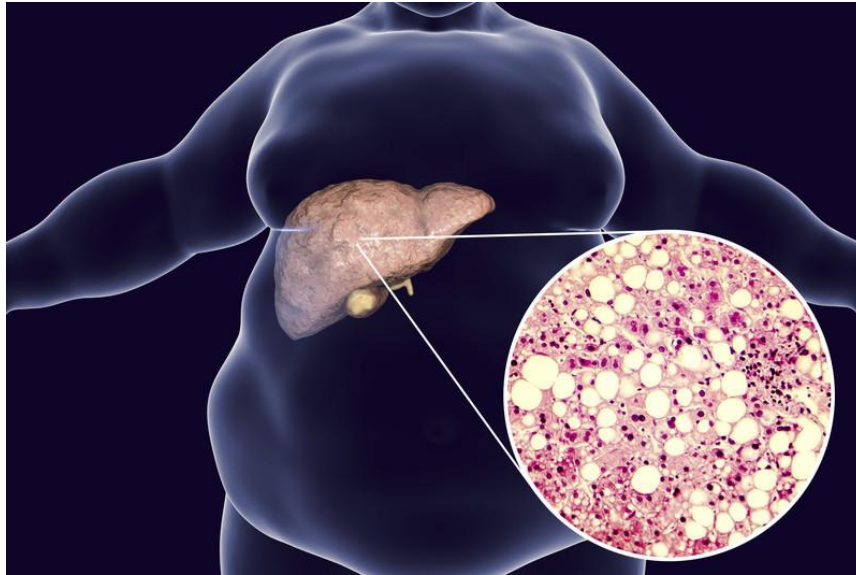
## La crise de foie une affection française?

The “liver attacks” (crise de foie) commonly suffered by the French.

The French “liver attack” is part of a vast set of ideas and behaviours that, beyond its medical aspects, combines considerations to do with food, emotions, religion, sexuality, clothing, climate, the colonial situation, the nation, power and the emancipation of women



# Fatty liver disease: What is it?

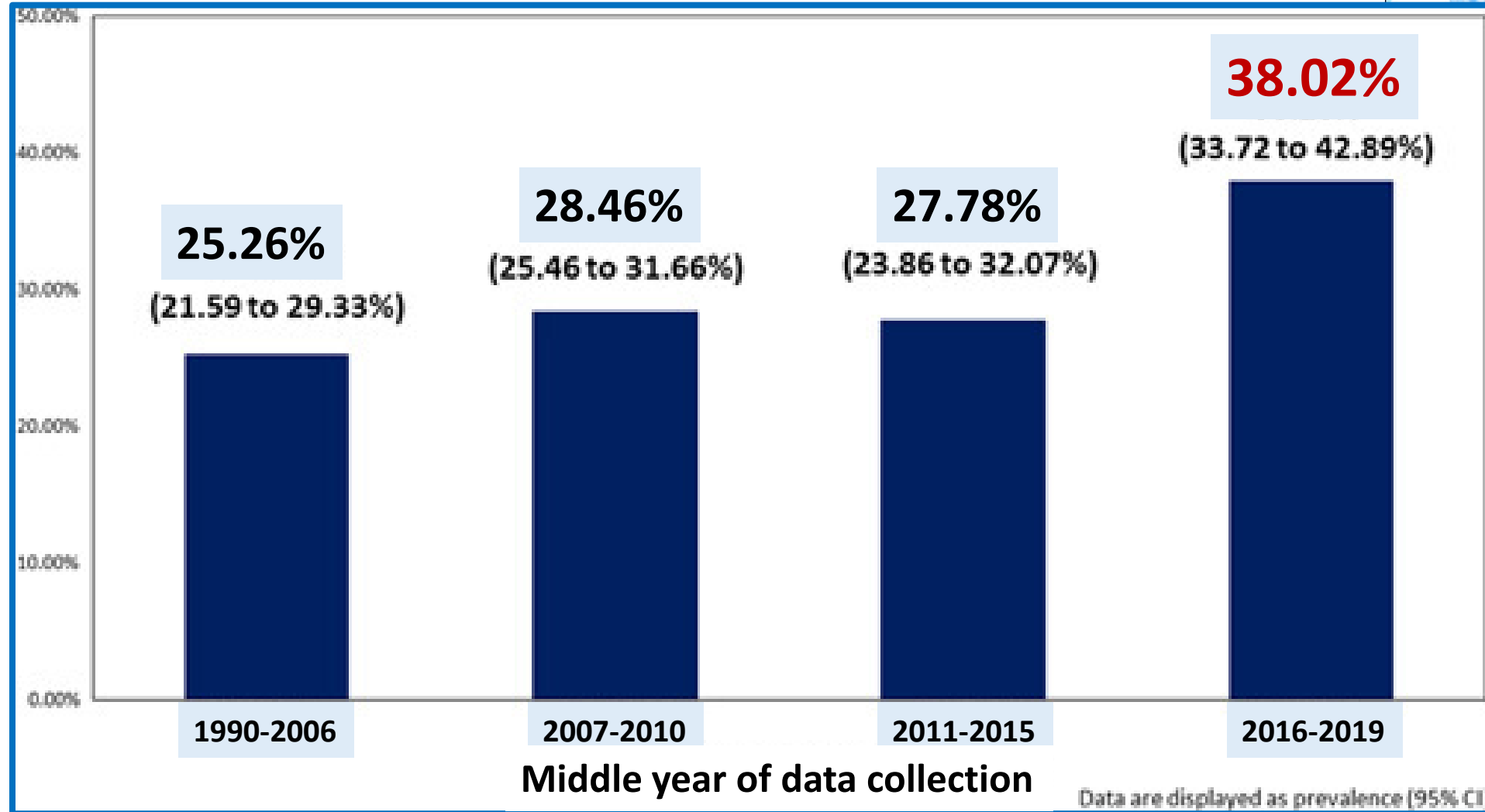
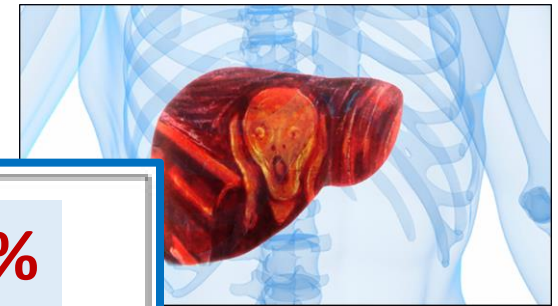


**Alcoholic  
Fatty liver disease**



**Non Alcoholic  
Fatty liver disease NAFLD**

# Global rates of NAFLD increasing inexorably.



Younossi ZM, Golabi P, Paik JM, Henry A, Van Dongen C, Henry L. The global epidemiology of nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH): a systematic review. *Hepatology*. 2023;77(4):1335-47.

# Why is NAFLD important?

**Many patients with NAFLD die of cardiovascular diseases rather than liver disease.**

Even so, liver-related mortality is the second or third leading cause of death in these patients.\*



\*Younossi ZM, Henry L, Bush H, Mishra A. Clinical and Economic Burden of Nonalcoholic Fatty Liver Disease and Nonalcoholic Steatohepatitis. Clinics in Liver Disease. 2018;22(1):1-10.

# Gamma Glutamyl Transferase\* and Metabolic Syndrome, Cardiovascular Disease, and Mortality Risk: The Framingham Heart Study

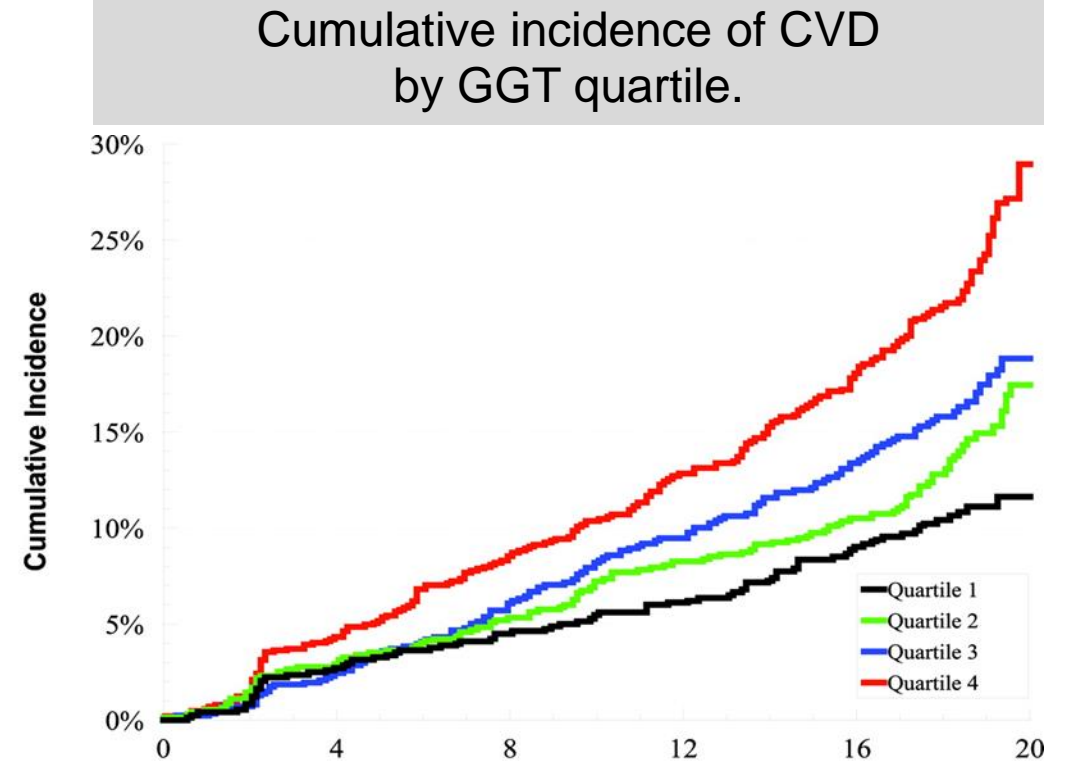
## Arteriosclerosis, Thrombosis, and Vascular Biology

In 3,451 Framingham Study participants followed up for 19 years we examined the relations of GGT with CVD risk factors.

The risk of metabolic syndrome increased with higher GGT.

Each SD increase in GGT conferred;

- **a 13% increase in CVD risk ( $p=0.007$ )**
- **26% increased risk of death ( $p<0.001$ )**



**Individuals in the highest GGT quartile experienced a 67% increase in CVD incidence**

# Weight 2004 -2019 in kg

**ALT 23u/L (0-49)**  
**GGT 34u/l (0-59)**  
**Both normal but USS**

**39 year old male**  
**22stone or 140kg**

**NAFLD can be present**  
**Even if liver function is normal**

**VERIFIED** Verified By: FLANAGAN Karen 15-Sep-2019 1149 Last Verified: 15-Sep-2019 1149 First Typed By: RA48657 15-Sep-2019 1149.  
Clinical History : ruq pain

Ultrasound Abdomen

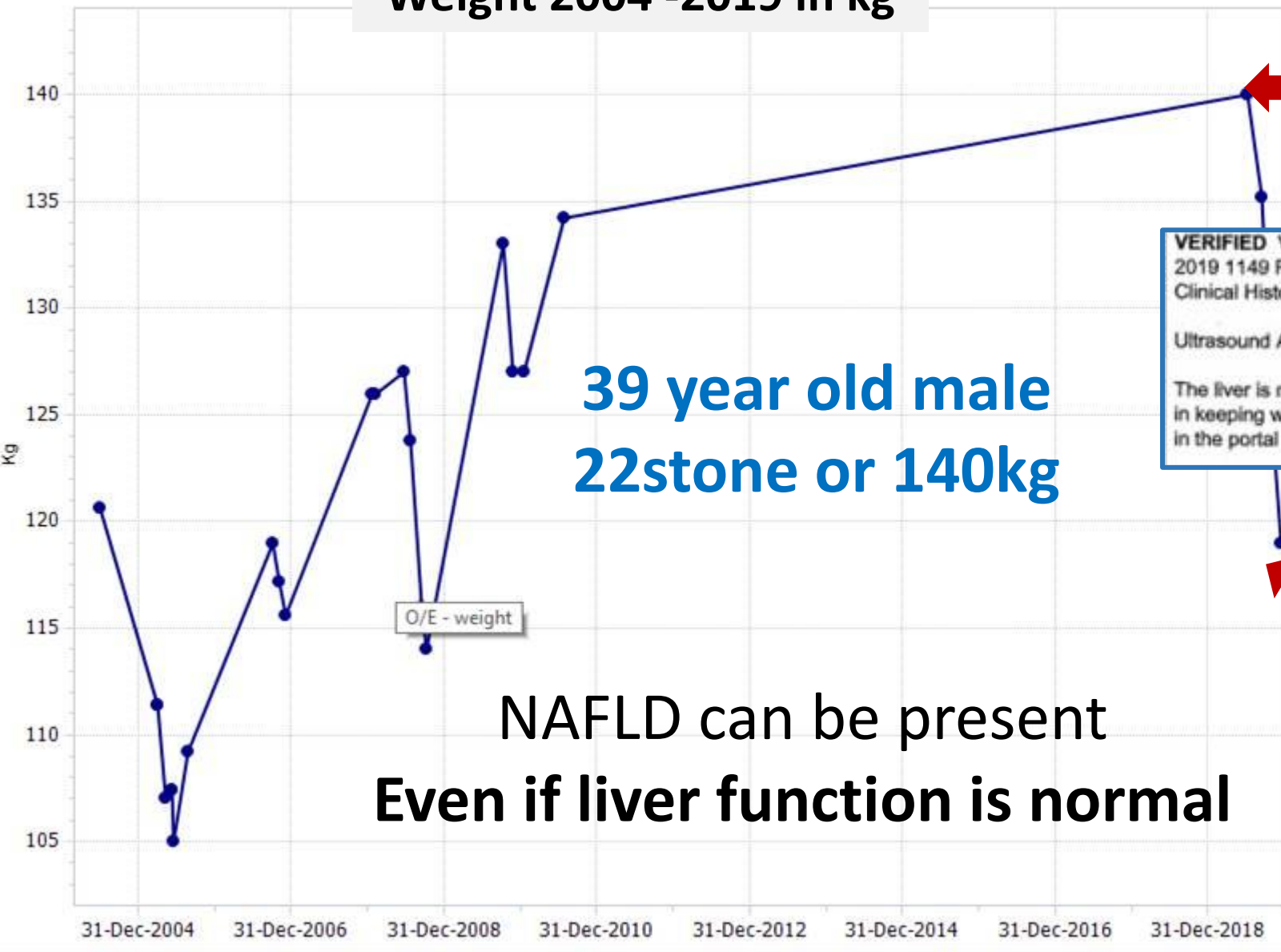
The liver is normal in shape and size, however demonstrates an increase in echotexture in keeping with fatty infiltration. No focal lesions seen. Normal directional blood flow seen in the portal vein.

**VERIFIED** Verified By: ILANO Rosemarie 09-Dec-2019 1535 Last Verified: 09-Dec-2019 1535 First Typed By: RA51825 09-Dec-2019 1535.  
Clinical History : Significant weight loss (low carb) is the fatty improving ?

US Abdomen:


The liver appears normal in size and demonstrates increased in parenchymal echogenicity in keeping with fatty infiltration. No focal lesion seen. Normal appearances of the gallbladder, CBD, pancreas (tail obscured), spleen, abdominal aorta, and both kidneys. No free fluid seen.

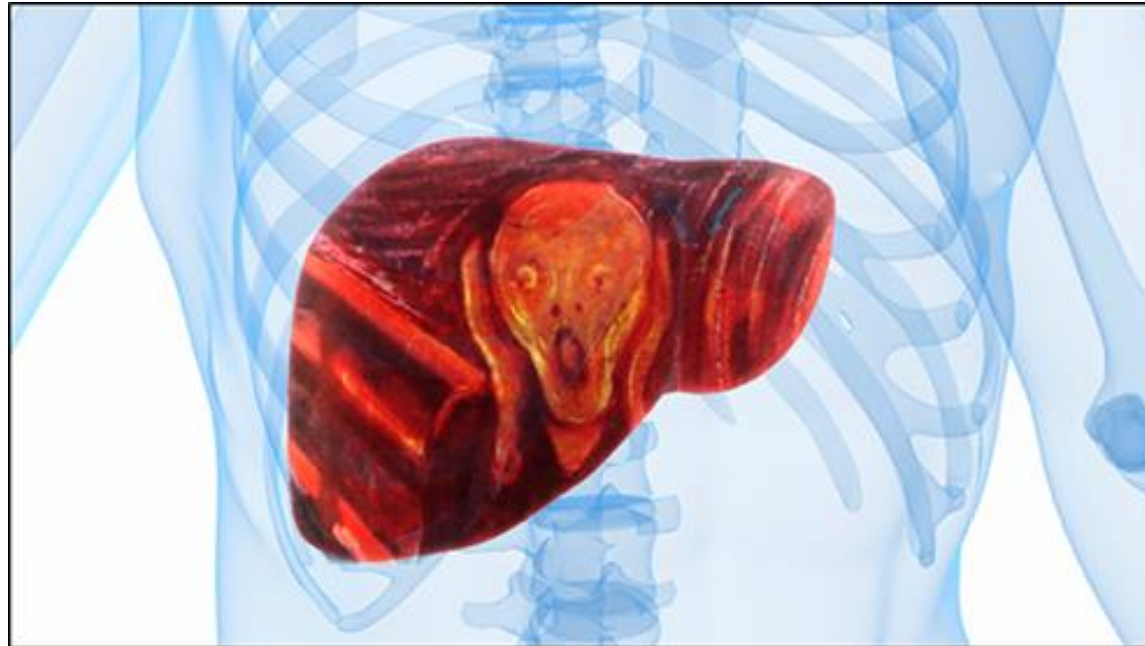
Conclusion:  
In comparison to the previous images of the liver the degree of fatty infiltration has improved.



O/E - weight



**Of 4,753 Norwood practice patients having liver function blood tests (GGT) in the last three years, 1,153 (24%) were abnormal- (USS would be )**

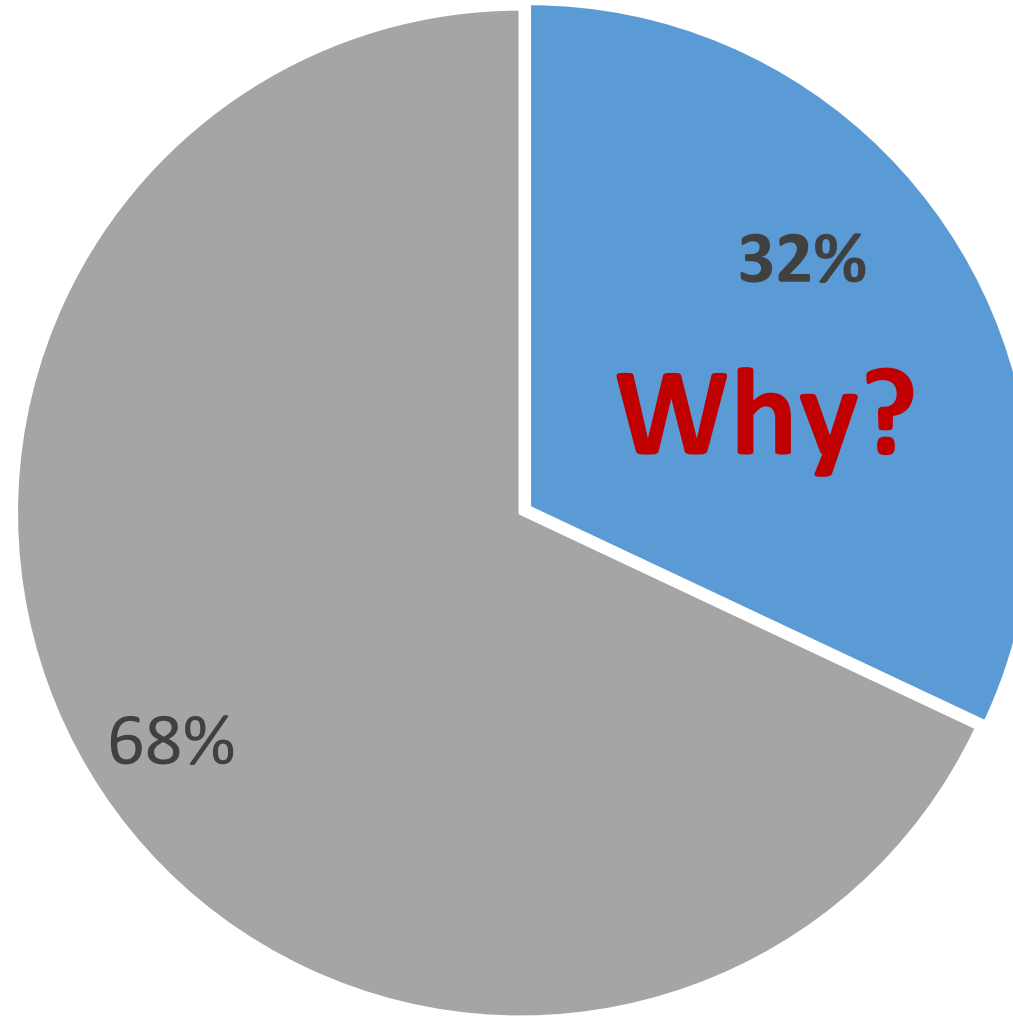


## Fasting triglyceride\* level

Out of 2458  
Norwood practice  
patients having a  
lipid profile done  
in the last 3 years  
791 (32%) had an  
abnormal  
triglyceride result

>2mmol/mol

<2mmol/mol



**'Elevation in the ratio of TG to HDL-c, the single most powerful predictor of extensive coronary heart disease'\***

\*da Luz PL, Favarato D, Faria-Neto JR, Jr., Lemos P, Chagas ACP. High ratio of triglycerides to HDL-cholesterol predicts extensive coronary disease. Clinics (Sao Paulo). 2008;63(4):427-32.



**NAFLD**

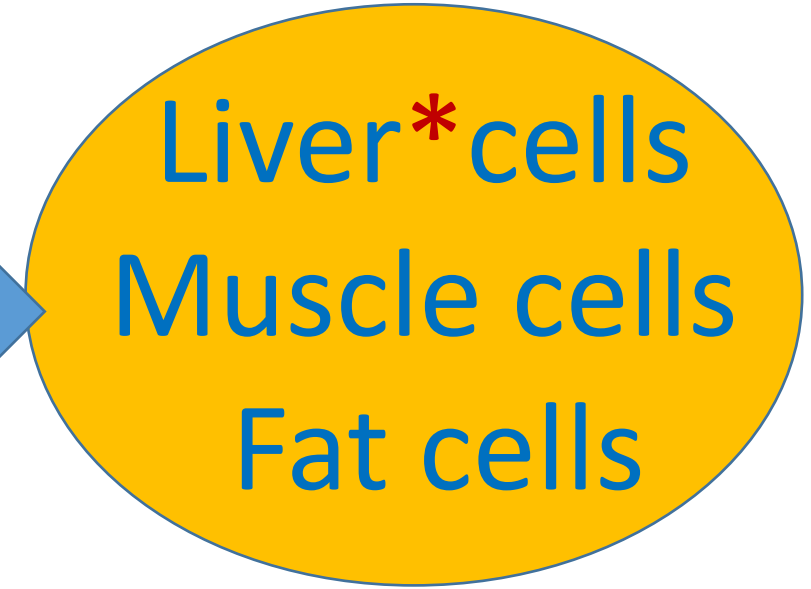
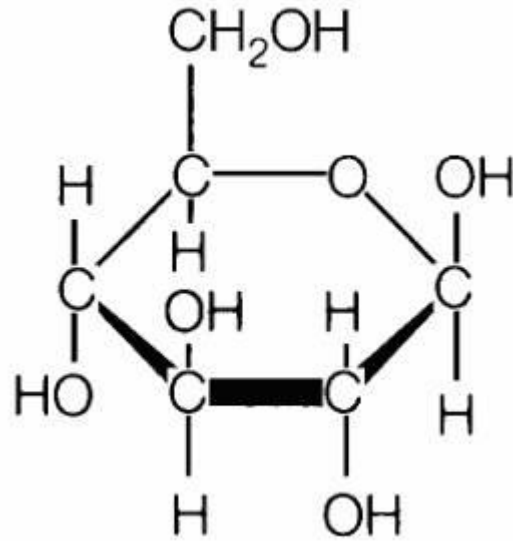
**Raised triglyceride level**

**Type 2 diabetes**

**Three epidemics:  
all linked to each other and mortality**

**BUT HOW?**

The hormone insulin can be thought of as pushing glucose out of the blood stream and into cells to reduce blood sugar. In some cells it becomes fat



\*Also pancreas cells as triglyceride

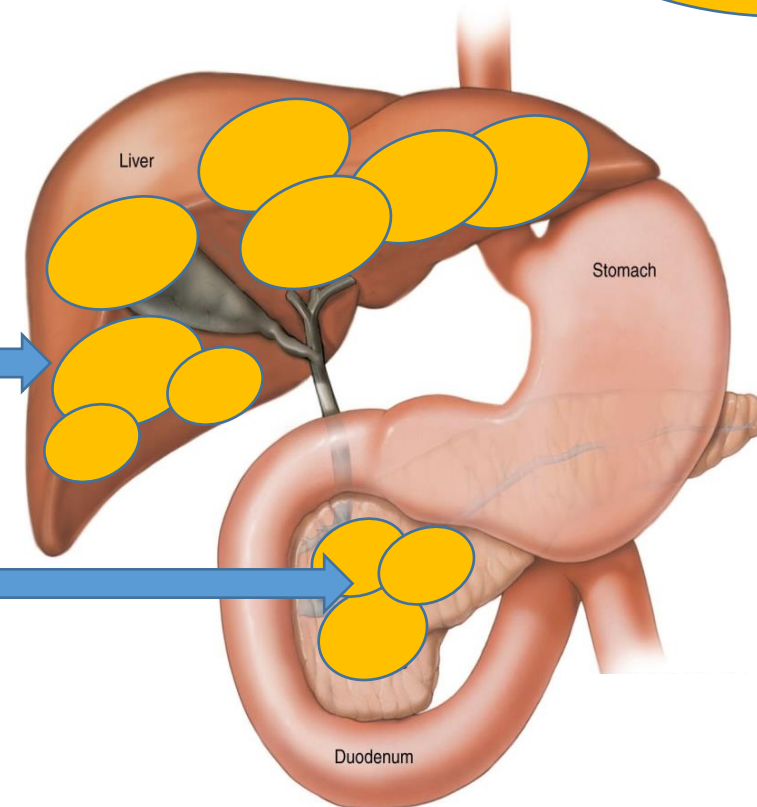
**Insulin + Glucose → cells**

# Type 2 diabetes results in part from accumulation of fat in the liver and pancreas

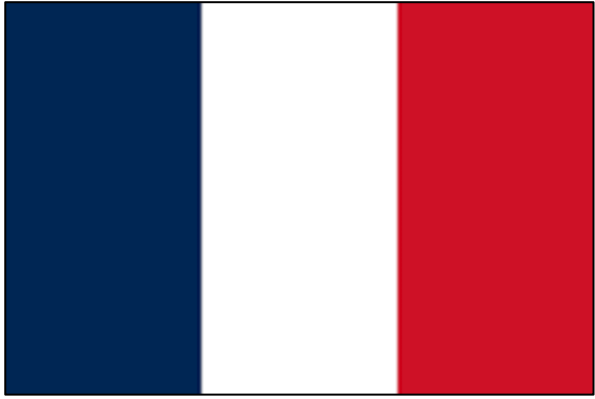
Triglyceride

**Liver fat:** linked to insulin resistance

**Pancreatic fat:** inhibits B cell function -cannot produce enough insulin



Reversal of type 2 diabetes: Normalisation of beta cell function in association with decreased pancreas and liver triacylglycerol. Lim EL1, Hollingsworth KG, Taylor R. Diabetologia. 2011 Oct;54(10):2506-14. doi: 10.1007/s00125-011-2204-7.



Fois gras





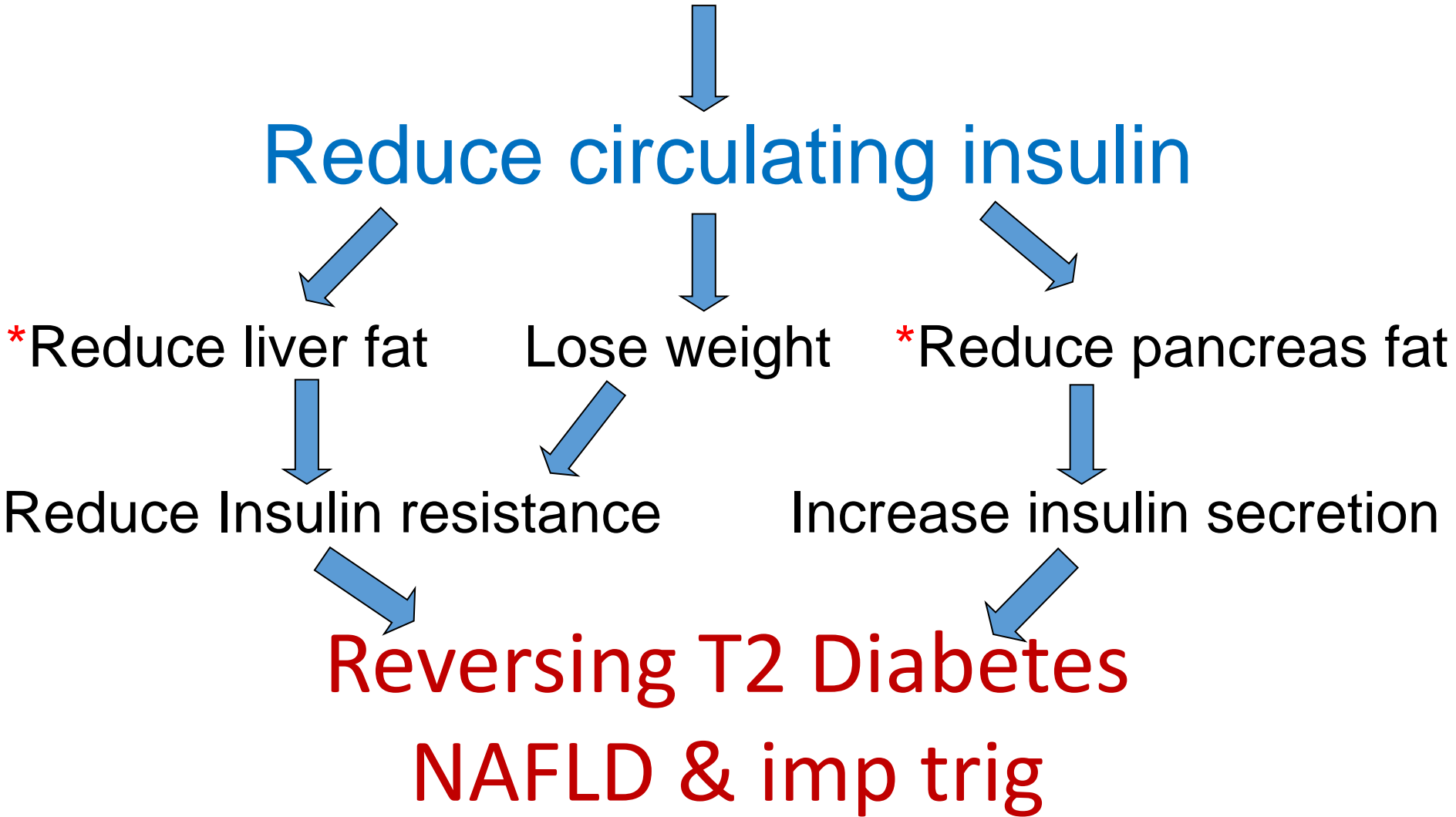
**NAFLD**

**Raised triglyceride level**

**Type 2 diabetes**

**How is food the solution ?**

# Reduced carbohydrate intake



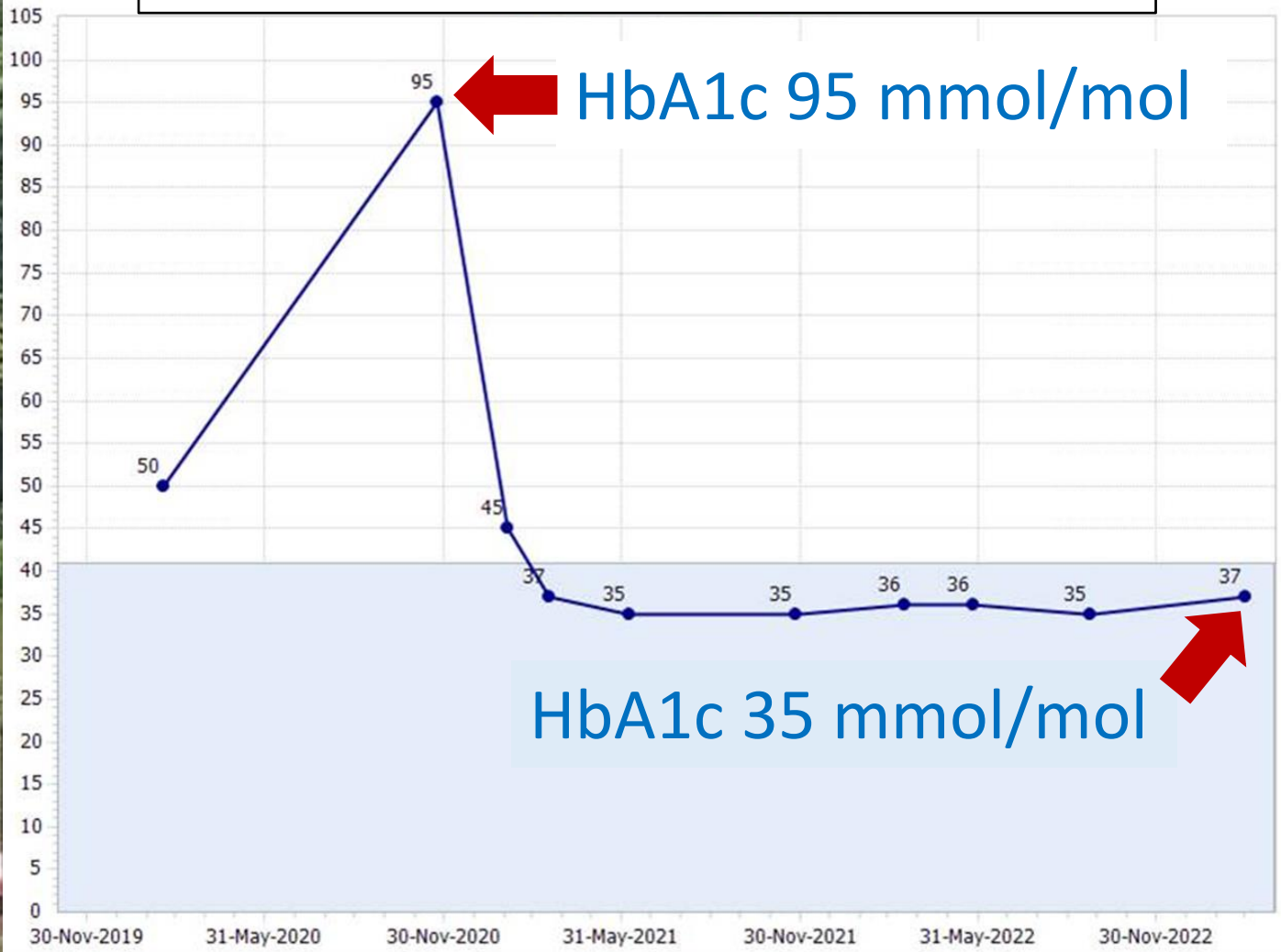
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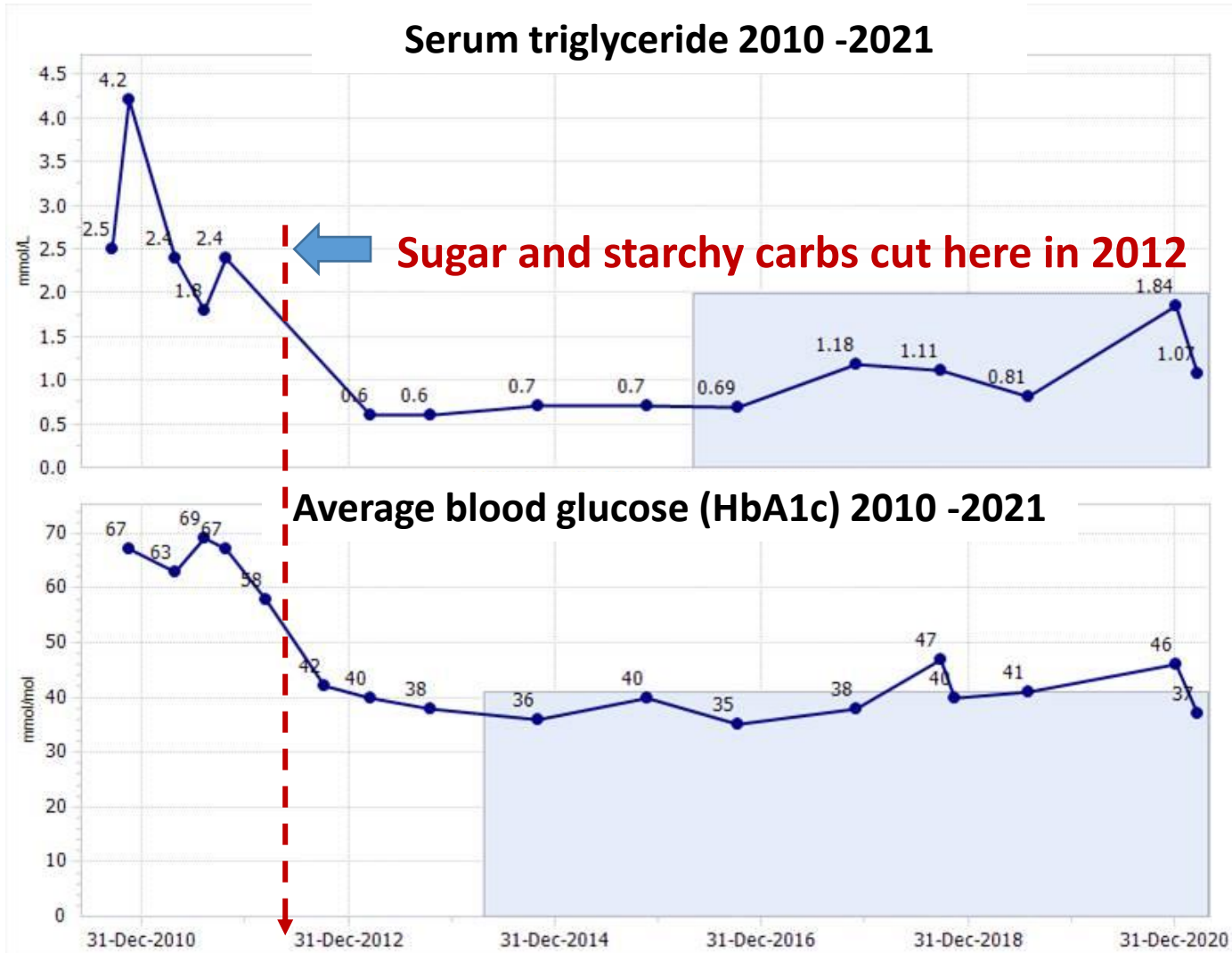


HbA1c\* in mmol/mol 2019 -2023



Drug free T2D remission

The hormone insulin can be thought of as pushing glucose out of the blood stream and into cells to reduce blood sugar. In some cells it becomes triglyceride



A high blood glucose is linked to a high triglyceride level

Can it last?

Drug free T2D remission and improved trig can be sustained (11 years)

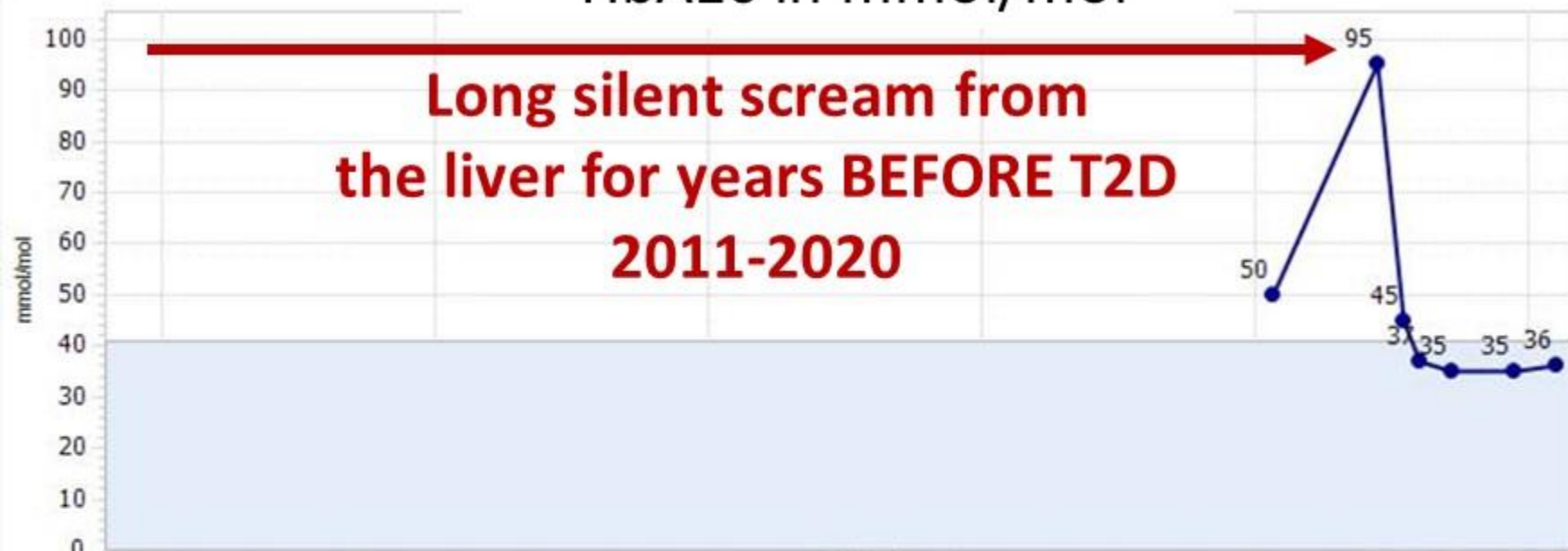
**‘Before diagnosis of Type 2 diabetes,  
there is a long silent scream from the liver’\* **That  
scream is NAFLD****



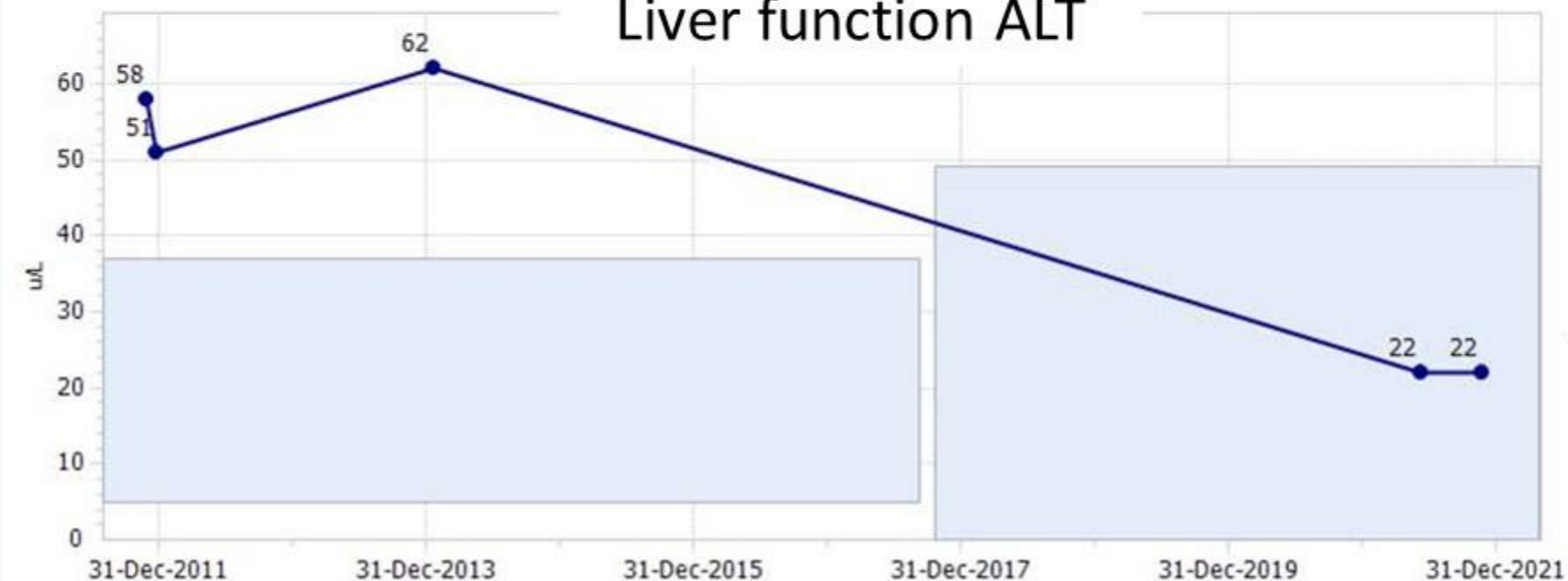
**\*Taylor R: Banting Memorial  
lecture 2012: reversing the twin  
cycles of type 2 diabetes. Diabet  
Med 2013, 30(3):267-275.**

# HbA1c in mmol/mol

**Long silent scream from  
the liver for years BEFORE T2D  
2011-2020**



# Liver function ALT



Taylor R. (2013). Banting Memorial lecture 2012: reversing the twin cycles of type 2 diabetes. *Diabetic medicine : a journal of the British Diabetic Association*, 30(3), 267–275. <https://doi.org/10.1111/dme.12039>

# A high blood sugar?

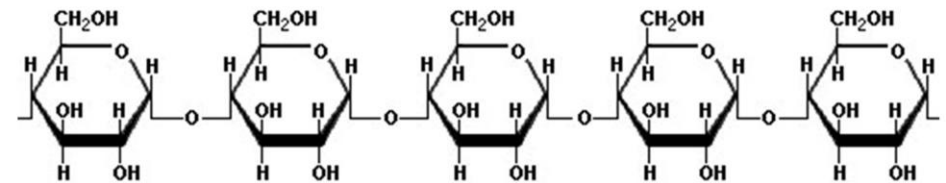
1. See this as a 'puzzle to be solved' rather than a 'problem'





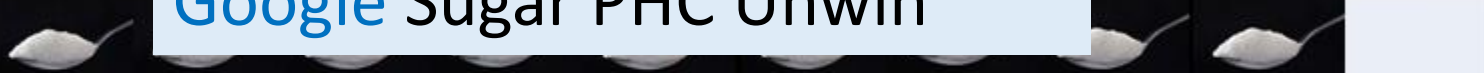



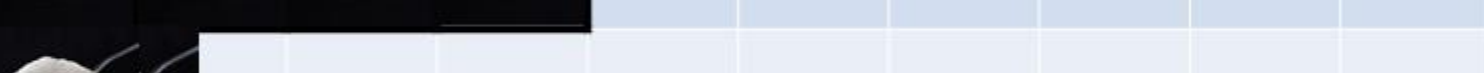



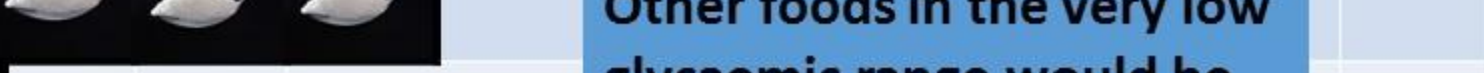

2. So often it's something you ate

3. Try asking 'where is the sugar in my diet coming from?'

## A Starch Molecule



Many glucose molecules are linked together – enzymal digestion will break them up again

Food Item	Glycaemic index	Serve size g	How does each food affect blood glucose compared with one 4g teaspoon of table sugar? 
Basmati rice	69	150	10.1 
Potato, white, boiled	96	150	9.1 
French Fries baked	64	150	7.5 
Spaghetti White boiled	39	180	6.6 
Sweet corn boiled	60	80	4.0 
Frozen peas, boiled	51	80	1.3 
Banana	62	120	5.7 
Apple	39	120	2.3 
Wholemeal Small slice	74	30	3.0 
Broccoli	15	80	0.2 
Eggs	0	60	0 

Google Sugar PHC Unwin

Other foods in the very low glycaemic range would be chicken, oily fish, almonds, mushrooms, cheese



**A lower carb diet for type 2 diabetes: In this condition your metabolism struggles to deal with sugar- so its consumption needs cutting back dramatically-**

**Sugar – cut it out altogether**

strawberries and raspberries y  
a mixture of sugar and starch t  
cravings; they just make you h

**Reduce starchy carbs a lot**

surprising amounts of sugar. If  
bread, pasta, rice, crackers and

**All green veg/salads are fi**

**–turn the white stuff gree**

substituting veg such as broccc  
pasta or rice – still covering the

Tip: try home-made soup – it c  
microwaved. Mushrooms, tom

**Fruit is trickier...**

Some tropical fruits like banan  
have too much sugar in and ca  
better and can be eaten; blueb  
pears too.

**Eat healthy proteins...**

Such as non-processed meat, eggs (three eggs a day is not too much), fish – particularly oily fish such as salmon, mackerel or tuna –are fine and can be eaten freely. Plain **full fat** yoghurt makes a good breakfast with the berries. Processed meats such as bacon, ham, sausages or salami are not as healthy and should only be eaten in moderation.

**Fats are fine in moderation...**

Yes, fats can be fine in moderation: olive oil is very useful, butter may be tastier than margarine and could be better for you! Coconut oil is great for stir fries. Four essential vitamins A, D, E and K are only found in some fats

**People following a low carb diet may well replace dietary carbohydrate with relative increases in dietary fat and/or protein.**

**Increasing dietary fat** has historically been attributed to worsening lipid profiles & cardiovascular disease but what did we find?

more difficult – drink tea, coffee, and water or herb teas. (100ml milk is 1 teaspoon of sugar)

**Important** On medication? Check this first with your Doctor or HCP

**PS some folk need more salt on a low carb diet**

il.

weeteners added to  
e definitely on!!

s such as almonds  
eat of strong dark

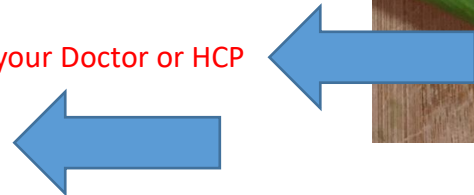
**Healthy fats leaves  
ests**

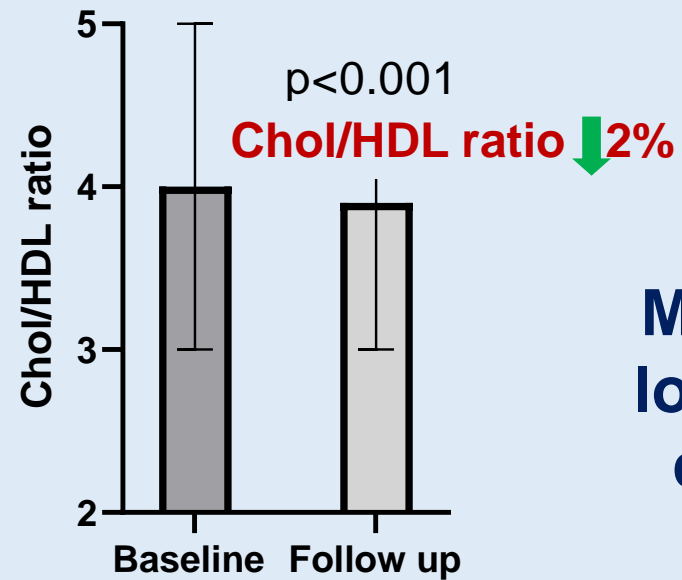
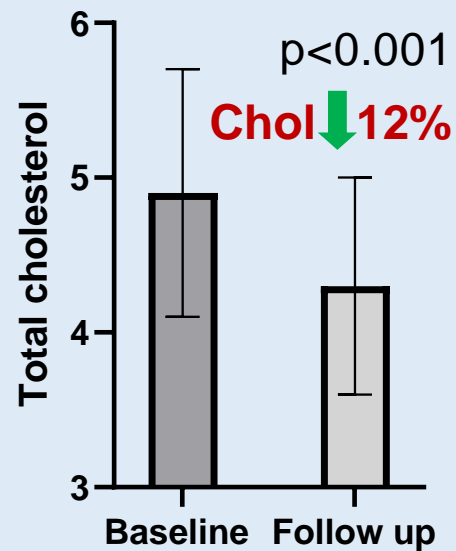
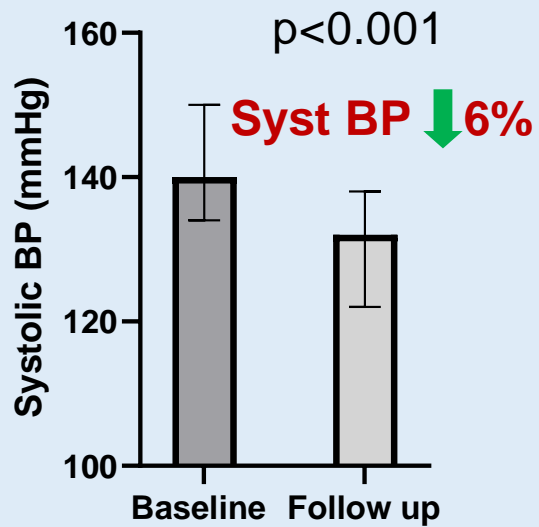
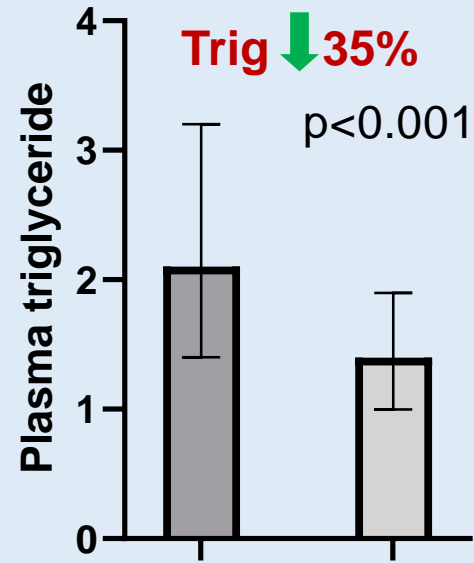
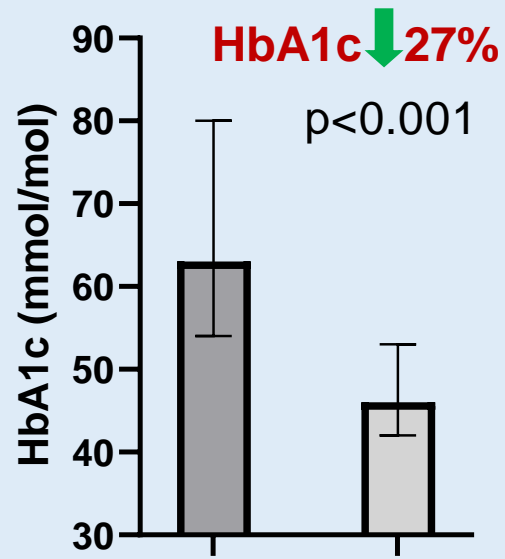
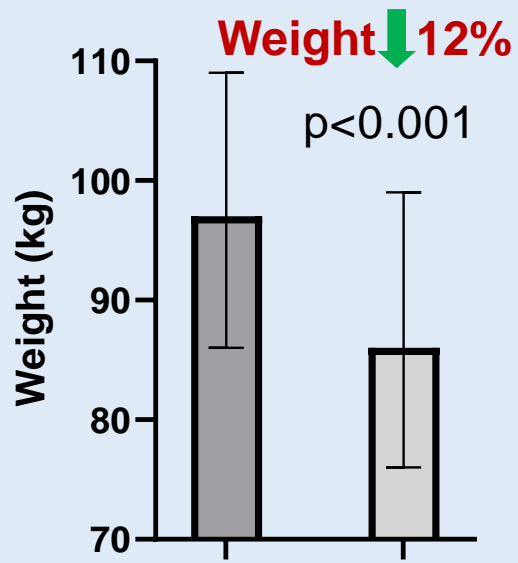
or example, beer is  
s of dry white, red  
gry afterwards – or

ers have been  
inking weight loss



**GOOGLE 'PHC Unwin Sugar'**





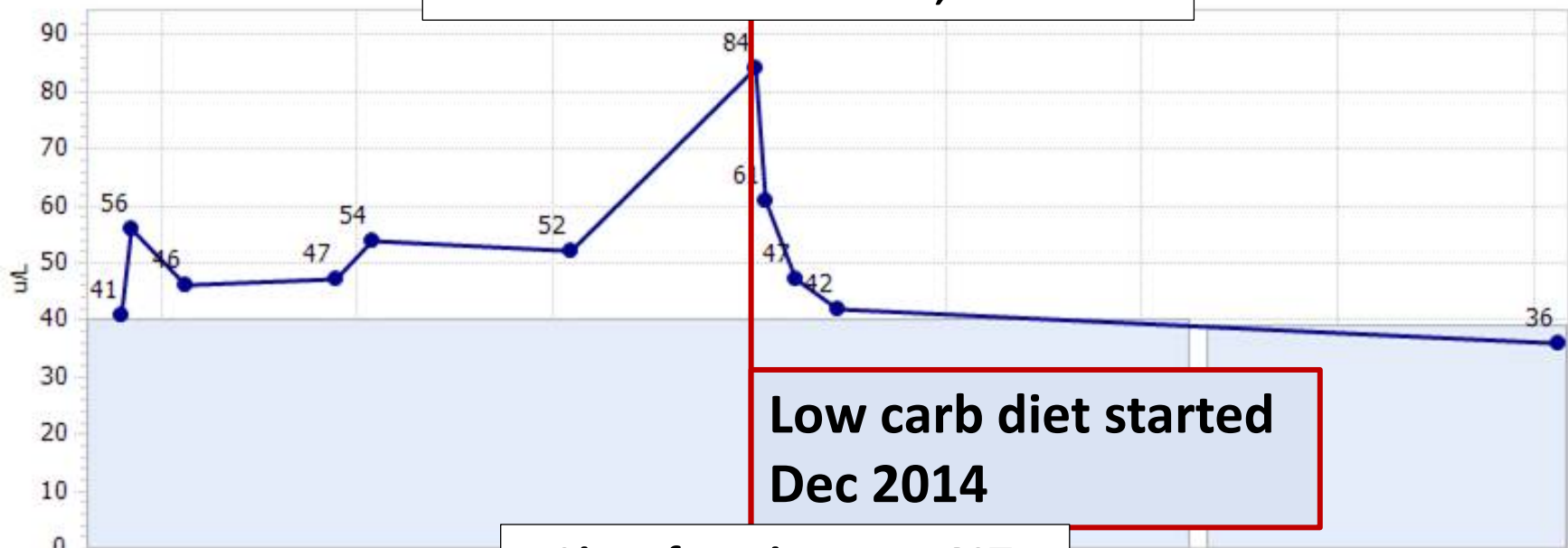
**‘Dynamite plots’  
of median  
& IQR at baseline  
and latest follow up.**

**Cohort of 186 T2D  
participants.**

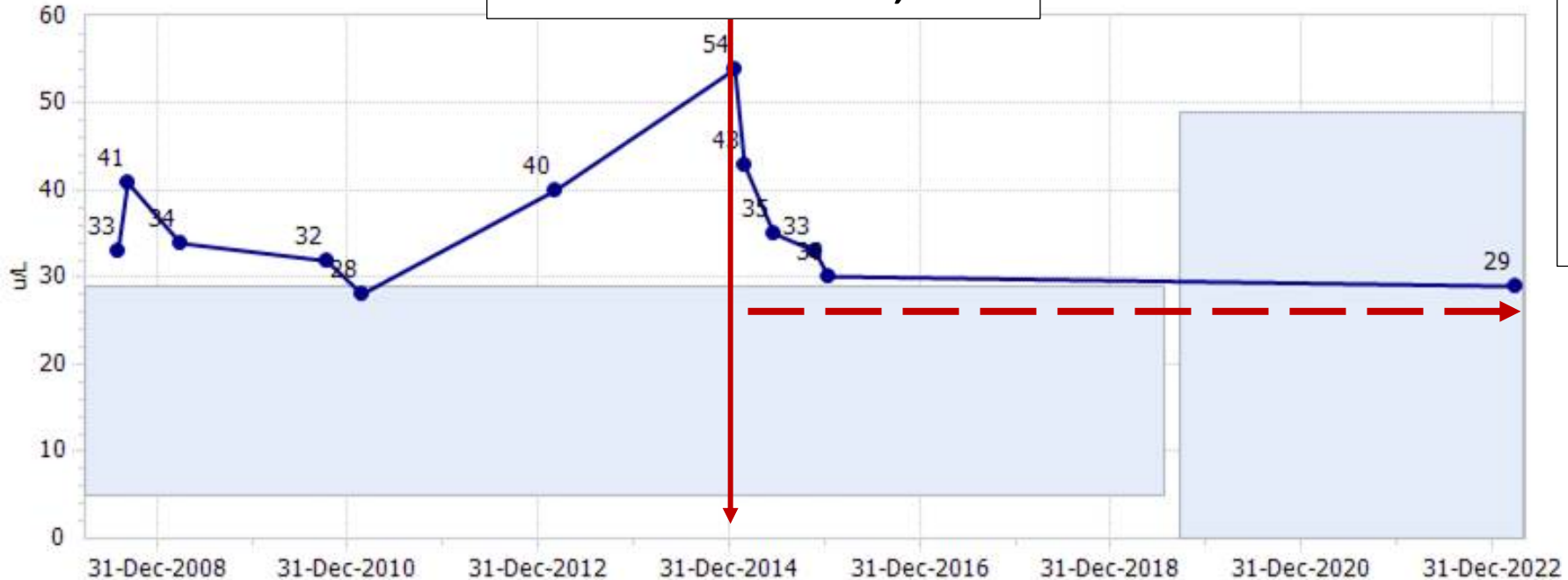
**Mean duration of  
low carbohydrate  
diet 33 months**



## Liver function test, GGT



## Liver function test, ALT



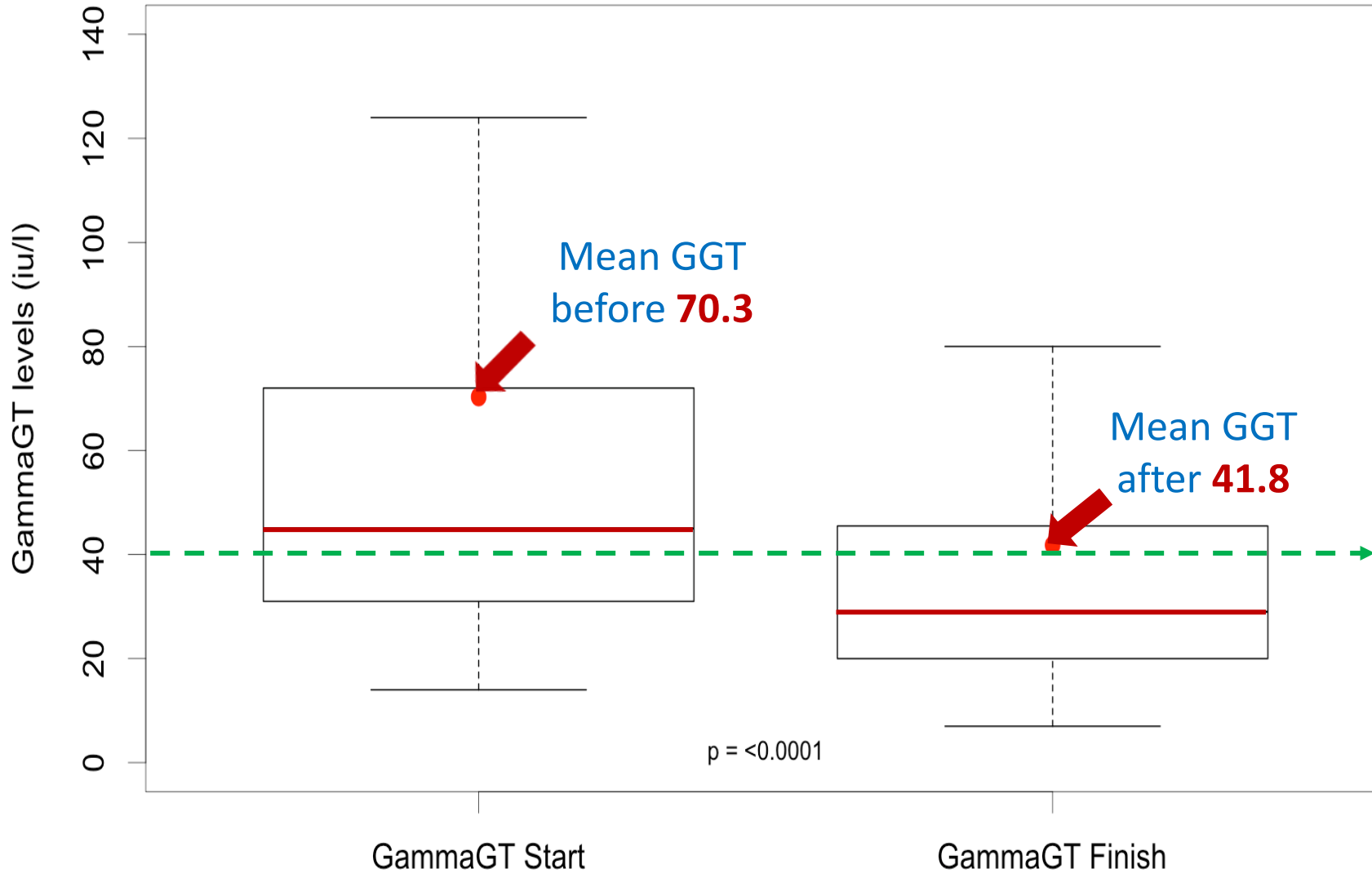
Can it last?

This patient went low carb because of prediabetes

This also cured her NAFLD (8 years and counting)



# GGT liver function tests for 95 patients before and after being on a low carbohydrate diet for an average of 29 months



**GGT improved  
on average by  
36%**



Evidence: RCT

Adolescents (age 9-17) with obesity and confirmed NAFLD were randomized for 8 weeks to

- 1) a CHO-restricted (<10:25:>65% energy from CHO:protein:fat)
- 2) a fat-restricted diet (55:25:20 % energy from CHO:protein:fat).

## Results:

After 8 weeks, the CHO-restricted diet group experienced a significant decrease in liver lipid content (-6.0±4.7%, p<0.001)

The fat-restricted diet group showed no change.

## Conclusion:

**The CHO-restricted diet approach may be markedly beneficial in improving fatty liver, body composition, and insulin resistance in adolescents with NAFLD even in the absence of intentional caloric restriction.**

**Practitioners should consider recommending this diet approach to effectively improve disease course in this patient population.**

## A high blood triglyceride level, what diet is best?

### 2021 American College of Cardiology Expert Consensus Decision Pathway on the Management of cardiovascular disease risk reduction in patients with persistent hypertriglyceridemia

Table 4. Summary of Nutrition Recommendations for Patients with Hypertriglyceridemia

	TG <500 mg/dL	TG 500-999 mg/dL	TG ≥1,000 mg/dL
<b>Sugar-sweetened beverages</b>	Restrict	<b>Abstain completely</b>	<b>Abstain completely</b>
<b>Desserts</b> (sweets, cookies, cakes, pies, other pastries, ice cream, candy) <b>Added sugars</b> (table sugar, jams/jellies, honey)	Occasional indulgence	Occasional indulgence	<b>Abstain completely</b>
<b>Vegetables</b>	Emphasize vegetables	<b>Avoid</b> vegetables with a high glycemic index (ie, carrots, potatoes, sweet potatoes, yams, parsnips)	<b>Avoid</b> vegetables with a high glycemic index (ie, carrots, potatoes, sweet potatoes, yams, parsnips)

***Lifestyle interventions are the first line of therapy for the management of all patients with persistent hypertriglyceridemia.***

App Store Preview

# Freshwell Low carb App

Open the Mac App Store to buy and download apps.



**Freshwell** 4+


Freshford Practice

Designed for iPhone

★★★★★ 5.0 • 27 Ratings

Free

**A free low carb App  
to download  
on your phone**

Now accredited for use throughout the NHS and are certified as compliant with the NICE guidelines on what is required for a structured education programme for type 2 diabetes. QOF DM014 

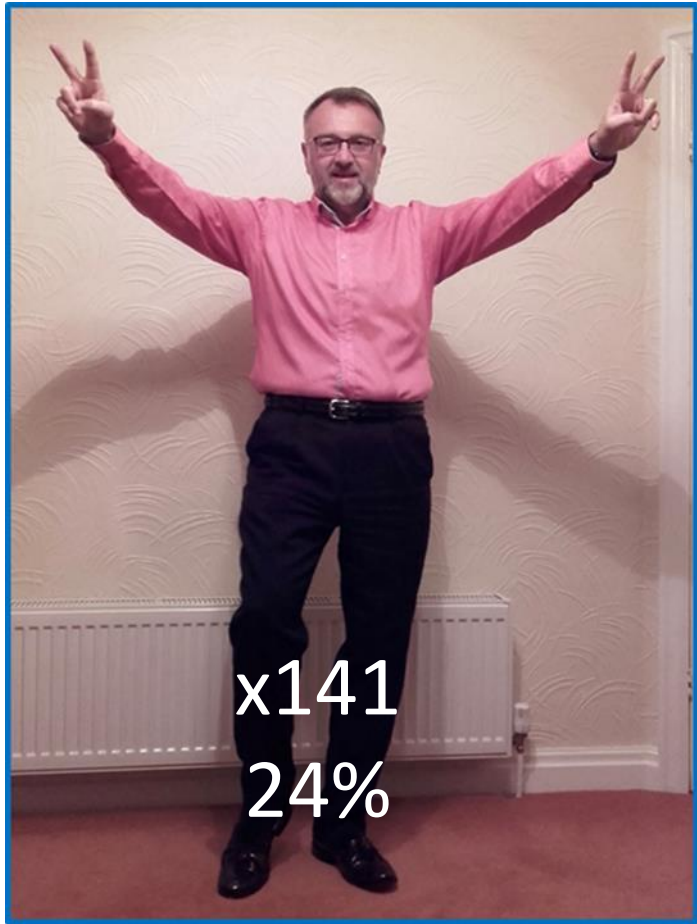




Can it last?



This is Chris he is 40 years old & weighs 19stone. For him **T2D is a chronic, deteriorating condition** he also has NAFLD



x141  
24%

This is Chris, now 62 years old. For him **T2D can be put into remission** along with his NAFLD, hypertension and obesity



**Liver health REALLY matters.**  
**Think of NAFLD your diet and cutting carbs if:**

- T2D,
- Raised triglyceride
- Abnormal liver function

[@lowcarbGP](#)



# Integrative & Personalised Medicine 24

London UK Sat June 8<sup>th</sup>  
15:50 pm

SATURDAY  
08 JUNE 2024

food <sup>+</sup>on  
prescription  
CONFERENCE 24

Keynote  
Address

## Keynote: Liver and heart health – a David and Goliath story

📍 The Whittle



Doctors are often of the belief that heart health is the most important area for patients to concentrate on and that the liver was a minor player. **Dr David Unwin** explains how understanding the significance of Non-alcoholic fatty liver disease (NAFLD) which is now affecting 38% of the developed world, is the key to preventing both diabetes and a lot of cardiovascular illnesses.



Dr David Unwin, GP from Southport, UK who has been transforming the lives of his patients through a low carb diet, United Kingdom

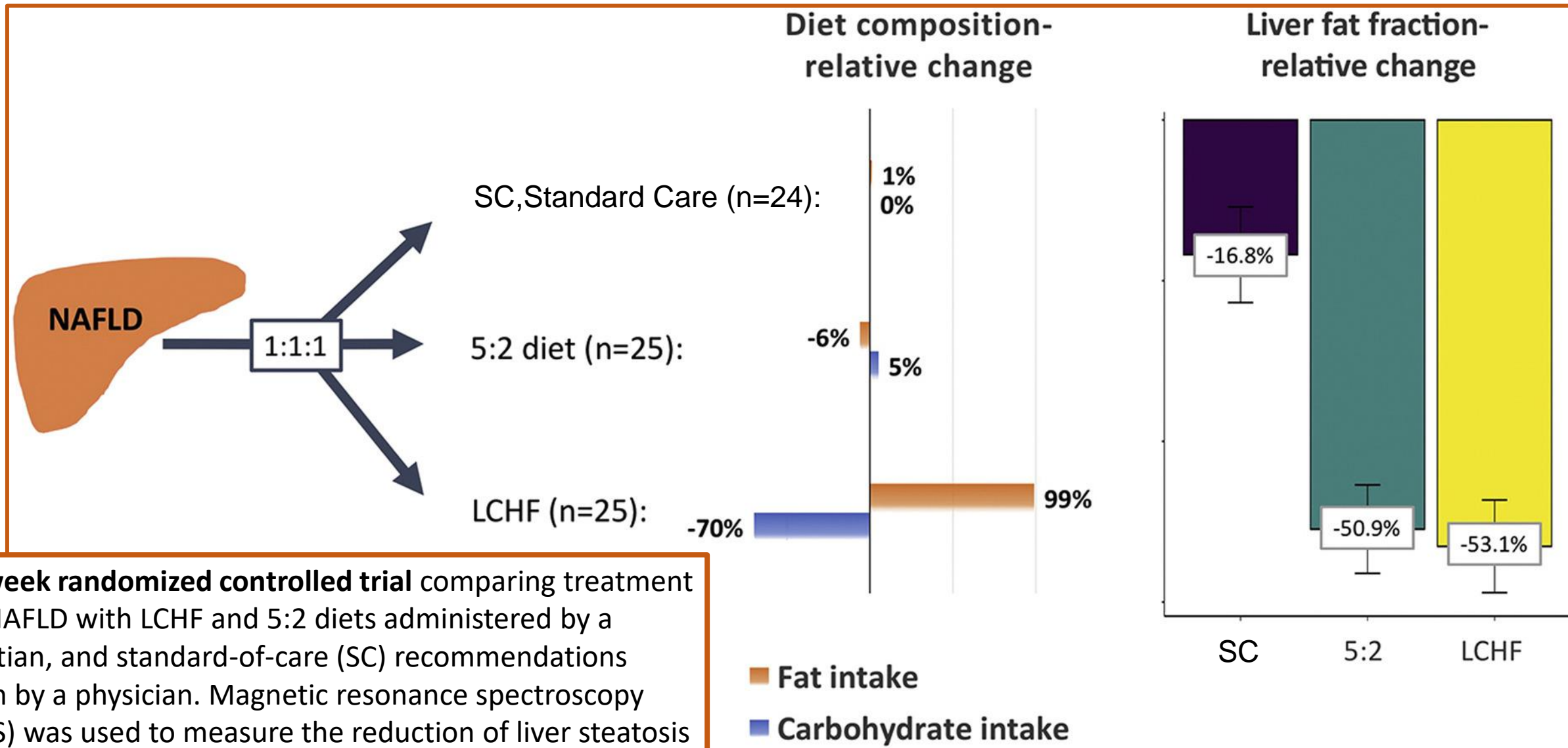




**Baseline macronutrients for 8 people  
achieving drug-free T2D remission**

	Mean baseline intake	min	max	Std D
Carbs	77 grams	35.5g	161g	35g
Protein	75.1 grams	47g	96g	21.5g
Fats	66.3 grams	38g	96g	17.7g
Calories	1,252	691	2008	389

# Treatment of NAFLD with intermittent calorie restriction or low-carb high-fat diet; a randomized controlled trial. JHEP Reports. Holmer M, et al. February 17, 2021



**12-week randomized controlled trial** comparing treatment for NAFLD with LCHF and 5:2 diets administered by a dietitian, and standard-of-care (SC) recommendations given by a physician. Magnetic resonance spectroscopy (MRS) was used to measure the reduction of liver steatosis from baseline to end of treatment

# Essential Knowledge Updates & Challenges

Non-alcoholic fatty liver disease:  
assessment and management  
**Screencast**



## Non-alcoholic fatty liver disease

By viewing/listening to the content of this screencast you are able to learn more about the ECU module on Non-alcoholic fatty liver disease: assessment and management as well as gain an additional insight into the topic itself through the commentary provided by Dr David Unwin, a GP in Southport, an RCGP Clinical Adviser in diabetes and a National Champion for collaborative care in diabetes and obesity.