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Title **Diagnostic Accuracy of Infrared Tympanic, Oral, Axillary and Temporal Thermometry, Compared with Rectal Readings when Identifying Fever in Adult Hospitalized Patients**

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Aim

To summarize documentation on the diagnostic accuracy of infrared tympanic, oral, axillary, and temporal thermometry compared to rectal readings.

Conclusions and results

Correct and observer-independent use of infrared tympanic thermometry can be challenging in a clinical setting. Comparing temperature measurements of different body sites might also be problematic because the measurements at different sites are all estimates for what we wish to know, the core temperature. Although this review considered rectal measurement to be the reference standard, we acknowledge that this is imperfect in many ways.

Our review shows that few studies have assessed the accordance between infrared tympanic and rectal thermometry in detecting and excluding fever. We found 8 small studies that compared different types of infrared tympanic thermometers to rectal measurement. These studies generally showed that infrared tympanic thermometry had low sensitivity, but high specificity in detecting and excluding rectal fever compared with rectal measurements. Since these results were based on few patients with elevated temperature, the sensitivity values are uncertain, as expressed by wide confidence intervals. Different cut-off values for defining fever in these studies also contributed to uncertainty about sensitivity and specificity.

We found no documentation on the diagnostic accuracy of temporal thermometry, and very few studies that compared oral and axillary thermometry with rectal thermometry.

Methods

We performed systematic literature searches in several health-related databases (per October 1, 2008). We included clinical, prospective, cross-sectional studies and used rectal thermometry (mercury or digital) as the reference test. Only studies conducted in emergency wards, general hospital wards, or nursing homes were included.

Further research/reviews required

Given the widespread use of infrared tympanic thermometer, further documentation is needed concerning the diagnostic accuracy and repeatability of newer models used in clinical settings.

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