![AMA American Medical Association logo]

American Medical Association (AMA)

Prediabetes Quality Measures

Developed by AMA's Prediabetes Quality Measures Technical Expert Panel

Table of Contents

Disclaimer Notice

The Measures are not clinical guidelines, do not establish a standard of medical care, and have not been tested for all potential applications.

The Measures, while copyrighted, can be reproduced and distributed, without modification, for noncommercial purposes, e.g., use by health care providers in connection with their practices. Commercial use is defined as the sale, license, or distribution of the Measures for commercial gain, or incorporation of the Measures into a product or service that is sold, licensed or distributed for commercial gain.

Commercial uses of the Measures require a license agreement between the user and American Medical Association (AMA). The AMA shall not be responsible for any use of the Measures. The AMA encourages use of the Measures by other health care professionals, where appropriate.

THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.

© 2018 American Medical Association. All Rights Reserved.[*]

Limited proprietary coding is contained in the Measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets. The AMA disclaims all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications.

CPT® contained in the Measures specifications is copyright 2004-2017 American Medical Association. LOINC® copyright 2004-2017 Regenstrief Institute, Inc. SNOMED CLINICAL TERMS (SNOMED CT®) copyright 2004-2017 The International Health Terminology Standards Development Organisation (IHTSDO). ICD-10 is copyright 2017 World Health Organization. All Rights Reserved.

---

[*] The date of the copyright notice shall be the date of first publication of the Measure by the AMA or the date of subsequent updating and publication of the Measure.

AMA Prediabetes Technical Expert Panel Members

Ronald Ackermann, MD, MPH (Co-Chair)
William Golden, MD, MACP (Co-Chair)

Stephen Benoit, MD, MPH	Leslie Kolb, RN, BSN, MBA
Ameldia R. Brown, MDiv, BSN, RN	Tannaz Moin, MD, MBA, MSHS
Brian S. Cohen, PhD	Jennifer Torres Most, PhD, MscPH, MSSW
Laura Clapper, MD, MPPA, CPE, FAAPL	Maria Prince, MD, MPH
Mary Carol Greenlee, MD, FACP, FACE	James L. Rosenzweig, MD
Elizabeth Joy, MD, MPH	Anita Stewart, MD, MPH, JD
Mary E. Krebs, MD	

AMA Staff	PCPI Foundation Staff
Kate Kirley, MD, MS	Beth Bostrom, MPH
Karen Kmetik, PhD	Kerri Fei, MSN, RN
Koryn Rubin	Diedra Gray, MPH
Beth Tapper, MA	Courtney Hurt, MSW, LCSW
Greg Wozniak, PhD	Sam Tierney, MPH
	Patrick Yep, MS, MPH

CDC Subject Matter Expert
Ann Albright, PhD, RD

Purpose of the Measurement Set

The AMA convened a cross-specialty, multidisciplinary technical expert panel (TEP) to identify and define new measures for prediabetes. The focus of these measures is to support the prevention of type 2 diabetes in our nation. Specific areas of focus include increasing screening and testing for prediabetes, referring/providing those at risk an intervention, and follow-up testing.

The recommendations of this Technical Expert Panel have resulted in the first measurement set in the U.S. for use at the individual physician/group practice level intended to help prevent type 2 diabetes. Currently, eighty-four million Americans have prediabetes and 9 out 10 of these individuals are unaware that they have this condition. CDC-recognized lifestyle change programs are included in the health benefit plans of many private health insurers and the Medicare Diabetes Prevention Program will extend the program to Medicare beneficiaries in April 2018.

Measure #1: Screening for Abnormal Blood Glucose

Measure Description	Percentage of patients aged 40 years and older with a BMI ≥ 25 who are seen for at least two office visits or at least one preventive visit during the 12-month period who were screened for abnormal blood glucose at least once in the last 3 years
Numerator Statement	Patients who were screened* for abnormal blood glucose at least once in the last 3 years *Screening for abnormal blood glucose may include using a fasting plasma glucose, 2-h plasma glucose during a 75g oral glucose tolerance test, or A1C.
Denominator Statement	All patients aged 43 years and older with a BMI ≥ 25 seen for at least two office visits or at least one preventive visit during the 12-month measurement period
Denominator Exclusions/ Exceptions	Denominator Exclusions: Exclude patients who are pregnant. Exclude patients who have any existing diagnosis of diabetes (Type 1, Type 2, latent autoimmune diabetes of adults [LADA], monogenic diabetes [MODY]) Exclude patients in palliative care/hospice Denominator Exception: Documentation of patient reason(s) for refusing screening for abnormal blood glucose (eg. patient reports having blood glucose checked at another site during the last three years [eg, employee health screening, community health fair])
Guideline Recommendations	The following evidence statements are quoted **verbatim** from the referenced clinical guidelines and other sources, where applicable: The USPSTF recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40 to 70 years of age who are overweight or obese. Clinicians should offer or refer patients with abnormal blood glucose to intensive behavioral counseling interventions to promote a healthful diet and physical activity. (USPSTF, 2015[1]) (B recommendation) This recommendation applies to adults aged 40 to 70 years who are seen in primary care settings and do not have obvious symptoms of diabetes. Persons who have a family history of diabetes, have a history of gestational diabetes or polycystic ovarian syndrome, or are members of certain race/ethnic groups (that is, African Americans, American Indians, or Alaskan Natives, Asian Americans, Hispanics or Latinos, or Native Hawaiians or Pacific Islanders) may be at increased risk for diabetes at a younger age or at a lower body mass index. Clinicians should consider screening earlier in persons with 1 or more of these characteristics. (USPSTF, 2015[1]) Testing for prediabetes and risk for future diabetes in asymptomatic people should be considered in adults of any age who are overweight or obese (BMI ≥25kg/m2 or ≥23kg/m2 in Asian Americans) and who have one or more additional risk factors for diabetes (Table 2.3). (ADA, 2018[2]) (B Recommendation) • Table 2.3—Criteria for testing for diabetes or prediabetes in asymptomatic adults 1. Testing should be considered in overweight or obese (BMI ≥25kg/m2 or ≥23kg/m2 in Asian Americans) adults who have one or more of the following risk factors: • First-degree relative with diabetes • High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)

	• History of CVD • Hypertension (≥140-90mmHg or on therapy for hypertension • HDL cholesterol level <35mg/dL (0.90mmol/L) and/or triglyceride level >250mg/dL (2.28mmol/L) • Women with polycystic ovary syndrome • Physical inactivity • Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans) 2. Patients with prediabetes (A1C ≥5.7% [39mmol/mol], IGT, or IFG) should be tested yearly. 3. Women who were diagnosed with GDM should have lifelong testing at least every 3 years. 4. For all other patients, testing should begin at age 45 years. 5. If results are normal, testing should be repeated at a minimum of 3 year intervals, with consideration for more frequent testing depending on initial results and risk status. To test for prediabetes, fasting plasma glucose, 2-h plasma glucose during 75-g oral glucose tolerance test, and A1C are equally appropriate. (ADA, 2018[2]) (B Recommendation)
Rationale	Overall, screening patients for prediabetes does not occur as often as it should. In a nationally representative sample of patients from the National Health and Nutrition Examination Survey (NHANES) from 2005-2012, only 45% of those who met screening criteria were actually screened.[3] Additionally, survey data show that while primary care physicians are aware of the guidelines that support screening for prediabetes, there is a disconnect between this knowledge and actual practice[4,5] There are two main guidelines that provide recommendations and guidance regarding screening for prediabetes. One from the United States Preventive Services Task Force (USPSTF) and one from the American Diabetes Association (ADA). The main difference between the two recommendations is regarding the recommended age range. The USPSTF recommends screening patients aged 40-70 years who are overweight or obese, or younger if they have additional risk factors. The ADA recommends screening patients who are overweight or obese with one risk factors, regardless of age. Additionally, those who have no risk factors should start screening at age 45. After consultation with experts it was decided not to have an upper age limit cut off for this measure, essentially aligning with the ADA recommendation, because patients over the age of 70 can be identified as having prediabetes can subsequently benefit from referral to a diabetes prevention program, referred to medical nutrition therapy with a registered dietitian, or be prescribed metformin.[6,7,8] However, as it currently stands, the numerous risk factors recommended in the ADA and USPSTF guidelines are currently not feasible to collect reliably, so this measure currently focuses on the main patient population in the USPSTF recommendation. As guidelines are updated and systems to collect the needed risk factor data elements improve, this measure will be re-evaluated and changes made as appropriate.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice

Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☒Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

Supporting Guidance

As this measure is evaluating a screening lab test that has a frequency of occurring at least once in the last three years, the age range for the denominator begins three years after the age range recommended in the evidence-based guideline recommendation. This is to allow for the three year look back period.

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. This measure provides three rates to allow providers to monitor patient groups that are high-risk versus those undergoing more routine screening. If the measure is used for accountability purposes, only Rate 1 should be used.

Measure #2: Intervention for Prediabetes

Measure Description	Percentage of patients aged 18 years and older with identified abnormal lab result in the range of prediabetes during the 12-month measurement period who were provided an intervention*
Numerator Statement	Patients who were provided an intervention* *Intervention must include one of the following: referral to a CDC-recognized diabetes prevention program; referral to medical nutrition therapy with a registered dietician; prescription of metformin.
Denominator Statement	All patients aged 18 years and older with identified abnormal lab result in the range of prediabetes during the 12-month measurement period **Abnormal lab result in the range of prediabetes includes a fasting plasma glucose level between 100 mg/dL (5.6 mmol/L) to 125 mg/dL (6.9 mmol/L) OR a 2-hour glucose during a 75g oral glucose tolerance test between 140 mg/dL (7.8 mmol/L) to 199 mg/dL (11.0 mmol/L) OR and A1C between 5.7-6.4% (39-47 mmol/mol).
Denominator Exclusions/ Exceptions	Denominator Exclusions: Exclude patients who are pregnant. Exclude patients who have any existing diagnosis of diabetes (Type 1, Type 2, latent autoimmune diabetes of adults [LADA], monogenic diabetes [MODY]) Denominator Exceptions: Documentation of medical reason(s) for not providing an intervention for prediabetes (eg, limited life expectancy, lack of program availability, other medical reason) Documentation of patient reason(s) for not providing an intervention (eg, patient refusal)
Guideline Recommendations	The following evidence statements are quoted **verbatim** from the referenced clinical guidelines and other sources, where applicable: The USPSTF recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40 to 70 years of age who are overweight or obese. Clinicians should offer or refer patients with abnormal blood glucose to intensive behavioral counseling interventions to promote a healthful diet and physical activity. (USPSTF, 2015[1]) (B recommendation) Patients with prediabetes should be referred to an intensive behavioral lifestyle intervention program modeled on the Diabetes Prevention Program to achieve and maintain 7% loss of initial body weight and increase moderate-intensity physical activity (such as brisk walking) to at least 150 min/week. (ADA, 2018[2]) (A). Metformin therapy for prevention of type 2 diabetes should be considered in those with prediabetes, especially for those with BMI ≥35 kg/m^2, those aged <60 years, women with prior gestational diabetes mellitus**Error! Bookmark not defined.**. (ADA, 2018[2]) (A) "As is the case for those with diabetes, individualized medical nutrition therapy (see Section 4 "Lifestyle Management" for more detailed information) is effective in lowering A1C in individuals diagnosed with prediabetes." Recommendation from Section 4: Lifestyle Management: An individualized MNT program, preferably provided by a registered dietitian, is recommended for all people with type 1 or type 2 diabetes or gestational diabetes mellitus. (ADA, 2018[2]) (A)

Rationale	Patients who are diagnosed with prediabetes benefit from referral to intervention programs. Data from the 2012 National Ambulatory Medical Care Survey show that only 23% of visits that were associated with prediabetes showed that any type of referral or intervention was made[9]. In a small study, survey data show that while providers report following patients with prediabetes closely, only 11% reported referring to a behavioral weight loss program[5]. Data support that there is room for improvement in providing patients with prediabetes an intervention.

Measure Designation

Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☒Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

Supporting Guidance

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. It is also recommended that results be reported by type of intervention to which the patient was referred (ie, CDC-recognized diabetes prevention program; referral to medical nutrition therapy with a registered dietician; prescription of metformin) so that the provider understands their referral patterns.

Measure #3: Retesting of Abnormal Blood Glucose in Patients with Prediabetes

Measure Description	Percentage of patients aged 18 years and older who had an abnormal fasting plasma glucose, oral glucose tolerance test, or hemoglobin A1c result in the range of prediabetes in the previous year who have a blood glucose test performed in the one-year measurement period
Numerator Statement	Patients who had a blood glucose test performed *Retesting for abnormal blood glucose may include using a fasting plasma glucose, 2-h plasma glucose during a 75g oral glucose tolerance test, or A1C.
Denominator Statement	All patients aged 18 years and older who had an abnormal fasting plasma glucose, oral glucose tolerance test, or hemoglobin A1c result in the range of prediabetes in the year prior to the one-year measurement period **Abnormal lab result in the range of prediabetes includes a fasting plasma glucose level between 100 mg/dL (5.6 mmol/L) to 125 mg/dL (6.9 mmol/L) OR a 2-hour glucose during a 75g oral glucose tolerance test between 140 mg/dL (7.8 mmol/L) to 199 mg/dL (11.0 mmol/L) OR and A1C between 5.7-6.4% (39-47 mmol/mol).
Denominator Exclusions/ Exceptions	Denominator Exclusions: Exclude patients who are pregnant. Exclude patients who have any existing diagnosis of diabetes (Type 1, Type 2, latent autoimmune diabetes of adults [LADA], monogenic diabetes [MODY]). Exclude patients in palliative care/hospice Denominator Exceptions. Documentation of patient reasons for exception (eg, patient moved, changed insurance coverage)
Guideline Recommendations	The following evidence statements are quoted **verbatim** from the referenced clinical guidelines and other sources, where applicable: At least annual monitoring for the development of diabetes in those with prediabetes is suggested.**Error! Bookmark not defined.** (ADA, 2018[2]) (E)
Rationale	At least annual glucose testing in patients who were previously found to have lab results in the range of prediabetes is an important aspect of care so that patients can be monitored for improvement or potential transition to Type 2 diabetes. While there are no current studies that show patients with prediabetes do not have follow-up testing completed, the TEP felt that this is a key area in which to have a measure.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality
National Quality Strategy	☐Communication and Care Coordination ☐Community/Population Health ☒Effective Clinical Care

Priority/CMS Measure Domain	☐Efficiency and Cost Reduction
	☐Patient Safety
	☐Person and Caregiver-Centered Experience

Evidence Classification/Rating Schemes

United States Preventive Services Task Force (USPSTF) Recommendation Grade Definition[10]

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.

Level of Certainty* Regarding Net Benefit[10]

*The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

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	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: • 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. 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.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: • 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. More information may allow estimation of effects on health outcomes.

American Diabetes Association (ADA) Evidence Grading System[2]

Table 1—ADA evidence-grading system for "Standards of Medical Care in Diabetes"

Level of evidence	Description
A	Clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered, including • Evidence from a well-conducted multicenter trial • Evidence from a meta-analysis that incorporated quality ratings in the analysis Compelling nonexperimental evidence, i.e., "all or none" rule developed by the Centre for Evidence-Based Medicine at the University of Oxford Supportive evidence from well-conducted randomized controlled trials that are adequately powered, including • Evidence from a well-conducted trial at one or more institutions • Evidence from a meta-analysis that incorporated quality ratings in the analysis
B	Supportive evidence from well-conducted cohort studies • Evidence from a well-conducted prospective cohort study or registry • Evidence from a well-conducted meta-analysis of cohort studies Supportive evidence from a well-conducted case-control study
C	Supportive evidence from poorly controlled or uncontrolled studies • Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results • Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls) • Evidence from case series or case reports Conflicting evidence with the weight of evidence supporting the recommendation
E	Expert consensus or clinical experience

References

[1] Siu L on behalf of the U. S. Preventive Services Taskforce. Screening for abnormal blood glucose and type 2 diabetes mellitus: U. S. Preventive Services Task Force recommendation. Ann Intern Med. 2015;163:861-868.

[2] American Diabetes Association. Standards of medical care in diabetes—2018. Diabetes Care. 2018. (41)Supplement 1. Available at: http://care.diabetesjournals.org.

[3] Kiefer M, et al. National patterns in diabetes screening: Data from the National Health and Nutrition Examination Survey (NHANES) 2005-2012. J Gen Intern Med. 2014;30(5): 612-618

[4] Mehta S, Mocarski M, Wisniewski T, Gillepsie K, Narayan Venkat KM, Lang K. Primary care physician's utilization of type 2 diabetes screening guidelines and referrals to behavioral interventions: a survey-linked retrospective study. BMJ Open Diab Res Care. 2017;5:e000406. Doi:10.1136/bmjdrc-2017-000406.

[5] Tseng E, Greer R C, O'Rourke, P, Yeh, H-C, McGuire, M M, Clark, J M, & Maruthur, N M. Survey of primary care providers' knowledge of screening for, diagnosing and managing prediabetes. Journal of General Internal Medicine, 32(11), 1172–1178.

[6] Smith West D, Bursac Z, Cornell CE, Felix HC, Fausett JK, Krukowski RA, Lensing S, et al. Lay heath providers translate a weight-loss intervention in senior centers. Am J Prev Med. 2011;(41)4:385-391

[7] Brokaw SM, Carpenedo D, Campbell P, Butcher MK, Furshong G, Helgerson SD, et al. Effectiveness of an adapted diabetes prevention program lifestyle intervention in older and younger adults. J Am Geriatr Soc. 2015;63:1067-1074.

[8] Kramer MK, Vanderwood KK, Arena VC, Miller RG, Meehan R, Eaglehouse YL, et al. Evaluation of a diabetes prevention program lifestyle intervention in older adults: A randomized controlled study in three senior/community centers of varying socioeconomic status. The Diabetes EDUCATOR. 2018;44(2):118-129.

[9] Mainous A G, Tanner R J, & Baker R. Prediabetes Diagnosis and Treatment in Primary Care. The Journal of the American Board of Family Medicine. 2016. 29(2), 283–285.

[10] Grade Definitions. U.S. Preventive Services Task Force. November 2017. https://www.uspreventiveservicestaskforce.org/Page/Name/grade-definitions