

Prediabetes

Beyond the Borderline



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KEYWORDS

- Prediabetes • Impaired fasting glucose (IFG) • Impaired glucose tolerance (IGT)

KEY POINTS

- Prediabetes is a complex multifactorial metabolic disorder that extends beyond glucose control.
- Prediabetes is not the harmless condition that it was previously thought to be.
- Microvascular and macrovascular changes are present with the onset of glycemic dysregulation.
- Identification and intervention can reverse or delay the progression of prediabetes.

INTRODUCTION

Defined by the American Diabetes Association (ADA) in 1997, prediabetes recognizes those specific individuals who did not meet the diagnostic criteria of type 2 diabetes (T2DM) but whose laboratory testing levels were not at normal values.¹ Prediabetes is a complex multifactorial metabolic disorder that extends beyond glucose control.² Once thought of as an innocuous condition, current studies have found that microvascular (neuropathy, nephropathy, and retinopathy), macrovascular (stroke, coronary artery disease, and peripheral vascular disease), periodontal disease, cognitive dysfunction, blood pressure changes, obstructive sleep apnea, low testosterone level, fatty liver disease, and cancer are some of conditions that are present with the onset of glycemic dysregulation.^{3–5} The presence of prediabetes increases the risk of developing T2DM by 3-fold to 10-fold.³ Worldwide it is estimated that 5% to 10% of people with prediabetes will develop T2DM, whereas an American Diabetes Association expert panel estimates up to 70% will progress to T2DM.⁴ Once the diagnosis of T2DM is made the condition cannot be reversed or cured but it can be controlled.⁶

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DIAGNOSIS

Prediabetes is diagnosed using the following criteria (**Box 1**):

- Impaired fasting glucose (IFG) as defined by a fasting glucose level between 100 mg/dL and 125 mg/dL
- Impaired glucose tolerance (IGT) as defined by a glucose level between 140 and 199 mg/dL 2-hours after receiving a 75-g oral glucose tolerance test (OGTT)
- Hemoglobin A1c 5.7% to 6.4%

The A1c is a simple test to obtain; many clinics and offices have the ability to obtain results in less than 15 minutes with point-of-care (POC) technology. The ADA does not recommend the POC A1c for diagnostic purpose at this time because there is no current proficiency testing mandate for performing the test.¹ It is important to obtain an accurate medical history because the hemoglobin A1c results can be inaccurate in the presence of certain conditions. Conditions such as asplenia, iron deficiency anemia, vitamin B₁₂ and folate deficiency anemias can falsely increase the A1c results.⁷ In contrast, hemoglobin A1c results can be falsely decreased in the following conditions: pregnancy, acute and chronic blood loss, hemolytic anemia, splenomegaly, and end-stage renal failure.⁷ If a patient has one of these conditions the diagnosis of prediabetes or diabetes should be made using other diagnostic criteria.

RISK FACTORS

The main risk factors for diabetes are divided into 3 categories: modifiable, unmodifiable, and other.

Unmodifiable risk factors include:

- Family history or first-degree relative with T2DM
- Ethnicity (Native American, African American, Hispanic, Asian American, and Pacific Islander)
- Age

Modifiable risk factors include:

- Being overweight or obese. Body mass index (BMI) more than 25 kg/m²
- Physical inactivity

Other risk factors include:

- History of gestational diabetes
- Delivery of a child weighing more than 9 pounds (4.1 kg)
- Hypertension
- Dyslipidemia

Box 1

Diagnosis of prediabetes

Fasting glucose level between 100 mg/dL and 125 mg/dL, or

Two-hour post-75-g oral glucose tolerance test between 140 and 199 mg/dL, or

Hemoglobin A1c between 5.7% and 6.4%

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