



Topic Brief: Diabetes Educators and Therapeutic Inertia

Date: 1/7/2020

Nomination Number: 889

Purpose: This document summarizes the information addressing a nomination submitted on 10/22/2019 through the Effective Health Care Website. This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most suitable.

Issue: Therapeutic inertia, the delay in treatment intensification despite poor disease control, affects over half of people with diabetes mellitus type 2. Various interventions have been proposed to address this. The nominator proposes that the utilization of diabetes educators may be an option.

Program Decision: The EPC Program will not develop a new systematic review on this topic. Effectiveness of diabetes education is already established for many clinical outcomes. We found too few primary studies on diabetes education or diabetes educators and clinical inertia specifically.

Key Findings

- We found one in-process systematic review on strategies to address therapeutic inertia which included diabetes educators; it is not known when the review will be completed.
- We found multiple systematic reviews on effectiveness of diabetes education on clinical outcomes such as HbA1C, diabetes complications, and mortality.
- There is little uncertainty about the impact of diabetes education on clinical outcomes. Diabetes education is recommended by multiple clinical groups, and it is a covered benefit under Medicare.
- We found four primary studies on the impact of different interventions on clinical inertia; two specifically included diabetes educators. There were too few to recommend a systematic review at this time

Background

- Diabetes is a disease that occurs when a person's blood glucose, also called blood sugar, is too high. Diabetes mellitus can be treated with a combination of lifestyle changes (diet and exercise), oral medications, and insulin. As a result control of blood glucose levels requires monitoring, medication management by the healthcare team, and self-management by patients.¹
- Guidelines generally recommend that treatment should be escalated if individualized glycemic targets are not met within 3–6 months of initiation of treatment.²
- Therapeutic inertia is defined as the failure of healthcare providers to intensify treatment when a health condition is not well-controlled. It is thought that this affects over half of adults with type 2 diabetes mellitus.³

- Poor control of diabetes mellitus type 2 can lead to many complications including blindness, kidney failure, peripheral neuropathy, and amputation.
- Clinician, patient and system factors that contribute to therapeutic inertia. These include fear of adverse events, including hypoglycemia; insufficient time with the patient; poor team communication; and limited patient support. ³The nominator suggests that diabetes educators could affect therapeutic inertia, improve glycemic control, and improve health outcomes for adults with type 2 diabetes.
- Diabetes educators can be found in a variety of settings: hospitals, physician offices, clinics, home health, wellness programs, to name a few. They most often work within accredited or recognized diabetes education programs.
- Diabetes education is a covered benefit for Medicare. ⁴
- Diabetes self-management education is recommended by the ADA for all people with diabetes. ⁵

Nomination Summary

- We confirmed the scope of the nomination with representatives from the nominating organization. They confirmed that the primary outcome of interest was therapeutic inertia, though other clinical outcomes were also of interest.
- They note that diabetes educators are an underutilized resource and they wish to improve awareness of their contribution to improving care for people with diabetes.
- They stated that the topic could be broadened to diabetic education but asked that any literature on diabetes educators be highlighted.
- They plan to use the proposed systematic review to support efforts to disseminate information about the value of diabetes educators in achieving glycemic control.

Scope

1. What is the effectiveness of diabetes education on therapeutic inertia and other outcomes for adults with type 2 diabetes mellitus?

Table 1. Questions and PICOTS (population, intervention, comparator, outcome, timing and setting)

Population	Adults 18 years and older with diabetes mellitus type 2
Intervention	Diabetes education Subgroup: diabetes education delivered by a diabetes educator
Comparator	Usual care
Outcome	<ul style="list-style-type: none"> • Therapeutic or clinical inertia • Hemoglobin A1C • Time in range • Diabetes complications (renal insufficiency, neuropathy, retinopathy) • Mortality • Resource utilization (office visits, ER visits, hospitalization) • Harms
Timing	All
Setting	Outpatient

Assessment Methods

See Appendix A.

Summary of Literature Findings

We found multiple systematic reviews that addressed clinical outcomes of diabetes education, and an ongoing systematic review on diabetes education and therapeutic inertia⁶; however it does not appear that it will be completed in the near future. We found 4 primary studies on diabetes education on therapeutic inertia⁷⁻¹⁰; one was focused on diabetes educators. One was a qualitative study⁷; one was an RCT⁸ and two were cluster RCTs.^{9,10} All studied slightly different interventions. These included education delivered by telemedicine⁷; mailed education to both the patient and provider⁸; provider education and on-site consultation by a diabetes educator⁹; and patient education and intensification of therapy using a treatment protocol by diabetes educator.¹⁰

See Appendix B for detailed assessments of all EPC selection criteria.

Summary of Selection Criteria Assessment

Therapeutic inertia is an important issue that results in poor diabetes control. Strategies have been proposed to address this. Multiple systematic reviews have addressed the impact of diabetes educators on clinical outcomes. There is little uncertainty about the benefit of diabetes education; it is recommended by multiple clinical groups, and it is a covered benefit under Medicare. Few studies address the impact of diabetes educators on therapeutic inertia. A systematic review is not recommended at this time.

Please see Appendix B for detailed assessments of individual EPC Program selection criteria.

Related Resources

We identified additional information in the course of our assessment that might be useful.

- Kangas et al. An integrative systematic review of interprofessional education on diabetes. 2018.

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Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Desirability of New Review/Absence of Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years <date> on the questions of the nomination from these sources:

- AHRQ: Evidence reports and technology assessments
 - AHRQ Evidence Reports <https://www.ahrq.gov/research/findings/evidence-based-reports/index.html>
 - EHC Program <https://effectivehealthcare.ahrq.gov/>
 - US Preventive Services Task Force <https://www.uspreventiveservicestaskforce.org/>
 - AHRQ Technology Assessment Program <https://www.ahrq.gov/research/findings/ta/index.html>
- US Department of Veterans Affairs Products publications
 - Evidence Synthesis Program <https://www.hsrd.research.va.gov/publications/esp/>
 - VA/Department of Defense Evidence-Based Clinical Practice Guideline Program <https://www.healthquality.va.gov/>
- Cochrane Systematic Reviews <https://www.cochranelibrary.com/>
- University of York Centre for Reviews and Dissemination database <https://www.crd.york.ac.uk/CRDWeb/>
- PROSPERO Database (international prospective register of systematic reviews and protocols) <http://www.crd.york.ac.uk/prospéro/>
- PubMed <https://www.ncbi.nlm.nih.gov/pubmed/>
- Campbell Collaboration <http://www.campbellcollaboration.org/>
- Joanna Briggs Institute <http://joannabriggs.org/>

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Feasibility of New Evidence Review

We conducted a limited literature search in PubMed and PsycInfo for the last five years December 10, 2014 to December 10, 2019. We reviewed all studies identified titles and abstracts for inclusion. We classified identified studies by question and study design to estimate the size and scope of a potential evidence review.

Search strategy

MEDLINE ALL (Ovid) 1946 to December 09, 2019

Date searched: December 10, 2019

- 1 *Diabetes Mellitus, Type 2/ and (Education/ or Health Education/ or Patient Education as Topic/ or patient education handout.pt.) (3120)
- 2 ((diabet* adj7 (coach* or educat* or instruct* or learn* or psychoeducat* or teach*)) not ("type 1" or gestational or "deep learning" or "machine learning")).ti,kf. (3655)
- 3 or/1-2 (6115)
- 4 limit 3 to english language (5349)
- 5 4 and ((meta-analysis or systematic review).pt. or (((evidence or systematic) adj3 (review or synthesis)) or meta-anal* or metaanal*).ti,ab,kf.) (181)
- 6 limit 5 to yr="2016 -Current" (70)**
- 7 4 and ((controlled clinical trial or randomized controlled trial).pt. or (random* or trial).ti,ab.) (1293)
- 8 limit 7 to yr="2014 -Current" (553)**
- 9 limit 4 to yr="2014-Current" (1748)
- 10 9 not (6 or 8) (1159)**

EBM Reviews (Ovid) - Cochrane Central Register of Controlled Trials November 2019

Date searched: December 10, 2019

- 1 ((diabet* adj7 (coach* or educat* or instruct* or learn* or psychoeducat* or teach*)) not ("type 1" or gestational or "deep learning" or "machine learning")).ti. (937)
- 2 limit 1 to english language (602)
- 3 limit 2 to yr="2014 -Current" (283)

EBM Reviews (Ovid) - Cochrane Database of Systematic Reviews 2005 to December 4, 2019

Date searched: December 10,2019

- 1 ((diabet* adj7 (coach* or educat* or instruct* or learn* or psychoeducat* or teach*)) not ("type 1" or gestational or "deep learning" or "machine learning")).ti. (6)
- 2 limit 1 to last 3 years (1)

ClinicalTrials.gov ([link to search and results](#))

Date searched: December 10, 2019

AREA[OverallStatus] EXPAND[Term] COVER[FullMatch] ("Recruiting" OR "Active, not recruiting" OR "Completed" OR "Enrolling by invitation") AND AREA[ConditionSearch] (Diabetes Mellitus, Type 2 OR diabetes type 2) AND AREA[InterventionSearch] (coach OR education OR instruction OR learning OR psychoeducation OR teaching) AND AREA[StdAge] EXPAND[Term] COVER[FullMatch] ("Adult" OR "Older Adult") AND AREA[StudyFirstPostDate] EXPAND[Term] RANGE[01/01/2014, 12/10/2019] = 264 results

Appendix B. Selection Criteria Assessment

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the U.S.?	Yes, diabetes educators are available in the US
1b. Is the nomination a request for an evidence report?	Yes
1c. Is the focus on effectiveness or comparative effectiveness?	Yes
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Uncertain
1. Importance	
2a. Represents a significant disease burden; large proportion of the population	23.1 million people had diagnosed diabetes. 95% have type 2 diabetes. ¹¹
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population	In 2017, the total estimated cost of diagnosed diabetes was \$327 billion, including \$237 billion in direct medical costs and \$90 billion in reduced productivity. ¹²
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes

Selection Criteria	Assessment
2d. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Yes
2. Desirability of a New Evidence Review/Absence of Duplication	
3. A recent high-quality systematic review or other evidence review is not available on this topic	<p>There are completed and ongoing systematic reviews that covers the scope of this nomination. However the systematic review that addresses diabetes educators and therapeutic inertia does not have a firm completion date.</p> <p>We found one ongoing review on therapeutic inertia</p> <ul style="list-style-type: none"> • Zafar et al. Systemic review to describe the available interventions that have been implemented to overcome clinical inertia in the management of type 2 diabetes. PROSPERO 2015 CRD42015016030.⁶ We confirmed with the point of contact that the review is in-process and includes diabetes educators as an intervention. However it is not clear when it will be completed. <p>We found multiple SR on diabetes self-management. However none studied therapeutic inertia as an outcome.</p> <ul style="list-style-type: none"> • Adiewere et al. A systematic review and meta-analysis of patient education in preventing and reducing the incidence or recurrence of adult diabetes foot ulcers (DFU). 2018¹³ • Cunningham et al. The effect of diabetes self-management education on HbA1c and quality of life in African-Americans: a systematic review and meta-analysis. 2018.¹⁴ • Choi et al. Diabetes education for Chinese adults with type 2 diabetes: A systematic review and meta-analysis of the effect on glycemic control. 2016.¹⁵ • Chrvala et al. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. 2016¹⁶ • He et al. reduces risk of all-cause mortality in type 2 diabetes patients: a systematic review and meta-analysis. 2017. ¹⁷ • LaManna et al. Diabetes Education Impact on Hypoglycemia Outcomes: A Systematic Review of Evidence and Gaps in the Literature. 2019¹⁸ • Rie Tanaka, Taiga Shibayama, Keiko Sugimoto, Kikue Hidaka. Diabetes self-management education and support (DSMES) introduced by multidisciplinary health care teams for adults with newly diagnosed type 2 diabetes mellitus: a systematic review of randomized controlled trials. PROSPERO 2019 CRD42019132723 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42019132723 • Andre Luis Ferreira Azeredo-Da-Silva, Eduardo Tarasconi Ruschel, Gilberto Costa Borges Junior, Alexandre Moraes Bestetti. Structured education and monitoring programs for people with type 1 and type 2 diabetes: overview of reviews and systematic review of recent randomized trials. PROSPERO 2018 CRD42018087644 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42018087644

Selection Criteria	Assessment
3. Impact of a New Evidence Review	
4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?	<p>Yes it is unclear how best to address therapeutic inertia in adults with diabetes. However resolving this uncertainty may not lead to the desired practice change of interest to the nominator—increased utilization of diabetic educators. There does not appear to be uncertainty about the value of diabetes education for people with diabetes. A consensus statement of several clinical practice organizations, including American Academy of Nurse Practitioners (AANP), American Academy of Family Practice (AAFP) and American Academy of Diabetes Educators (AADE), recommend that people with diabetes consult with diabetes educators for self-management.¹⁹</p> <p>The American Diabetes Association (ADA) recommends that all people with diabetes should participate in diabetes self-management education. It can be delivered individually, as a group, or using technology. It should also be communicated to the entire diabetes care team.⁵</p>
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	Yes likely there is practice variation in how to address therapeutic inertia.
4. Primary Research	
5. Effectively utilizes existing research and knowledge by considering: - Adequacy (type and volume) of research for conducting a systematic review - Newly available evidence (particularly for updates or new technologies)	<p>We focused the search for primary research on diabetes education and therapeutic inertia. We found four studies and one trial on clinicaltrials.gov.</p> <ul style="list-style-type: none"> • Barton et al. Clinical inertia in a randomized trial of telemedicine-based chronic disease management: Lessons Learned.⁷ <ul style="list-style-type: none"> ○ This qualitative study explored reasons for failure of an RCT that studied the effect of telemedicine delivered nurse intervention of self-management education and medication management facilitation. • Bieszk et al. Act on threes Paradigm for treatment intensification of Types 2 Diabetes in Managed Care⁸ <ul style="list-style-type: none"> ○ In this RCT the educational component of this intervention was targeted and general information that was mailed to the patient and provider. ○ Funded by Sanofi • Krall et al. Can a diabetes educator influence clinical inertia in primary care?⁹ <ul style="list-style-type: none"> ○ This cluster randomized trial compared diabetes educator delivered education to providers and on-site diabetes educator to support therapy advancement vs. provider education only vs. usual care. ○ It appears that this was published as an abstract. • Zgibor et al. Effectiveness of certified diabetes educators following pre-approved protocols to redesign diabetes care delivery in primary care: results of the REMEDIES 4D trial. 2018.¹⁰ <ul style="list-style-type: none"> ○ Cluster randomized trial that assessed the impact of certified diabetes educators providing diabetes education and also using standardized protocols to intensify treatment. Comparison was a support group at the primary care office.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality;