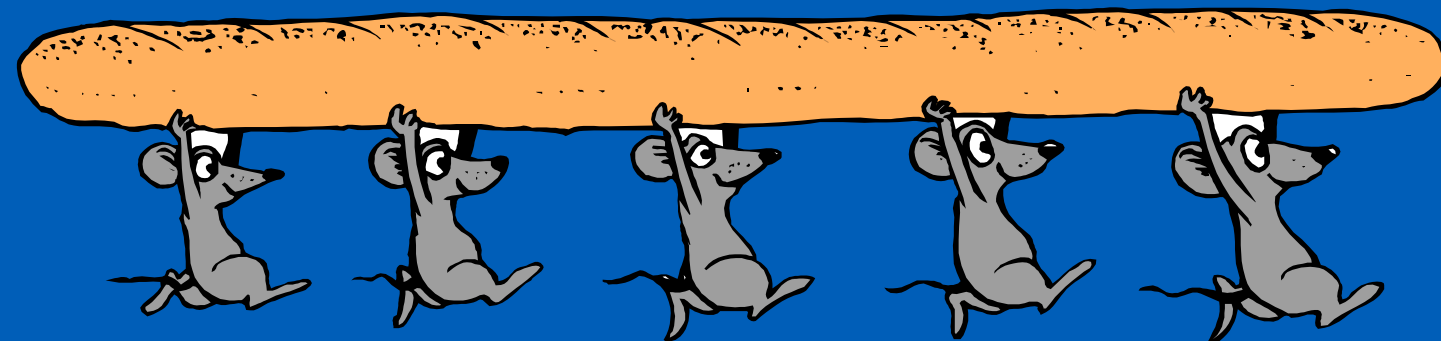


Carbohydrate Counting – Why, Who and How?

Caroline Carne
Lead Diabetes Specialist Dietitian



*Outstanding
Care for One+All*

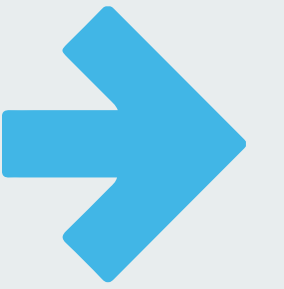


Aim: Enable development of diabetes self-management knowledge and skills

Learning outcomes:

- Identify which foods/fluids contain carbohydrate
- Calculate the amount of carbohydrate in foods/fluids using a variety of tools
- Start to understand how to adjust insulin doses for meals and snacks
- Demonstrate knowledge and skills by completing a food diary



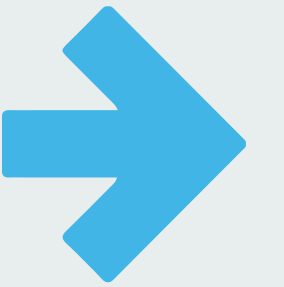


Additional learning outcome:

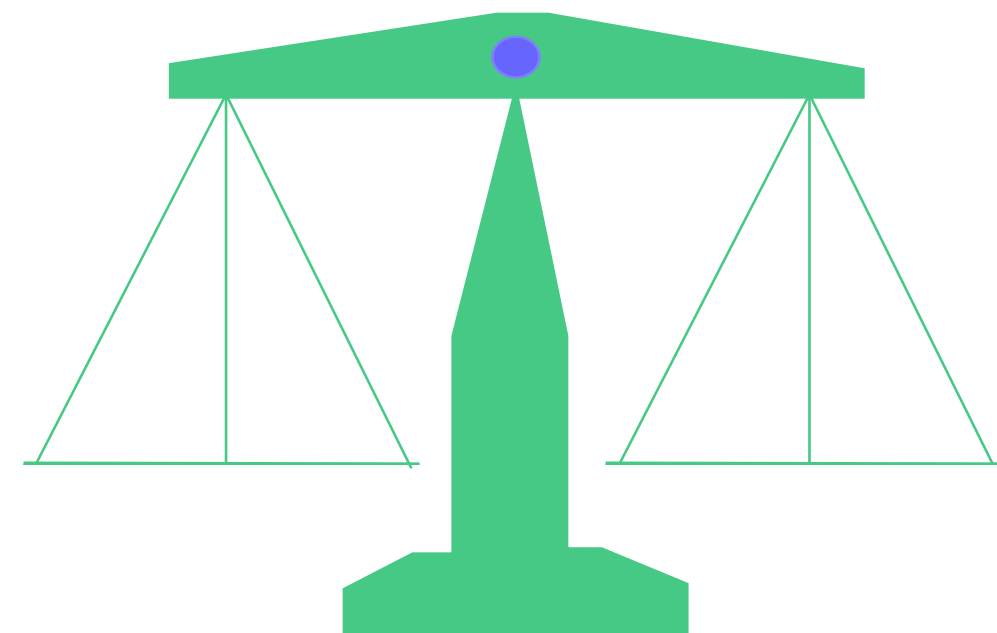
understand the impact of other factors on blood glucose levels, such as stress, illness, alcohol, exercise, snacking



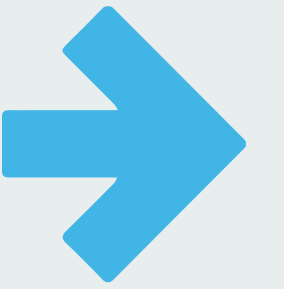
Why count carbohydrates?



- Key nutrient that impacts on blood glucose levels
- Amount and type eaten determines the magnitude and length of the glucose rise after eating
- Improved understanding of how much a food / meal is likely to increase the blood glucose level enables people living with Type 1 diabetes to more closely match their insulin dose



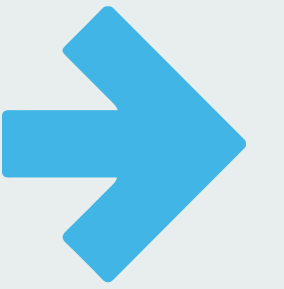
Benefits of carb counting



- Flexibility with what, how much and when to eat and drink
- Improved stability of blood glucose levels – more Time in Range
- No need to snack to avoid hypos
- Improved confidence in self-management of diabetes and feeling in control



Barriers

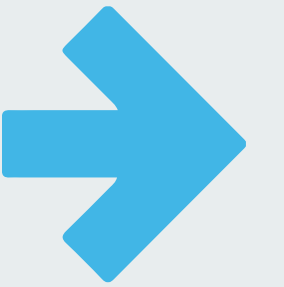


- Time pressures
- Lack of confidence
- Fear of the maths involved
- Fear of getting it wrong



Important to have a balanced discussion about the pros and cons – encourage to consider it as a trade-off / investment for the future

Who would benefit from carb counting?



Type 1 diabetes and:

- Basal bolus insulin regimen
- Consistent monitoring and reflection of blood glucose levels
- Able to read food labels and weigh foods
- Motivated to improve diabetes management
- Willing and able to dedicate the time needed (including keeping a carb diary!)



Essential requirement for those considering insulin pump therapy

Exclusions: Current eating disorder or disordered eating behaviour

What is our local provision?



Carbohydrate Counting session

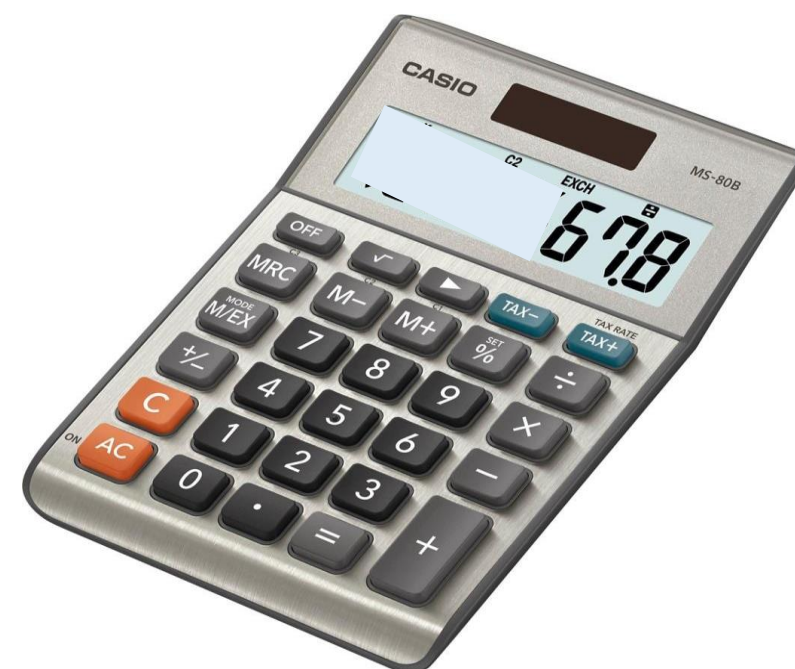
- 1 x 3.5 hr session delivered by a Diabetes Specialist Dietitian
- 8 places per course
- Offered to all adults newly diagnosed with Type 1 diabetes
- Also open to those with already established Type 1 diabetes
- Followed by a Patient Initiated Follow-Up, delivered on a 1:1 basis to assess / provide further support as required



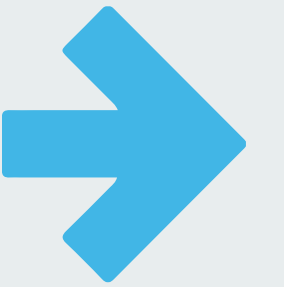
Key Steps to Carbohydrate Counting



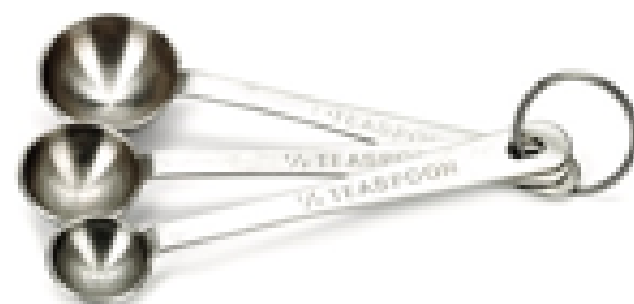
1. Identify which foods and drinks contain carbohydrate
2. Calculate how much carbohydrate is in the food and drink
3. Calculate how much insulin is required for the total number of carbohydrates



Useful Resources



- Calculator
- Notepad and pen
- Carbs & Cals book or app
- Kitchen scales – ideally digital scales for accuracy
- Measuring spoons/scoops



Step 1: What are Carbohydrates?



Foods with minimal / no carbohydrate



Protein foods – meat, fish, eggs (check labels for sausages)

Fats – butter, spreads and oils

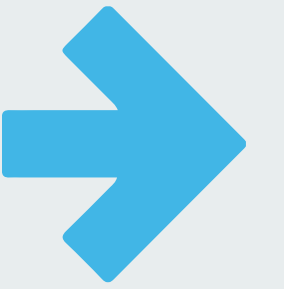
Diary – cheese and cream

Veg – salad and all other veg

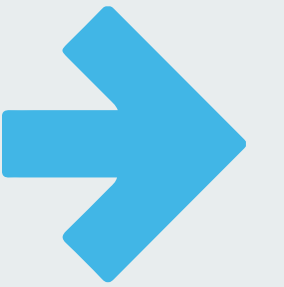
Some drinks - Water, sugar free drinks, tea and coffee without milk or sugar.



Where are the Carbs??



2. Calculate the TOTAL carbohydrate content of the meal / snack



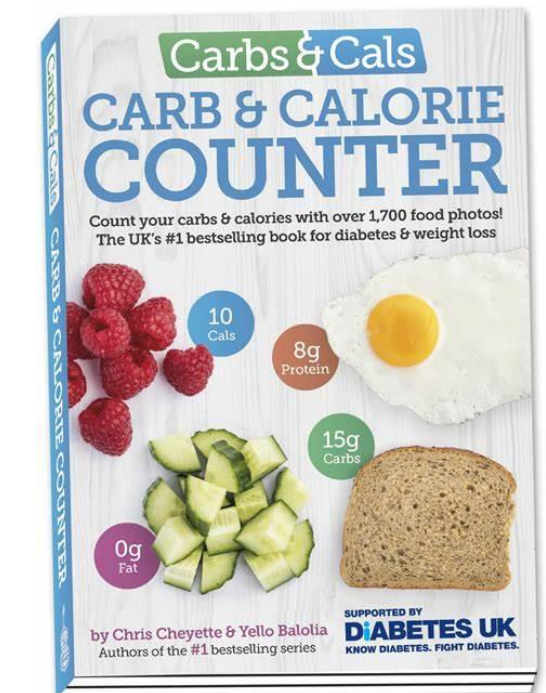
Where to find the carb content of a food?

- Food labels – most accurate
- Reference books or apps
- Carbs and Cals resources and other apps
- Supermarket / restaurant websites

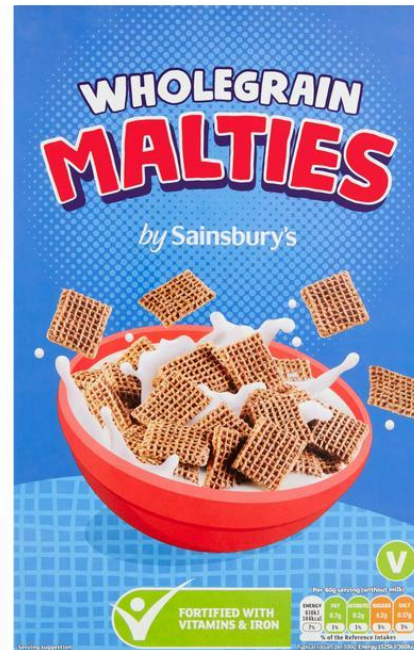
Nutrition information			
Typical values	Per 100g	Per 1/4 pot	% based on GDA for adults
Energy	256 kJ 61 kcal	320 kJ 76 kcal	3.8%
Protein	4.9g	6.1g	13.6%
Carbohydrate	6.9g	8.6g	3.7%
of which sugars	6.9g	8.6g	9.6%
of which starch	nil	nil	-
Fat	1.5g	1.9g	2.7%
of which saturates	0.9g	1.1g	5.5%
mono-unsaturates	0.4g	0.5g	-
polyunsaturates	nil	nil	-
Fibre	nil	nil	nil
Salt	0.2g	0.3g	5.0%
of which sodium	trace	0.1g	4.2%
Vitamins & minerals			
Calcium	168mg	210mg	26%



Calorie Counter + 17+
by Nutracheck. UK food tracker
NutraTech Ltd
Designed for iPad
#8 in Health & Fitness
★★★★★ 4.8 • 236K Ratings
Free - Offers In-App Purchases



Reading Food labels



Typical Analysis	Per 100g (without milk)	Per 40g serving (without milk)
Energy	1525kJ	610kJ
	360kcal	144kcal
Fat	1.7g	0.7g
Saturates	0.4g	0.2g
Mono-unsaturates	0.2g	<0.1g
Polyunsaturates	1.0g	0.4g
Carbohydrate	69.6g	27.8g
Sugars	10.6g	4.2g
Starch	59.0g	23.6g



Most accurate but some maths may be needed



Use the TOTAL carbohydrate value (not “of which sugars”)

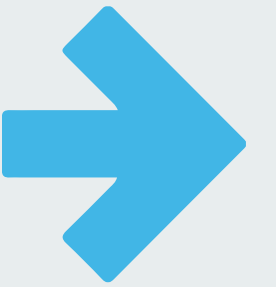


Usually have 2 values – per serving and per 100g



Need to check if value listed is for cooked or uncooked food

What if the portion eaten is different to the serving size on the packet / reference table / portion in Carbs and Cals book?

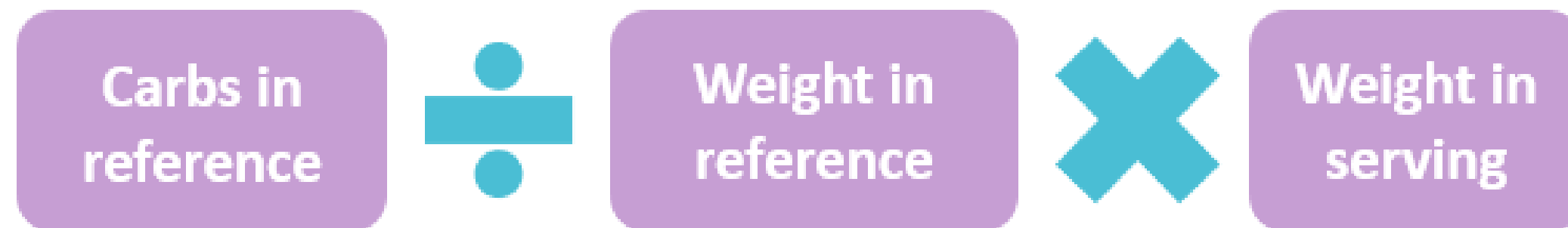


- Weigh own portion size

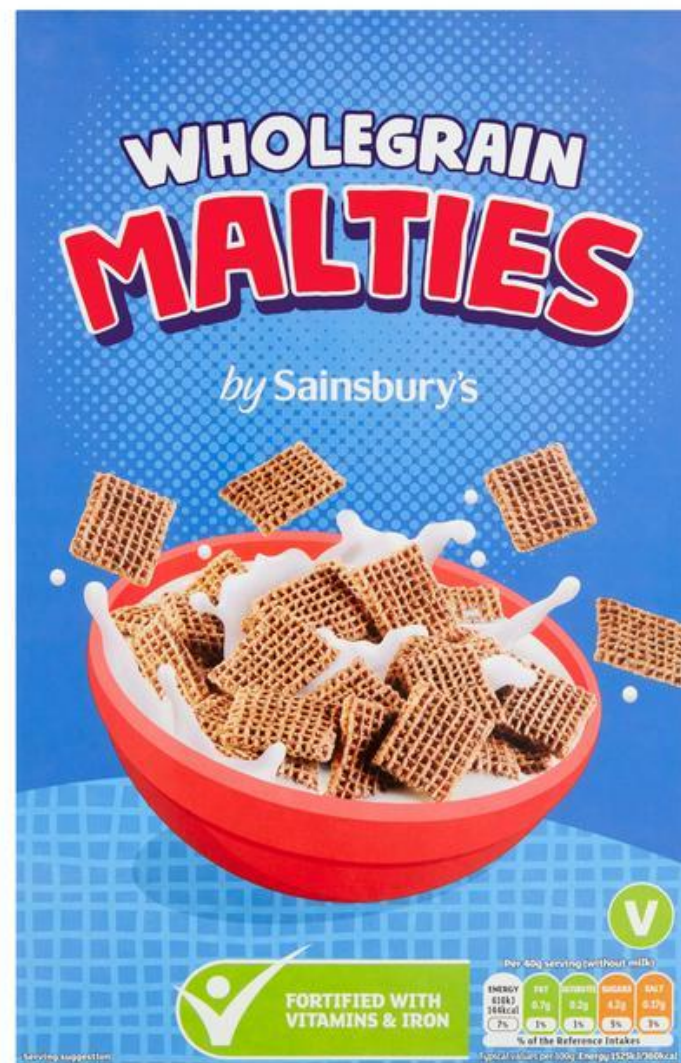


- Look up the carbohydrate per 100g on the food label or in the reference table

- Do the maths...



How many carbs in 65g portion of Malties?



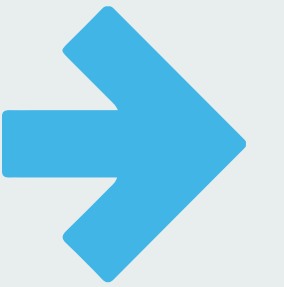
Typical Analysis	Per 100g (without milk)	Per 40g serving (without milk)
Carbohydrate	69.6g	27.8g
Sugars	10.6g	4.2g



$$69.6 / 100 \times 65g = 45.25g \text{ carbs}$$



Apps and Websites



- Carb Counting apps with barcode scanner and food database
 - Nutracheck - subscription required
 - Carbs & Cals – basic version free but subscription needed for full database and barcode scanner



- Recipe calculator [Explore Food - Calculator \(foodafactoflife.org.uk\)](https://foodafactoflife.org.uk)

- Supermarket websites – provide accurate info if label not to hand

- Restaurant / Café chains – incl. Pizza Express, Dominos, Starbucks



Consider factors that may influence blood glucose response



Factors influencing the speed and length of the glucose rise

- Total Carbohydrate load



- Glycaemic Index



- Fat content of the meal – slower gastric emptying



- Individual digestion / gut transit – delayed gastric emptying / gastroparesis

Is accuracy important?

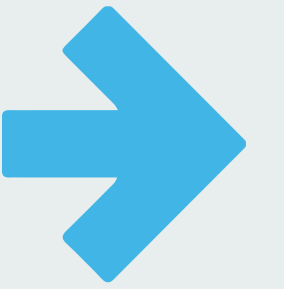
3mmol/l

**1 unit
Insulin**



**10g
Carbohydrate**

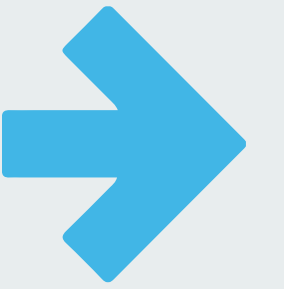
3mmol/l



- Convert usual portions to easy household measures
- Build a personal database / list of usual portions of favourite foods
- Remember food composition changes with cooking
- Practice makes perfect!



Step 3: How to Calculate the Insulin Dose?

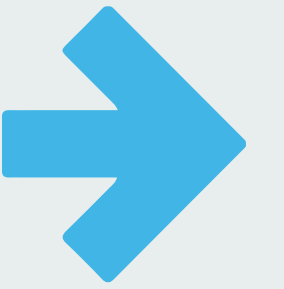


Ratios

- An insulin-to-carbohydrate ratio (ICR) is used to work out the insulin dose for meals and snacks containing carbohydrate
- For example, the total carbohydrates in the meal is 86g and the ICR is 1:10 (one unit of insulin for every 10g of carbs)
- $86/10 = 8.6$ units of insulin - this could be rounded up to 8 or 8.5 or 9 units depending on the insulin pen, or the exact amount given via a pump



Step 3: How to Calculate the Insulin Dose?



Correction factor / Insulin sensitivity factor (ISF)

- A correction factor (CF) is used to work out the additional insulin dose for raised blood glucose levels
- For example, sensor glucose is reading 17mmol/l and the CF is 1:3 over 8mmol/l (one unit of insulin is expected to reduce blood glucose by 3 mmol/l, and the target is to correct blood glucose levels over 8mmol/l)
- Work out by how much the blood glucose needs to reduce ($17 - 8 = 9\text{mmol/l}$)
- Use the CF to work out how much insulin is needed to reach the target ($9 / 3 = 3$ units)
- Total mealtime dose = insulin for carbs + insulin for correction

Step 3: How to Calculate the Insulin Dose?



Using a Bolus Advisor

- It is common to find that people need more than one ICR, for example, some people need more insulin in the morning than the afternoon/evening, so they may use 1:8 for breakfast and 1:10 for other meals
- It becomes more difficult to calculate insulin doses with trickier ratios, such as 1:7 or 1:13
- A bolus advisor can help: it stores all the ratios and correction factors and will do the insulin dosage calculations

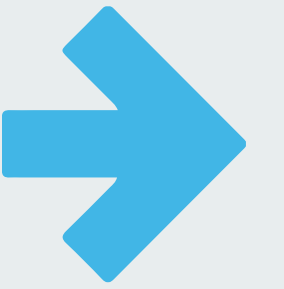


mylife™ App
SINOVO health solutions GmbH
4.2 ★



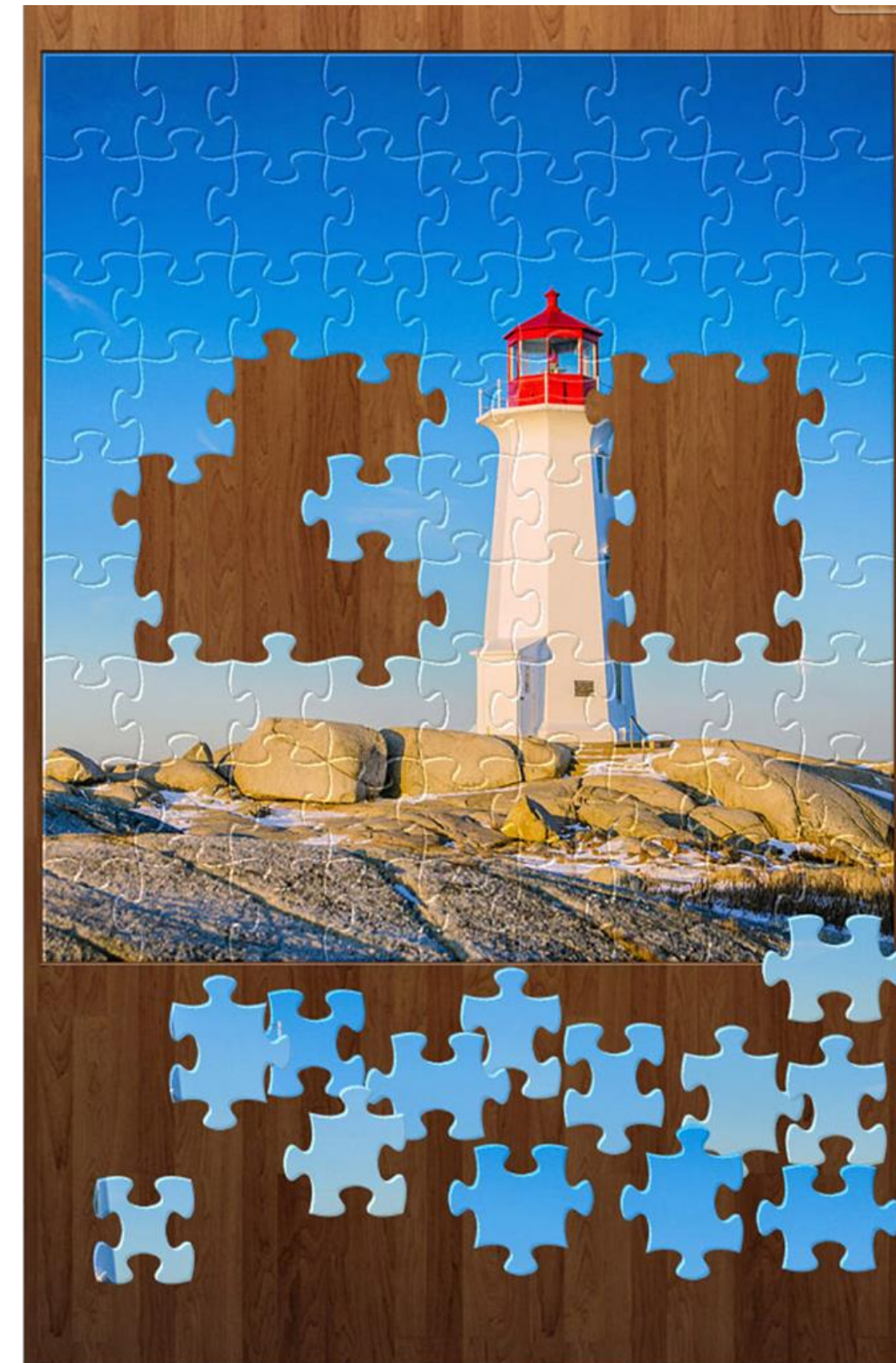
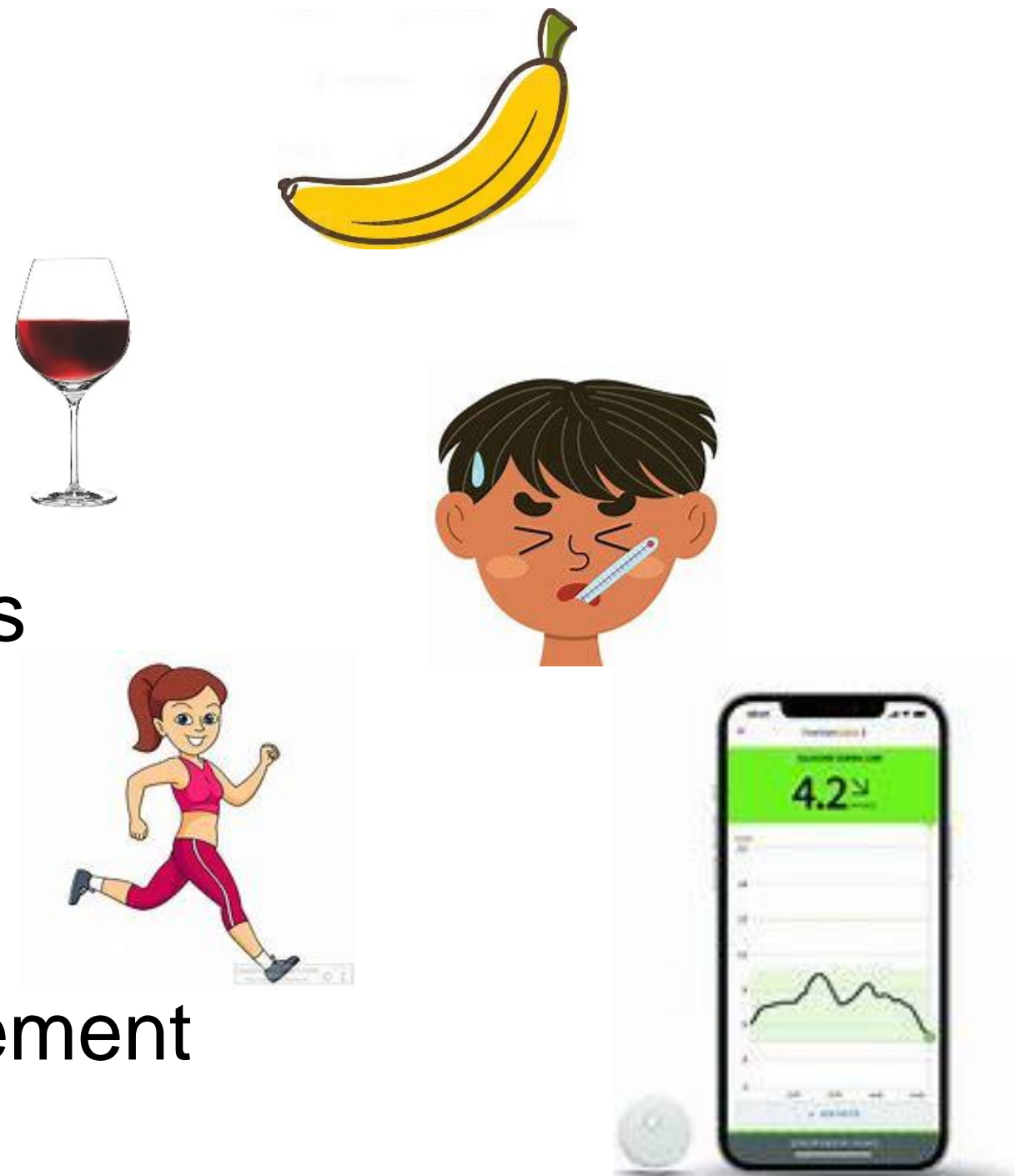
mySugr - Diabetes Tracker Log
mySugr GmbH
4.5 ★

The remaining pieces of the puzzle...

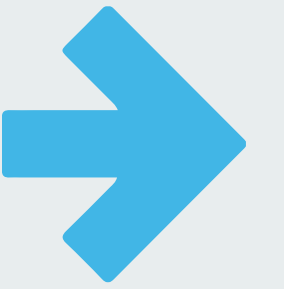


What else to consider?

- Snacking
- Alcohol
- Stress / illness
- Exercise
- Hypo management



Resources to help...



- [How carbs interact with your body | Diabetes UK](#)
- [Type 1 diabetes – NHS](#)
- [Bertie Diabetes](#)
- [Carbs & Cals | Dieting & Calorie Counting Books & App](#)



Our values

Respect

Compassion

Honesty

Teamwork

Thank you



Author: RCHT Creative
Created: September 2023
Review: September 2025
Version: V2.0

Outstanding
Care for One+All