

Innovation gives pregnant women with diabetes round-the-clock glucose control

April 23 2015



Achieving better glucose control in pregnant women with diabetes by using continuous glucose monitoring may help them give birth to healthier children, new research from the University of Leeds says.

Up to 50% of babies born to women with [diabetes](#) are born too large, which can lead to greater intervention and problems during childbirth and also increase the risk of the child developing diabetes, obesity and cardiovascular disease later in life.

Usually, pregnant women with diabetes monitor their glucose during the

day using the traditional 'finger-prick' test, which can be painful and inconvenient. However, only snapshots of what is happening to the glucose are picked up, as it is only done between four and eight times a day, and not at all during the night when asleep.

Even when these blood glucose readings reach the targets required, [pregnant women](#) with diabetes still give [birth](#) to large babies. This suggests that the traditional finger-prick test may not be good enough to detect all the changes in glucose that contribute to the baby's growth, and that using newer technology such as continuous glucose monitoring (CGM) may be able to help with this problem.

The research team, from the University of Leeds' School of Medicine, has worked out a way to interpret the complex data provided by CGM devices, so they get a much clearer picture of the [glucose control](#) across the 24-hour day that is associated with having a large baby.

The devices usually consist of a tiny probe that sits just under the skin and a small data monitor that sits on the skin (about the size of a 50p piece), measuring glucose levels all day, every day, revealing in detail glucose changes that may otherwise be missed with finger-prick testing alone.

Dr Eleanor Scott, Consultant in Diabetes and Endocrinology, who led the research with Dr Graham Law, Senior Lecturer in Statistical Epidemiology, said: "The reality is that comparing the data provided by a CGM to that offered by a finger-prick test is like comparing an image under the microscope to that seen by the naked eye – we get much more detail with CGM.

"Women can use this data to make sure that the times of day when glucose seems to run higher are periods where they are particularly careful to keep their glucose as close to normal as possible. They can do

this by consulting with their 'diabetes in pregnancy' clinical teams who will be able to advise on timing of insulin, timing and types of food to help smooth the glucose profiles and avoid these problem areas."

Dr Scott added that the next stage of the research would be to find out how its findings may help with the future design of the so-called "artificial pancreas", the closed loop insulin systems which are being developed to transform the care of people with type 1 diabetes who are reliant on insulin.

They consist of an integrated CGM sensor and insulin pump that talk to each other via computer to deliver insulin safely across the 24 hour day.

Dr Anna Secher, of the Center for Pregnant Women With Diabetes in the Department of Endocrinology at the University of Copenhagen, a collaborator on the study with the University of Cambridge, said: "CGM has been used for many years in The Center for Pregnant Women with Diabetes in Copenhagen, but this study is the first to investigate [glucose](#) levels 'round the clock' in relation to large babies."

The research has been published in the journal *Diabetes Care*.

Provided by University of Leeds

Citation: Innovation gives pregnant women with diabetes round-the-clock glucose control (2015, April 23) retrieved 5 May 2024 from <https://medicalxpress.com/news/2015-04-pregnant-women-diabetes-round-the-clock-glucose.html>

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