

Type 1 Diabetes Screening

Is your child at risk of type 1 diabetes?

If one person in your family* has type 1 diabetes, you're up to 15 times more likely to get it too. And type 1 diabetes can be detected before any symptoms appear.

*Family is defined as including first- and second-degree relatives:

A first-degree relative is defined as a close blood relative which includes the individual's parents, full siblings, or children. A second-degree relative is defined as a blood relative which includes the individual's grandparents, grandchildren, aunts, uncles, nephews, nieces or half-siblings.

What is type 1 diabetes?

It is an autoimmune condition which occurs when the immune system attacks healthy beta cells, which are the cells in the pancreas that produce insulin. When this happens, it's harder for your body to produce insulin and keep your blood sugar in a healthy range. Once the attack of the beta cells begins, the body can still make insulin for a period of time and keep the sugar in the healthy zone - this is called early stage, **stage 1**, or pre-insulin-dependent type 1 diabetes. You would have no symptoms at this time, but would have 2 or more autoantibodies present.

When the patient has two or more autoantibodies and progresses to dysglycemia as evidenced in an OGTT, they are in **stage 2**. They are still asymptomatic or pre symptomatic, the fasting glucose may be normal or a little higher, and the HgB A1C is still below the type 1 diabetes threshold (5.7-6.4%).

At stage 3, the patient has the diagnosis of type 1 diabetes. The autoantibodies may be absent by this time, the patient is symptomatic and has overt hyperglycemia. "Virtually all individuals with stage 1 diabetes will progress to **stage 3** type 1 diabetes, 35% within 5 years, 70% within 10 years, and >95% within 15 years." ** (reference- Insel, 2015).

What is the benefit of testing for type 1 diabetes?

Autoantibody testing is most critical during early childhood, as the rate of progression from positive testing to clinical disease is more rapid in younger individuals.

With screening, we can identify patients who are at increased risk for type 1 diabetes very early, such as at stage 1 when the patient has no symptoms, or stage 2, when the sugar is starting to move out of the normal range but the patient still doesn't have symptoms. Up until now, we have been identifying patients when they are in the final stage of development, called stage 3, when they have hyperglycemia (elevated sugar level) and symptoms of diabetes. In stage 3, the patient has already lost a significant portion of his beta cells.

In summary, knowing that your child is at risk of type 1 can minimize their chance of serious illness at the time of diagnosis of type 1 diabetes. Some of these illnesses can be serious, such as diabetic ketoacidosis (DKA), which can be life threatening if not diagnosed quickly and correctly, and the risk can be decreased by 50% or more.

How do we test?

It's a blood test for autoantibodies to the pancreas. It can be done by fingerprick or blood draw.

What do the test results mean?

If the patient has **one positive antibody test**, then he is at risk for disease progression and should be monitored at regular intervals for type 1 diabetes, such as yearly.

If the patient is **positive for two or more autoantibodies**, the lifetime risk of type 1 diabetes is nearly 100% (they will develop type 1 diabetes). Those patients will need to be monitored every 6 months, and will be followed by the Pediatric Endocrinologist. The specialist will determine if medical treatment is appropriate to delay the onset of type 1.

If the patient screens **negative for all antibodies**, Dr. Cossen recommends that they get retested every 2 years until age 17, so that they are retested during the highest risk time.

Will insurance cover this test?

***Our own Children's Healthcare of Atlanta Endocrinologist, Dr. Kristina Cossen, is part of the Trialnet clinical trial and is currently testing patients. There is NO charge for testing through Trialnet if you qualify.

Who qualifies for the Trialnet study?

If you have a 1st degree relative: 2 yo to 45 years of age
If you have a 2nd degree relative: 2 yo to 17 years of age

According to Dr. Cossen, if your screen is negative, you will get a letter in about 4 weeks. If you screen positive, you will get a call from the Doctor. If there is one positive, then you will be re-screened in 2 years. If you have two positive antibodies, the research team will order an OGTT.

Dr. Cossen asks that the patient register on the Trialnet site, then reach out to her Research Coordinator to arrange for the VENOUS blood draw. - xlanpid@emory.edu (Xiaomiao).

Physicians may contact Dr. Cossen or Dr. Muir directly, if needed, by called the choa P2P line.