**National Quality Forum—Evidence (subcriterion 1a)**

**Measure Number** (*if previously endorsed*)**:** Click here to enter NQF number

**Measure Title**: Prediabetes Screening for Abnormal Glucose

**IF the measure is a component in a composite performance measure, provide the title of the Composite Measure here:** Click here to enter composite measure #/ title

**Date of Submission**: 4/9/2020

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| **Instructions**  *Complete 1a.1 and 1a.2 for all measures. If instrument-based measure, complete 1a.3.*  *Complete* ***EITHER 1a.2, 1a.3 or 1a.4*** *as applicable for the type of measure and evidence.*  *For composite performance measures:*  *A separate evidence form is required for each component measure unless several components were studied together.*  *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*   * All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed. * If you are unable to check a box, please highlight or shade the box for your response. * Contact NQF staff regarding questions. Check for resources at [Submitting Standards webpage](http://www.qualityforum.org/Measuring_Performance/Submitting_Standards.aspx). |

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| **Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF’s evaluation criteria.**   1a. Evidence to Support the Measure Focus The measure focus is evidence-based, demonstrated as follows:   * Outcome: [**3**](#Note3) Empirical data demonstrate a relationship between the outcome and at least one healthcare structure, process, intervention, or service. If not available, wide variation in performance can be used as evidence, assuming the data are from a robust number of providers and results are not subject to systematic bias. * Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4)that the measured intermediate clinical outcome leads to a desired health outcome. * Process: [**5**](#Note5) a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4) that the measured process leads to a desired health outcome. * Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4) that the measured structure leads to a desired health outcome. * Efficiency: [**6**](#Note6) evidence not required for the resource use component. * For measures derived from patient reports, evidence should demonstrate that the target population values the measured outcome, process, or structure and finds it meaningful. * Process measures incorporating Appropriate Use Criteria: See NQF’s guidance for evidence for measures, in general; guidance for measures specifically based on clinical practice guidelines apply as well.   **Notes**  **3.** Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.  **4.** The preferred systems for grading the evidence are the Grading of Recommendations, Assessment, Development and Evaluation [(GRADE) guidelines](http://www.gradeworkinggroup.org) and/or modified GRADE.  **5.** Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.  **6.** Measures of efficiency combine the concepts of resource use and quality (see NQF’s [Measurement Framework: Evaluating Efficiency Across Episodes of Care](http://www.qualityforum.org/Publications/2010/01/Measurement_Framework__Evaluating_Efficiency_Across_Patient-Focused_Episodes_of_Care.aspx); [AQA Principles of Efficiency Measures](http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc)). |

**1a.1.This is a measure of**: (*should be consistent with type of measure entered in De.1*)

Outcome

Outcome: Click here to name the health outcome

Patient-reported outcome (PRO): Click here to name the PRO

*PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors.* (*A PRO-based performance measure is not a survey instrument. Data may be collected using a survey instrument to construct a PRO measure.)*

Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome

Process: Glucose screening for identifying patients with prediabetes

Appropriate use measure: Click here to name what is being measured

Structure: Click here to name the structure

Composite: Click here to name what is being measured

**1a.2** **LOGIC MODEL** Diagram or briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient’s health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

**1a.3** **Value and Meaningfulness:**  **IF** this measure is derived from patient report, provide evidence that the target population values the measured ***outcome, process, or structure*** and finds it meaningful. (Describe how and from whom their input was obtained.)

Implementing this measure to increase screening and identifying patients with prediabetes can improve health outcomes for patients by preventing the progression to type 2 diabetes. Cost savings associated with preventing diabetes are significant. In the Medicare Diabetes Prevention Program (Medicare DPP) model test conducted through the Center for Medicare and Medicaid Innovation, implementation of the MDPP preventive service resulted in an estimated cost savings of $ 2,650.00 per participating Medicare beneficiary over 15 months. Individuals with diabetes typically have medical expenses 2.3 times higher than those without it. The longitudinal impact of this measure would be substantial in terms of cost savings and disease prevention.

**\*\*RESPOND TO ONLY ONE SECTION BELOW -EITHER 1a.2, 1a.3 or 1a.4) \*\***

**1a.2** **FOR OUTCOME MEASURES including PATIENT REPORTED OUTCOMES - Provide empirical data demonstrating the relationship between the outcome (or PRO) to at least one healthcare structure, process, intervention, or service.**

N/A

**1a.3.****SYSTEMATIC REVIEW(SR) OF THE EVIDENCE (for intermediate outcome, PROCESS, or STRUCTURE PERFORMANCE measures, including those that are instrument-based) If the evidence is not based on a systematic review go to section 1a.4) If you wish to include more than one systematic review, add additional tables.**

**What is the source of the systematic review of the body of evidence that supports the performance measure? A systematic review is a scientific investigation that focuses on a specific question and uses explicit, prespecified scientific methods to identify, select, assess, and summarize the findings of similar but separate studies. It may include a quantitative synthesis (meta-analysis), depending on the available data. (IOM)**

x Clinical Practice Guideline recommendation (with evidence review)

x US Preventive Services Task Force Recommendation

☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*)

☐ Other

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| **Source of Systematic Review:**   * **Title** * **Author** * **Date** * **Citation, including page number** * **URL** | 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.  American Diabetes Association. Standards of medical care in diabetes—2018. Diabetes Care. 2018. (41) Supplement 1. Available at: <http://care.diabetesjournals.org>. |
| Quote the guideline or recommendation verbatim about the process, structure or intermediate outcome being measured. If not a guideline, summarize the conclusions from the SR. | The following evidence statements are quoted **verbatim** from the referenced clinical guidelines and other sources, where applicable:  U. S. Preventive Services Taskforce. Screening for abnormal blood glucose and type 2 diabetes mellitus: U. S. Preventive Services Task Force recommendation  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]](#endnote-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, 20151)  American Diabetes Association. Standards of medical care in diabetes—2018.  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]](#endnote-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)  1. Patients with prediabetes (A1C ≥5.7% [39mmol/mol], IGT, or IFG) should be tested yearly. 2. Women who were diagnosed with GDM should have lifelong testing at least every 3 years. 3. For all other patients, testing should begin at age 45 years. 4. 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, 20182) (B Recommendation) |
| Grade assigned to the **evidence** associated with the recommendation with the definition of the grade | See above evidence statements with grades |
| Provide all other grades and definitions from the evidence grading system | USPSTF Grading:  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 : 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.  ADA Grading:  Grade 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   Grade 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   Grade 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 |
| Grade assigned to the **recommendation** with definition of the grade | 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.  Grade 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 |
| Provide all other grades and definitions from the recommendation grading system | See above |
| Body of evidence:   * Quantity – how many studies? * Quality – what type of studies? | In addition to the USPSTF and ADA guidelines, we reviewed over five evidence-based peer reviewed journal articles that confirmed the gap in care around prediabetes screening. |
| Estimates of benefit and consistency across studies | Strong evidence exits that rates of screening patients for prediabetes and undiagnosed diabetes are suboptimal in clinical care, especially in patients who are at high risk for developing type 2 diabetes. Approximately 1/3 of physicians reported screening patients for prediabetes according to guidelines (ADA and USPSTF).  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 screened.[[3]](#endnote-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]](#endnote-4),[[5]](#endnote-5) |
| What harms were identified? | None |
| Identify any new studies conducted since the SR. Do the new studies change the conclusions from the SR? | None |

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**1a.4 OTHER SOURCE OF EVIDENCE**

*If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.*

**1a.4.1** **Briefly SYNTHESIZE the evidence that supports the measure.** A list of references without a summary is not acceptable.

This measure is based on evidence-based guidelines from the United States Preventive Services Task Force (USPSTF) and from the American Diabetes Association (ADA). The evidence base for preventing diabetes via intensive lifestyle change is substantial. The United States Preventive Services Task Force (USPSTF) incorporated this evidence into the updated recommendation regarding screening for abnormal glucose and type 2 diabetes. The grade B recommendation states that physicians should screen individuals for abnormal glucose if they are between the ages of 40 and 70 and 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 factor, regardless of age. Additionally, those who have no risk factors should start screening at age 45. The risk factors included in this measure bring together both the USPSTF and ADA risk factors.

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. (ADA, 2018 ) (B Recommendation)

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, 20181) (B Recommendation)

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) (B recommendation)

Other evidence-based studies to support this measure:

**Geiss L. et all. Diabetes risk reduction behaviors among US adults with prediabetes. Am J Prev Med. 2010. 38(4): 403-409.**

• Based on data from 1402 adults without diabetes (with preDM) who participated in the 2005-

2006 National Health and Nutrition Examination Survey (NHNES) and who had valid fasting

glucose and OGTTs.

• Almost 30% of the US adult population had preDM in 2005-2006 but only 7.3% were aware they

had the condition.

• About half of adults with preDM reported performing DM risk reduction behaviors in the past

year but only one third of adults with preDM received healthcare provider advice about these

behaviors in the past year.

**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.**

• In a nationally representative sample (NHANES), only 45% of those who met ADA criteria

(thought to be approximately 76.6% of the US population) for screening were actually

screened.

**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.**

• Online survey of 305 primary care physicians regarding use of guidelines in screening for type 2

guidelines and referral to DPP and DSME for newly diagnosed patients with prediabetes or type

2 diabetes.

• Findings show a disconnect between physician perception of following guidelines and actual

practice when physician survey responses are compared to EMR data.

* 38% of physicians reported using guidelines (33% used ADA only, 25% use ADA only)

**1a.4.2 What process was used to identify the evidence?**

A thorough literature review was conducted to identify evidence-based guidelines and other evidence, gaps in care with supportive evidence, and gaps in measurement to support the identification of measure concepts.

**1a.4.3.** **Provide the citation(s) for the evidence.**

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. [↑](#endnote-ref-1)
2. American Diabetes Association. Standards of medical care in diabetes—2018. Diabetes Care. 2018. (41)Supplement 1. Available at: <http://care.diabetesjournals.org>. [↑](#endnote-ref-2)
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 [↑](#endnote-ref-3)
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. [↑](#endnote-ref-4)
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. [↑](#endnote-ref-5)