Virtual Pulmonary Rehabilitation for Respirator Disease or Post-Intensive Care Syndrome: Clinical Effectiveness and Guidelines

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To produce this report, CADTH used a modified approach to the selection, appraisal, and synthesis of the evidence to meet decision-making needs during the COVID-19 pandemic. Care has been taken to ensure the information is accurate and complete, but it should be noted that international scientific evidence about COVID-19 is changing and growing rapidly.
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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

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Questions or requests for information about this report can be directed to requests@cadth.ca.
Research Questions

1. What is the clinical effectiveness of virtual pulmonary rehabilitation for patients with coronavirus disease or post-intensive care syndrome?

2. What is the clinical effectiveness of virtual pulmonary rehabilitation for patients with respiratory disease?

3. What are the evidence-based guidelines regarding the use of virtual pulmonary rehabilitation for patients with respiratory disease or post-intensive care syndrome?

Key Findings

Seven systematic reviews (five with meta-analysis), two randomized controlled trials, and one non-randomized study were identified regarding the clinical effectiveness of virtual pulmonary rehabilitation for patients with respiratory disease. In addition, one evidence-based guideline was identified regarding the use of virtual pulmonary rehabilitation for patients with respiratory disease. No relevant literature was identified regarding the clinical effectiveness of virtual pulmonary rehabilitation for patients with coronavirus disease or post-intensive care syndrome.

Methods

A limited literature search was conducted by an information specialist on key resources including PubMed, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of 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. To address research question one, the main search concepts were virtual pulmonary rehabilitation and post-intensive care syndrome, or COVID-19 and like respiratory diseases. No search filters were applied to limit retrieval by study type. To address research questions two and three, the main search concepts was virtual pulmonary rehabilitation, with search filters applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or network meta-analyses, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and June 8, 2020. 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

| Population | Q1,3: Individuals (of all ages) with confirmed or presumptive coronavirus disease (COVID-19), severe acute respiratory syndrome (SARS), or Middle East Respiratory Syndrome Coronavirus (MERS), or individuals with post-intensive care syndrome (PICS)  
Q2,3: Patients with respiratory or lung disease |
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<td>Intervention</td>
<td>Q1-3: Virtual pulmonary rehabilitation or Pulmonary rehabilitation via telephone</td>
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| Comparator | Q1-2: Pulmonary rehabilitation conducted in-person; No pulmonary rehabilitation  
Q3: Not applicable |
| Outcomes | Q1,2: Clinical effectiveness (e.g., functional capacity, exercise tolerance, quality of life, return to work) and adverse events  
Q3: Recommendations regarding the use of virtual pulmonary rehabilitation |
| Study designs | Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines |

Results

Seven systematic reviews (five with meta-analyses),1-7 two randomized controlled trials,8,9 and one non-randomized study10 were identified regarding the clinical effectiveness of virtual pulmonary rehabilitation for patients with respiratory disease. In addition, one evidence-based guideline11 was identified regarding the use of virtual pulmonary rehabilitation for patients with respiratory disease. No relevant health technology assessments were identified.

References of potential interest that did not meet the inclusion criteria are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses

   PubMed: PM30690162

   PubMed: PM29320895

   PubMed: PM27694279
PubMed: PM 28535331

PubMed: PM 27087257

PubMed: PM 27909373

PubMed: PM 25464906

Randomized Controlled Trials

PubMed: PM 30568967

PubMed: PM 28716786

Non-Randomized Studies

PubMed: PM 31040656

Guidelines and Recommendations

See: Pulmonary rehabilitation, 2.12, page 10
Appendix — Further Information

Previous CADTH Reports


Health Technology Assessments – Intervention Not Specified


Overviews of Reviews – Unclear Intervention


Systematic Reviews and Meta-Analyses

Alternative Intervention


Unclear Intervention – Virtual Pulmonary Rehabilitation Not Specified


Outcomes Not Specified


COVID-19 Upcoming Study Protocols


Randomized Controlled Trials – Rehabilitation Setting Not Specified


Non-Randomized Studies – Rehabilitation Setting Not Specified

Review Articles


Additional References


