

Title Infrared Thermometer

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Aim

To assess the safety, efficacy/effectiveness and cost-effectiveness of Infrared thermometer for fever detection in a hospital or primary care setting.

Conclusions and results

- **Infrared tympanic thermometer in children**
One systematic review and four diagnostic accuracy studies showed that infrared tympanic thermometer temperature measurement better reflect the core body temperature than axillary thermometer. It also showed that the Infrared tympanic thermometer sensitivity and specificity was moderate. However, the sensitivity and specificity increased with higher cut of point of temperature defined as fever.
- **Infrared tympanic thermometer in adult**
With respect to its use in adult population, there was fair level of evidence from four diagnostic accuracy studies that showed that infrared tympanic thermometer was less accurate to reflect core body temperature than pulmonary artery catheter or mercury in glass oral thermometer.
- **Non- contact infrared thermometer**
Four studies were retrieved on the effectiveness of non-contact infrared thermometer in children. The evidence found was inconclusive whereby two studies reported good correlation of non-contact infrared thermometer with rectal/ mercury in glass axilla thermometer but the other two studies did not show good correlation.
- **Cost - effectiveness/Cost**
The evidence showed that the infrared tympanic thermometer with lowest purchase price has higher overall cost compared to the highest purchase price, This was because of the increased cost of consumables (nearly double the price in the cheaper infrared tympanic thermometer) that contributed to the total cost. In contrast, the cost of covers of the expensive infrared tympanic thermometer was found to be cheaper.

- **Safety**

There was no retrievable evidence reporting any adverse events related to the use of the infrared thermometer.

Recommendations

Based on the above review, the infrared tympanic thermometer can be used in children. However, infrared tympanic thermometer cannot replace the used of rectal thermometer as reference standard (gold standard) in children. Similarly, the use of non contact infrared thermometer is not recommended to replace the rectal thermometer in children.As for the adult population, infrared tympanic thermometer is not recommended to replace pulmonary artery catheter temperature measurement in critically ill patient or oral mercury in glass thermometer in other clinical setting.

Methods

Electronic databases were searched from inception: MEDLINE including MEDLINE In-Process & Other Non-Indexed Citations (Ovid); PubMed; EBM Reviews, Cochrane database of systematic; EBM Reviews - Health Technology Assessment; NHS economic evaluation database. Searches were also run in Horizon Scanning database- National Horizon Scanning Centre, Australia and New Zealand Horizon Scanning Network, National Horizon Scanning Birmingham, EuroScan; FDA; MHRA. In addition to the database searches, articles were identified from reviewing the bibliographies of retrieved articles and hand searching of journals.

A combination of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords free text. The search strategies used in MEDLINE were adapted for use in other databases. The search was limited by including search filters for 'human studies'.

Written by

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