

## Community Forum 26<sup>th</sup> July. Audience Q & A.

### 1. Is there plans to research/explore different models of care which incorporate allied health providers beyond CDEs, dietitians, podiatry - what about exercise physiology to support diabetes & exercise

This is an excellent point. The standard of care that we uphold in Western Australia is that the core diabetes team includes medical staff, specialist diabetes nurse educators, certified dietitians with expertise in type 1 diabetes, and social workers. We provide this core team at every clinic for every child in WA at least 4 times/year. However, this is not to say that other experts don't have value and we have a special interest and focus on addressing exercise in our clinical service.

We know that regular physical activity improves many aspects of health for people living with type 1 diabetes. It helps reduce the risk of cardiovascular disease, improves insulin sensitivity (reduces the amount of insulin needed to achieve ideal glucose control), can help with weight management, and is associated with higher quality of life, amongst other things.

However, glucose management and insulin dose decisions around exercise can be challenging, and people may experience a wide range of responses to exercise. It is especially important that clinicians caring for young people living with type 1 diabetes are confident and competent to give high quality advice to families regarding exercise management. Emerging diabetes-related technologies, such as continuous glucose monitors, automated insulin delivery systems and the administration of glucagon, are demonstrating efficacy for preserving glucose homeostasis during and after exercise in people living with type 1 diabetes.

The Global Centre of Excellence has had an interest and research focus on exercise and type 1 diabetes for many years. More information about our exercise research theme can be accessed via our website here

<https://diabetes.telethonkids.org.au/our-research/research-focus-areas/exercise/>

### 2. Pumps have enormous monetary costs associated with them, for some people prohibitively so. Is there any hope for getting them subsidised like we've recently been able to with CGMs?

Hybrid closed loop systems require a continuous glucose sensor and an insulin pump to function. In Australia, continuous glucose sensors already have Government funding but, insulin pumps are available only to those with private health insurance (except for small philanthropic programs available only to children, and a restricted number of means-tested applicants in the government supported JDRF program). This results in a major disadvantage to those without private health insurance which in turn may mean the more disadvantaged will have poorer health outcomes and have a higher risk of diabetes complications.

Recent data in Australia has demonstrated that uptake of diabetes technology is lower in children living with T1D from socioeconomic disadvantaged areas. This is despite evidence that improvements in diabetes outcomes are just as significant for the same groups.

We have recently highlighted the evidence produced in these studies in a submission to the House of Representatives Standing Committee on Health, Aged Care and Sport inquiry into diabetes. The Children's Diabetes Centre will continue to advocate for equitable access to the safest and most effective therapies for T1D for all Australians.



### **3. A lot of hypoglycaemic anxiety revolves around the fact that the individual may become incapacitated and unable to help themselves. What research is being done on automated delivery of glucagon?**

Internationally, over the past 10 years clinical trials of bionic pancreas systems have been taking place using automated insulin and glucagon delivery. Currently these trials consist of dual sensor and dual pump systems automating insulin and glucagon delivery separately.

There have been many trials, and this review from 2020 cites more than 20 trials in the preceding 10 years. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7398489/>. It is important to note though that hypoglycaemia severe enough to incapacitate has been shown to be rare with hybrid closed loop systems.

### **4. Do you have any advice on how to go about navigating T1D as a teenager in regard to mental health?**

Adolescence and young adulthood are peak periods of risk for poor mental health and living with type 1 diabetes puts young people at greater risk for poor mental health than their peers without diabetes. It's vital that young people know how to access support during this challenging time. The Perth Children's Hospital does offer Clinical Psychology and Social Work input and can be a great place to seek support initially, particularly if the challenges being experienced are directly related to diabetes. However, we know that it can sometimes be difficult to access appropriate support through the clinic due to long waitlists. Additionally, young people may wish to seek support outside of the clinic. In that case, we would recommend speaking with your GP about obtaining a mental health care plan and referral to a Clinical Psychologist. A mental health care plan allows you to access Medicare rebates for up to 10 sessions per calendar year. Your GP can then provide you with options in your area.

Alternatively, the Type 1 Diabetes Family Centre also offers psychology support through their clinic (<https://www.type1familycentre.org.au/psychology>).

JDRF also have a range of resources on their website, including a teen wellbeing guide and a private Facebook group for 14–24-year-olds (<https://jdrf.org.au/living-with-t1d/community-support/>).

More general mental health support can be found through organisations such as headspace (<https://headspace.org.au/>).

### **5. My sister and I migrated with my parents from Dubai to Perth. Do you think major environmental change is a factor of getting diabetes?**

The cause of type 1 diabetes remains unknown, but both genetic and environmental factors are thought to be involved. Lots of different environmental factors have been studied such as viral infections (in particular enterovirus infections in early life), the amount of UV radiation from sunlight and vitamin D levels, living in farming compared to urban environments, having pets and air pollution. Although some of these factors have been associated with type 1 diabetes in some populations, the findings are variable, and no one factor has yet been identified to cause type 1 diabetes.

Studies of people migrating from one country to another have shown that the risk of developing type 1 diabetes in those who migrate changes to the risk of the new country to which they move to. For example, Somalians who have migrated to Sweden have been shown to have a higher risk of type 1 diabetes similar to people living in Sweden, rather than maintain the low risk in Somalia. This shows



that the environment you live in plays an important part in whether or not you develop type 1 diabetes, but what in the environment explains this is still not known.

For more info: <https://jdrf.org.au/living-with-t1d/type-1-diabetes-causes/>

### **6. Is diabetes genetic, both my parents had high blood sugar like me?**

The cause of type 1 diabetes remains unknown but both genetic and environmental factors are thought to be involved. Importantly, type 1 diabetes can occur in those with and without a family history of the condition.

For people who do not have a family history of type 1 diabetes, the risk of developing it is approximately 1 in 300. In comparison, for people who have a first-degree family member (mother, father, brother or sister) living with type 1 diabetes, this risk goes up 20 times to approximately 1 in 15.

In Western Australia, 9 out of 10 children diagnosed with type 1 diabetes do *not* have a family history.

For more info: <https://www.trialnet.org/t1d-facts>

### **7. Is the child at more potential risk of having type 1 diabetes to a mother with type 1 diabetes while pregnant control was not the best?**

Children with no first-degree family member diagnosed with type 1 diabetes have a 1 in 300 risk of developing the condition. For children born to a mother with type 1 diabetes this increases to 1 in 40.. Interestingly, for children where their father or a brother/sister is the first-degree family member with type 1 diabetes, the risk is higher at about 1 in 15. So, for reasons that are not yet understood, for those with a first-degree family history of type 1 diabetes, having a mother with type 1 diabetes confers a lower risk than having a father or sibling with type 1 diabetes.

Although glucose control during pregnancy can influence maternal and child health outcomes such as the size of the baby, the effect on the child's future risk of type 1 diabetes is not clear.

For more info: <https://www.diabetesaustralia.com.au/living-with-diabetes/pregnancy/>

### **8. Are we doing anything to support those experiencing tape allergies?**

Diabetes providers should screen for any skin related issues during clinic consults. For patients experiencing skin reactions from adhesives, there are some tips that may help minimise symptoms. These include:

- Site Rotation - Just like with injections, it's important to rotate device locations. Try to move at least two inches away from the last insertion point and, if possible, select entirely different patches of skin, with each adhesive application. Rotating sites can help keep skin from becoming compromised and helps promote healing.
- Use a Barrier - Tapes like Tegaderm and Opsite Flexifix, can provide enough of a barrier to keep irritation at a minimum.
- Experiment with Tapes - Overlay tapes can help keep devices from shifting on skin. Dexcom and Medtronic provide overlay tape, and several third-party companies and designers offer tapes (e.g. RockaDex) to help keep devices in place.
- Removal Techniques - Careful removal techniques can greatly reduce the likelihood of contact dermatitis and wear and tear skin injury from device use. In general, adhesive tapes should be removed slowly and with low energy, reducing risk of injury.



- Hydration - Patients should try to drink plenty of fluids so skin can retain moisture better. This allows skin to heal more readily.
- Referral to a Dermatologist - When simple measures are ineffective, the diabetes care team can facilitate a referral to a dermatologist.

## **9. Following on from all these new pump and tech developments, is there any research happening in regard to treating scarring and lipohypertrophy ?**

Lipohypertrophy is a common skin complication associated with insulin-treated diabetes. The impact of lipohypertrophy as a contributing factor to suboptimal glycaemic control, glucose variability, and hypoglycaemia is often under-recognised by health care professionals.

No treatments currently exist to prevent or reduce the burden of injection-induced fibrosis/scarring and lipohypertrophy. The only advice we can offer is to rotate and closely inspect (sight and feel) their injection sites. Patients should try to rotate injection sites across four consecutive abdominal and four consecutive thigh sites.

Devices which attach to insulin pens and map where to inject are in development. Additionally, studies have shown that portable ultrasound is better than physical touch for detecting lipohypertrophy and could be used clinically to help people living with Type 1 Diabetes to become aware of areas of lipohypertrophy.

A study in Denmark plans to investigate if seven-day infusion sets influence rates of lipohypertrophy. Further, there is no data available on whether automated insulin delivery systems effect rates of lipohypertrophy.

Interestingly, CGM systems have been found to be more accurate when inserted into areas of lipohypertrophy, so people with lipohypertrophy could be educated to insert their CGM into affected areas. This would also help to remind them where to avoid doing insulin injections.

In a recent Webinar on April 26, 2023, Diabetes Technology Society asked international experts to provide updates on the latest knowledge related to lipohypertrophy for practicing clinicians and educators, researchers, and industries involved in insulin delivery. A recording of the Webinar is freely available on the Diabetes Technology Society Web site (<https://www.diabetestechology.org/>).

## **10. The govt. recently announced the removal of Fiasp from the PBS. Is research around the value of as Fiasp being communicated effectively enough to government?**

Fiasp is a Rapid-Acting Insulin that has recently been removed from the Pharmaceutical Benefits Scheme (PBS). This is a significant concern to us and for the many thousands of Australians living with type 1 diabetes and other forms of insulin-dependent diabetes who used Fiasp as an important part of a well-established management regimen.

There are several other insulins listed on the PBS, however, changes to management routines need to be made in consultation with healthcare professionals and are a source of substantial anxiety for many affected.

The recent Parliamentary Inquiry into Diabetes provided the opportunity for individuals and organisations to express their concerns regarding Fiasp to the Government. Key advocacy organisations, such as JDRF and the Australian Paediatric Society also continue to lobby the Government to express concerns of the Type 1 Diabetes community around this issue.



<https://auspaediatrics.org.au/position-statements/statement-on-pbs-delisting-of-fiasp-insulin-31-march-2023>

<https://jdrf.org.au/removal-of-fiasp-from-pbs-announced/>

### **11. Low carb seems to be pushed a lot, but I worry about impact on mental health & disordered eating for our kids (and adults!) What does the research say? Do we have much data on this?**

There has been some research into the effect of low carb diets on the management of Diabetes and its impact of blood glucose levels. There is considerable variability in these studies and as yet the evidence is inconclusive. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194987>

There is, however, evidence to suggest that there is an increased risk for disordered eating for people living with type 1 diabetes and that prevalence of disordered eating in the type 1 Diabetes population may be as high as 40%. The increased prevalence is related to both, diabetes-specific and psychosocial factors. <https://clinicalexcellence.qld.gov.au/>

A recent paper has examined the experiences and attitudes of parents of children living with type 1 diabetes who reduce carbs to help manage blood glucose levels and identified barriers and promoters of this way of eating. <https://www.mdpi.com/2072-6643/15/7/1666>

As yet, there is not enough evidence for health care teams to promote low carb eating for children living with type 1 diabetes in relation to their health. More research is needed to assess the impact of these diets on glucose control and mental health.