

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

# Remote Monitoring for Non-Cardiac Chronic Conditions: Clinical Effectiveness and Cost-Effectiveness

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**Funding:** CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

## Research Questions

1. What is the clinical effectiveness of remote monitoring for non-cardiac chronic conditions?
2. What is the cost-effectiveness of remote monitoring for non-cardiac chronic conditions?

## Key Findings

One systematic review was identified regarding the clinical and cost-effectiveness of remote monitoring for non-cardiac chronic conditions.

## Methods

A limited literature search was conducted by an information specialist on key resources including Ovid Medline, PubMed, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were remote monitoring and chronic conditions (including asthma, diabetes, and chronic kidney disease). No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 01, 2014 and April 23, 2019. Internet links were provided, where available.

## Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

**Table 1: Selection Criteria**

<b>Population</b>	People with non-cardiac chronic conditions
<b>Intervention</b>	Remote patient monitoring with a wearable device
<b>Comparator</b>	Standard of care (e.g., doctor's appointments)
<b>Outcomes</b>	Q1: Clinical effectiveness (e.g., quality of life, well-being, health status, hospital admissions) and safety (e.g., mortality) Q2: Cost-effectiveness
<b>Study Designs</b>	Health technology assessments, systematic reviews, meta-analyses, economic evaluations

## Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by economic evaluations.

One systematic review was identified regarding the clinical and cost-effectiveness of remote monitoring for non-cardiac chronic conditions. No relevant health technology assessments, meta-analyses or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

1. Vegesna A, Tran M, Angelaccio M, Arcona S. Remote patient monitoring via non-invasive digital technologies: a systematic review. *Telemed J E Health*. 2017 01;23(1):3-17.

[PubMed: PM27116181](#)

### Economic Evaluations

No literature identified.

## Appendix — Further Information

### Previous CADTH Reports

2. Remote access technologies versus interfacility transportation in rural and remote settings: clinical effectiveness, cost-effectiveness and guidelines. (*CADTH rapid response report: reference list*). Ottawa (ON): CADTH; 2018:  
<https://www.cadth.ca/sites/default/files/pdf/htis/2018/RA0988%20Remote%20Access%20Technologies%20Final.pdf>. Accessed 2019 Apr 26.
3. Telehealth: summary of evidence. Ottawa (ON): CADTH; 2016:  
[https://www.cadth.ca/sites/default/files/pdf/telehealth\\_bundle.pdf](https://www.cadth.ca/sites/default/files/pdf/telehealth_bundle.pdf). Accessed 2019 Apr 26.

### Randomized Controlled Trials

4. Wang J, Cai C, Padhye N, Orlander P, Zare M. A behavioral lifestyle intervention enhanced with multiple-behavior self-monitoring using mobile and connected tools for underserved individuals with type 2 diabetes and comorbid overweight or obesity: pilot comparative effectiveness trial. *JMIR MHealth Uhealth*. 2018 Apr 10;6(4):e92.  
[PubMed: PM29636320](#)

### *Healthcare Costs/ Health Care Utilization*

5. Bloss CS, Wineinger NE, Peters M, et al. A prospective randomized trial examining health care utilization in individuals using multiple smartphone-enabled biosensors. *PeerJ*. 2016;4:e1554.  
[PubMed: PM26788432](#)
6. Kim MY, Lee SY, Jo EJ, et al. Feasibility of a smartphone application based action plan and monitoring in asthma. *Asia Pac Allergy*. 2016 Jul;6(3):174-180.  
[PubMed: PM27489790](#)
7. Lim S, Kang SM, Kim KM, et al. Multifactorial intervention in diabetes care using real-time monitoring and tailored feedback in type 2 diabetes. *Acta Diabetol*. 2016 Apr;53(2):189-198.  
[PubMed: PM25936739](#)

### *Unclear if Intervention is Wearable Device*

8. Nicolucci A, Cercone S, Chiriatti A, Muscas F, Gensini G. A randomized trial on home telemonitoring for the management of metabolic and cardiovascular risk in patients with type 2 diabetes. *Diabetes Technol Ther*. 2015 Aug;17(8):563-570.  
[PubMed: PM26154338](#)

## Protocol Paper

9. Seto E, Ware P, Logan AG, et al. Self-management and clinical decision support for patients with complex chronic conditions through the use of smartphone-based telemonitoring: randomized controlled trial protocol. *JMIR Res Protoc*. 2017 Nov 21;6(11):e229.  
[PubMed: PM29162557](#)

## Non-Randomized Studies

10. Wu R, Liaqat D, de Lara E, et al. Feasibility of using a smartwatch to intensively monitor patients with chronic obstructive pulmonary disease: prospective cohort study. *JMIR Mhealth Uhealth*. 2018 Jun 14;6(6):e10046.  
[PubMed: PM29903700](#)
11. Schiaffini R, Tagliente I, Carducci C, et al. Impact of long-term use of eHealth systems in adolescents with type 1 diabetes treated with sensor-augmented pump therapy. *J Telemed Telecare*. 2016 Jul;22(5):277-281.  
[PubMed: PM26289613](#)

## Review Articles

12. Atreja A, Ootobo E, Ramireddy K, Deorocki A. Remote patient monitoring in IBD: current state and future directions. *Curr Gastroenterol Rep*. 2018 Mar 07;20(2):6.  
[PubMed: PM29516186](#)