



Title: Automated Insulin Delivery use in Pregnancies of Women with Type 1 Diabetes

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Research area: Type 1 diabetes

Award: End Diabetes 100 Award, 2021-2024

Summary:

Problem: Over half of the newborns of pregnant women with type 1 diabetes (T1D) are born excessively large or early, have low blood glucose, birth defects or die in the womb. These complications result from high glucose levels during pregnancy. Their occurrence is reduced by keeping glucose normal in pregnancy. Few women with T1D are able to achieve this because pregnancy results in changing insulin requirements, the margin of safety for insulin dosing is narrow and conventional methods of giving insulin can lead to dangerously high and low glucose.

Potential Solution: A new technology, automated insulin delivery (AID), mimics a healthy pancreas by automatically adjusting the amount of insulin given by a pump based on the current and predicted glucose levels. We know AID systems have achieved better glucose control in non-pregnant people with T1D, but their use has not been well studied in pregnancy. This study would allow us to see if these benefits are also achievable in pregnant women with T1D and if AID can bring about healthier pregnancies and babies compared to standard insulin delivery.

Question: Is a new AID system, compared to standard insulin delivery, effective in achieving the following among pregnant women with T1D: 1) Improved blood glucose levels? 2) Fewer newborn complications? 3) Reduced diabetes self-care demands?

Methods: Pregnant women with T1D will be randomly assigned to use a new AID system or standard insulin delivery with continuous glucose monitoring. Glucose control, newborn and maternal complications and diabetes self-care demands will be compared between these two groups.

Impact: Findings from this research could result in more effective and easier ways for women with T1D to have healthier pregnancies and children.