Results of Topic Selection Process & Next Steps

The nominator, a managed care pharmacist, is interested in a new systematic review evaluating the effectiveness of mobile health (mHealth) technologies for diabetes. This topic met the Effective Health Care Program selection criteria, and will move forward for development as an AHRQ evidence product.

Topic Brief

Topic Name: mHealth for Diabetes

Topic #: 0672

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Conflict of Interest: None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

Summary of Key Findings:
- Appropriateness and importance: The nomination is both appropriate and important.
- Duplication: An AHRQ systematic review on this topic would not be duplicative. We identified a total of 19 completed or in-process reviews that covered part, but not all, of the nomination.
  - For Key Question 1a, we identified an in-process review that will examine the effects of eHealth technologies for lifestyle interventions on adult patients with either pre-diabetes or risk factors for diabetes. We identified no reviews on mHealth technologies for children or adolescents with pre-diabetes or risk factors for diabetes.
  - For Key Question 1b, we did not identify any reviews on the comparative effectiveness of mHealth technologies for diabetes prevention.
  - For Key Question 2a, we identified 17 completed or in-process evidence reviews examining the effectiveness of mHealth technologies. The majority of these reviews examined devices, apps, internet-based programs or other software that helped to facilitate clinician coaching or track medical information.
  - For Key Question 2b, we identified an in-process review that plans to conduct a network meta-analysis to compare the effectiveness of telemedicine interventions (including the use of mobile applications) for type 1 and type 2 diabetes.

- Impact: A new review on this topic has high impact potential. Although patient-facing mHealth technologies for chronic illnesses have shown promise, questions remain as to whether they improve outcomes. A recent study found that patient ratings of mobile health applications are poor indications of those application's clinical utility and usability. A new review about the effectiveness of mHealth technologies for diabetes could address uncertainty about mHealth's impact on improving diabetic outcomes. Patients and clinicians could use an evidence review to decide whether to use mHealth care, and which technology to use.
- Feasibility: An AHRQ systematic review on this topic is feasible.
  - *Size/scope of review:* We identified 17 studies relevant to the key questions. We identified 1 study examining the effectiveness of a web-based lifestyle intervention for women with recent gestational diabetes (KQ1a), 1 study comparing different versions of a technology-based intervention for adolescents at risk for type 2 diabetes (KQ1b), 9 studies and 2 protocols on the effectiveness of mHealth technologies for diabetes management (KQ2a), and 4 studies on the comparative effectiveness of mHealth technologies for diabetes management (KQ2b).
  - *ClinicalTrials.gov*: We identified 9 recently completed or ongoing studies on the effectiveness of mHealth technologies for diabetes management (KQ2a) and 1 recently completed study on the comparative effectiveness of two internet-based diabetes management programs for transitioning teens (KQ2b) that recruited or planned to recruit 100 or more participants.
- Value: The American Academy of Family Physicians (AAFP) has expressed interest in partnering with AHRQ on an evidence product examining mHealth for diabetes. The AAFP has previously produced high-quality, evidence-based guidelines and is transparent about its methodology.

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Introduction

Approximately 29 million Americans suffer from a form of Diabetes Mellitus (DM).[1] An additional 86 million adults in the US have prediabetes, 15-30% of which will develop type 2 diabetes within 5 years.[1] The CDC reports that in 2012, diabetes cost $245 billion due to related complications, medical costs, and lost wages.[1]

Researchers have started to explore the use of low-cost digital diabetes prevention and management technologies. These technologies are often referred to as mHealth, telehealth, or telemedicine. These terms are sometimes used interchangeably, although their definitions differ slightly. Telehealth is the broadest term and is defined as "the use of electronic information and telecommunication technology to support and promote long-distance clinical health care, patient and professional health related education, public health, and health administration."[2] Telemedicine has a similar definition- "the use of information and communication technologies to improve patient outcomes by increasing access to care and clinical outcomes"- although some organizations use the term to describe interventions that provide clinical care alone.[3] mHealth, or mobile health, is defined as "the use of mobile and wireless technologies to support the achievement of health objectives."[4] mHealth technologies are typically patient-facing and are available on patients' mobile devices.

mHealth technologies could potentially improve the self-management of diabetes and diabetes risk factors by providing patients with educational resources, support from peers and clinicians, as well as tools for tracking nutrition, exercise, glucose levels, and other relevant health information. However, due to the wide range of features available through these technologies, and the rapid pace of technological change, it is unclear which technologies currently available to patients are effective at improving outcomes.

Topic nomination *#0672 mHealth for Diabetes* was received on May 10, 2016. It was nominated by a managed care pharmacist. Because the nominator declined to be contacted, we developed key questions and populations, interventions, comparators and outcomes (PICOs) of interest based on a pamphlet provided by the nominator. This pamphlet gives an overview of the purpose of digital diabetes programs, an explanation of the components often used in programs (ie, educational content, personal information tracking, social network/support, and clinician coaching), and lists specific examples of programs. The pamphlet does not provide information on the effectiveness of programs.

We developed key questions on both the effectiveness and comparative effectiveness of mHealth technologies, as we felt both these questions would be relevant to stakeholder groups (ie, clinicians, pharmacists, patients, and health systems). We chose outcomes we felt would be most relevant for these four stakeholder groups, including both intermediate and long-term outcomes. We included studies that looked at either web-based technology or technology specifically designed for use on mobile devices (such as mobile applications), as these are both available on mobile devices.

The questions for this nomination are:

Key Question 1a. What is the effectiveness of mobile health technologies for adults and adolescents with pre-diabetes or who are at a high risk of developing diabetes?

Key Question 1b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?

Key Question 2a. What is the effectiveness of mobile health technologies for adults and adolescents with type I, type II, or gestational diabetes?

Key Question 2b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?

To define the inclusion criteria for the key questions we specify the population, interventions, comparators, and outcomes, (PICOs) of interest. See Table 1.

Table 1. Key Questions and PICOs

Key Question	1a. What is the effectiveness of mobile health technologies for adults and adolescents with pre-diabetes or who are at a high risk of developing diabetes? 1b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?	2a. What is the effectiveness of mobile health technologies for adults and adolescents with type I, type II, or gestational diabetes? 2b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?
Population	Adults and adolescents who have pre-diabetes or who are at high risk of developing diabetes	Adults and adolescents diagnosed with type I, type II, or gestational diabetes
Intervention	Any mobile health technology, delivered online or through mobile apps, that include one or more of the following components: 1) Educational content 2) Personal information tracking 3) Social network/support 4) Clinician coaching	Any mobile health technology, delivered online or through mobile apps, that include one or more of the following components: 1) Educational content 2) Personal information tracking 3) Social network/support 4) Clinician coaching
Comparator	1a. Usual care, diabetes prevention delivered in-person, or other control 1b. Other mobile health technology for diabetes prevention	2a. Usual care, diabetes management delivered in-person, other control 2b. Other mobile health technology for diabetes management
Outcomes	Intermediate outcomes: • Medication adherence • Diet/exercise • Weight loss Long-term outcomes: • Diabetes diagnosis • Health-related quality of life • Functionality • Death from any cause • Adverse events • Costs	Intermediate outcomes: • Glucose levels/glycemic control • Medication adherence • Diet/exercise • Weight loss Long-term outcomes: • Health-related quality of life • Functionality • Death from any cause • Adverse events • Costs

Methods

To assess topic nomination *#0672 mHealth for Diabetes* for priority for a systematic review or other AHRQ Effective Health Care (EHC) report, we used a modified process based on established criteria. Our assessment is hierarchical in nature, with the findings of our assessment determining the need for further evaluation. Details related to our assessment are provided in Appendix A.

1. Determine the *appropriateness* of the nominated topic for inclusion in the EHC program.
2. Establish the overall *importance* of a potential topic as representing a health or healthcare issue in the United States.
3. Determine the *desirability of new evidence review* by examining whether a new systematic review or other AHRQ product would be duplicative.
4. Assess the *potential impact* a new systematic review or other AHRQ product.
5. Assess whether the *current state of the evidence* allows for a systematic review or other AHRQ product (feasibility).
6. Determine the *potential value* of a new systematic review or other AHRQ product.

Appropriateness and Importance
We assessed the nomination for appropriateness and importance (see Appendix A).

Desirability of New Review/Duplication
We searched for high-quality, completed or in-process evidence reviews pertaining to the key questions of the nomination. Table 2 includes the citations for the reviews that were determined to address the key questions.

Impact of a New Evidence Review
The impact of a new evidence review was assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether a new review could influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.). See Appendix A.

Feasibility of New Evidence Review
We conducted a literature search in PubMed from October 2011 to October 2016. Because a large number of articles (n=722) were identified, we reviewed a random sample of 200 titles and abstracts for inclusion and classified identified studies by study design, to assess the size and scope of a potential evidence review. We then calculated the projected total number of included studies based on the proportion of studies included from the random sample. See Table 2, Feasibility Column, Size/Scope of Review Section for the citations of included studies.

We also searched Clinicaltrials.gov for recently completed or in-process unpublished studies. See Appendix B for the PubMed search strategy and links to the ClinicalTrials.gov search.

Value
We assessed the nomination for value (see Appendix A). We considered whether a partner organization could use the information from the proposed evidence review to facilitate evidence-based change; or the presence of clinical, consumer, or policymaking context that is amenable to evidence-based change.

Compilation of Findings
We constructed a table outlining the selection criteria as they pertain to this nomination (see Appendix A).

Results

Appropriateness and Importance
This is an appropriate and important topic. Approximately 86 million Americans are pre-diabetic, and 29 million suffer from a form of Diabetes Mellitus.[1] Diabetes Mellitus cost an estimated $245 billion dollars in 2012 in the U.S. due to related complications, medical costs, and lost wages.[1] There are hundreds of mobile and internet-based resources available to patients for preventing and managing diabetes; however it is unclear which are most effective.

Desirability of New Review/Duplication
A new evidence review examining mHealth technologies for diabetes would not be duplicative of an existing product. We identified a total of 19 completed or in-process reviews that covered part, but not all, of the nomination.

For Key Question 1a, we identified an in-process review[5] that will examine the effects of eHealth technologies for lifestyle interventions on adult patients with either pre-diabetes or risk factors for diabetes.

For Key Question 1b, we identified no reviews on mHealth technologies for children or adolescents with pre-diabetes or risk factors for diabetes.

For Key Question 2a, we identified 17 completed or in-process reviews examining the effectiveness of mHealth technologies.[6-22] The majority of these examined devices, apps, internet-based programs or other software that facilitated clinician coaching or helped track medical information. Reviews to note include a 2014 review[10] that looked at the cost-effectiveness of telemedicine for type 2 diabetes, a 2013 Cochrane review[8] that examined the effectiveness of computer-based self-management interventions for type 2 diabetes, a 2012 Cochrane review[22] that looked at automated text-messaging interventions for self-management of long-term illnesses, a 2012 review[14] that examined mobile monitoring technologies for adults with type 1 and type 2 diabetes, and an in-process review[20] covering all mobile applications for the management of type 1 diabetes, type 2 diabetes, and gestational diabetes. Note: We also identified an in-process AHRQ evidence review[23] on telehealth for acute or chronic consultation. We contacted the review authors for the in-process review and they stated their review would likely not address the current nomination's questions.

For Key Question 2b, we identified an in-process review[18] that plans to conduct a network meta-analysis to compare the effectiveness of telemedicine interventions (including mobile applications) for type 1 and type 2 diabetes.

Impact of a New Evidence Review
A new systematic review on mHealth for diabetes has high impact potential. Although patient-facing mHealth technologies show promise[24], questions remain as to whether they improve outcomes. A recent study found that patient ratings of mobile health applications are poor indicators of those applications' clinical utility and usability.[25] A new review about the effectiveness of mHealth technologies for diabetes could address uncertainty about mHealth's impact on improving diabetic outcomes. Patients and clinicians could use an evidence review to decide whether to use mHealth technology, and which technology to use.

Feasibility of a New Evidence Review
A new evidence review on mHealth for diabetes is feasible.

We identified 17 studies relevant to the key questions. We identified 1 study[26] examining the effectiveness of a web-based lifestyle intervention for women with recent gestational diabetes (KQ1a), 1 study[27] comparing different versions of a technology-based intervention for

adolescents at risk for type 2 diabetes (KQ1b), 9 studies[28-35 36] and 2 protocols[37,38] on the effectiveness of mHealth technologies for diabetes management (KQ2a), and 4 studies[39-42] on the comparative effectiveness of mHealth technologies for diabetes management (KQ2b). The majority of studies were RCTs.

From ClinicalTrials.gov, we also identified 9 recently completed[43-45] or ongoing[46-51] studies on the effectiveness or comparative effectiveness of mHealth technologies for diabetes management that recruited or planned to recruit 100 or more participants. (Due to the large number of potentially relevant clinical trials, we chose n=100 as a cut-off point to identify the largest studies.)

We estimate there may be 62 studies pertinent to the nomination. See Table 2, Feasibility column for the citations that were determined to address the key questions.

Table 2. Key questions with the identified corresponding evidence reviews and original research

Key Question	Duplication (Completed or In-Process Evidence Reviews)	Feasibility (Published and Ongoing Research, Yield=722)
1a. What is the effectiveness of mobile health technologies for adults and adolescents with pre-diabetes or who are at a high risk of developing diabetes?	Total number of completed and in-progress systematic reviews: 1 • Other (in process): 1[5]	<u>Size/scope of review</u> Relevant Studies Identified: 1 • RCTs: 1[26] Projected total: 4 <u>ClinicalTrials.gov</u> None identified.
1b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?	Total number of completed and in-progress systematic reviews: 0	<u>Size/scope of review</u> Relevant Studies Identified: 1 • RCTs: 1[27] Projected total: 4 <u>ClinicalTrials.gov</u> None identified.
2a. What is the effectiveness of mobile health technologies for adults and adolescents with type I, type II, or gestational diabetes?	Total number of completed and in-progress systematic reviews:17 • AHRQ: 1[6,21] • Cochrane: 4[7,8,22] • Other: 8[9-16] • Other (in process): 4[17-20]	<u>Size/scope of review</u> Relevant Studies Identified: 11 • RCTs: 8[28-35 36] • Protocol: 2[37,38] Projected total: 36 <u>ClinicalTrials.gov</u> Relevant Trials: 9 • Active, not recruiting: 3[46-48] • Active, recruiting: 4[49-51] • Completed: 2[43,44]
2b. Among the mobile health technologies shown to be effective, what is the comparative effectiveness?	Total number of completed and in-progress systematic reviews: 1 • Other (in process): 1[18]	<u>Size/scope of review</u> Relevant Studies Identified: 4 • RCT: 2[39,40] • Randomized trial: 1[41] • Prospective observational: 1[42] Projected total: 14 <u>ClinicalTrials.gov</u> Relevant Trials: 1 • Completed: 1[45]

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; RCT=Randomized Controlled Trial

Value

The American Academy of Family Physicians (AAFP) has expressed interest in partnering with AHRQ on an evidence product examining mHealth for diabetes. The AAFP has previously produced high-quality, evidence-based guidelines and is transparent about its methodology.

Summary of Findings

- Appropriateness and importance: The nomination is both appropriate and important.
- Duplication: An AHRQ systematic review on this topic would not be duplicative. We identified a total of 19 completed or in-process reviews that covered part, but not all, of the nomination.
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Appendices

Appendix A: Selection Criteria Summary

Appendix B: Search Strategy & Results (Feasibility)

Appendix A. Selection Criteria Summary

Selection Criteria	Supporting Data
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, this topic represents a health care drug and intervention available in the U.S.
1b. Is the nomination a request for a systematic review?	Yes, this topic is a request for a systematic review.
1c. Is the focus on effectiveness or comparative effectiveness?	The focus of this review is on effectiveness and comparative effectiveness.
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?	Yes, it is biologically plausible. Yes, it is consistent with what is known about the topic.
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Yes, this disease represents a significant disease burden. Approximately 86 million Americans are pre-diabetic, and 29 million suffer from a form of Diabetes Mellitus.[1]
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	Yes, this nomination represents a disease of high public interest and cost. Diabetes Mellitus cost an estimated $245 billion in 2012 in the U.S. due to related complications, medical costs, and lost wages.[1]
2c. Represents important uncertainty for decision makers	Yes, this nomination represents uncertainty for decision makers. There are hundreds of mobile and electronic resources for managing diabetes, and it is unclear which are most effective.
2d. Incorporates issues around both clinical benefits and potential clinical harms	While the nomination does not explicitly mention harms, we included harms as part of the outcomes of interest.
2e. 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, this topic represents high costs, however the interventions of interest are marketed as low cost ways to prevent and manage diabetes.
3. Desirability of a New Evidence Review/Duplication	
3. Would not be redundant (i.e., the proposed topic is not already covered by available or soon-to-be available high-quality systematic review by AHRQ or others)	An AHRQ systematic review on mHealth for diabetes would not be duplicative. We identified a total of 19 completed or in-process reviews that covered part, but not all, of the nomination. For Key Question 1a, we identified an in-process review[5] that will examine the effects of eHealth technologies for lifestyle interventions on adult patients with either pre-diabetes or risk factors for diabetes. We identified no reviews on mHealth technologies for diabetes prevention among children or adolescents. For Key Question 1b, we identified no reviews on the comparative effectiveness of mHealth technologies for diabetes prevention.

	For Key Question 2a, we identified 17 completed or in-process reviews examining the effectiveness of mHealth technologies for diabetes management.[6-20,52] The majority of these examined devices, apps, internet-based programs or other software that facilitated clinician coaching or helped track medical information. Reviews to note include a 2014 review[10] that looked at cost-effectiveness of telemedicine for type 2 diabetes, a 2013 Cochrane review[8] that examined the effectiveness of computer-based self-management interventions for type 2 diabetes, a 2012 Cochrane review[22] that looked at automated text-messaging interventions for self-management of long-term illnesses, a 2012 review[14] that examined mobile monitoring technologies for adults with type 1 and type 2 diabetes, and an in-process review[20] covering all mobile applications for the management of type 1 diabetes, type 2 diabetes, and gestational diabetes. For Key Question 2b, we identified an in-process review[18] that plans to conduct a network meta-analysis to compare the effectiveness of telemedicine interventions (including the use of mobile applications) for type 1 and type 2 diabetes.
4. 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)?	The standard of care for diabetes prevention and management is clear; however, less is known about the effectiveness of integrating mHealth into care. An evidence review can address the uncertainty about the effectiveness of different mHealth technologies. Patients and clinicians could then potentially use an evidence review to inform decisions on whether to use mHealth technology in care, and which technologies to use.
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, there is evidence of practice variation in the use of mHealth in diabetes care.[53]
5. 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)	*Size/scope of review*: We identified 17 studies relevant to the key questions. We identified 1 study[26] examining the effectiveness of a web-based lifestyle intervention for women with recent gestational diabetes (KQ1a), 1 study[27] comparing different versions of a technology-based intervention for adolescents at risk for type 2 diabetes (KQ1b), 9 studies[28-35 36] and 2 protocols[37,38] on the effectiveness of mHealth technologies for diabetes management (KQ2a), and 4 studies[39-42] on the comparative effectiveness of mHealth technologies for diabetes management (KQ2b). The majority of studies were RCTs.

	ClinicalTrials.gov: We also identified 9 recently completed[43-45] or ongoing[46-51] studies on the effectiveness or comparative effectiveness of mHealth technologies for diabetes management that recruited or planned to recruit 100 or more participants. (Due to the large number of potentially relevant clinical trials, we chose n=100 as a cut-off point to identify the largest studies.)
6. Value	
6a. The proposed topic exists within a clinical, consumer, or policy-making context that is amenable to evidence-based change	Yes, the topic exists within a clinical, consumer and policy-making context that is amenable to evidence-based change.
6b. Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation)	The American Academy of Family Physicians (AAFP) has expressed interest in partnering with AHRQ on an evidence product examining mHealth for diabetes. The AAFP has previously produced high-quality, evidence-based guidelines and is transparent about its methodology.

Abbreviations: AAFP= American Academy of Family Physicians; mHealth= mobile Health; RCT=Randomized controlled trials

Appendix B. Search Strategy & Results (Feasibility)

Topic: mHealth for Diabetes Date: October Database Searched: MEDLINE (PubMed)	
Concept	Search String
Diabetes	(("Diabetes Mellitus"[Mesh] OR "Diabetes Insipidus"[Mesh] OR "Diabetes Complications"[Mesh])) OR diabetes[Title]
AND	
Disease Management	((("Disease Management"[Mesh]) OR "prevention and control" [Subheading])) OR ((management[Title/Abstract] OR control[Title/Abstract] OR prevent[Title/Abstract]))
AND	
mHealth	((((((((("Telemedicine"[Mesh]) OR "Computers"[Mesh]) OR "Information Storage and Retrieval"[Mesh]) OR "Online Systems"[Mesh]) OR "Internet"[Mesh]) OR "Cell Phones"[Mesh]) OR "Mobile Applications"[Mesh])) OR ((mobile[Title] OR mhealth[Title] OR telehealth[Title] OR eHealth[Title] OR telemedicine[Title] OR digital[Title] OR online[Title] OR internet[Title] OR web[Title] OR cell[Title] OR phone[Title] OR smartphone[Title] OR app[Title]))
NOT	
Not Editorials, etc.	((((((("Letter"[Publication Type]) OR "News"[Publication Type]) OR "Patient Education Handout"[Publication Type]) OR "Comment"[Publication Type]) OR "Editorial"[Publication Type])) OR "Newspaper Article"[Publication Type]
Limit to last 5 years ; human ; English ;	Filters activated: published in the last 5 years, Humans, English, Adolescent: 13-18 years, Adult: 19+ years.
N=722	
Systematic Review N=35	PubMed subsection "Systematic [sb]"
Randomized Controlled Trials N=429	Cochrane Sensitive Search Strategy for RCT's "((((((((groups[tiab])) OR (trial[tiab])) OR (randomly[tiab])) OR (drug therapy[sh])) OR (placebo[tiab])) OR (randomized[tiab])) OR (controlled clinical trial[pt])) OR (randomized controlled trial[pt])"
Other N=258	

Clinicaltrials.gov

Recruiting
36 studies found for: mobile OR mhealth OR telehealth OR ehealth OR telemedicine OR digital OR online OR internet OR web OR cell OR phone OR smartphone OR app | Recruiting | diabetes | NOT drug | management OR control OR prevent | Studies received on or after 01/01/2011
https://clinicaltrials.gov/ct2/results?term=mobile+OR+mhealth+OR+telehealth+OR+ehealth+OR+telemedicien+OR+digital+OR+online+OR+internet+OR+web+OR+cell+OR+phone+OR+smartphone+OR+app&recr=Recruiting&type=&rslt=&age_v=&gndr=&cond=diabetes&intr=NOT+drug&titles=&outc=management+OR+control+OR+prevent&spons=&lead=&id=&state1=&cntry1=&state2=&cntry2=&state3=&cntry3=&locn=&rcv_s=01%2F01%2F2011&rcv_e=&lup_s=&lup_e=

Active – not recruiting
16 studies found for: mobile OR mhealth OR telehealth OR ehealth OR telemedicine OR digital OR online OR internet OR web OR cell OR phone OR smartphone OR app | Active, not

recruiting | diabetes | NOT drug | management OR control OR prevent | Studies received on or after 01/01/2011

https://clinicaltrials.gov/ct2/results?term=mobile+OR+mhealth+OR+telehealth+OR+ehealth+OR+telemedicien+OR+digital+OR+online+OR+internet+OR+web+OR+cell+OR+phone+OR+smartphone+OR+app&recr=Active%2C+not+recruiting&type=&rslt=&age_v=&gndr=&cond=diabetes&intr=NOT+drug&titles=&outc=management+OR+control+OR+prevent&spons=&lead=&id=&state1=&cntry1=&state2=&cntry2=&state3=&cntry3=&locn=&rcv_s=01%2F01%2F2011&rcv_e=&lup_s=&lup_e=

Completed
26 studies found for: mobile OR mhealth OR telehealth OR ehealth OR telemedicine OR digital OR online OR internet OR web OR cell OR phone OR smartphone OR app | Completed | diabetes | NOT drug | management OR control OR prevent | Studies received on or after 01/01/2011

https://clinicaltrials.gov/ct2/results?term=mobile+OR+mhealth+OR+telehealth+OR+ehealth+OR+telemedicien+OR+digital+OR+online+OR+internet+OR+web+OR+cell+OR+phone+OR+smartphone+OR+app&recr=Completed&type=&rslt=&age_v=&gndr=&cond=diabetes&intr=NOT+drug&titles=&outc=management+OR+control+OR+prevent&spons=&lead=&id=&state1=&cntry1=&state2=&cntry2=&state3=&cntry3=&locn=&rcv_s=01%2F01%2F2011&rcv_e=&lup_s=&lup_e=