

APRIL 2026

Six Pillars webinar

Diet, Insulin Resistance & Diabetes



Poll Question:

Is there evidence that diet and lifestyle can manage and potentially reverse type 2 diabetes?



Amy Leahy

- Education & Project Support Officer
- BHSc Nutritional & Dietetic Medicine
- Master of Public Health
- Program Lead of lifestyle medicine program - Mastering Diabetes



Health Literacy

In 2006, about 60% of adult Australians (ages 15–74) had low health literacy, meaning they struggled to understand and act on health information effectively

<https://www.aihw.gov.au/reports/australias-health/australias-health-2018/contents/indicators-of-australias-health/health-literacy>

*You will see health literate wording/explanations throughout this presentation



The fastest growing chronic health problem in the world

- 1 person dies from diabetes every 9 seconds, on average, worldwide
- 1 Australian is diagnosed with diabetes every 5 minutes
- New Zealand has seen a 90% increase in the number of diabetes cases, and numbers continue to climb



Classification of diabetes in primary care

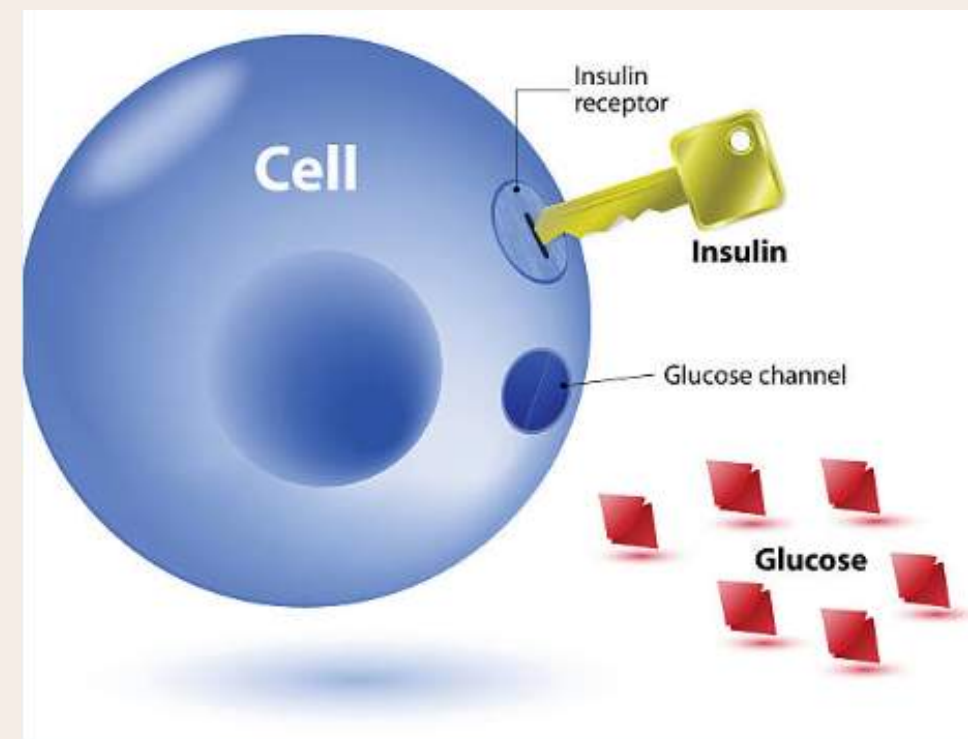
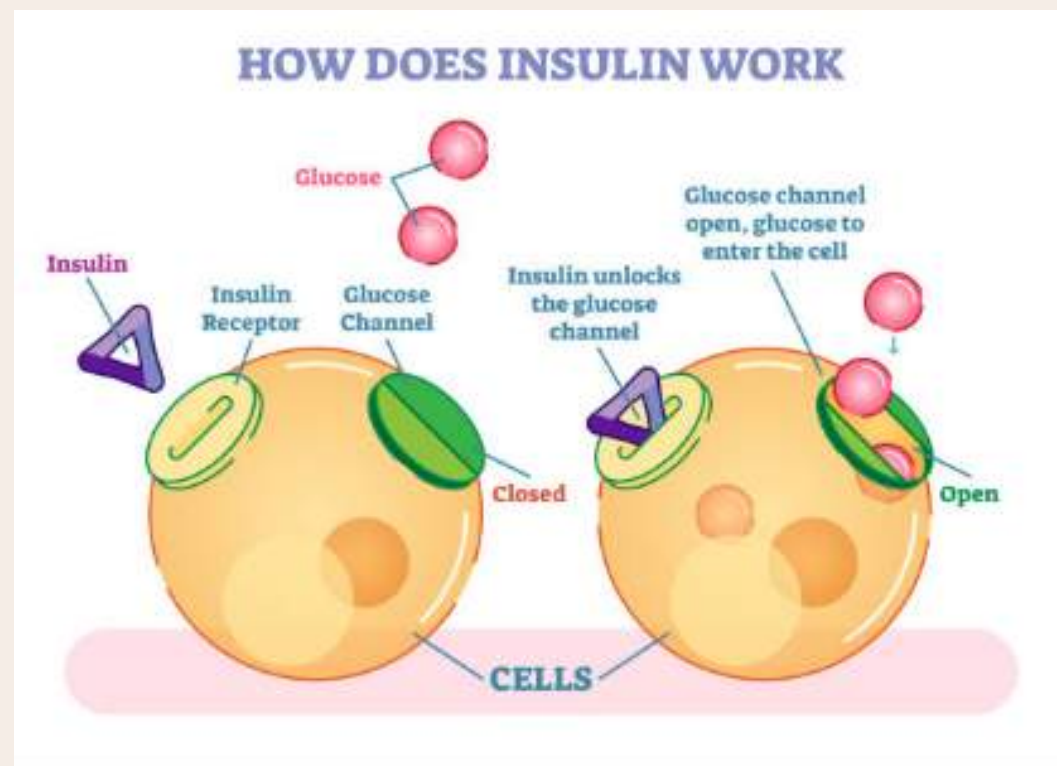
- Type 1 (autoimmune)
- **Type 2**
- LADA/Type 1.5 (autoimmune) - (5-15% misdiagnosed as T2D)
- MODY (genetic)



Pathophysiology of T2D

The normal mechanisms regulating glycaemia.

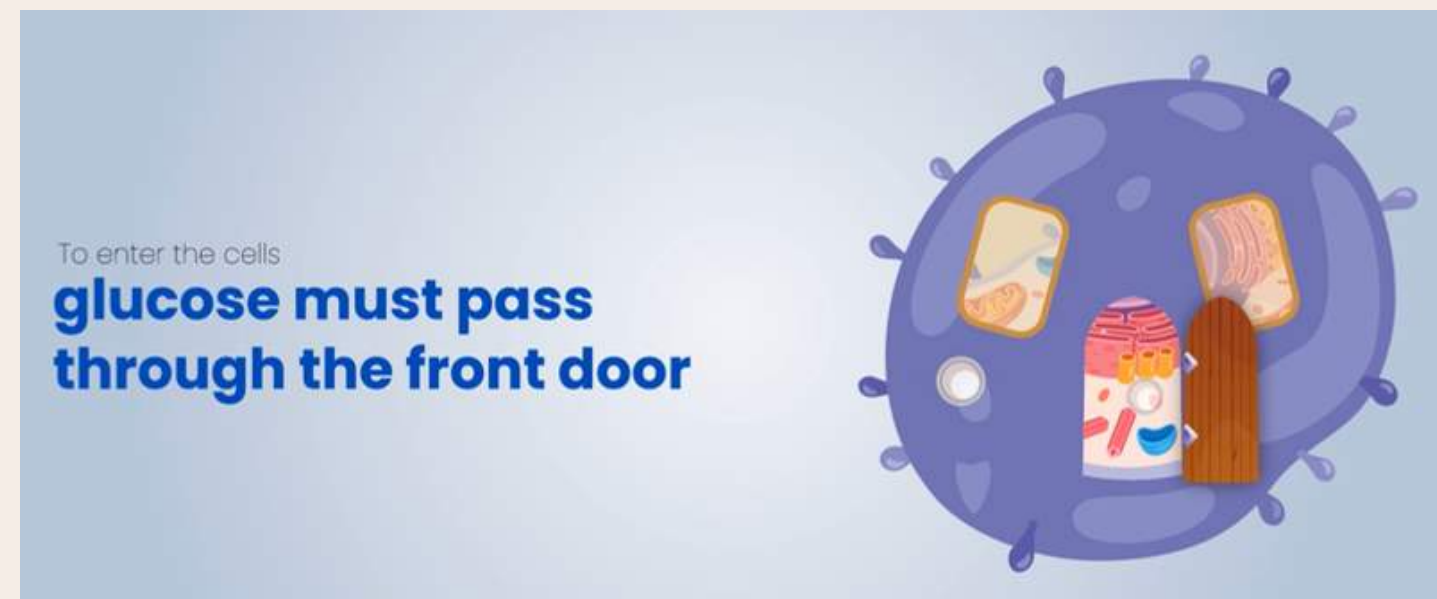
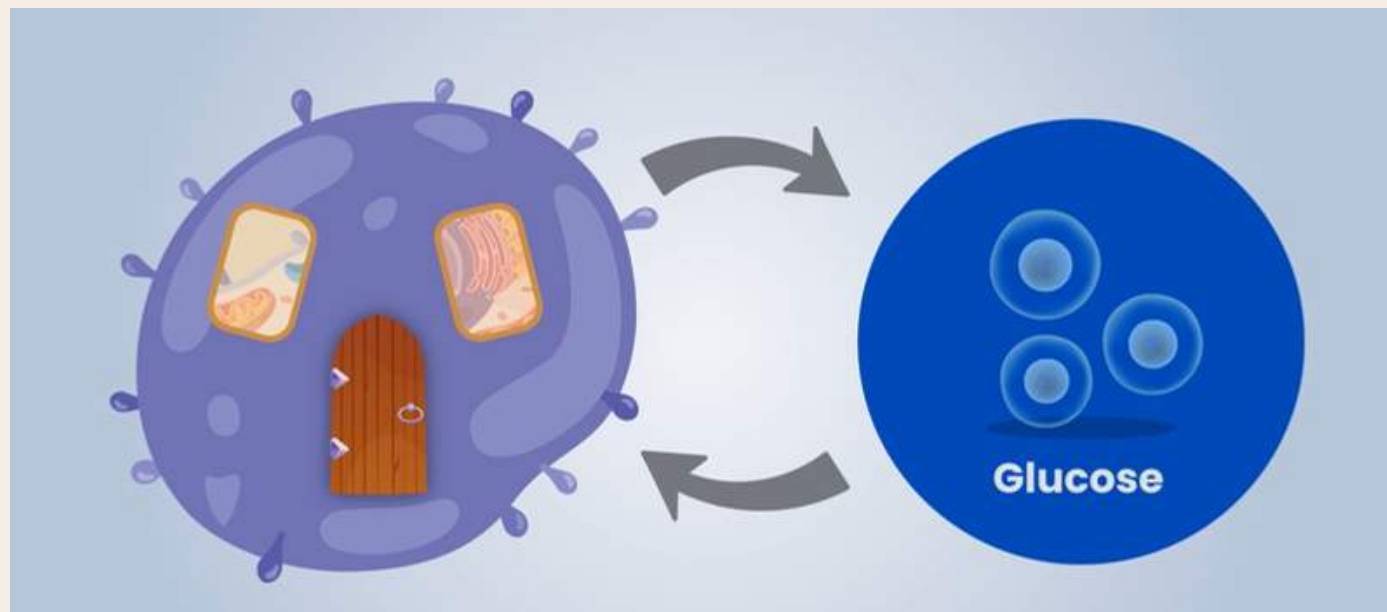
*How the body normally regulates blood sugar levels.



Pathophysiology of T2D

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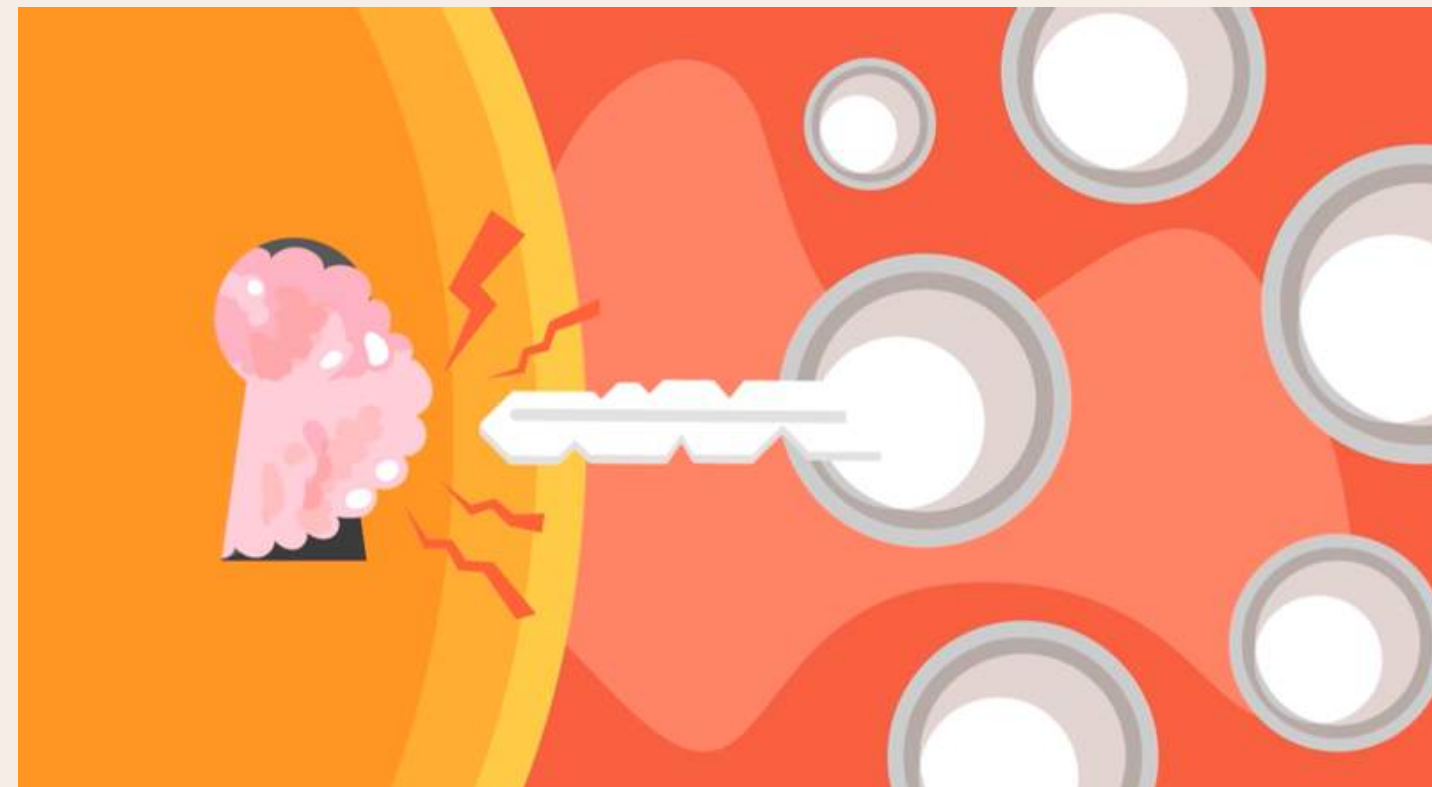
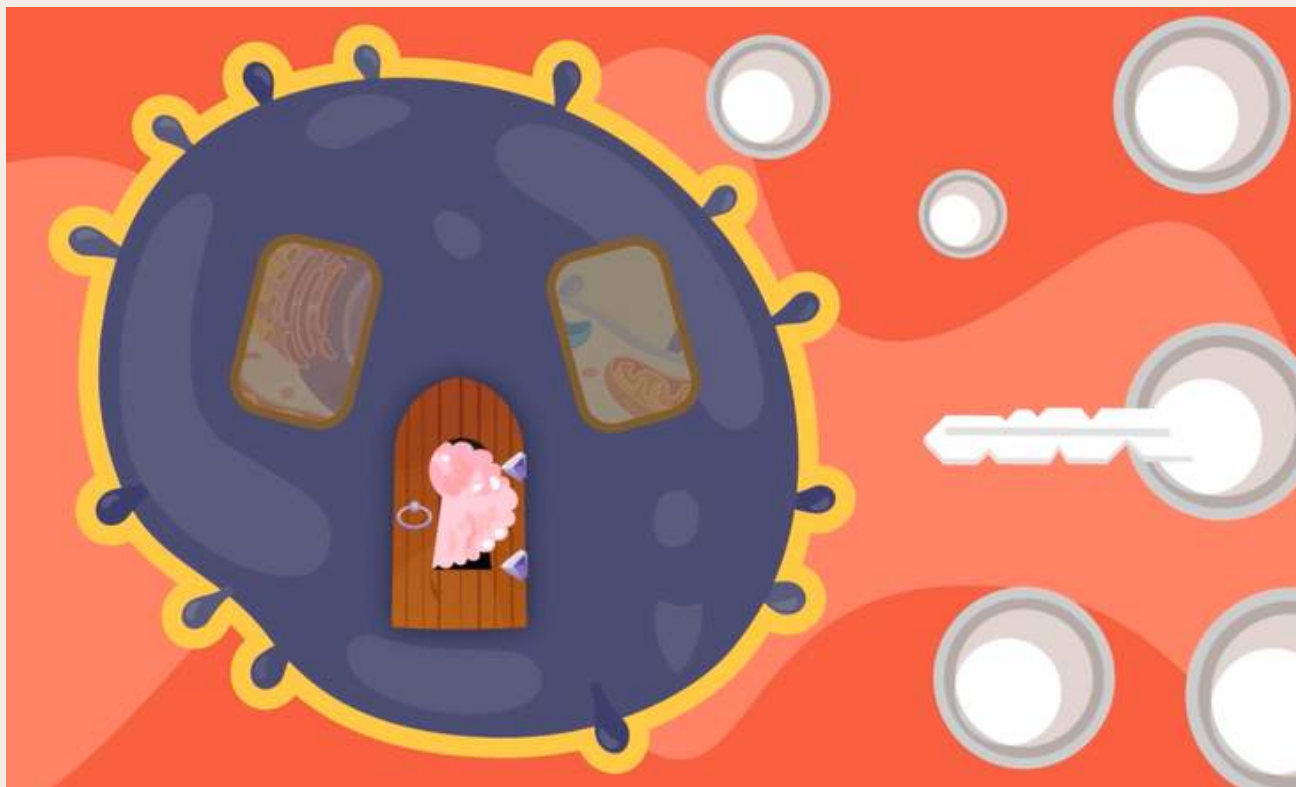
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Pathophysiology of T2D

Pathophysiology of insulin resistance

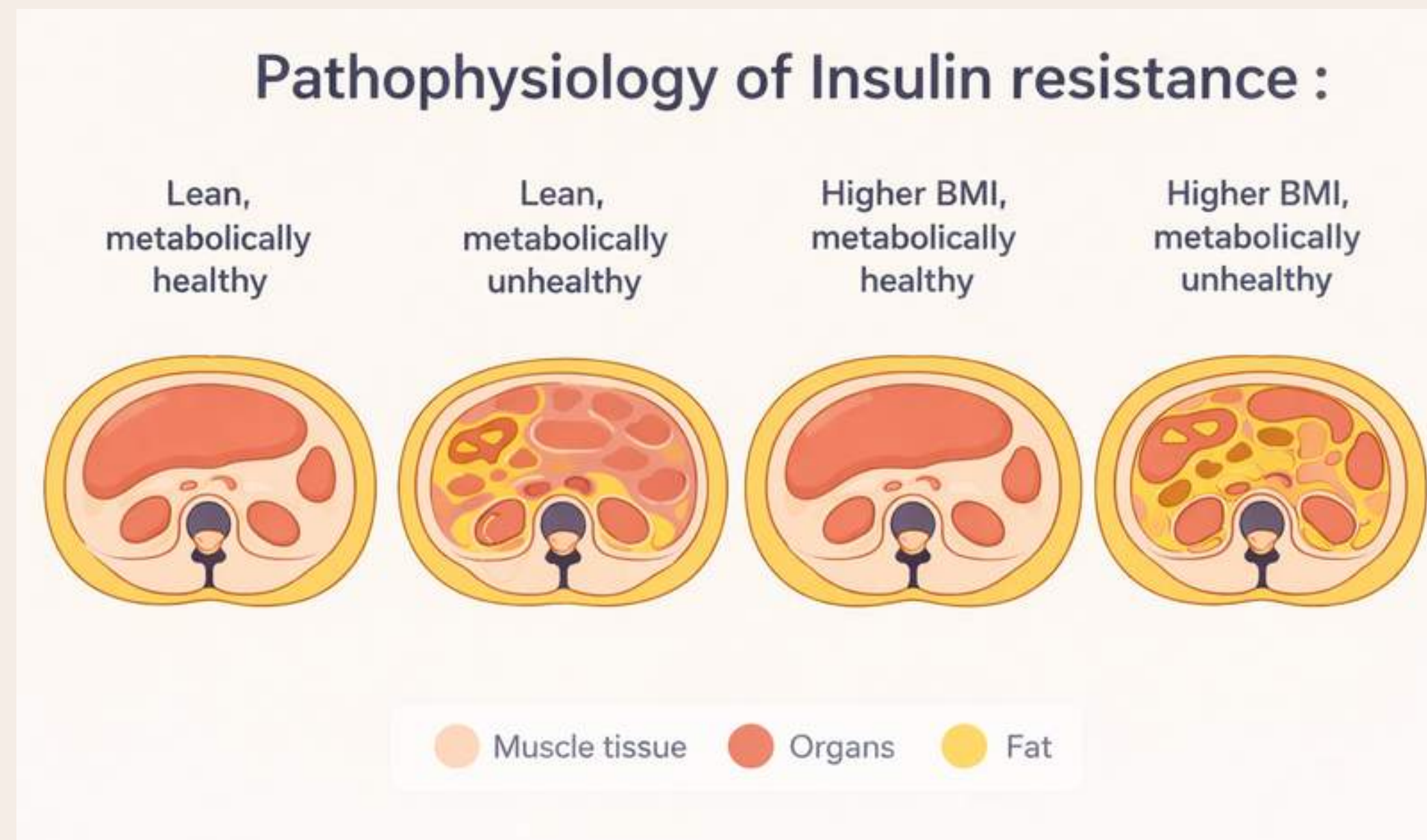
*When the body's blood glucose control system isn't working properly.



Insulin resistance arises from the deposition of ectopic fat within liver and muscle cells, leading to impaired insulin signaling in these tissues.

Pathophysiology of Insulin resistance

The role of ectopic versus subcutaneous fat



Clinical Relevance

By the time of clinical diagnosis of type 2 diabetes, approximately 50–70% of insulin-producing pancreatic β -cells have been lost.

Diabetes Australia



The path to management & remission

As dietary fat is the main cause of insulin resistance, reducing and removing dietary fat is the solution.

*Removing the gum (fat) from the lock

And whilst diabetes may not always be reversible, insulin resistance is **ALWAYS** reversible



Dietary fats

- **Saturated fats:** meat, red and processed meats (beef, bacon, sausages) butter, cheese, whole-fat dairy, coconut oil, and palm oil.
- **Trans fats:** animal products, processed foods, foods made with partially hydrogenated oils
- **Monounsaturated fats:** olive oil, canola oil, avocados, nuts, and seeds.
- **Polyunsaturated fats:** fatty fish, walnuts, flaxseeds, chia seeds, soybean oil, corn oil, and sunflower oil

Whilst replacing saturated & trans fats with mono and polyunsaturated fats has shown to **improve** insulin sensitivity and blood glucose regulation it is still possible to consume too much dietary fat from these sources.

Whilst the type matters **so does the amount.**



Evidence for low fat as an intervention

> Am J Clin Nutr. 1979 Nov;32(11):2312-21. doi: 10.1093/ajcn/32.11.2312.

High-carbohydrate, high-fiber diets for insulin-treated men with diabetes mellitus

J W Anderson, K Ward

PMID: 495550 DOI: [10.1093/ajcn/32.11.2312](https://doi.org/10.1093/ajcn/32.11.2312) 

- In 20 men on insulin, a high-carbohydrate, high-plant-fibre diet cut insulin needs from 26 to 11 units/day and improved fasting and post-meal glucose, even with lower insulin doses.
- **Diets were designed to be weight-maintaining and there were no significant alterations in body weight.**
- Insulin could be stopped in 11 patients, **58% reduction of insulin average and total cholesterol fell by 28%** without changes in weight or triglycerides, after only **16 days on the HCHF diet**
- For GPs, this supports fiber-rich, high-carbohydrate, plant-based eating as a practical first-line approach to improve glycemic and lipid control in type 2 diabetes.



Evidence for low fat as an intervention

Randomized Controlled Trial > [Nutr Diabetes](#). 2017 Mar 20;7(3):e256. doi: 10.1038/nutd.2017.3.

The BROAD study: A randomised controlled trial using a whole food plant-based diet in the community for obesity, ischaemic heart disease or diabetes

[N Wright](#)¹, [L Wilson](#)², [M Smith](#)³, [B Duncan](#)⁴, [P McHugh](#)⁵

Affiliations + expand

PMID: 28319109 PMCID: [PMC5380896](#) DOI: [10.1038/nutd.2017.3](#) 

- 6-month RCT, a whole food plant-based diet led to greater weight loss than usual care, with HbA1c improving and **some participants reaching remission**.
- The intervention also reduced medication needs and improved quality of life and self-efficacy.
- For clinicians, this supports whole food plant-based eating as a practical, effective option for type 2 diabetes and cardiovascular risk management in primary care.



Low carb dietary interventions are not effective long term

- Low-carb eating can be safe and useful in lowering average blood glucose levels in **the short term (up to 6 months)**. - Diabetes Australia
- **The longer-term (over 2 years) effectiveness of low-carb diets for people with type 2 diabetes is currently unknown.** - Dietitians Australia
- People with diabetes who should not use low-carb diets: children, women who are pregnant or breastfeeding, anyone at risk of an eating disorder and people with kidney disease - Dietitians Australia
- **There is no strong evidence to support the use of low-carb diets for people with type 1 diabetes** - Dietitians Australia



The risks of low carb dietary intervention

In two large US cohorts, animal-based low-carbohydrate patterns were associated with:

- ↑ All-cause mortality (HR 1.23)
- ↑ Cardiovascular and cancer mortality

Whereas vegetable-based low-carbohydrate patterns were associated with lower mortality risk (HR 0.80).

Similarly, high processed meat intake (≥ 160 g/day) was associated with increased mortality (HR ~ 1.44) in the EPIC study.



Lifestyle pillar: exercise

- Muscle contraction during exercise increases glucose uptake without needing insulin (via GLUT4 activation)
- Effects begin within minutes, helping lower blood glucose quickly—even with insulin resistance
- Short walks after meals (e.g. 10 minutes) reduce post-meal blood glucose levels and duration
- Benefits can last for several hours after activity
- Regular exercise improves insulin sensitivity and reduces fat in liver and muscle
- Higher activity levels linked to ~30–40% lower risk of type 2 diabetes



Lifestyle pillar: sleep

- <7 hours or poor sleep → ↑ insulin resistance, impaired glucose tolerance
- **Sleep is an independent T2D risk factor (beyond diet, activity)**
- Effects are rapid: even 1 night of poor sleep reduces insulin sensitivity
- Chronic sleep loss → ↑ insulin resistance (≈15–20%)
- Hormonal disruption: ↓ leptin, ↑ ghrelin → ↑ appetite & calorie intake (~20%)



Lifestyle medicine prescription for improving post-prandial BGLs

- Eat 2 cups of leafy greens before a meal (or snack on leaves or cucumbers)
- Eat half your meal slowly, pause for 10 mins, finish the rest of your meal slowly
- Move for at least 10 mins after eating



Hollie Waters

- Accredited Practicing Dietitian
- BSc (Nutrition, Human Biology)
- Master of Nutrition and Dietetics
- DFN Advisory Council Member



Why this matters in practice

- Nutrition is the **primary modifiable driver**.
- Patients are often told to “cut carbs” or “lose weight”, but not how or why.
- This leaves them confused, overwhelmed, and focused on **restriction** rather than **patterns**.
- As clinicians, we need to:
 - Provide clear, **simple** messaging
 - Employ **time-efficient** counselling skills
 - Provide **evidence-based** resources



Role of the clinician

- Move beyond advice to **capacity building**.
- Patients need:
 - Understanding
 - Skills
 - Confidence
- Education drives **sustainable change**.
- Don't just tell patients what to eat—help them understand why and how.



Role of the clinician

- We are no longer the sole source of health information.
- Patients are already seeking answers
 - Google → Social media → AI
- Information quality is variable - Guide patients to credible sources.
- Help interpret—not just provide—information
- AI consideration:
 - Designed to be helpful/agreeable → may reinforce bias
- Position yourself as the interpreter, not just the source.



Role of the clinician

- Speak with clarity and **confidence**
- Patients value clear direction
- Don't underestimate their willingness to change
- Meet patients where they are at
- Avoid lowering the standard too far
- Be supportive—but don't dilute the message.



Eating is a behaviour

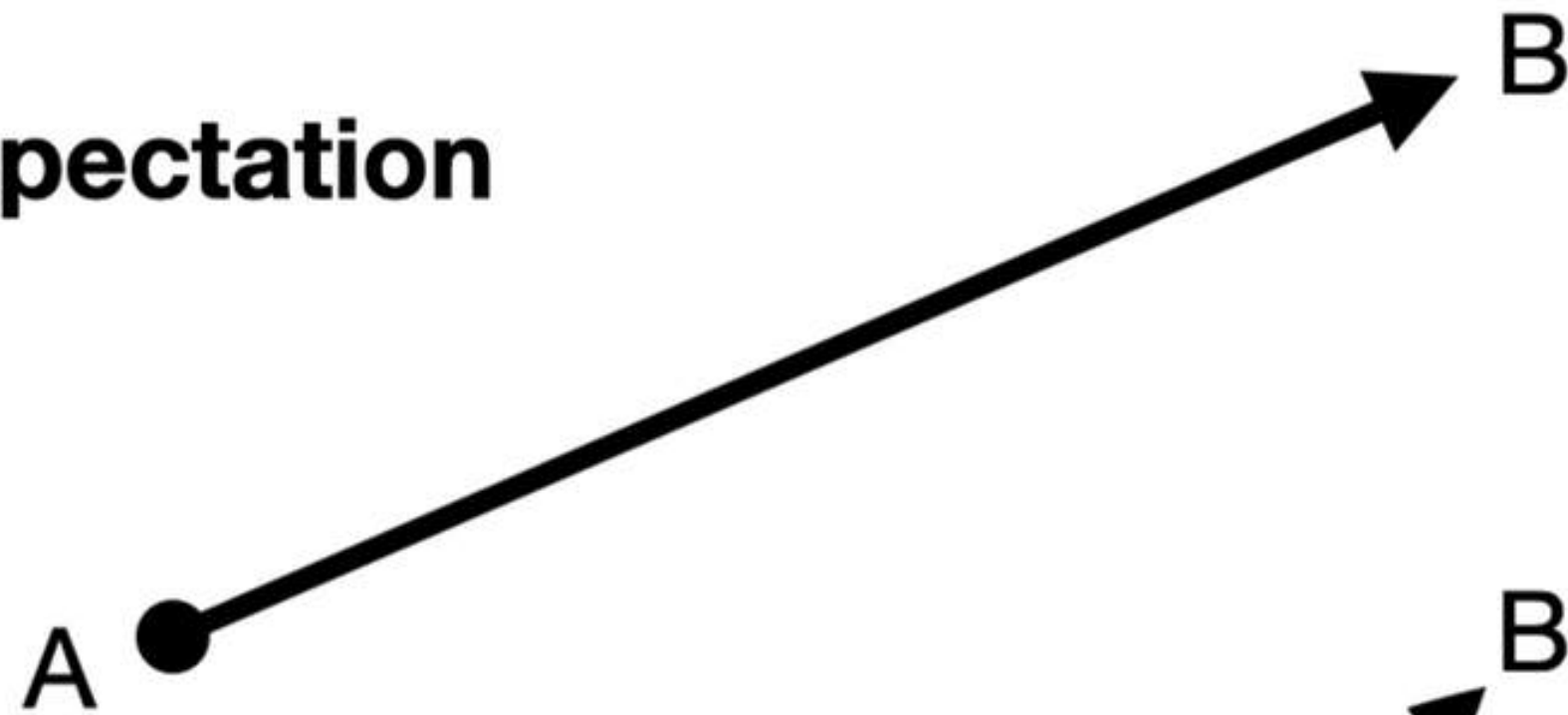
- Eating patterns = habits
- Habits = routine + environment + culture
- Change is effortful
- You're not just encouraging a change in food choices—you're suggesting someone change deeply embedded behaviours.



<https://onlinelibrary.wiley.com/doi/10.1111/joim.13699>



Expectation



Reality



Thinking About Change

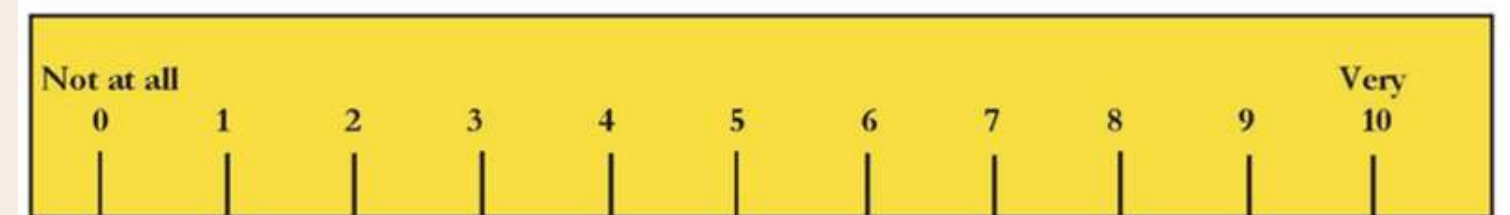
What change(s) are you considering?

How important is it that you make this change?

How confident are you that you are able to make this change?

How ready are you to make this change?

Readiness Ruler



<https://www.flindersprogram.com.au/repositories/strategies/>

Reframing carbs

- Common misconception: “Carbs cause diabetes”
 - Reality: Fat inside cells causes insulin resistance
 - Insulin resistance makes carbs harder to process.
- High-fibre (‘whole’) carbohydrates:
 - Slow glucose absorption
 - Enhance insulin sensitivity
- Problem foods: Refined carbs + fat (e.g. pastries, takeaway)
- Suggested phrasing: “Carbs aren’t the problem—when insulin is working properly, your body handles them very well.”



Reframing carbs

 **GRAINS & LEGUMES
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Food Category

Brand

Level of Whole Grain

GLNC Certified

Search

Definitions: 'Very High in Whole Grain' = ≥24g/serve, 'High in Whole Grain' = ≥16g/serve, 'Source of Whole Grain' = ≥8g/serve

<https://www.glnc.org.au/whole-grain-registered-products-search-aus/>



Core dietary advice

- Recommend patients structure meals to:
 - **Minimise fat load** - Avoid animal products, highly-processed and high-fat foods, and added oils
 - **Maximise fibre intake** - Eat mostly plants in their whole form, and base meals around fibre-rich carbs (avoiding refined varieties)
- These suggestions are easier to retain than macronutrient targets



What to say in a 10-minute consult

- Acknowledge: “There’s a lot of confusing information out there”
- Explain (simply): “Fat inside your cells is blocking insulin.”
- Give hope: “The good news is this is very reversible.”
- Set action: “A simple and effective way to improve your insulin sensitivity is to change what you eat. Evidence shows that eating low-fat, whole plant-based foods can improve how insulin works in your body.”



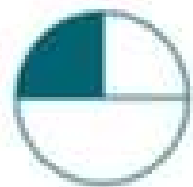
What to say in a 10-minute consult

- Patients don't need perfection—just **traction**.
- Focus on 1-2 achievable changes:
 - Swap:
 - Processed breakfast cereals → oats
 - Takeaway → simple homemade meals
 - Add:
 - 1–2 serves of legumes/day
 - More vegetables, especially leafy greens
 - Remove:
 - Animal-derived products
 - Highly-processed foods
 - Added oils



THE PLANT-BASED PLATE

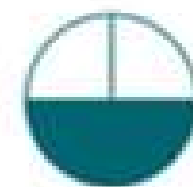
Use this plate to help you portion your food in a healthy way and make meal planning easier. Portions are based on a small dinner plate.



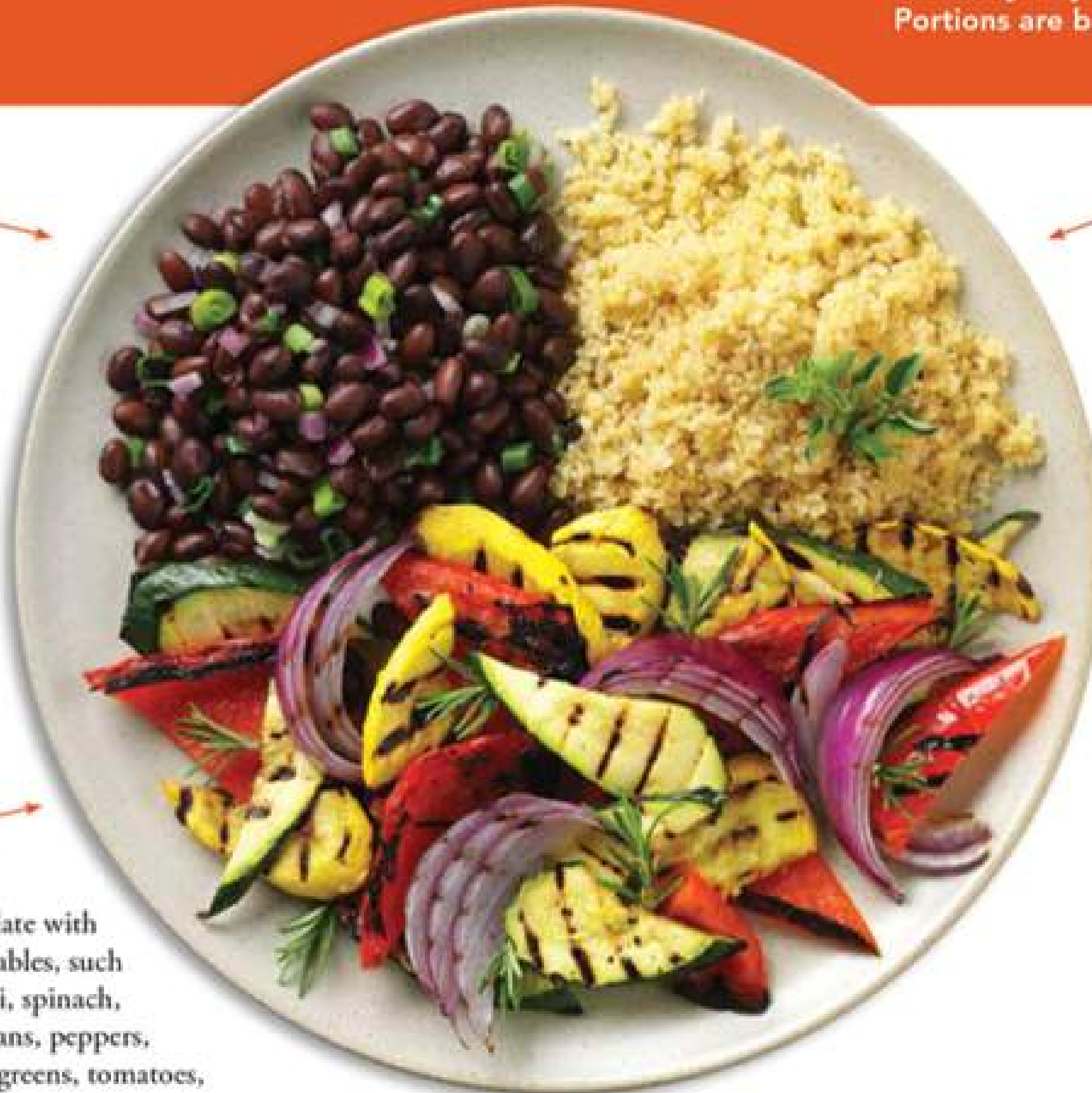
Fill one-quarter of your plate with a plant-based protein source, such as cooked beans, lentils, or tofu.



Fill one-quarter of your plate with healthy grains or starches, such as brown rice, whole-wheat pasta, quinoa, bulgur, corn, peas, barley, farro, amaranth, one slice of whole-grain bread, two corn tortillas, or one whole-wheat tortilla.



Fill half of your plate with non-starchy vegetables, such as carrots, broccoli, spinach, cabbage, green beans, peppers, zucchini, onions, greens, tomatoes, or romaine lettuce.



Simple swaps

EAT **BETTER** NOT LESS



White rice for brown rice



1 egg for 1 tbsp ground flaxseed
& 3 tbsp water in baking



Minced beef for canned lentils



Cup of fruit juice for fruit

<https://www.doctorsfornutrition.org/general-public/getting-started/simple-swaps/>



Healthy Meal Matrix

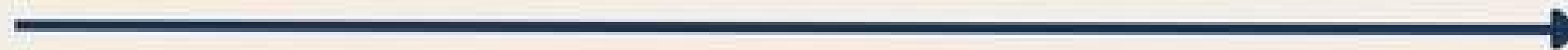
YOUR JOURNEY TO A Healthier Plate

A matrix of meal comparisons and recipe ideas



From the standard Australian/NZ diet to WFPB eating

From here



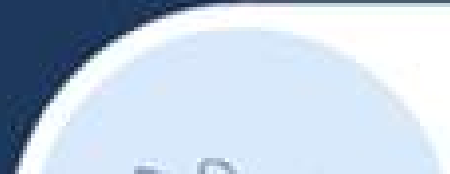
To here



Daily Lifestyle Habits Checklist



DFN Daily Lifestyle Habits

 Beans At least 3 servings per day One serving is $\frac{1}{2}$ cup of cooked or canned beans e.g. lentils, kidney beans, chickpeas, black beans, peas.	Cruciferous vegetables and leafy greens At least 3 servings per day One serving is one standard cup (250 ml) e.g. broccoli, cauliflower, cabbage, kale, brussels sprouts, spinach, rocket, lettuce 
 Vegetables At least 5 servings per day, fresh or frozen Examples of one serving: $\frac{1}{2}$ cup sweet corn, $\frac{1}{2}$ medium potato or other starchy vegetables (sweet potato, taro or cassava), 1 medium tomato	Fruit At least 3 servings per day One serving is one piece medium-sized fruit e.g. apples, oranges, pears, kiwifruit + at least 1 serving of berries $\frac{1}{4}$ cup fresh/frozen e.g. blueberries, raspberries 
 Whole grains At least 3 servings per day	Spices At least 1 serving ($\frac{1}{4}$ teaspoon) per day 

Addressing concerns / resistance

- *“Won’t carbs spike my sugar?”*
 - Not when insulin sensitivity improves
- *“Will I get enough protein?”*
 - Legumes, tofu, tempeh, whole grains offer more than enough
- *“This sounds expensive!”*
 - Lentils, beans, oats = lowest-cost staples
- *“I don’t have time”*
 - Suggest batch cooking, simple/component meals
- *“Will I feel full?”*
 - Fibre + volume = improved satiety



Monitoring & medication

- Rapid improvements possible: ↓ fasting glucose within days–weeks
- Monitor hypoglycaemia risk closely, especially with insulin and sulfonylureas
- Schedule early follow-up



Referral pathways

- Refer to a dietitian (WFPB-experienced) under a Chronic Disease Management Plan (CDMP)
- Consider Telehealth options



Deeni Betar-Young

Dietitian (APD)
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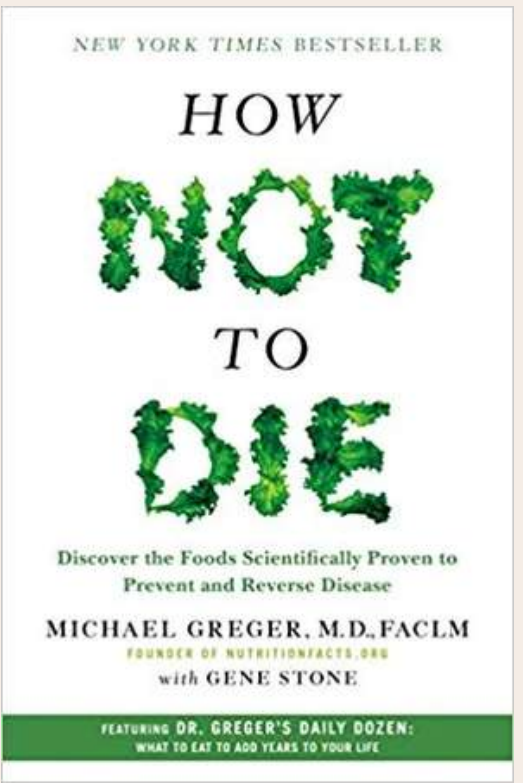
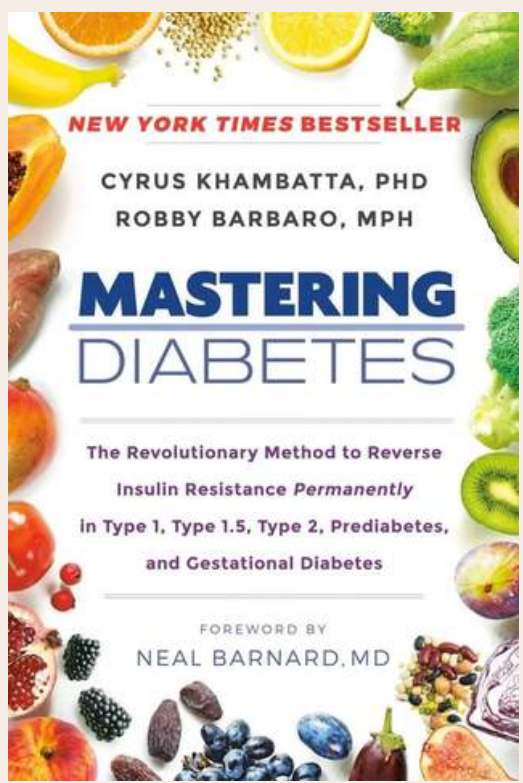
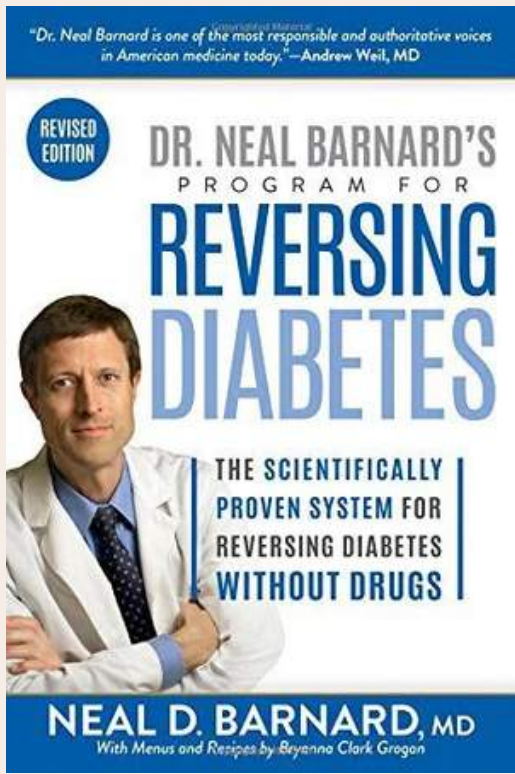


Yvonne O' Halloran

Dietitian (APD)
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Patient / practitioner resources

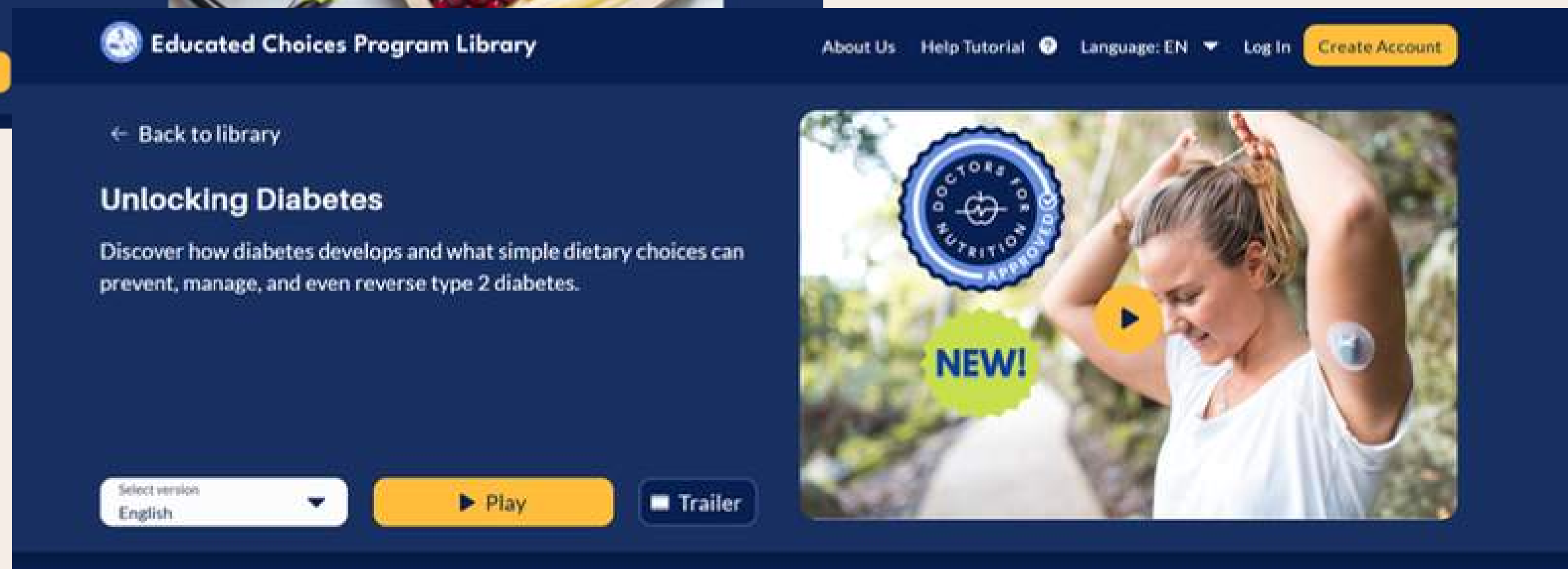


Key takeaways

- Keep messaging **simple, clear, and consistent**
 - Insulin resistance is driven by intracellular fat
 - Dietary fat reduction is central to treatment
- Focus on dietary **pattern**, not nutrients
 - Carbohydrates (whole, high-fibre) are not the enemy
 - WFPB diet can improve and even reverse IR
- Start with small, achievable changes / simple dietary shifts
- Reinforce with practical visual tools + handouts
- Utilise referral pathways for additional support



Health Literacy: videos are the most equitable form of information



Q&A



Thank you for watching!



www.doctorsfornutrition.org