The accuracy of mother's touch to detect fever in children: a systematic review
Teng CL, Ng CJ, Nik-Sherina H, Zailinawati AH, Tong SF

CRD summary
This review concluded that maternal touch may be more useful to exclude rather than confirm fever in children, but that significant variation between studies made interpretation of the data difficult. Although the review was prone to publication bias, with no study quality assessment and significant variation, the authors' cautious conclusions appear appropriate.

Authors' objectives
To assess the accuracy of the ability of mother's touch to detect fever in children.

Searching
MEDLINE was searched from 1956 to 2006 for published studies. Search terms were reported, but it was not reported whether language restrictions were applied. Reference lists were examined for further studies.

Study selection
Studies that compared maternal touch with thermometer for temperature measurement in sick children in whom fever was suspected were eligible for inclusion. A study was excluded in which calculation was based on patient-visit rather than individual patients.

The included studies were conducted in outpatient clinics, paediatric clinics, emergency rooms and a hospital ward. Most studies were conducted in the USA; the remainder were conducted in Brazil, India, Malawi and Zambia. The included participants were children with complaints of fever in two studies, and children whose mothers used palpation method for fever detection in one study; the type of presentation was through various complaints or not specified in the remaining studies. The site of maternal touching was reported in four studies (various combinations of neck, forehead and/or abdomen). Electric, mercury and a mixture of thermometers were used (where reported) to measure axillary, rectal or forehead temperature, or temperature at multiple sites. The cut-off value of fever ranged from 37.5°C to 38.3°C.

Seven independent assessors evaluated and included studies using a checklist

Assessment of study quality
The authors did not state that they assessed study validity.

Data extraction
Prevalence of fever (%), true positives (TPs), true negatives (TNs), false positives (FPs) and false negatives (FNs) were extracted. Positive predictive value (PPV), negative predictive value (NPV), and positive and negative likelihood ratios were calculated.

The number of reviewers that extracted data was not reported.

Methods of synthesis
Pooled sensitivity, specificity, positive and negative likelihood ratios and diagnostic odds ratios and 95% confidence intervals (CIs) were calculated using a random-effects meta-analysis. Heterogeneity was assessed (the method was not reported).

Results of the review
Ten cross-sectional studies were included in the review (n=3,694 children).

The diagnostic sensitivity of maternal touch for fever ranged from 70.6 to 97.3%; specificity ranged from 19.2 to
90.6%. Eight out of ten studies showed greater sensitivity than specificity.

Pooled diagnostic sensitivity was 89.2% (95% CI 87.3 to 90.9); pooled specificity was 50% (95% CI 47.9 to 52.0). The pooled diagnostic odds ratio was 15.3.

There was significant heterogeneity in the included studies (p<0.01, no further details reported).

**Authors' conclusions**
Maternal touch may be more useful to exclude fever than "rule in" fever, but significant heterogeneity made interpretation of the data difficult.

**CRD commentary**
Inclusion criteria were defined for interventions, comparators, outcomes and participants, but not for study design. Only one database was searched for published studies, so publication bias could not be ruled out (as the authors acknowledged). It was not reported whether language restrictions were applied. The review process was only reported for study selection, so it was not known whether steps were taken to reduce bias and error during data extraction.

Study quality was not assessed, so the reliability of the individual studies was not known, but all of the included studies were observational, so somewhat prone to bias. Heterogeneity was assessed and significant heterogeneity was reported, so the results of the meta-analysis may not be reliable.

Although this review was prone to publication bias and there was no quality assessment and significant heterogeneity, the authors’ cautious conclusions appear appropriate.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that further studies are needed to address the following issues: variability in the prevalence of fever, lack of standardised methods of maternal touching, different reference tests, and variable cut-off level for fever.

**Funding**
Not reported.

**Bibliographic details**

**PubMedID**
18039678

**DOI**
10.1093/tropej/fmm077

**Original Paper URL**
http://tropej.oxfordjournals.org/content/54/1/70.abstract

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Child; Child, Preschool; Fever /diagnosis; Humans; Infant; Infant, Newborn; Mothers; Palpation; Reproducibility of
Results; Thermometers; Touch

**AccessionNumber**
12008005755

**Date bibliographic record published**
03/11/2008

**Date abstract record published**
08/06/2011

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.