

American Medical Association (AMA)

Screening for Abnormal Glucose Metabolism in Patients at Risk of Developing Diabetes

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Table of Contents

Disclaimer Notice 2

Screening for Abnormal Glucose Metabolism in Patients at Risk of Developing Diabetes..... 4

Table 1. Glycemic Screening Tests..... 7

Table 2. USPSTF Recommendation Grade Definition 8

Table 3. USPSTF Level of Certainty Definition 8

Table 4. Measure Development Team 9

Table 5. Technical Expert Panel (TEP)..... 9

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Screening for Abnormal Glucose Metabolism in Patients at Risk of Developing Diabetes

The purpose of this measure is to ensure that patients who are at risk of developing diabetes have a screening process initiated for abnormal glucose metabolism at least once every three years in accordance with the United States Preventive Services Task Force (USPSTF) guideline recommendations.

Measure Description	Percentage of adult patients with risk factors for type 2 diabetes who are due for glycemic screening for whom the screening process was initiated during the measurement period
Numerator Statement	Patients who had a glycemic screening test performed and result documented during the measurement period (Table 1)
Denominator Statement	All patients with at least two office visits or one preventive visit during the measurement period who have the following risk factors for type 2 diabetes: <ul style="list-style-type: none"> • Most recent BMI ≥ 25 kg/m² (BMI ≥ 23 kg/m² for Asian patients) during measurement period AND • Age 35-70 at start of measurement period
Denominator Exclusions/ Exceptions	<ul style="list-style-type: none"> • Patient is pregnant during measurement period • Patient with diagnosis of advanced illness or limited life expectancy during measurement period • Patient with diagnosis of diabetes during 2-year look-back period • Patient with diagnosis of prediabetes during 2-year look-back period • Patient with glycemic screening performed during 2-year look-back period (Table 1)
Guideline Recommendations	<p>The following evidence statements are quoted verbatim from the clinical guidelines:</p> <p>Evidence Supporting Denominator Criteria: <i>Inclusion Criteria</i> The USPSTF recommends screening for prediabetes and type 2 diabetes in adults aged 35 to 70 years who have overweight or obesity. Clinicians should offer or refer patients with prediabetes to effective preventive interventions.¹ (Grade B - Table 2)</p> <p><i>Exclusion Criteria</i> Evidence on the optimal screening interval for adults with an initial normal glucose test result is limited. Cohort and modeling studies suggest that screening every 3 years may be a reasonable approach for adults with normal blood glucose levels.¹</p> <p>Evidence Supporting Numerator Criteria: Prediabetes and type 2 diabetes can be detected by measuring fasting plasma glucose or HbA1c level, or with an oral glucose tolerance test. A fasting plasma glucose level of 126 mg/dL (6.99 mmol/L) or greater, an HbA1c level of 6.5% or greater, or a 2-hour postload glucose level of 200 mg/dL (11.1 mmol/L) or greater are consistent with the diagnosis of type 2 diabetes. A fasting plasma glucose level of 100 to 125 mg/dL (5.55-6.94 mmol/L), an HbA1c level of 5.7% to 6.4%, or a 2-hour postload glucose level of 140 to 199 mg/dL (7.77-11.04 mmol/L) are consistent with prediabetes.¹</p> <p>1. Davidson KW, Barry MJ, Mangione CM, et al. Screening for Prediabetes and Type 2 Diabetes: US Preventive Services Task Force Recommendation Statement. <i>Jama</i>. 2021;326(8):736-743.</p>
Rationale	This measure was developed by the American Medical Association with support from a measure development team at Health Services Advisory Group (Table 4)

	<p>and a technical expert panel (TEP) that included representatives from stakeholder organizations, guideline developers, quality measure experts, payers, clinical operations, and patients/caregivers (Table 5).</p> <p>This measure is critical to identifying patients with prediabetes who may benefit from interventions to prevent type 2 diabetes and identification of undiagnosed type 2 diabetes. The Centers for Disease Control and Prevention (CDC) estimates that approximately 96 million American adults have prediabetes.² They note that more than 80% of adults with prediabetes are not aware that they have the condition. Regular screening for prediabetes is a critical first step to helping patients avoid the disability and costs associated with progression to type 2 diabetes.</p> <p>The measure gives credit for three types of tests that can be used to detect abnormal glucose metabolism: HbA1c, oral glucose tolerance, and fasting plasma glucose. When considering which plasma glucose screening codes to include in the measure, the measure development team carefully considered two potential unintended consequences related to the limited use of accompanying fasting status codes. If the measure specified plasma glucose screening too narrowly, it could incentivize over screening, which would impose added burden on clinicians and increased costs to some patients. Alternatively, if the measure specified plasma glucose screening too broadly, it could give credit for non-fasting plasma glucose tests that are not adequate for diagnostic purposes.</p> <p>In the test data, the most common plasma glucose code ordered by both sites was LOINC 2345-7, which does not specify ‘fasting’ in the test description. However, one of the practices also consistently used an accompanying LOINC code, 49541-5, which is used to indicate a patient’s fasting status at the time of the lab. Approximately 90% of the 2345-7 plasma glucose tests were fasting according to the 49541-5 LOINC. The team also found that lab companies (e.g., Labcorp) advise patients to fast for at least 8 hours ahead of the 2345-7 plasma glucose blood draw. Code 2345-7 is the glucose test included in basic and comprehensive metabolic panels in serum or plasma, which also recommend fasting for at least 8 hours prior to the blood draw.</p> <p>A sensitivity analysis compared the measure denominator and numerator with and without the plasma glucose code 2345-7 and found that excluding that code would overestimate the denominator population eligible for screening by approximately 109% and undercount patients with an adequate screening in the numerator by approximately 92%. Including plasma glucose code 2345-7 would underestimate the denominator population by approximately 3% and overcount patients with adequate screening in the numerator by approximately 10%. Therefore, the measure specifications give credit for plasma glucose code 2345-7 because the risk of encouraging over-testing and imposing additional costs on patients outweighs the risk of accepting a relatively small number of non-fasting plasma glucose test results. If the accompanying fasting status LOINC code for glucose tests is used more reliably in the future, the measure can be modified to require fasting for all plasma glucose tests but, in the meantime, the technical expert panel agreed that this approach is acceptable given the benefits of screening and low risk of unintended consequences.</p> <p>2. Prevalence of prediabetes among adults. Centers for Disease Control and Prevention, 30 Sept. 2022, https://www.cdc.gov/diabetes/data/statistics-report/prevalence-of-prediabetes.html. Accessed 14 Nov. 2022.</p>
Measure Type	Process
Level of Measurement	Individual clinician

Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	<input type="checkbox"/> Person-Centered Care <input type="checkbox"/> Equity <input type="checkbox"/> Safety <input type="checkbox"/> Affordability and Efficiency <input type="checkbox"/> Chronic Conditions <input checked="" type="checkbox"/> Wellness and Prevention <input type="checkbox"/> Seamless Care Coordination <input type="checkbox"/> Behavioral Health
Supporting Guidance	<p>The measure is limited to patients aged 35 to 70 with overweight or obesity because it is recommended that all patients with those risk factors be screened for diabetes at least once every three years. However, this measure is not intended to discourage screening at younger ages, which the USPSTF recommends considering for adults with overweight or obesity and any of the following risk factors:</p> <ul style="list-style-type: none"> • Race/ethnicity with disproportionately high incidence and prevalence of diabetes (American Indian/Alaska Native, Asian American, Black, Hispanic/Latino, or Native Hawaiian/Pacific Islander persons) • Family history of diabetes • History of gestational diabetes • History of polycystic ovarian syndrome <p>It is recommended that every patient evaluated by this measure also identify payer, race, ethnicity, and sex, so that results may be reported back to the provider in a stratified manner. If the measure is used for accountability purposes, only the overall rate should be used.</p>

Table 1. Glycemic Screening Tests

Code	Type	Description	Test Type
17856-6	LOINC	Hemoglobin A1c/Hemoglobin.total in Blood by HPLC	HbA1c
4548-4	LOINC	Hemoglobin A1c/Hemoglobin.total in Blood	HbA1c
4549-2	LOINC	Hemoglobin A1c/Hemoglobin.total in Blood by Electrophoresis	HbA1c
83036	CPT	Hemoglobin; glycosylated (A1C)	HbA1c
3044F	CPT	Most recent hemoglobin A1c (HbA1c) level less than 7.0% (DM)	HbA1c
3051F	CPT	Most recent hemoglobin A1c (HbA1c) level greater than or equal to 7.0% and less than 8.0% (DM)	HbA1c
3052F	CPT	Most recent hemoglobin A1c (HbA1c) level greater than or equal to 8.0% and less than 9.0% (DM)	HbA1c
3046F	CPT	Most recent hemoglobin A1c level greater than 9.0% (DM)	HbA1c
14995-5	LOINC	Glucose^2H post 75 g glucose PO	Oral glucose tolerance
1518-0	LOINC	Glucose^2H post 75 g glucose PO	Oral glucose tolerance
1519-8	LOINC	Glucose^2H post 75 g glucose PO	Oral glucose tolerance
82951	CPT	Glucose Tolerance Test (GTT); three specimens (includes glucose)	Oral glucose tolerance
10450-5	LOINC	Glucose [Mass/volume] in Serum or Plasma – 10 hours fasting	Fasting plasma glucose
1554-5	LOINC	Glucose [Mass/volume] in Serum or Plasma – 12 hours fasting	Fasting plasma glucose
1558-6	LOINC	Fasting glucose [Mass/volume] in Serum or Plasma	Fasting plasma glucose
1557-8	LOINC	Fasting glucose [Mass/volume] in Venous blood	Fasting plasma glucose
2345-7	LOINC	Glucose [Mass/volume] in Serum or Plasma	Plasma glucose
82947	CPT	Glucose; quantitative, blood (except reagent strip)	Plasma glucose

Table 2. USPSTF Recommendation Grade Definition

Grade	Definition
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.
I	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Table 3. USPSTF Level of Certainty Definition

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Medium	<p>The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by such factors as:</p> <ul style="list-style-type: none"> • The number, size, or quality of individual studies. • Inconsistency of findings across individual studies. • Limited generalizability of findings to routine primary care practice. • Lack of coherence in the chain of evidence. <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.</p>
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> • The limited number or size of studies. • Important flaws in study design or methods. • Inconsistency of findings across individual studies. • Gaps in the chain of evidence. • Findings not generalizable to routine primary care practice. • Lack of information on important health outcomes. <p>More information may allow estimation of effects on health outcomes.</p>

Table 4. Measure Development Team

American Medical Association	Health Services Advisory Group
Heidi Bossley, MSN, MBA	Kyle Campbell, PharmD
Jennie Folk, MHA	Hayley Dykhoff, BA
Kate Kirley, MD, MS, FAAFP	Marie Hall, RN
Koryn Rubin, MHA	Kendra Hanley, MS
Stavros Tsipas, MA	Megan Keenan, MPH
Gregory Wozniak, PhD	Kim Nguyen, MPH

Table 5. Technical Expert Panel (TEP)

Name	Affiliation
Elizabeth (Liz) Joy, MD, MPH, FACSM, FAMSSM	Intermountain Healthcare TEP Co-Chair
Ronald T. Ackermann, MD, MPH	Northwestern University Feinberg School of Medicine TEP Co-Chair
William (Bill) Adams	Patient Representative
Stephen Benoit, MD, MPH	Centers for Disease Control and Prevention
Christine Donohoe	Patient and Caregiver Representative
Nuha Ali ElSayed, MD, MM Sc.	American Diabetes Association
Angela Forfia, MA	Association of Diabetes Care & Education Specialists
William Golden, MD, MACP	Subject Matter Expert
Robert Hopkins, MD, MACP	American College of Physicians / University of Arkansas for Medical Sciences College of Medicine
Mary Krebs, MD, FAAFP	American Academy of Family Physicians
Carol M. Mangione, MD, MSPH, FACP	University of California, Los Angeles (UCLA)
Tannaz Moin, MD, MBA, MSHS	UCLA and VA Greater Los Angeles Healthcare System
Justin Moore, MD, FACP	Kansas Business Group on Health
Joshua Peake, MPH	Prisma Health
Samantha (Sam) Tierney, MPH	American College of Physicians
Dawn R. Wells, BSN, RN	Illinois Department of Healthcare and Family Services, Div. of Medical Programs, Bureau of Quality Management
Thomas R. White, MD, FAAFP, FNLA	American Academy of Family Physicians
Mihail Zilbermint, MD, FACE	Endocrine Society