



Effective Health Care Type 2 Diabetes Prevention in Children & Adolescents Nomination Summary Document

Results of Topic Selection Process & Next Steps

- Type 2 diabetes prevention in children and adolescents will not go forward for systematic review because those preventive interventions for which sufficient evidence exists to review are already addressed by in-process or recently completed projects. Those preventive interventions which are not addressed by existing projects are not feasible for a review due to insufficient evidence at this time.
- Screening, prevention, and management of overweight and obesity for the prevention of type 2 diabetes in children and adolescents was found to be addressed by several AHRQ products, including 2010 US Preventive Services Task Force (USPSTF) recommendations on screening for obesity in children with a corresponding evidence synthesis titled *Effectiveness of Primary Care Interventions for Weight Management in Children and Adolescents: An Updated, Targeted Systematic Review for the USPSTF*; an AHRQ Evidence-based Practice Center (EPC) review titled *Effectiveness of Weight Management Programs in Children and Adolescents*; and an in-process AHRQ Effective Health Care (EHC) Program review on the prevention of overweight and obesity in children and adolescents. Given that the existing and in-process work listed below covers this nomination, no further activity will be undertaken on this aspect of the topic.

Screening for obesity:

- USPSTF Recommendations on Screening for Obesity in Children and Adolescents, 2010. Available at: <http://www.uspreventiveservicestaskforce.org/uspstf/uspschobes.htm>

Prevention of overweight and obesity:

- In-process EHC review on the prevention of overweight and obesity in children and adolescents. To sign up for notification when this and other EHC Program topics are posted, please go to <http://effectivehealthcare.ahrq.gov/index.cfm/join-the-email-list1/>.

Management of overweight and obesity:

- Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW. Effectiveness of Primary Care Interventions for Weight Management in Children and Adolescents: An Updated, Targeted Systematic Review for the USPSTF. Evidence Synthesis No. 76. AHRQ Publication No. 10-05144-EF-1. Rockville, Maryland: Agency for Healthcare Research and Quality, January 2010. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK36416/pdf/TOC.pdf>
- Whitlock EP, O'Connor EA, Williams SB, Beil TL, Lutz KW. Effectiveness of Weight Management Programs in Children and Adolescents. Evidence Report/Technology Assessment No. 170 (Prepared by the Oregon Evidence-based Practice Center under Contract No. 290-02-0024). AHRQ Publication No. 08-E014. Rockville, MD: Agency for Healthcare Research and

Quality. September 2008. Available at:

<http://www.ahrq.gov/downloads/pub/evidence/pdf/childweight/chweight.pdf>

- Pharmacologic management of overweight/obesity and other risk factors for the prevention of type 2 diabetes in children is not feasible for a full systematic review due to the limited data available for a review at this time.
- No information was found regarding development of a youth-adapted Diabetes Prevention Program (DPP), but this could be considered for a potential new research project within the EHC Program.

Topic Description

Nominator: Government agency

Nomination Summary: The nominator is broadly interested in strategies to prevent type 2 diabetes in children, including those that target overweight and obesity. The nominator is also interested in what is being done nationally to develop a youth-adapted Diabetes Prevention Program (DPP) similar to what was developed and studied in the original DPP for adults.

Staff-Generated PICO:

Population(s): Children (particularly from minority populations) ages 10-17 years at risk of developing type 2 diabetes, including those with impaired glucose tolerance (prediabetes), polycystic ovarian disease, metabolic syndrome, and obesity

Intervention(s): Any strategy to delay the progression or prevent the onset of type 2 diabetes, including lifestyle and pharmacologic interventions, as well as prevention programs

Comparator(s): See above interventions

Outcomes(s): Safety and efficacy of prevention strategies

Key Question from Nominator: 1. For children ages 10-17, what is being done nationally to develop a diabetes prevention program (DPP) curriculum?

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/>.)
- This topic nomination identifies several areas of interest related to the prevention of type 2 diabetes in children and adolescents. The most important modifiable risk factor for type 2 diabetes in children is overweight and obesity. Overweight and obesity are currently the first-line screening criteria used by several professional society guidelines for the screening of type 2 diabetes in children and adolescents, including the American Diabetes Association. This important topic has been the focus of considerable research and is largely covered by one in-process and several existing AHRQ products related to screening, prevention, and management of overweight and obesity in children and adolescents.

- Screening for obesity was found to be addressed by 2010 United States Preventive Services Task Force (USPSTF) recommendations on screening for obesity in children and adolescents and the corresponding AHRQ evidence synthesis titled *Effectiveness of Primary Care Interventions for Weight Management in Children and Adolescents: An Updated, Targeted Systematic Review for the USPSTF* (key questions listed below).
- Prevention of overweight and obesity in children and adolescents was found to be addressed by an in-process AHRQ comparative effectiveness review that will evaluate non-pharmacologic strategies to prevent and manage overweight and obesity in children and adolescents. Key questions have not yet been developed for this in-process review; however, the review will include any diabetes-related outcomes reported along with weight-related outcomes and will include the minority populations of particular interest to this nominator.
- Interventions for and management of overweight and obesity in children and adolescents was found to be addressed by two existing AHRQ reviews.
 - The most recent review is a 2010 review titled *Interventions for Weight Management in Children and Adolescents: An Updated, Targeted Systematic Review for the USPSTF*. Key questions from this review include those listed below. The bolded key question specifically looked at diabetes-related outcomes.
 1. Do weight management programs (behavioral, pharmacological) lead to BMI, weight, or adiposity stabilization or reduction in children and adolescents who are obese (\geq 95th BMI percentile) or overweight (85th–94th percentile)?
 - a. Do these programs lead to other positive outcomes (e.g., improved behavioral or physiologic measures, decreased childhood morbidity, improved childhood functioning, or reduced adult morbidity and mortality)?
 - b. Do specific components of the programs influence the effectiveness of the programs?
 - c. Are there population or environmental factors that influence the effectiveness of the programs?
 2. Do weight management programs (behavioral, pharmacological) help children and adolescents who were initially obese or overweight maintain BMI, weight, or adiposity improvements after the completion of an active intervention?
 - a. **Do these programs lead to other positive outcomes (e.g., improved behavioral or physiologic measures, decreased childhood morbidity, improved childhood functioning, or reduced adult morbidity and mortality)?**
 - b. Do specific components of the programs influence the effectiveness of the programs?
 - c. Are there population or environmental factors that influence the effectiveness of the programs?
 3. What are the adverse effects of weight management programs (behavioral, pharmacological) attempting to stabilize, reduce, or maintain BMI?
 - The second review is a 2008 AHRQ review titled *Effectiveness of Weight Management Programs in Children and Adolescents*. Key questions from this review include those listed below. The bolded key question specifically looked at diabetes-related outcomes.

1. Do weight management interventions lead to BMI reduction or stabilization in children and adolescents who are obese (≥ 95 th BMI percentile) or overweight (85-94th BMI percentile)?
 - a. Behavioral Interventions
 - b. Pharmacological Interventions
 - c. Surgical Interventions
 2. Do weight management interventions help children and adolescents who were initially obese (≥ 95 th BMI percentile) or overweight (85-94th percentile) maintain BMI improvements after the completion of an active intervention?
 - a. Behavioral Interventions
 - b. Pharmacological Interventions
 - c. Surgical Interventions
 3. Are there harms associated with weight management interventions to help children and adolescents reduce or stabilize BMI who are obese (≥ 95 th BMI percentile) or overweight (85-94th BMI percentile)?
 - a. Behavioral Interventions
 - b. Pharmacological Interventions
 - c. Surgical Interventions
 4. **Are there other beneficial outcomes to weight management interventions in children and adolescents who are obese (≥ 95 th BMI percentile) or overweight (85-94th BMI percentile) (i.e., improvements in diet or physical activity or reduction in risk factors, such as lipid level, insulin resistance, etc.)?**
 5. If effective behavioral weight management interventions are found (see KQ1),
 - a. are there specific components of the interventions that affect the effectiveness of the programs?
 - b. are there population or environmental factors that affect the effectiveness of the programs?
- Pharmacologic management to prevent type 2 diabetes was also of interest to the nominator. This aspect of the nomination is not addressed in the existing work listed above and will not be addressed in the in-process AHRQ review described above. Further exploration into this aspect of the nomination revealed very limited literature for pharmacologic treatment of overweight/obesity in children and almost no literature on pharmacologic treatment for the prevention of type 2 diabetes in children and adolescents. Clinical efficacy of pharmacologic interventions for the prevention of type 2 diabetes in children and adolescents has not been established. Therefore, this aspect of the topic is not feasible for a full systematic review due to the limited data available for a review at this time.
 - The nominator questioned whether a youth-adapted DPP is being developed or conducted. No indication of a youth-adapted DPP was found in published or grey literature. Therefore, this topic could be considered for a potential new research project within the EHC Program.