TITLE: Infrared Thermometers for Detecting Fever: Clinical Effectiveness

DATE: 17 October 2014

RESEARCH QUESTIONS

1. What is the accuracy of tympanic infrared thermometers for detecting febrile individuals?
2. What is the accuracy of handheld infrared non-contact thermometers for detecting febrile individuals?
3. What is the accuracy of thermal scanners for detecting febrile individuals?
4. What is the comparative effectiveness of tympanic thermometers, handheld infrared thermometers, and thermal scanners for detecting febrile individuals?

KEY FINDINGS

Three systematic reviews and 22 non-randomized studies regarding the accuracy of tympanic infrared thermometers, handheld infrared non-contact thermometers, or thermal scanners; and the comparative effectiveness of these modalities for detecting febrile individuals were identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 10), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. 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 1, 2009 and 15 October, 2014. Internet links were provided, where available.

SELECTION CRITERIA

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

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Table 1: Selection Criteria

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<th>Population</th>
<th>Any patient with suspected fever</th>
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<td>Intervention</td>
<td>Tympanic infrared thermometers, handheld infrared thermometers, thermal scanners</td>
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| Comparator                      | Q1-3: Reference standard (e.g. rectal, oral, or axillary thermometers)  
Q4: Devices compared to each other or a reference standard |
| Outcomes                        | Diagnostic accuracy (true/false positives/negatives, agreement with reference standard) |
| Study Designs                    | Health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies |

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, and non-randomized studies.

Three systematic reviews and 22 non-randomized studies regarding the accuracy of tympanic infrared thermometers, handheld infrared non-contact thermometers, or thermal scanners; and the comparative effectiveness of these modalities for detecting febrile individuals were identified. No relevant health technology assessment reports or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

Pediatric Population

PubMed: PM25104731

PubMed: PM24879119

Adult population

PubMed: PM21880009
Randomized Controlled Trials
No literature identified.

Non-Randomized Studies

**Pediatric Population**


PubMed: PM20133994

PubMed: PM20736400

Adult Population

PubMed: PM2353669

PubMed: PM22224147

PubMed: PM21145551

PubMed: PM20651420

PubMed: PM21029528

PubMed: PM19386547

General Population

PubMed: PM22800413

PubMed: PM21245928

PubMed: PM20141690

PubMed: PM19191993

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APPENDIX – FURTHER INFORMATION:

Position Statements


See: Tympanic Thermometry, page 2.

Review Articles


Additional References