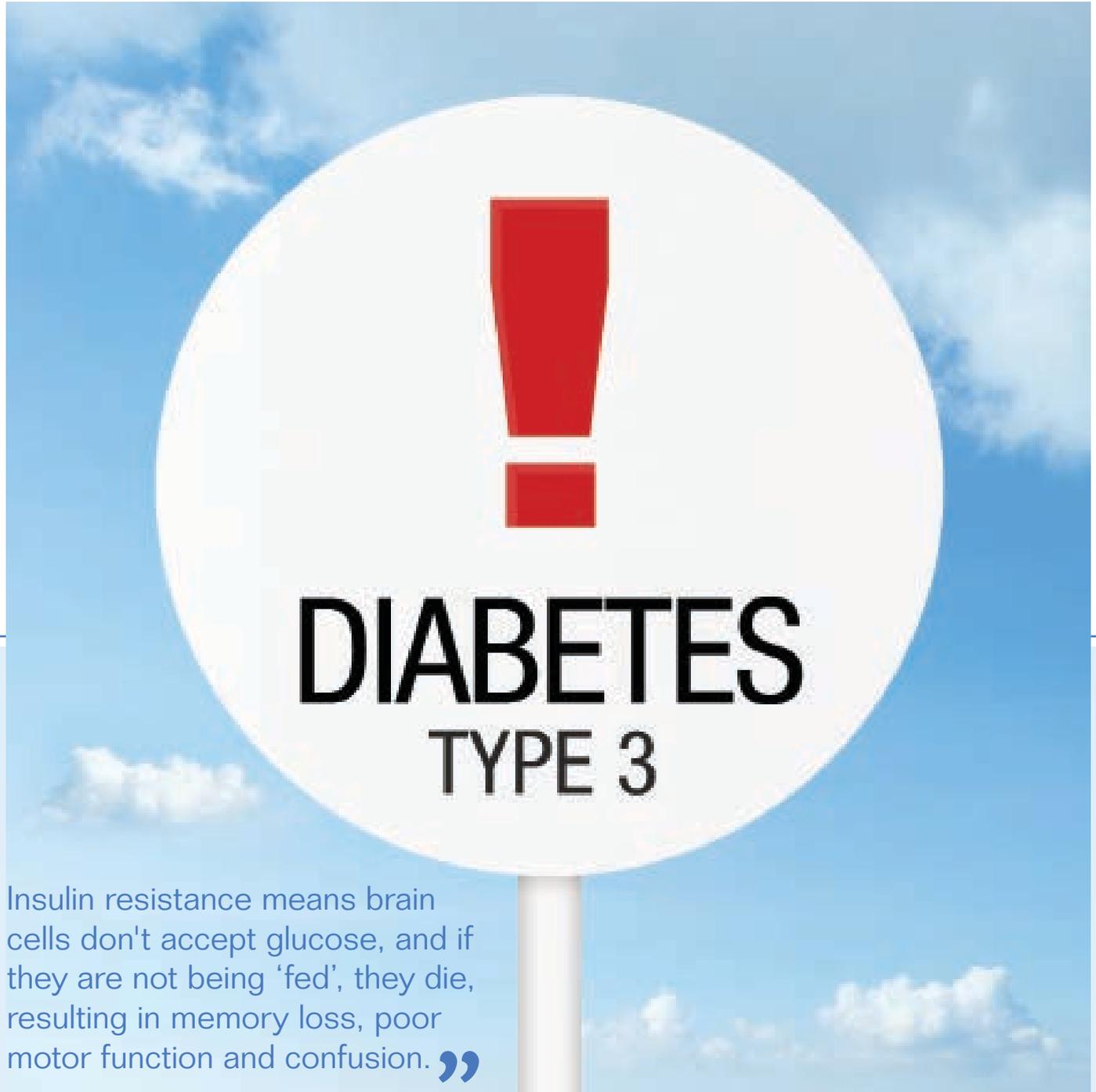


Hidden hazard

Most people have heard of type 1 and 2 diabetes – but type 3 has skated below the radar. Tara Thorne explains why it's on the rise.



“Insulin resistance means brain cells don't accept glucose, and if they are not being 'fed', they die, resulting in memory loss, poor motor function and confusion.”

TYPE 2 diabetes accounts for 85 percent of all diabetes in Australia. And it's increasing. However, type 3 diabetes – a form that involves the brain and is similar to type 2, the overarching mechanism being insulin resistance – is not widely known outside the medical community. Research now shows there's a connection between Alzheimer's disease and impaired insulin signalling, or – what's now being called – type 3 diabetes.

To understand type 3 diabetes, it's important to first understand insulin resistance. Insulin is released when we consume sugar or carbohydrates (the worst being simple carbohydrates like white bread or white pasta). Insulin's role is to usher glucose from these carbohydrates into our cells, where it can be used for energy. Essentially, insulin is the key that unlocks the door to the cell in order for glucose to enter. But if there's too much glucose the cells fill up, and the glucose is stored as glycogen and then as fat. At a certain point – due to an oversupply of glucose – our cells start to ignore insulin's screams. In response to this more insulin is produced, screaming louder at our cells – but our cells are no longer listening because insulin resistance has begun.

Brain drain

Here's how this affects the brain. Insulin encourages brain neurons to take up glucose (the brain's main fuel source). But when brain cells have insulin resistance they're not accepting glucose. This means they're not being "fed", which leads to the death of neurons resulting in memory loss, poor motor function, confusion – all symptoms of Alzheimer's disease. We now know that people with type 2 diabetes are twice as likely to get Alzheimer's disease. We also know

that type 2 diabetes is mostly an environmental disease, meaning it's a preventable disease that's largely linked to diet and lifestyle. Type 3 diabetes is also largely an environmental disease that can potentially be prevented.

Blood sugar control is one of the most important factors when it comes to preventing Alzheimer's. Eat whole foods and avoid refined and simple carbohydrates, at all costs. Include protein and fibre at every meal, particularly focusing on soluble fibre as this will slow down digestion and absorption of carbohydrates, so reducing blood sugar spikes. Good sources include oat bran, nuts, seeds, psyllium husks, pears, apples, strawberries, blueberries, most vegetables, and legumes. Fibre also flushes out excess oestrogen from the body via the bowels. Substantial evidence links excess oestrogen and diabetes, so ridding the body of it is a must. Cruciferous vegetables also help as they contain DIM (diindolylmethane), which protects against high oestrogen levels. Good sources are rocket, broccoli, Brussels sprouts, cabbage, kale, watercress, and cauliflower.

Vitamin D is crucial in diabetes prevention, with many studies showing adequate levels can increase insulin sensitivity and reduce the risk of developing type 2 diabetes. Maintain a consistent meal routine and avoid eating late at night. Get good quality, ample sleep and manage stress. Chronically elevated cortisol levels are associated with poor glucose control, so take up meditation, yoga, Tai chi, or seek counselling if your stress levels are high. The good news? Type 3 diabetes is mostly a preventable disease, and we can be confident of significantly reducing our chances of getting it. [1](#)



MEET THE EXPERT

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Prevention beats cure

Good fat, bad fat Too much fat in the diet, and the wrong type, will lead to excess oestrogen. This happens when 'bad' gut bacteria feeds off bad fats like saturated fat, and produce oestrogen and diabetogens (diabetes-causing compounds). Fat in the bloodstream has also been shown to contribute to insulin resistance. Consuming the right type of fat, however, is important. There's a direct relationship between meat consumption and diabetes risk, so avoid saturated fat including meat but do eat essential fatty acids (EFAs) as these help maintain cell membrane integrity, which supports proper insulin signalling. Some of the best sources of EFAs are chia seeds, flax seeds, pumpkin seeds, and walnuts.

Lovely legumes These are a particularly good choice, thanks to their "second meal effect" – the term that describes their incredible ability to blunt blood sugar levels, not only after the meal they're eaten at but also in meals eaten hours later (with or without legumes). Studies show this effect is even active the next day. Other important foods which have an insulin-like activity include Jerusalem artichokes, Brussels sprouts, green beans, fresh garlic and onions, raw green vegetables, and brewer's yeast. Avoid alcohol and artificial sweeteners as they can interfere with glucose metabolism and contribute to high blood glucose levels. Coffee should also be avoided as it stimulates the release of stress

hormones, which increases blood sugar. Exercise also stimulates the release of stress hormones so although it's super-important for anyone wishing to prevent diabetes because it increases insulin sensitivity, if your blood glucose levels are already over 13 mmol/L and ketones are present in your urine, abstain from intense exercise until your levels are under control.

Pick potassium and zinc These nutrients play important roles in blood glucose and insulin metabolism. Good sources include beet greens, lima beans, Swiss chard, sweet potato, avocados and lentils for potassium, and sesame seeds, pumpkin seeds, lentils and chickpeas for zinc.