Low Carb for Type 1 Diabetes

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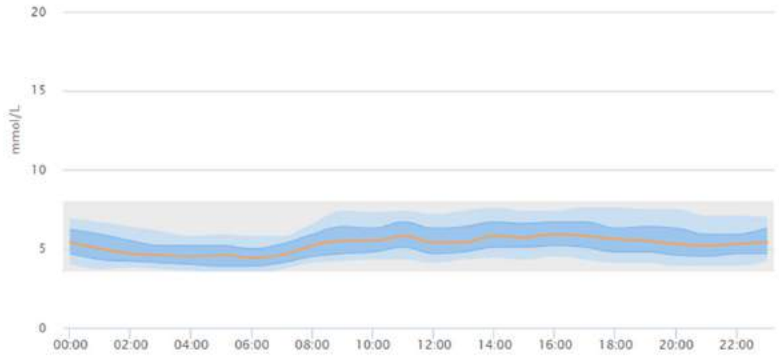
11 September 2016

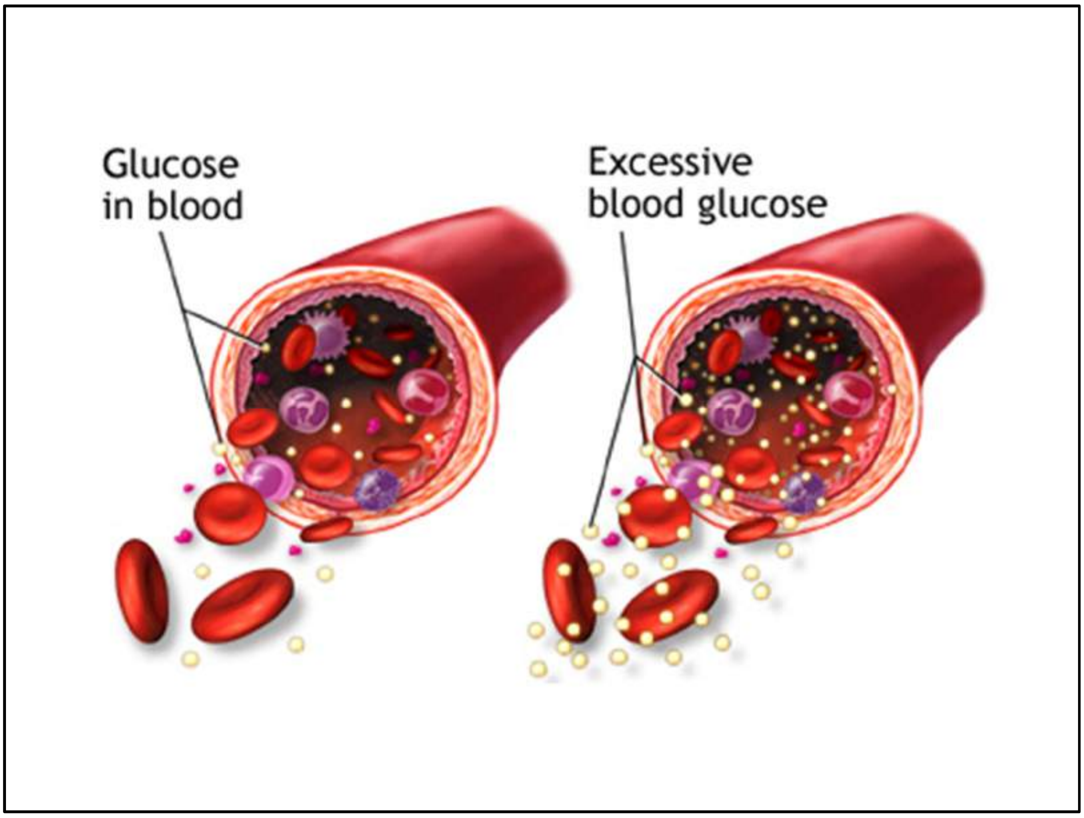


As you can see from the picture, Julie and I have three young children.

Our 8 year old son Patrick was diagnosed with T1D about 2 years ago.

This meant his pancreas no longer produced the insulin needed to keep his blood glucose at the **normal levels** you'd find in an otherwise healthy child without diabetes.

That job then fell to us, and will pass to him when he's older.



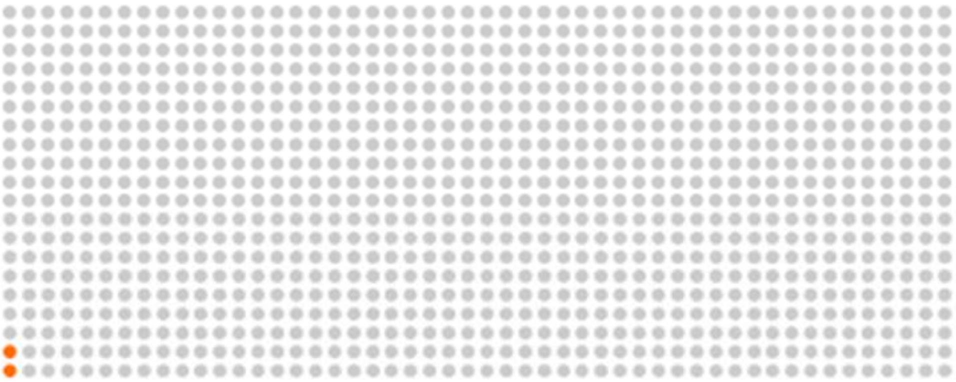
How well we (and he) do that job will have a **big impact** on his health and life expectancy.

Unfortunately, controlling blood glucose levels **manually** is a very difficult job.

This difficulty means most people with T1D regularly have blood glucose **well above** normal levels, for many hours a day, for years on end.

These levels increase the person’s risk of serious complications in their brain, eyes, heart, kidneys and nerves.

These complications explain why a diagnosis of T1D typically **reduces life expectancy** by about 12 years.



To give you an idea of just how difficult the job is, these 1,000 dots represent a group of 1,000 children with T1D. That's 40 class rooms of children.

Research shows that amongst this group, just **two children** (the orange dots in the bottom corner) will achieve the **normal blood glucose** levels needed to ensure they can live a life without complications.

At the moment, Patrick is one of the orange dots, thanks largely to our low carb lifestyle, continuous glucose monitoring technology, and us not getting much sleep overnight.

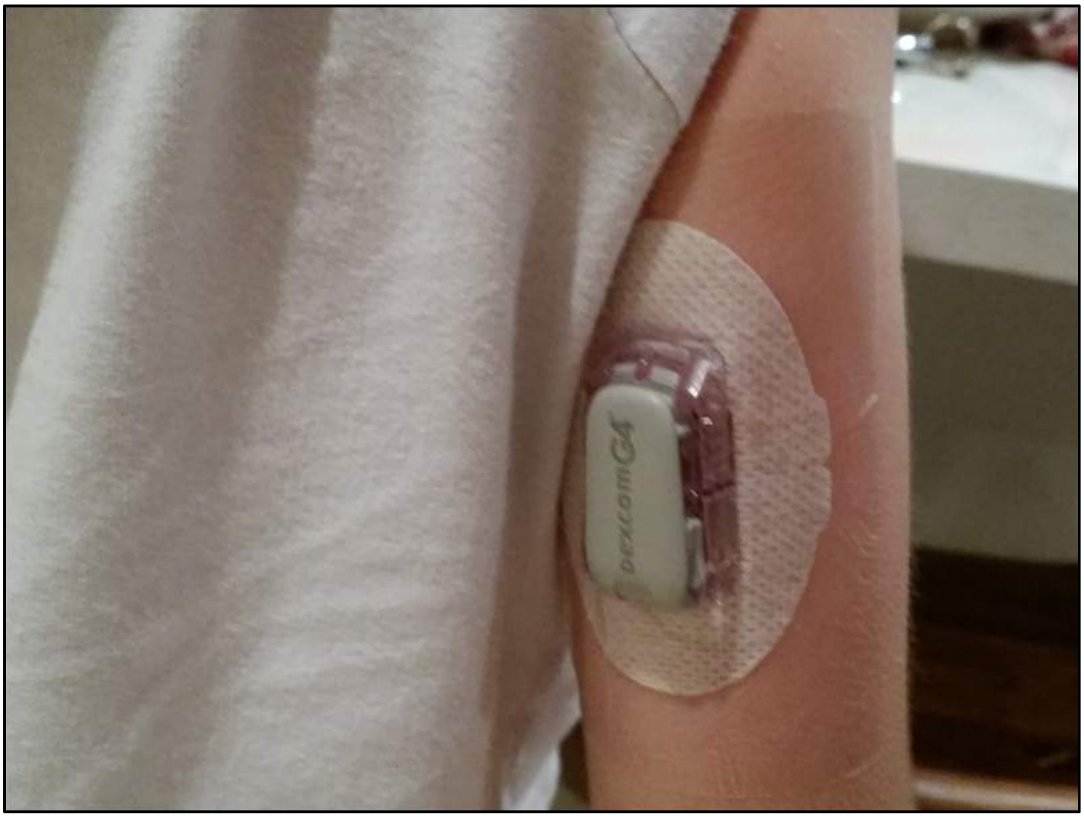
But Patrick wasn't always an orange dot.

When Patrick was diagnosed, the hospital dietitians told us to feed him according to the **standard food pyramid**. We followed this advice to the letter.

Despite our best efforts, feeding Patrick this way made the next 12 months a very difficult time.

It **proved impossible** to match the sharp glucose rises from the high carb diet, with the sharp peak of injected insulin. The insulin was always too much, or too little, or too early or too late.

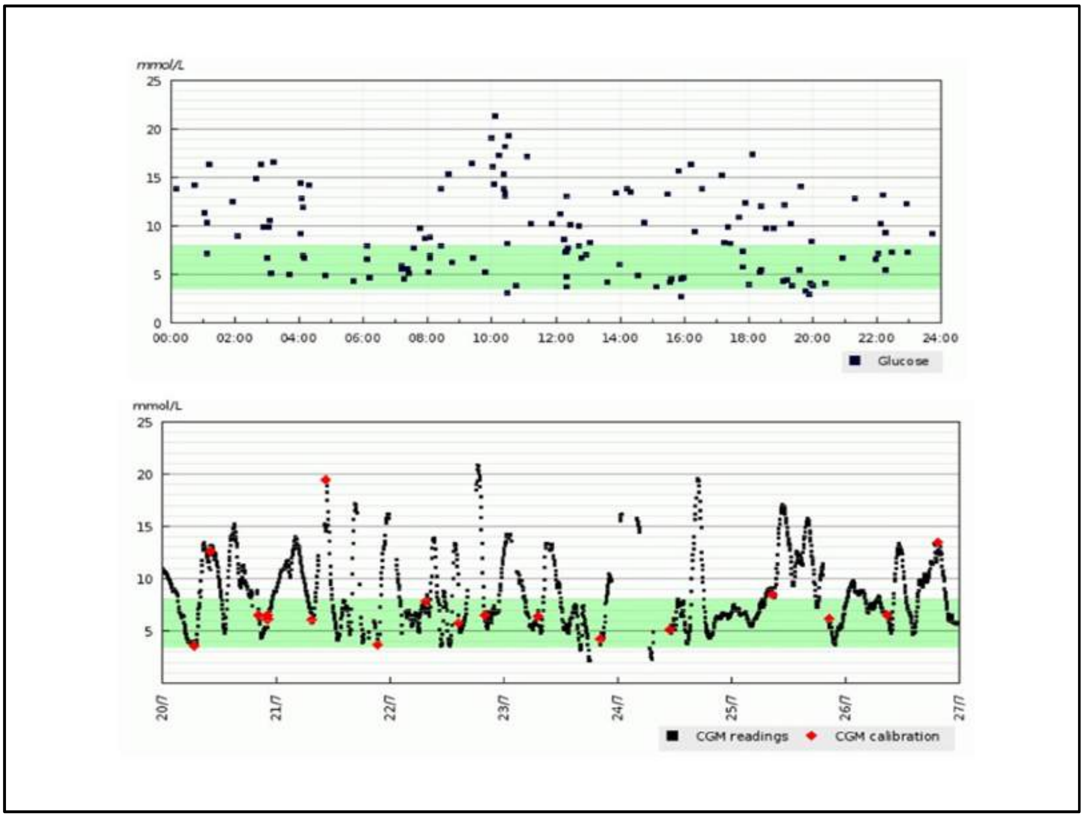
During these 12 months we could relate to the observation that managing type 1 diabetes is as easy as **riding a bike**, except the bike is on fire, and you’re on fire, and everything is on fire, and you’re in hell.



After 12 months of this hell, in an effort to douse some of these flames, we started monitoring Patrick's glucose levels with a **Dexcom** continuous glucose monitor (CGM) and a remote monitoring system called **Nightscout**.

CGM costs us thousands of dollars a year, but is worth every cent, and has been amazing.

The CGM transmits a glucose reading every 5 minutes. We used to have just 5 glucose readings from finger-sticks a day. Now we had **nearly 300 readings** each day.



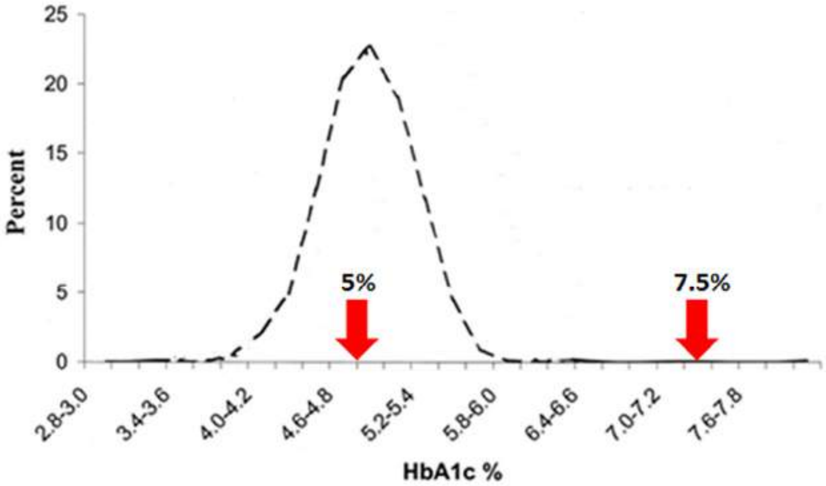
These charts show Patrick’s glucose readings over the first couple of weeks on CGM. Keep in mind that in an otherwise healthy child without diabetes, the readings would almost always be within the **green band**.

For the first time, we saw just how many of Patrick’s readings were **outside the target range**, and the rollercoaster of sharp rises and falls, despite all our efforts.

This shocked us, as did the thought that this had probably been happening daily for the last 12 months.

The bike was **more on fire** than we had realised!

From the timing of the rises, we could see that the culprit was all the carbs we were pushing into Patrick.



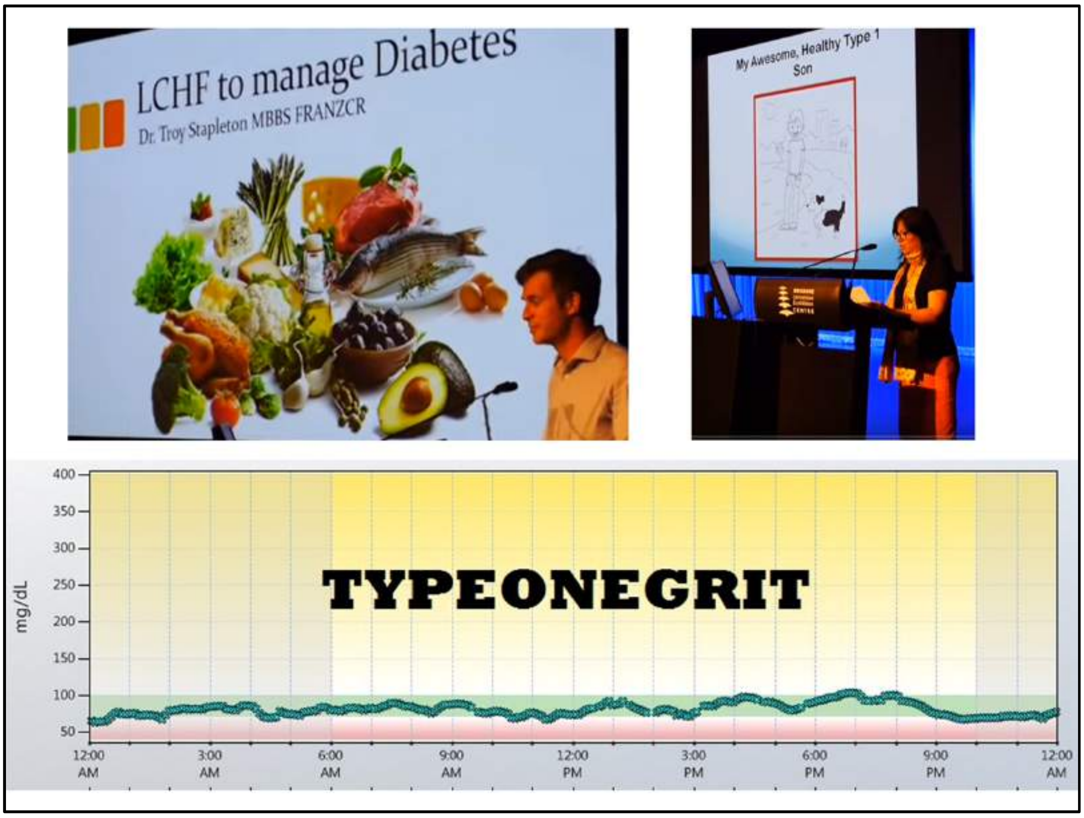
HbA1c distribution in non-Hispanic whites, without diabetes, in U.S. children and young adults aged 5–24 years (NHANES III, 1988–1994).

The hospital had assured us that such post-meal spikes were expected in T1D, and that we were doing an excellent job.

There's a blood test called the HbA1c that measures blood glucose control over the previous 3 months. This chart shows that the **normal value** for otherwise healthy children without diabetes is **about 5%**.

Current diabetes treatment guidelines for children say to aim for an A1c of under **7.5%**. However, research shows that this level **isn't close enough to normal** to avoid complications.

So we did what any parents would do when facing an impasse regarding a serious condition threatening their child's health. We consulted YouTube, and a bunch of strangers on Facebook!



On YouTube, we watched the talks about T1D and LC by Troy Stapleton and Lisa Scherger at earlier "Low Carb Down Under" events.

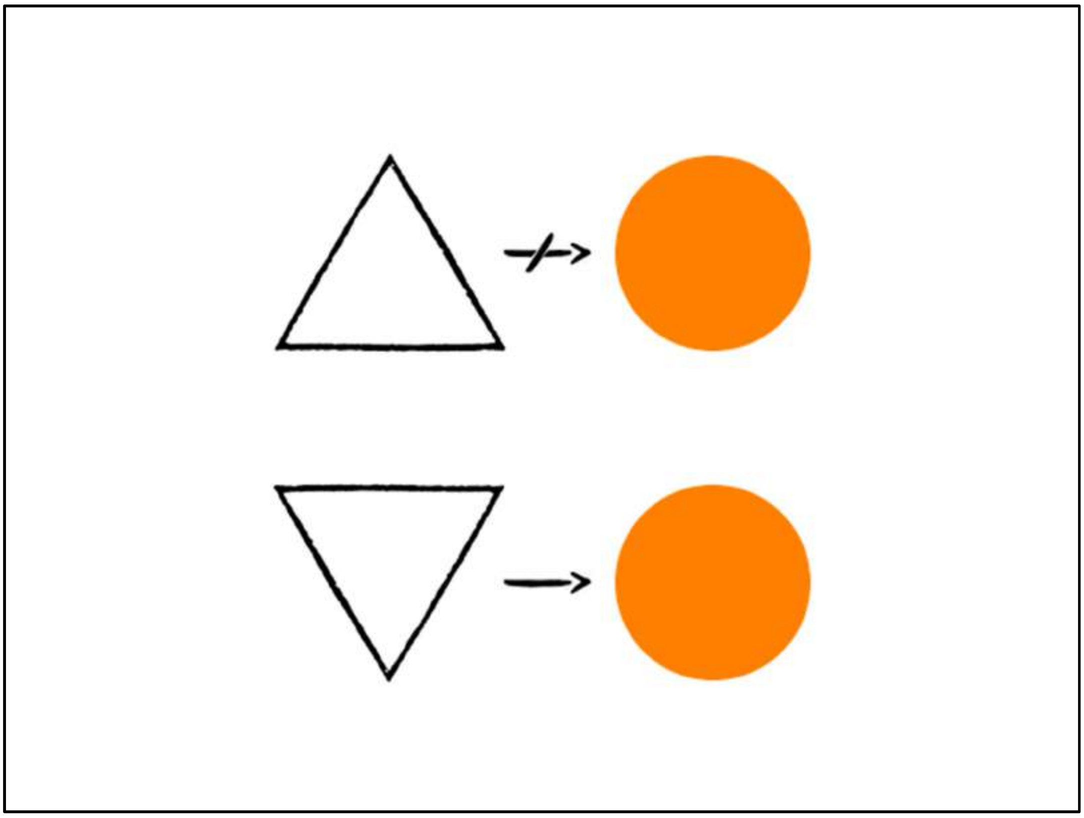
These talks led us to the TYPEONEGRIT Facebook page.

This is a group of people who follow the Bernstein approach to achieving normal blood glucose levels for people with T1D.

This approach involves eating **Low Carb Healthy Fat**, and a range of other diabetes management techniques.

Most of the people in the TYPEONEGRIT group were reporting **normal blood glucose levels** and **A1cs** in the **4s** and **5s**.

We'd found a cluster of elusive orange dots!

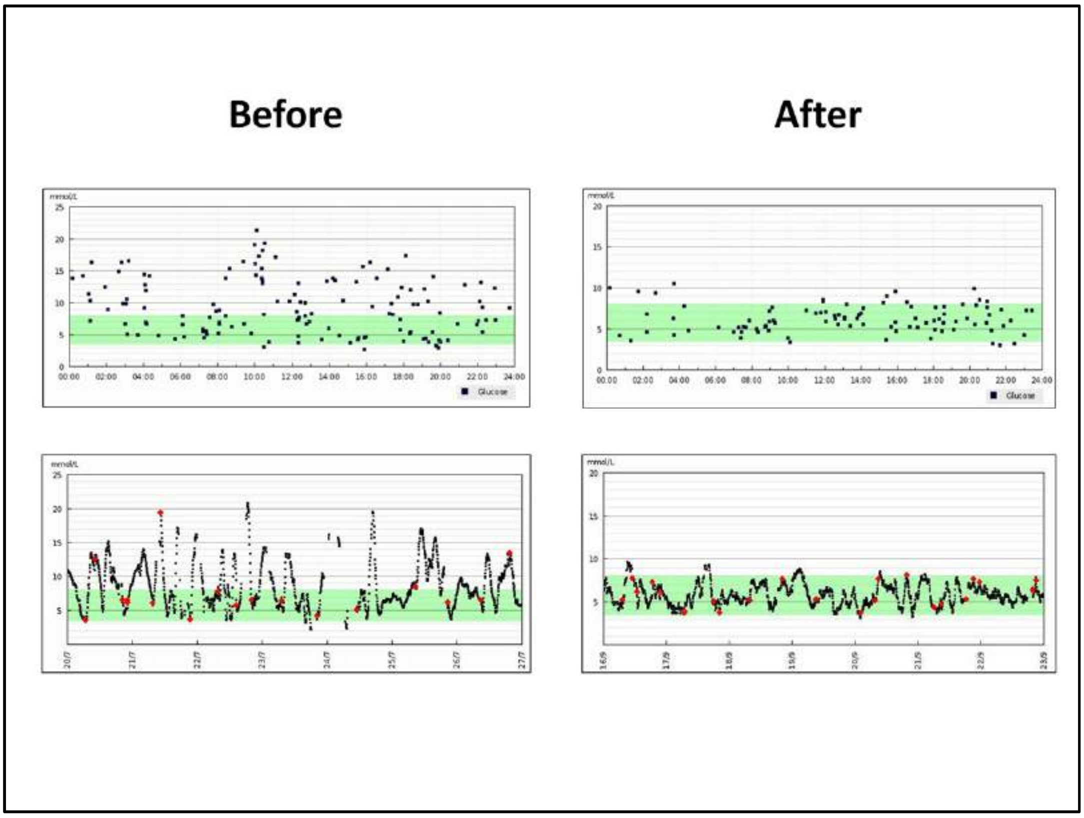


We learned from this group that if a person with T1D follows the standard food pyramid, they will probably **never** achieve normal blood glucose levels.

We also learned that if the person turns the food pyramid (and conventional wisdom) on its head, it **is** possible for them to safely achieve normal blood glucose levels.

Over the next few weeks, and after further research and a face-to-face consultation with a local LC nutritionist, we switched Patrick, and the rest of the family, to the LC way of eating.

As Patrick was wearing the CGM, we watched every one of his 300 glucose readings per day. We tracked his response to the new way of eating, and adjusted his insulin doses to match.



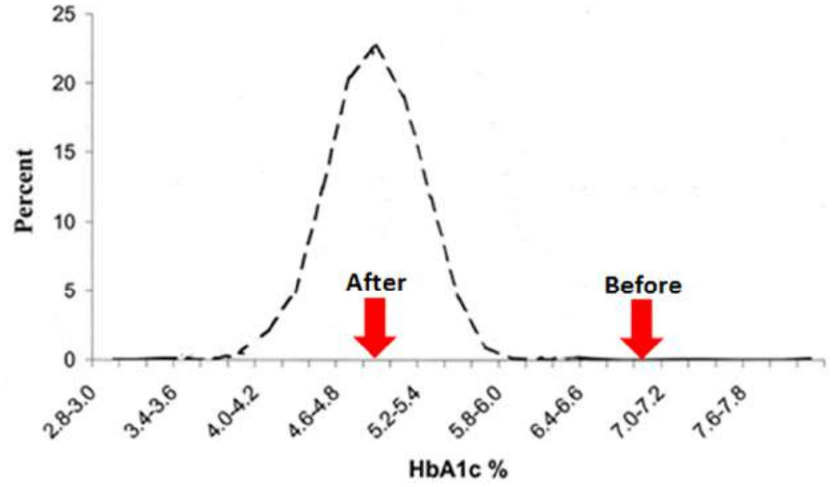
Before **After**

The results were **remarkable**.

These “before” and “after” snapshots show that within just a few weeks, Patrick’s blood glucose levels were mostly in the **normal range**.

Needless to say we’ve been LC ever since.

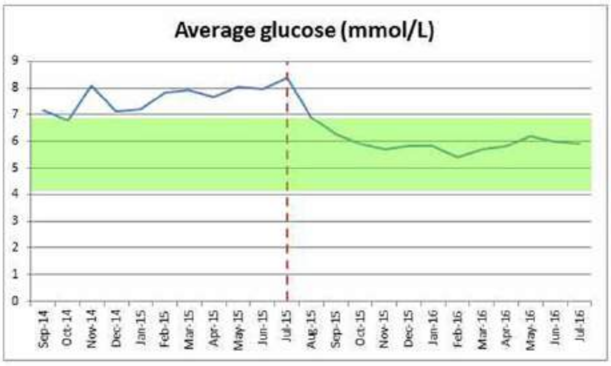
In the next 3 slides, I’ll show some comparisons between a full 12 months **eating high carb** and a full 12 months **eating low carb**.

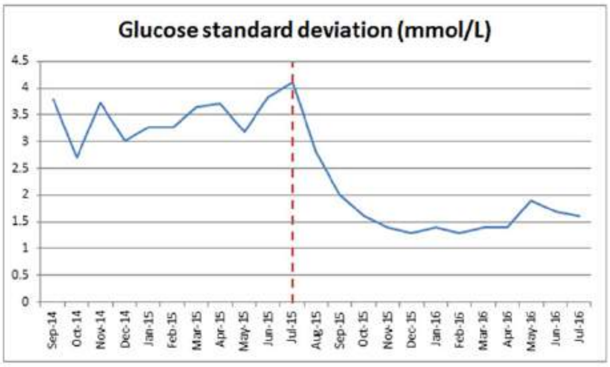


HbA1c distribution in non-Hispanic whites, without diabetes, in U.S. children and young adults aged 5–24 years (NHANES III, 1988–1994).

This chart shows that his **A1C** has come down from **outside the normal range** at over 7%, to **inside the normal range** at around 5%.

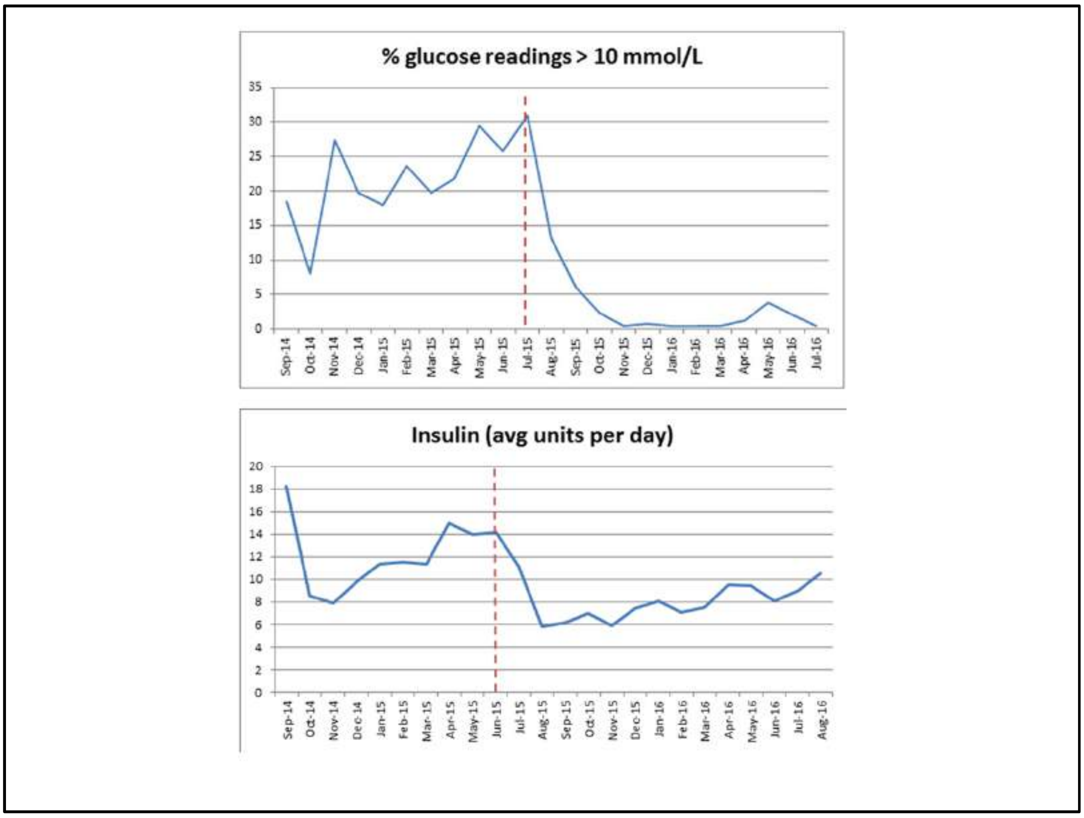
Along the way, he’s even had an A1c reading of 4.7%, which is a result most hospital teams will never have seen in a child with established T1D.





The first chart shows that his **average glucose** level started dropping once we went LC (indicated by the dotted red line), and soon came down into the normal range.

The second chart shows that his **standard deviation** (which is the extent of the swings around the average) started dropping once we went LC. Life is now much less of a wild rollercoaster.

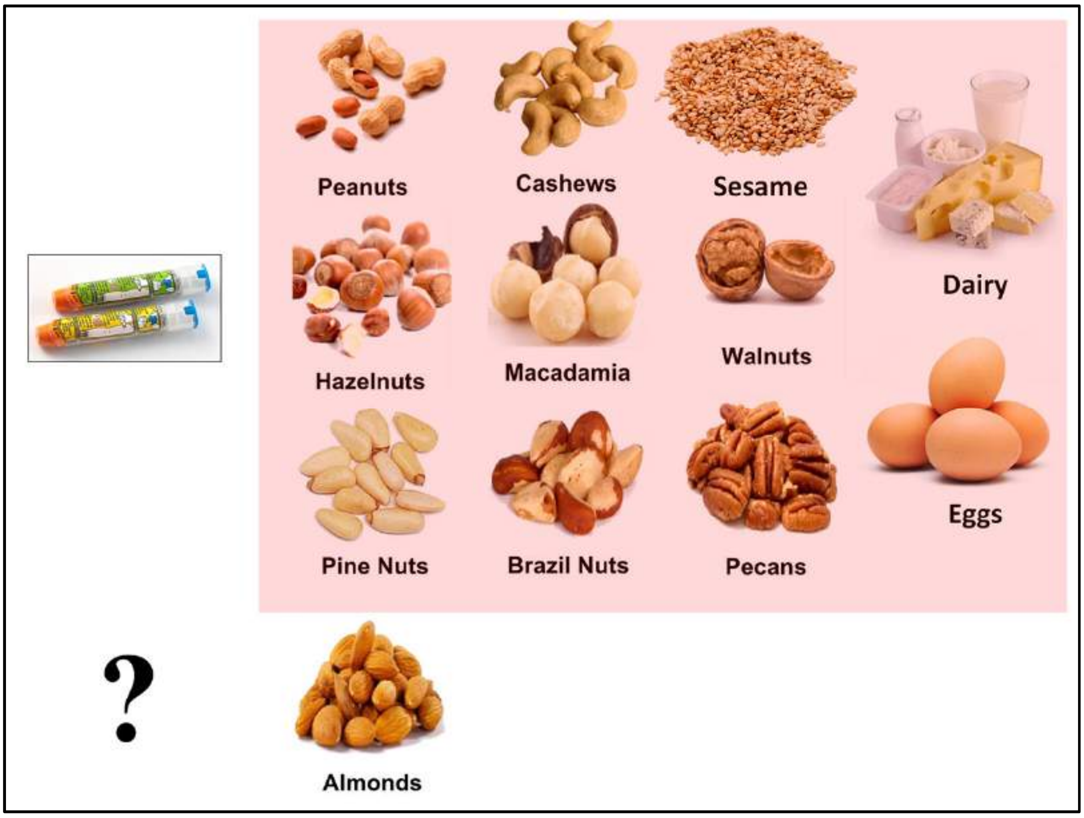


The first chart shows that his **readings over 10** dropped significantly once we went LC. Now, in most months, he doesn’t have **any** readings over 10, and has only a small number over 8.

It’s not shown here, but his **low readings** have also decreased in frequency, severity and duration. The improvement in his A1c has not been due to more hypos.

The second chart shows that his **insulin use** dropped by about 50% once we went LC. Since then, as we’d expect, it is slowly increasing with advancing age and growth.

All these charts have shown what it’s like to change from a grey dot to an orange dot, and to get back those potentially lost years of life expectancy.



The transition to **Low Carb Healthy Fat** was initially overwhelming for us, not only because we were grappling with T1D, but also because Patrick has anaphylaxis.

He started the LCHF journey with **life-threatening allergies** to peanuts, sesame, egg, all tree nuts (except almonds, which we had only just started introducing) and all dairy (except a small amount of hard cheese, such as parmesan).

So what did we do? We started by converting one meal at a time.

Low carb bread,
avocado and bacon

Waffles and ice-cream
(all home made and low carb)

Pancakes, berries,
sugar-free syrup and cream

Sausages, bacon,
cheese and salad

We began with breakfast.

We shifted from our usual porridge or toast, to things like:
- bacon and sausages;
- eggs, for those of us who could eat them;
- almond milk or coconut milk smoothies;
- LC waffles and ice cream;
- LC pancakes and yoghurt; and
- avocado and goats cheese on LC toast.

Fish & salad

Meat balls, cauli rice & greens

Grilled chicken, fried cauli rice & greens

Roast chicken, salad & celeriac chips

LC bread

For the evening meal, we stuck to our favourites, whilst substituting healthy LC options for the starchy carbs.

Rice became cauliflower rice.

Pasta became zucchini noodles, konjac noodles or kelp noodles.

We made chips from celeriac.

And we learned to bake our own LC bread.

Turkey slices, cheese, vegies & low carb bread

Ham, cheese, vegies & seed crackers

Vegies, cheese & dip

Fathead pizza, smoked salmon and salad

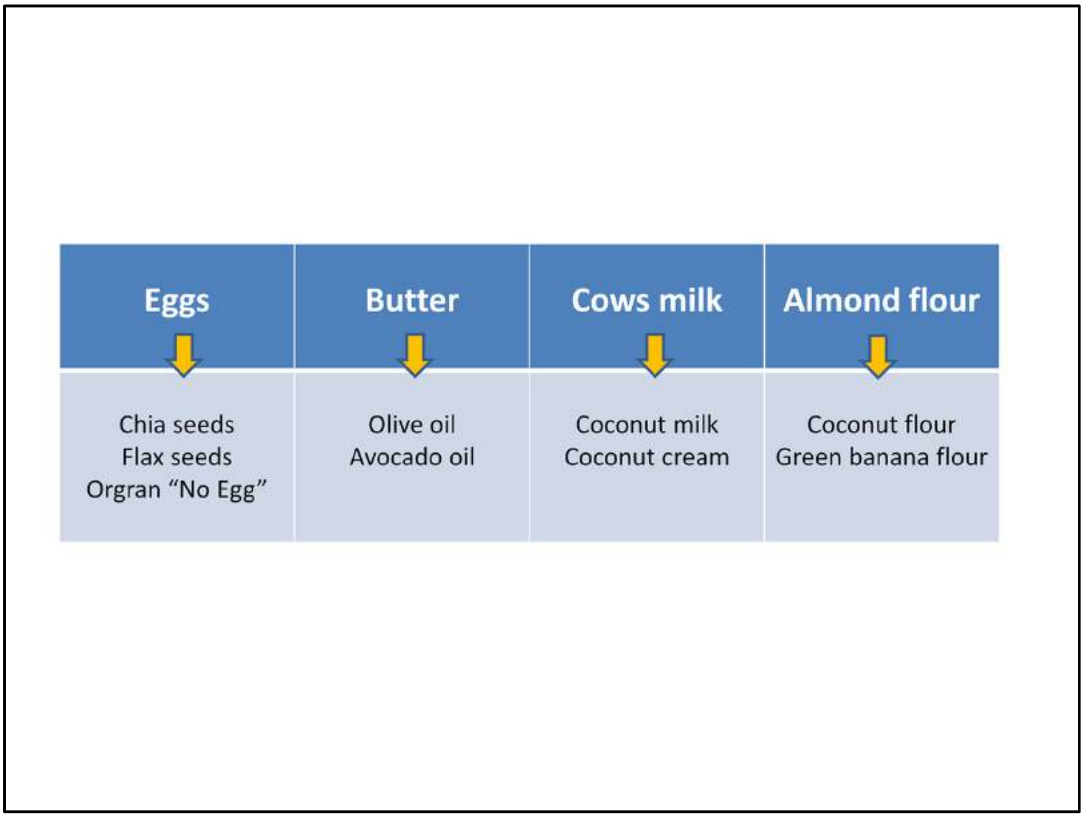
We then tackled the school lunch boxes.

We eliminated all fruit, except a small amount of berries.

And we made sandwiches using LC bread or seed crackers.

We made sure the lunch box contained lots of fresh vegies with cheese and meat or LC dips.

We also developed a range of LC cakes and biscuits for special occasions.



Eggs	Butter	Cows milk	Almond flour
Chia seeds Flax seeds Orgran “No Egg”	Olive oil Avocado oil	Coconut milk Coconut cream	Coconut flour Green banana flour

To accommodate Patrick’s allergies, especially in the early days, we made some substitutions.

Instead of eggs, we used chia or flax seed eggs, or Orgran “No Egg” egg replacer.

Instead of butter, we used olive oil or avocado oil.

Instead of cows milk and cream, we used coconut milk or coconut cream.

And instead of almond flour, we used coconut flour or green banana flour.

Disgusting	No thanks	Maybe	Good	Delicious
🤮	👎😠	🤔	😋	😍

We learned many things along the way.

While we were developing our new menus, we made it fun by giving the children some autonomy. We developed a scale from “disgusting” to “delicious” to describe new foods, and everyone got to vote. This helped us choose a variety of foods that everyone enjoyed.

It was a good decision to involve the whole family. This meant that there was no cheating from the outset. We cleared out the pantry, stocked the fridge and freezer with real, whole foods, and began our journey.

We have on hand good quality substitutes for almost everything we used to eat.

This seems especially important for kids’ parties and play dates. I often check what will be served, and send along similar looking alternatives.

There are plenty of LC recipe ideas online and in great cookbooks. But I often refer to the TYPEONEGRIT Pinterest page.

Once we got underway, we checked in with the experts.

We had regular reviews with Patrick’s paediatrician and diabetes educator. They monitored his diabetes and our management strategies, his allergies and his overall growth and development.

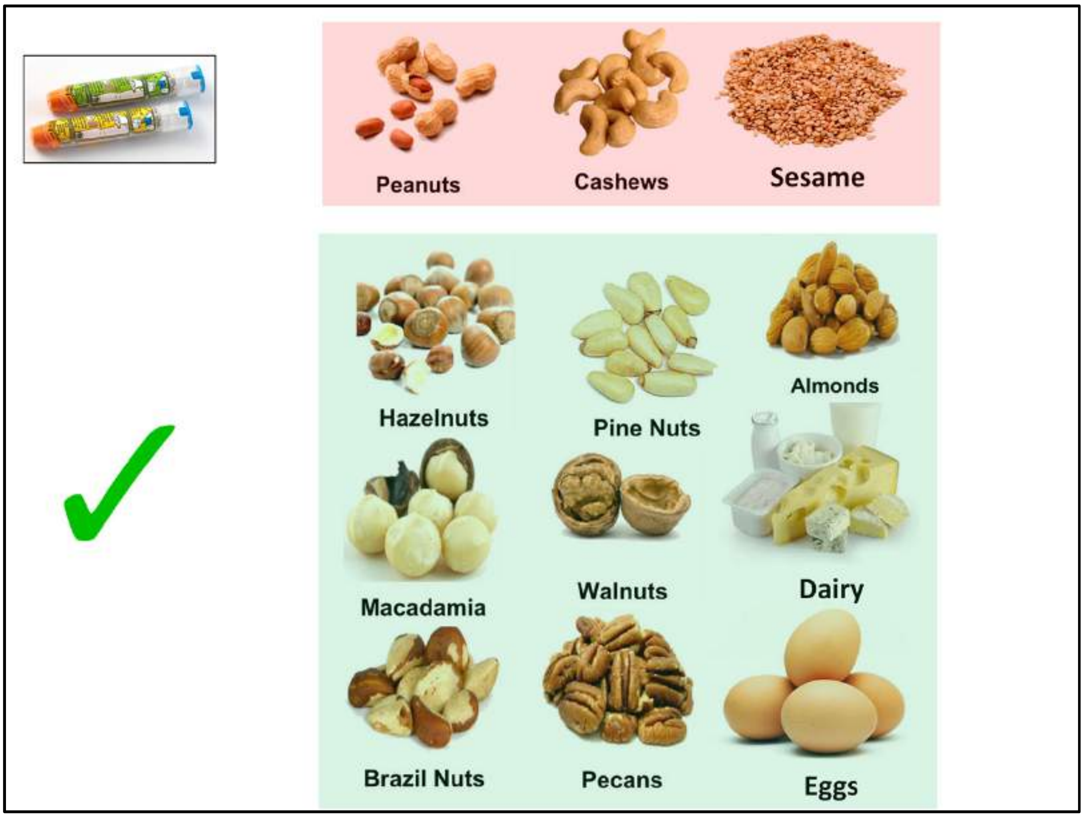
We saw Vicky Kuriel, a local LC nutritionist. She reassured us that our new way of eating was healthy and appropriately balanced.

We also consulted with Dr Robert Szabo, a specialist LC general practitioner. He confirmed that Patrick’s growth continued on the 50th centile for weight and 90th centile for height, and that his blood work was well within the normal range.

Despite us not following the standard food pyramid, Patrick is exceeding the year level expectations at school and so participates in extension programs for maths and spelling.

It appears that his brain **is** functioning efficiently on a LC diet.

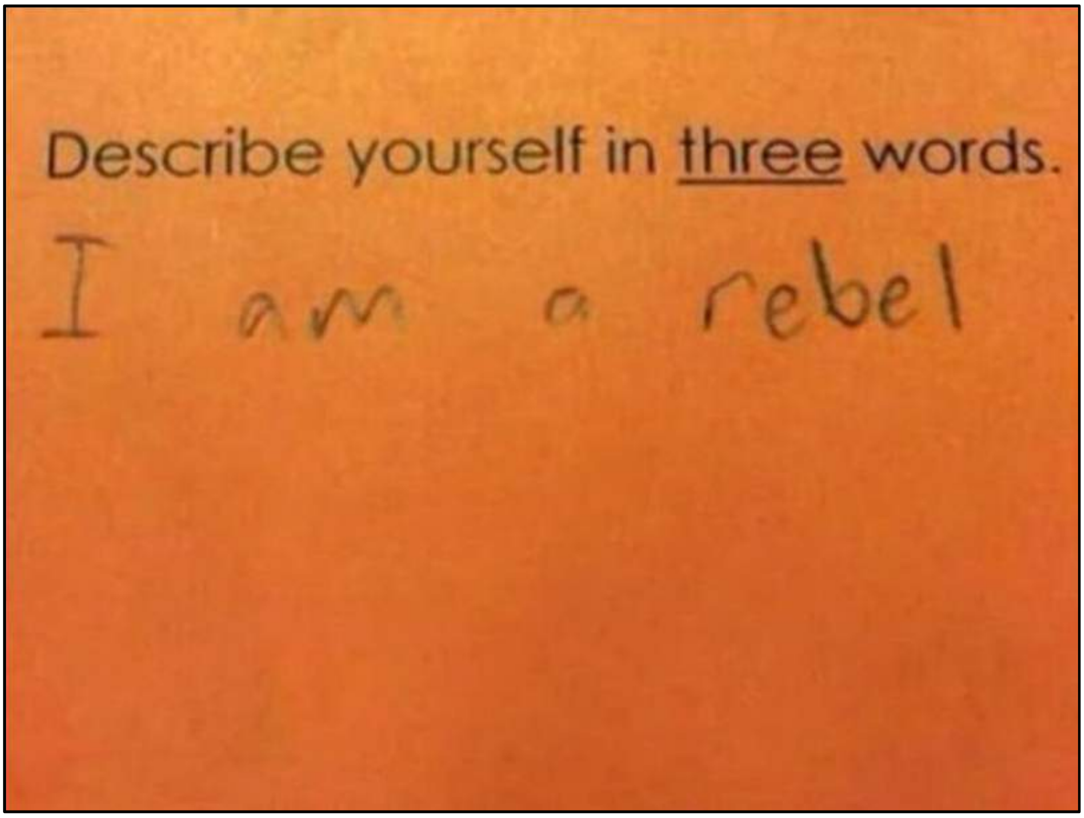
In addition, he no longer needs a carby snack before exercise, can exercise for hours with normal blood glucose levels, and no longer experiences the terrible post-exercise lows he once endured. His energy levels have returned to normal.



Along the way, many of Patrick’s allergies have resolved.

He is now happily eating dairy, eggs and most tree nuts, and this has helped us lower his daily carbohydrate intake even further.

The potential contribution of LC to this fairly rapid allergy resolution is of great interest to Patrick’s paediatrician, but that’s a topic for another day.



Describe yourself in three words.

I am a rebel

Finally, we made the switch to LCHF without having to wait for the world to change.

We didn't have to grin and bear the high carb approach. We didn't have to ask anyone's permission to turn things upside down. We didn't have to argue, shout, or convince anyone else.

We just quietly switched.

We're forever grateful to all the pioneers who paved the way for our switch, including Rod Tayler, Troy Stapleton, Lisa Scherger, Dr Bernstein, RD Dikeman, the entire TYPEONEGRIT community, and all the LC innovators.

Because of these people, for us and many others, there is light at the end of the tunnel.

And it’s not a flaming bike heading in our direction.

It’s a simple, orange dot.