



## **Title: Working to Finally End Diabetic Ketoacidosis in Type 1 Diabetes: An Education Tool Combining Data and Lived Experience**

### **Researchers:**

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### **Research area: Type 1 diabetes**

### **Award: End Diabetes 100 Award, 2021-2024**

### **Summary:**

**Purpose:** Potentially life-threatening diabetic ketoacidosis (DKA) occurs far too often in people with type 1 diabetes (T1D), and this has worsened during the pandemic. Insulin pump therapy and a promising add-on to insulin drug, called sodium glucose linked transporter inhibition (SGLTi), can substantially improve T1D control but unfortunately both increase DKA risk. We have designed a 3-step project to identify components of an effective education tool to prevent DKA.

**Methods:** Objective 1 is to identify if various stages of diabetes complications, like kidney disease, may increase risk for DKA. For this we will use data from a research study that has followed 1400 people with T1D for nearly 40 years. Objective 2 is to define the fingerstick ketone levels (for those using and not using SGLTi) that predicts if someone is at a higher risk of future DKA. For this we will use data from a very unique 1700-person clinical trial of SGLTi in T1D. Objective 3 is to develop, along with co-researchers who have T1D, the tools and steps necessary to promote successful behavior changes for people with T1D, caregivers, and healthcare providers to effectively prevent DKA.

**Outcome:** We will identify complications that may increase DKA risk, identify better ways for people with T1D to make use of ketone monitoring, and we will have education tools (such as infographics, web- or app-based tools) that actually work.

**Relevance:** 5 to 7 out of 100 people with T1D per year experience DKA. This is far too high, and death from DKA has increased during the pandemic. This research will help to better understand who is at risk and how to better prevent DKA for the general T1D population and also to benefit those in other countries using SGLTi.

**Engagement:** We have an experienced patient partner from Diabetes Action Canada on the leadership team, and for Objective 3 we will convene large groups of partners to co-design the education tool with the guidance of an "Implementation Research" team.