Point of Care Ultrasound for Assessment of Patients with Suspected or Known Chronic Heart Failure in Emergency Departments: Clinical Utility and Cost-Effectiveness
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Research Questions

1. What is the clinical utility of point of care ultrasound for the assessment of patients with suspected or known chronic heart failure in the emergency department?

2. What is the cost-effectiveness of point of care ultrasound for the assessment of patients with suspected or known chronic heart failure in the emergency department?

Key Findings

Three non-randomized studies were identified regarding the clinical utility of point of care ultrasound for the assessment of patients with suspected or known chronic heart failure in the emergency department. No relevant economic evaluations were identified regarding the cost-effectiveness of point of care ultrasound for the assessment of patients with chronic heart failure in the emergency department.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline, 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. The main search concepts were point-of-care ultrasounds and heart failure. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and August 15, 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

<table>
<thead>
<tr>
<th>Population</th>
<th>Adult patients presenting to emergency departments with suspected (e.g. presents with dyspnea) or known chronic heart failure or pericardial effusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Point of care ultrasound (POCUS) in the emergency department (also known as focused cardiac ultrasound, bedside ultrasound, emergency ultrasound, pocket-sized ultrasound)</td>
</tr>
<tr>
<td>Comparator</td>
<td>Q1-2: Ultrasound performed in the radiology ward (also known as radiology-performed ultrasound) No ultrasound/ POCUS</td>
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<tr>
<td>Outcomes</td>
<td>Q1: Clinical utility (safety, resuscitation length, frequency of intervention [e.g., intubation, drugs/medicine such as epinephrine], return of spontaneous circulation [ROSC], length of stay, survival, time till transfer from ED, harms/benefits, accuracy of clinical assessment) Q2: Cost-effectiveness</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations</td>
</tr>
</tbody>
</table>
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 randomized controlled trials, non-randomized studies, and economic evaluations.

Three non-randomized studies\(^1\)-\(^3\) were identified regarding the clinical utility of point of care ultrasound for the assessment of patients with suspected or known chronic heart failure in the emergency department. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Three non-randomized studies\(^1\)-\(^3\) were identified regarding the clinical utility of point of care ultrasound (POCUS) for the assessment of patients with suspected or known chronic heart failure in the emergency department. The authors of the first non-randomized study\(^1\) found that POCUS was effective in identifying pericardial effusions, facilitating appropriate treatment and leading to earlier pericardiocentesis and decreased length of hospital stay. The authors of the second non-randomized study\(^2\) found that when physicians were trained on the use of POCUS and implemented it within their practice, they were able to accurately identify pericardial effusion, leading to a higher level of confidence in their ultrasound findings, and changes in patient management. The authors of the third non-randomized study\(^3\) evaluated the use of pocket-sized focused echocardiography and found that it may be useful to allow for prompt diagnosis of cardiac issues such as heart failure, leading to earlier initiation of therapy.

References Summarized

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies

PubMed: PM27260349

*Focused Cardiac Ultrasound*

PubMed: PM25590933

*Economic Evaluations*

No literature identified.
Appendix — Further Information

Previous CADTH Reports


Systematic Reviews – Alternative Population


Randomized Controlled Trial

Alternative Comparator


Population Unspecified


Non-Randomized Studies

Diagnostic Accuracy


**Alternative Population**


**Alternative Comparator**


**Review Articles**


