TITLE: ECG Testing and Interpretation of Results: Comparative Clinical Effectiveness and Guidelines

DATE: 13 October 2016

RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of electrocardiogram (ECG) testing and interpretation performed by cardiology technologists versus other health care personnel for adults undergoing ECG testing?

2. What are the evidence based guidelines regarding the performance of ECG testing and interpretation of test results?

KEY FINDINGS

One non-randomized study was identified regarding the comparative clinical effectiveness of ECG testing and interpretation performed by cardiology technologists versus other health care personnel for adults undergoing ECG.

METHODS

A limited literature search was conducted on key resources including 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. For question #1, no filters were added to limit the retrieval by study type. For question #2, a methodological filter was applied to limit retrieval to guidelines only. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2006 and October 6, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
SELECTION CRITERIA

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

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
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<tr>
<td><strong>Population</strong></td>
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<td>Persons aged 18 years and older undergoing ECG testing</td>
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<td><strong>Intervention</strong></td>
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<td>Conduct and interpretation of a standard 12-lead ECG by a registered cardiology technologist (also referred to as cardiovascular technologist, cardiovascular/cardiac technician)</td>
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<td><strong>Comparator</strong></td>
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<td>Conduct and interpretation of a standard 12-lead ECG by non-expert health care personnel (e.g. nurse, nurse practitioner, paramedic)</td>
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<td><strong>Outcomes</strong></td>
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<td>Q1: Clinical benefits and harms (e.g. number of missed diagnoses, time to treatment following ECG test, number of adverse events)</td>
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<tr>
<td>Q2: Evidence-based guidelines (e.g. who can perform an ECG test?; who should be interpreting ECG test results?)</td>
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<td><strong>Study Designs</strong></td>
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<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, evidence-based guidelines</td>
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ECG = electrocardiogram.

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 evidence-based guidelines.

One non-randomized study was identified regarding the comparative clinical effectiveness of ECG testing and interpretation performed by cardiology technologists versus other health care personnel for adults undergoing ECG. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified. In addition, no evidence-based guidelines regarding the performance of ECG testing and interpretation of results were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One non-randomized study\(^1\) was identified regarding the comparative clinical effectiveness of ECG testing and interpretation performed by cardiology technologists versus other health care personnel. The one non-randomized study\(^1\) examined the reliability of ECG placement by cardiac technicians, nurses, and physicians. The study reported that correct position of the V1 electrode was identified correctly by 90% of cardiology technicians, 49% of nurses, 31% of non-cardiology physicians, and 16% of cardiologists. The study emphasized the need to properly train health professionals and to provide an environment that supports precision.\(^1\)
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


Guidelines and Recommendations
No literature identified.

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APPENDIX – FURTHER INFORMATION:

Systematic Review – Alternate Intervention


Randomized Controlled Trials – Alternate Outcomes


Non-Randomized Studies – Alternate Outcomes