



## Effective Health Care

### Type 2 Diabetes Mellitus Prevention Nomination Summary Document

#### Results of Topic Selection Process & Next Steps

- The topic, *Comparative Effectiveness of Interventions for Preventing or Delaying Progression to Type 2 Diabetes Mellitus*, was found to be addressed by a recently published evidence-based guideline by the American Diabetes Association titled, *Prevention/delay of type 2 diabetes, a systematic review Screening and Diagnosis of Gestational Diabetes Mellitus*, a 2012 systematic review *Screening and Diagnosing Gestational Diabetes Mellitus*, and an ongoing systematic review for the US Preventive Services Task Force (USPSTF) titled, *Screening for type 2 diabetes mellitus, impaired fasting glucose, and impaired glucose tolerance*. Given that a number of products address this nomination, no further activity will be undertaken on this topic.
  - Standards of medical care in diabetes. IV. Prevention/delay of type 2 diabetes. *Diabetes Care* 2012 Jan; 35 (Suppl 1):S16.
  - Hartling L, Dryden DM, Guthrie A, Muise M, Vandermeer B, Aktary WM, Pasichnyk D, Seida JC, Donovan L. Screening and Diagnosing Gestational Diabetes Mellitus. Evidence Report/Technology Assessment No. 210. (Prepared by the University of Alberta Evidence-based Practice Center under Contract No. 290-2007-10021-I.) AHRQ Publication No. 12(13)-E021-EF. Rockville, MD: Agency for Healthcare Research and Quality. October 2012.
  - US Preventive Services Task Force. Screening for Type 2 Diabetes Mellitus, Impaired Fasting Glucose, and Impaired Glucose Tolerance: Final Research Plan. AHRQ Publication No. 13-05190-EF-5. To view a description and status of the research review, please go to: <http://www.uspreventiveservicestaskforce.org/uspstf13/type2/type2finalresplan.htm>
    - To sign up for notification when this and other USPSTF topics are posted, please go to: <http://www.ahrq.gov/clinic/prevenix.htm>.

#### Topic Description

**Nominator(s):** Organization

**Nomination Summary:** Preventing type 2 diabetes mellitus (DM) in the general population is an important public health issue. Exercise, diet, weight loss, and drug therapy are being used to prevent progression to type 2 DM in individuals at high risk of developing type 2 DM. It is unclear if one type of intervention or combination of interventions is best for preventing type 2 DM including interventions targeting groups versus individuals. A review of the evidence on type 2 DM prevention would inform health policy and provide practical guidance to clinicians on preventing type 2 DM.

**Staff-Generated PICO**

**Population(s):** Individuals with impaired fasting glucose, impaired glucose tolerance, obesity, close relatives with type 2 DM, and of certain high-risk ethnic groups (e.g.,

Asian American, Hispanic American, and African American)

**Intervention(s):** Available interventions for preventing or delaying progression to type 2 DM, including diet, exercise, weight loss, and drug therapy with or without screening. For drug therapies, the SRC focused on drugs approved by the Food and Drug Administration (FDA).

**Comparator(s):** Available interventions for preventing or delaying progression to type 2 DM including diet, exercise, weight loss, and drug therapy with or without screening, non-intervention

**Outcome(s):** Prevention of type 2 DM, delayed onset of type 2 DM, improvement in fasting glucose, improvement in glucose tolerance, prevention of gestational DM

**Key Questions from Nominator:** What is the comparative effectiveness of interventions for preventing or delaying progression to type 2 DM?

## Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see <http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/>.)
- The topic was found to be addressed by a number of reviews and an American Diabetes Association (ADA) guideline.
- The in process systematic review is being conducted for the USPSTF and is titled, *Screening for type 2 diabetes mellitus, impaired fasting glucose, and impaired glucose tolerance*. Key questions from this report include:
  - Is there direct evidence that systematic screening (either targeted or universal) for type 2 DM, IFG, or IGT among asymptomatic, nonpregnant adults improves health outcomes?
  - What are the harms of screening nonpregnant adults for type 2 DM, IFG, or IGT?
  - Do interventions for screen-detected or mild type 2 DM, IFG, or IGT provide an incremental benefit in health outcomes compared with no interventions or initiating interventions after clinical diagnosis?
  - What are the harms of interventions for screen-detected or mild type 2 DM, IFG, or IGT?
  - Is there evidence that more stringent blood pressure control, lipid control, or lifestyle interventions (compared with traditional control) improves health outcomes in nonpregnant adults with type 2 DM, IFG, or IGT?
  - **Do interventions for impaired fasting glucose or impaired glucose tolerance delay or prevent the progression to type 2 diabetes?**
  - Do the effects of screening or interventions for screen-detected or mild type 2 DM, IFG, or IGT vary by subgroups, such as age, sex, or race/ethnicity?
- A 2012 systematic review *Screening and Diagnosing Gestational Diabetes Mellitus* addressed management in women with gestational diabetes. Key Questions from this report include:
  - KQ1: What are the sensitivities, specificities, reliabilities, and yields of current screening tests for GDM? A) After 24 weeks' gestation? B) During the first trimester and up to 24 weeks' gestation?

- KQ2: What is the direct evidence on the benefits and harms of screening women (before and after 24 weeks' gestation) for GDM to reduce maternal, fetal, and infant morbidity and mortality?
- **KQ3: In the absence of treatment, how do health outcomes of mothers who meet various criteria for GDM and their offspring compare to those who do not meet the various criteria?**
- **KQ4: Does treatment modify the health outcomes of mothers who meet various criteria for GDM and offspring?**
- **KQ5: What are the harms of treating GDM and do they vary by diagnostic approach?**
- The topic was also found to be addressed by an existing evidence-based guideline by the ADA titled, *Prevention/delay of type 2 diabetes*. In this guideline the ADA discusses approaches to and provides recommendations for the prevention or delay of type 2 DM. The ADA reports that RCTs have shown that individuals at high risk for developing type 2 DM (those with asymptomatic and symptomatic IFG, IGT, or both) can significantly decrease the rate of onset of type 2 DM with particular interventions, including intensive lifestyle modification and use of the pharmacologic agents. Though it is largely comprehensive, the ADA guideline does not address prevention of gestational diabetes.