

# Diabetes screening: Which patients, what tests, and how often?

**Principal Source:** U.S. Preventive Services Task Force. Screening for type 2 diabetes mellitus in adults: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2008;148(11):846-854.

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Psychiatric patients—especially those with schizophrenia or taking atypical antipsychotics—are at risk for developing type 2 diabetes mellitus (T2DM) and prediabetes conditions. T2DM can be present for years without significant symptoms and even asymptomatic conditions increase the risk of cardiovascular, renal, retinal, and neurologic complications.

Despite a need for T2DM screening and treatment, expert guidelines disagree on who and how to screen (*Table 1, page 20*). Although testing patients who have diabetes symptoms—including polyuria, polydipsia, and weight loss—is indicated, some medical groups advocate screening asymptomatic persons for T2DM.

## Screening recommendations

**Consensus guidelines.** In 2004, the American Diabetes Association (ADA), American Psychiatric Association (APA), American Association of Clinical Endocrinologists (AACE), and North American Association for the Study of Obesity (NAASO) created consensus guidelines for screening psychiatric patients receiving atypical antipsychotics. In addition to diabetes risk, psychiatric patients are at higher risk for metabolic syndrome, dyslipidemia, obesity, and hypertension.<sup>1</sup> The ADA, APA, AACE, and NAASO recommend regularly screening for weight gain and dyslipidemia, obtain-

ing baseline values of fasting plasma glucose (FPG), rechecking FPG after 3 months, and then screening annually for diabetes or prediabetes. For patients with risk factors for diabetes and those who develop diabetes or prediabetes while taking an atypical antipsychotic, consider an atypical with a lower risk of diabetes—specifically aripiprazole or ziprasidone.<sup>1</sup> For psychiatric patients who do not take atypicals, there is no consensus on who and how to screen for T2DM.

**The U.S. Preventive Services Task Force (USPSTF)** recommends screening only adults with hypertension.<sup>2</sup> Its review found insufficient evidence that early detection and treatment leads to improved clinical outcomes in asymptomatic adults.

**The ADA** recommends more liberal screening, including individuals age  $\geq 45$  or anyone age  $< 45$  who is overweight and has any other diabetes risk factors.<sup>3</sup> The ADA admits that no trials show a benefit of screening asymptomatic patients but notes that the duration of glycemic burden predicts adverse outcomes and effective interventions for diabetes and prediabetes are available.

**AACE** guidelines recommend screening starting at age 30 if the patient has risk factors for T2DM. This is the only group that includes psychiatric illness as a risk factor.<sup>4</sup>

**European Association for the Study of Diabetes (EASD)** guidelines calculate a risk score based on common risk factors to determine who should be screened and recommend using the oral glucose tolerance



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**Table 1**

**General population screening recommendations for type 2 diabetes mellitus or prediabetes**

Organization	Year	Whom to screen	How to screen
<b>U.S. Preventive Services Task Force (USPSTF)</b>	2008	Asymptomatic adults with sustained blood pressure >135/80 mmHg (treated or untreated)	FPG or OGTT every 3 years
<b>American Diabetes Association (ADA)</b>	2009	All adults age ≥45 Adults of any age with BMI >25 kg/m <sup>2</sup> and ≥1 risk factors for diabetes ( <i>Table 2, page 23</i> )	FPG or 2-hour OGTT every 3 years or more frequently, depending on initial results and risks
<b>American Association of Clinical Endocrinologists (AACE)</b>	2007	All adults age ≥30 with risk factors for diabetes ( <i>Table 2, page 23</i> )	FPG or 2-hour OGTT (frequency not specified)
<b>European Association for the Study of Diabetes (EASD) and European Society of Cardiology (ESC)</b>	2007	All adults with elevated risk score*	OGTT (frequency not indicated)

FPG: fasting plasma glucose; OGTT: oral glucose tolerance test (75 gm glucose load); BMI: body mass index  
\*Risk scoring tool available at [www.diabetes.fi/english/risktest](http://www.diabetes.fi/english/risktest)

**Clinical Point**

The most common diabetes risk factors are ethnic group, hypertension, lipid abnormalities, and cardiovascular disease

test (OGTT) rather than the FPG.<sup>5</sup> The OGTT identifies more cases of diabetes and prediabetes but takes >2 hours to administer.

**Discussion**

Despite a lack of evidence showing benefit to the screened population, treating diabetes and its comorbidities improves outcomes, and the potential risks of therapy are low. Therefore, it seems reasonable to screen more patients than the USPSTF recommends.

**Practice Points**

- **Screen annually** for type 2 diabetes mellitus (T2DM), prediabetes, weight gain, and lipid abnormalities in all patients taking atypical antipsychotics.
- **Screen annually** psychiatric patients age ≥30 who do not take atypicals for T2DM and prediabetes.
- For patients age <30, **regularly review** your patients' risk factors for diabetes to determine whom to screen for T2DM or prediabetes.
- Screening is done most simply by **ordering a fasting plasma glucose test.**

Using the EASD risk score is intriguing, but difficult to implement in a busy practice. Therefore, I recommend following the AACE guidelines, which recognize psychiatric illness as a risk factor, for screening psychiatric patients who are not receiving atypicals.

Annually screen psychiatric patients age ≥30, especially those with schizophrenia or affective disorders. I also follow the ADA guidelines and screen overweight adults age ≤30 if they have any of the other risk factors listed in *Table 2 (page 23)*. The most common risk factors seen in practice are being a member of a high-risk ethnic group, hypertension, lipid abnormalities, and cardiovascular disease. For overweight adults without other risk factors, I start screening at age 30.

Other practitioners can be more or less conservative and still be within accepted guidelines. The FPG—glucose level drawn from a vein after at least 8 hours of fasting—is probably the easiest screening test in practice. Any patient with a value >100mg/dL should be referred to the patient's primary care physician. Any patient who develops diabetes symptoms—including polyuria, polydipsia, and weight

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**Table 2**

## Risk factors identified for diabetes or prediabetes

<p><b>American Diabetes Association (ADA)</b></p>	<ul style="list-style-type: none"> <li>• BMI &gt;25 kg/m<sup>2</sup></li> <li>• physical inactivity</li> <li>• first-degree relative with diabetes</li> <li>• members of high-risk ethnic populations (African-American, Latino, Native American, Asian, Pacific Islander)</li> <li>• women who delivered a baby &gt;9 lb or had gestational diabetes</li> <li>• hypertension</li> <li>• high-density lipoproteins cholesterol &lt;35 mg/dL and/or triglyceride level &gt;250 mg/dL</li> <li>• women with polycystic ovarian syndrome</li> <li>• impaired glucose tolerance or impaired fasting glucose on previous testing</li> <li>• conditions associated with insulin resistance, such as severe obesity or acanthosis nigricans</li> <li>• history of cardiovascular disease</li> </ul>
<p><b>American Association of Clinical Endocrinologists</b></p>	<ul style="list-style-type: none"> <li>• All of the risk factors identified by the ADA, except for conditions associated with insulin resistance, such as severe obesity or acanthosis nigricans</li> <li>• psychiatric illness</li> </ul>

loss—should be tested immediately. The hemoglobin A1C test is not recommended for screening.

### Clinical presentation

Screening detects overt diabetes and can identify prediabetes. Prediabetes includes conditions of impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). IFG is defined as a fasting glucose of 100 to 125 mg/dL, and IGT is defined as having a 2-hour glucose of 140 to 199 mg/dL on an OGTT.

Approximately one-quarter of the adult population has prediabetes, and interventions can prevent the progression of prediabetes to overt diabetes and reverse prediabetes. The Diabetes Prevention Trial found that lifestyle measures—including exercise and diet—were most effective, with a 53% reduction in the rate of progression to diabetes.<sup>6</sup> Metformin also was effective, but less so than lifestyle measures alone.

Treatment slows the development or progression of microvascular complications, such as retinopathy, nephropathy, and neuropathy. Aggressive treatment of comorbid conditions, including hyperlipidemia and hypertension, also reduces the risk of cardiovascular events.

#### Drug Brand Names

Aripiprazole • Abilify  
 Metformin • Glucophage  
 Ziprasidone • Geodon

#### Related Resources

- American Diabetes Association. Diabetes risk calculator. [www.diabetes.org/risk-test.jsp](http://www.diabetes.org/risk-test.jsp).
- Dago-Jack S. The role of antipsychotic agents in the development of diabetes mellitus. *Nat Clin Pract Endocrinol Metab.* 2009;5(1):22-23. Quick, up-to-date review of the association between atypical antipsychotics and diabetes mellitus.

#### Disclosure

Dr. Keenan reports no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

#### References

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### Clinical Point

Treatment slows the progression of microvascular complications, such as retinopathy, nephropathy, and neuropathy