

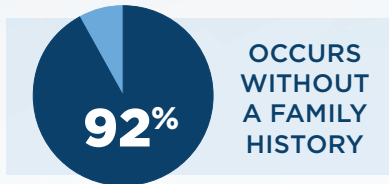
# TYPE 1 DIABETES (T1D)

1 in 200 people in the U.S. have T1D.

T1D is an autoimmune disease that destroys the beta cells that make insulin. Overtime, this causes high blood sugar levels, which left untreated are life-threatening. Currently, life-long treatment with insulin for those with T1D is required to control the blood sugar levels and maintain health.

## For many children, T1D:

- Develops unexpectedly
- May take months or years to progress from the start of autoimmunity to having high blood glucose



We now think of the progression to uncontrolled blood glucose as a process with three stages:

<b>STAGE 1</b>	<ul style="list-style-type: none"><li>• Autoantibodies develop, indicating that the immune system has begun attacking the body's insulin-producing beta cells.</li><li>• Blood sugar levels are still normal.</li><li>• A child does not have symptoms.</li></ul>
<b>STAGE 2</b>	<ul style="list-style-type: none"><li>• Further beta cell loss occurs.</li><li>• Not enough insulin is made to keep blood sugar levels normal all the time.</li><li>• The child still has no symptoms.</li></ul>
<b>STAGE 3</b>	<ul style="list-style-type: none"><li>• Most of the beta cells are destroyed, leading to consistently high blood sugar levels.</li><li>• A child begins to have symptoms and can be very sick.</li><li>• Clinical diagnosis usually occurs.</li></ul>

## Symptoms of T1D



EXTREME THIRST OR DRINKING MORE FLUIDS



FREQUENT NEED TO URINATE



BEDWETTING



FEELING VERY HUNGRY



FEELING VERY TIRED



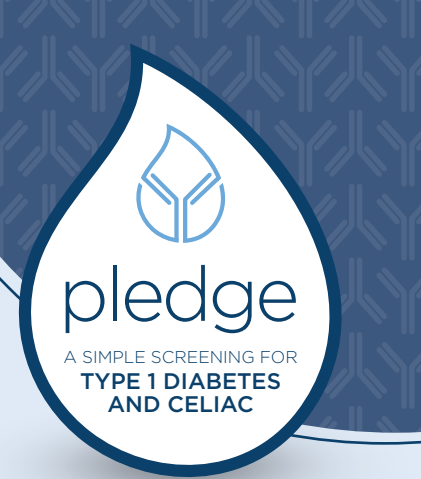
UNEXPLAINED WEIGHT LOSS



BLURRY VISION



DIFFICULTY CONCENTRATING



## Terms to know

### Immune system

The body's defense against outside infections and germs, protecting you to keep you healthy.

### Antibodies

Protective proteins in the immune system that attack and destroy harmful substances.

### Autoantibodies

A type of antibody whose presence indicates the immune system has begun to mistake the body's own cells as harmful and attack them.

### Autoimmune disease

A condition where the body's own immune system attacks itself and produces autoantibodies.

### Glucose

The main sugar found in your blood that the body uses for energy.

### Beta cells

The cells in the pancreas that make insulin.

### Insulin

This hormone allows cells to use glucose for energy.

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### **An unexpected diagnosis**

It may take months or years before autoimmune damage results in high blood sugar. Early symptoms may be subtle and can be missed. Once blood sugars are high (Stage 3), T1D typically progresses quickly to a life-threatening condition called diabetic ketoacidosis (DKA). Currently, most children are already in DKA when they are first diagnosed. Research has shown diagnosis and treatment before DKA occurs improves a child's long-term control and prevents DKA-associated effects to the brain.

Through screening for autoantibodies, T1D can be detected early (Stage 1 or 2) — when the autoimmune process is active, but blood sugar levels are still normal or only slightly elevated. Subsequent monitoring will enable treatment to start early enough to prevent DKA and improve long-term outcomes. Early identification of children with autoantibodies will allow us to offer participation in clinical trials to try to slow progression to high blood sugar (Stage 3).

### **Take the PLEDGE**

Sanford Health would like to invite your child to participate in a screening research study. We hope to learn better ways to identify and predict which children may be at risk of developing T1D and celiac disease.

### **Help with COVID-19 pandemic research**

Very little is known about COVID-19. Participation in the PLEDGE study may contribute to future research about COVID-19 without needing to collect any additional blood from your child.

**To see if your child qualifies for the study,  
please call (877) 878-4828.**

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