THE 3 STAGES OF TYPE 1 DIABETES

Type 1 diabetes (T1D) develops over time.

Early detection and monitoring of T1D in the pre-clinical stages can help reduce the likelihood of diabetic ketoacidosis (DKA) and may offer some patients an opportunity for preventive intervention.

T1D is classified into three stages that reflect the progression of disease.

Stage 1

Stage 1 T1D is characterized by:

- Detection of multiple islet autoantibodies
- Normal blood glucose levels
- No symptoms

The five-year risk for progression to clinical (stage 3) T1D is 44%. [1]

The progression to stage 1 T1D is believed to begin with a genetic predisposition for autoimmunity.

Islet autoantibodies then develop in response to an immune-activating trigger.

Possible triggers include viral infections, microbiome disruptions, antibiotic exposure, and food/diet. [2]

Children with stage 1 T1D should have their HbA1c monitored: [3]

At least every three months for children <3 years old	At least every six months for children 3-9 years old	At least every 12 months for children >9 years old

Longitudinal increases of ≥10% indicate an increased risk for progression to stage 3 disease within a median of one year. [3]

Stage 2

Stage 2 T1D represents an intermediate stage characterized by:

- Detection of multiple islet autoantibodies
- Abnormal blood glucose levels
- No symptoms

The five-year risk for progression to clinical T1D is 75%. [1]

Glucose regulation should be monitored every three months for all children with stage 2 T1D. [3]

At this stage, individuals ≥8 years of age may be considered for preventive treatment with teplizumab (Tzield®) to help delay the onset of clinical T1D. [4]

Patients with stage 2 T1D may benefit from referral to a specialist for discussion of treatment options and clinical risk.

Note that not all patients progress through all three stages of disease; some patients, particularly young children, may progress directly from stage 1 to stage 3. [1]

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Stage 3

Stage 3 T1D represents clinical disease based on diagnostic criteria* from the American Diabetes Association. [5]

A1C ≥6.5% (≥48 mmol/mol), or

Fasting plasma glucose ≥126 mg/dL (≥7.0 mmol/L), or

2-hour plasma glucose ≥200 mg/dL (≥11.1 mmol/L) during oral glucose tolerance test, or

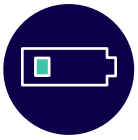
Random plasma glucose ≥200 mg/dL (≥11.1 mmol/L) with classic symptoms of hyperglycemia or hyperglycemic crisis

*All of these tests must be repeated unless random glucose is >200 and the patient is symptomatic.

Patients with stage 3 disease may also exhibit classic signs of T1D such as:

Frequent urination

Fatigue



Blurred vision

Excessive thirst

Increased appetite

Headache

Dry mouth

Unexplained weight loss

Irritability

Additional resources:

Breakthrough T1D – Overview of T1D stages

TrialNet – Overview of T1D stages and screening options to support early detection

HealthyChildren.org – Review of T1D, including stages, diagnosis, and recognition of symptoms from the American Academy of Pediatrics

References

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2. Insel RA, Dunne JL, Atkinson MA, et al. Staging presymptomatic type 1 diabetes: a scientific statement of JDRF, the Endocrine Society, and the American Diabetes Association. *Diabetes Care*. 2015;38(10):1964-1974.
3. Phillip M, Achenbach P, Addala A, et al. Consensus guidance for monitoring individuals with islet autoantibody-positive pre-stage 3 type 1 diabetes. *Diabetes Care*. 2024;47(8):1276-1298.
4. American Diabetes Association Professional Practice Committee. 3. Prevention or delay of diabetes and associated comorbidities: Standards of Care in Diabetes-2025. *Diabetes Care*. 2025;48(1 Suppl 1):S50-S58.
5. American Diabetes Association Professional Practice Committee. 2. Diagnosis and classification of diabetes: Standards of Care in Diabetes-2025. *Diabetes Care*. 2025;48(1 Suppl 1):S27-S49.

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