Suffer Not The Litte Children

Diabetes Singapore catches up with Dr Warren Lee, Senior Consultant, Department of Endocrinology, KK Women's and Children's Hospital, and Chairman of Diabetic Society of Singapore, to find out more about the latest diabetes treatments available in Singapore for children and teenagers.

Q. 9% of Singapore's population is estimated to have diabetes. That is almost 300,000 people. How many of these are children and teenagers?

A. There are about 500 to 600 children and teenagers with diabetes in Singapore today. Each year, approximately 20 to 40 children and young people develop type 1 diabetes in childhood.

Another 10 to 20 will be diagnosed to have type 2 diabetes. Most will be treated in KK Women's and Children's Hospital (KKH) or National University Hospital (NUH), as these two hospitals have specialised units for childhood and adolescent diabetes.

Q. Why do type 1 diabetes patients need to control their diabetes with insulin?

A. People with type 1 diabetes mellitus will still need insulin by injection for life. Studies such as the EDIC study which followed up patients from the DCCT study for 10 years have shown that it is important to have very good control of diabetes with a low HbA1c right from the start.

A phenomenon called 'metabolic memory' works so that people with intensively treated diabetes (e.g. four injections a day or the use of an insulin pump) continue to have lower rates of diabetes complications 10 years later, even when compared to those who have the same HbA1c levels but who have been conventionally treated (e.g. two injections a day).

Q. Currently, children at KKH are usually on three to four injections a day of insulin. How do they cope with this daily regimen?

A. While it may appear to be a rather painful process, most children accept it. They know that having these injections three to four times daily actually gives them more freedom with food choices and portions compared to someone on only two insulin injections a day.

Q. Could you tell us more about these insulin injections?

A. The four injections a day method is called the Basal Bolus method. Three injections of rapid acting insulin analogue such as Novorapid or Humalog (Lispro) are given just before or during each meal, and one injection of very long acting insulin analogue, such as Glargine or Detemir, is given at bedtime.

Children with varying timetables or older teens who are in tertiary education have taken well to the Basal Bolus method, because even if they wake up late, their blood glucose levels can still be normal due to the 20- to 24-hour action of the long acting insulin analogues.

Q. Do more injections mean better blood glucose control?

A. It is not the number of injections per day but the match between insulin and food and activity that ensures optimal blood glucose control. With the doctor, patient, parent, nurse educator and dietitian working together as a team, it is not difficult to achieve a near normal HbA1c, and most international guidelines suggest that one should try to achieve 7 to 7.5% HbA1c levels while ensuring as little hypoglycaemia as possible.

Even with three times a day insulin injections, which usually means having a combination of rapid acting and slow acting insulin, e.g. Novorapid /Lispro and Insulatard/Humulin N or Novomix/Mixtard premixed insulin in the morning, a rapid acting analogue (Novorapid or Lispro) at lunch and a long and short acting combination again at dinner-time, the results can be very good.

Q. What about insulin pumps and their benefits?

A. 30 children in Singapore are estimated to be on insulin pumps. An insulin pump is basically a device containing a reservoir for insulin, a microchip controlled mini-pump and a battery supply which can be used to pump out the insulin into a catheter which is in turn connected to a plastic cannula left inserted into the skin for about three days before it needs to be changed.

The great thing about the insulin pump is that you can do very fine tuning and use many boluses for each time you eat something, without having to endure the pain of separate injections each time you give an insulin bolus.

Although using an insulin pump seems more complicated at first and still costs about $200 per month to run, kids on the pump really appreciate it for the freedom they get to eat anytime and fine tune their diabetes control without having to worry about having hypos or low blood sugars.

Q. Are there other new devices in the market which can help children with good diabetes control?

A. A new device that is really making good diabetes control more attainable is the continuous glucose monitoring system or CGMS. There are several systems on the market, but essentially the system consists of a plastic proble (like an insulin pump cannula) inserted into the skin and left there for three to six days. The special probe detects glucose levels in the tissue fluid under the skin and sends the information either through a little wire or wirelessly to a recording device worn on the clothes or belt.

(continued on page 25)

Type 2 diabetes was once seen as a disease of adults. Today, this type of diabetes is growing at alarming rates in children and adolescents.

Small Talk >>>>>>>>>>>>>>>