



CLINICAL PRACTICE

Palpation for fever

A Clough

Fever is a key sign of infection, and infectious diseases remain a significant cause of morbidity and mortality in the developing world. The sign of fever assumes even greater importance where laboratory resources are scarce, some studies even recommending that antimalarials be administered to *any* febrile patient in certain regions of Africa.¹

Despite this it is possible that many patients in Malawi and other African countries are being under (or over-) treated due to errors in determining the febrile state. In the year 2000 most clinicians at St John's Hospital in Malawi were using palpation, not thermometry, to assess fever, despite the availability of thermometers in the hospital. The Malawian-based study by Nwanyanwu *et al.*² suggests that this practice is not uncommon in this part of the world.

Most studies assessing palpation as a method of determining fever have focused on mothers checking fever in their children or clinicians assessing children, often in a Western setting where thermometers and laboratory resources are plentiful. This study assessed the accuracy of palpation as a method of diagnosing fever by native clinicians who base management decisions on their results. Subjects included both adults and children.

What was done

St John's is a 215-bed mission hospital which normally operates with one or two doctors and a number of clinical officers, who work as medical clinicians but do not have formal medical

An advanced trainee in general surgery based in Melbourne, Australia, Dr Clough graduated in 2000 (University of Melbourne) and obtained the Graduate Certificate in Applied Health Statistics in 2003 (University of Swinburne, Melbourne). He travelled in southern Africa in 1997, returning in 1999 to spend 2 months working at St John's Mission Hospital in Mzuzu, Malawi.

Corresponding author: A Clough (adclough@optusnet.com.au)

qualifications. Seven Malawian clinicians and one Western-trained doctor assessed a series of patients for fever without the aid of a thermometer. Assessors and subjects had not met previously and each clinician examined between 15 and 40 patients. All measurements were carried out between 09h00 and 16h30. No conversation beyond a basic greeting was allowed and a definite 'yes/no' decision had to be made for each patient. Some patients were assessed more than once, but not by the same clinician.

A separate observer used a mercury thermometer to measure 3-minute axillary temperatures within a maximum of 20 minutes of the subjective assessment. Thermometers were re-set by flicking after each measurement, and cleaned carefully.

Fever was defined as an axillary temperature above 37.5°C.

What was found

Two hundred and twenty assessments were made, of which 77 were paediatric. Three patients were excluded because the clinician had prior knowledge of the patient. Fifty-one of 217 patients had fever by axillary thermometry. Using this as the gold standard, palpation for fever by clinicians had a 66.7% sensitivity and a specificity of 74.1%. Overall accuracy of palpation for fever using axillary thermometry as the gold standard was 72.4%. In paediatric patients, overall accuracy was 67.5%.

Tables I and II show results for all assessments and the paediatric subgroup, respectively.

Conclusion

The consequences of missing fever in a child may be substantial in a country rife with falciparum malaria. In this study, one-third of febrile patients were deemed afebrile by assessors using palpation alone, and a similar percentage of afebrile children in this study were deemed febrile by assessors. This may lead to over-treatment and unnecessary use of scarce resources.

Table III lists results from previous studies, looking at the same clinical question although in slightly differing contexts.

Table I. Accuracy of decisions compared with mercury thermometer axillary readings (all subjects)

| Thermometer reading (°C) | Total subjects (N) | No. of correct decisions made | Percentage |
|--------------------------|--------------------|-------------------------------|------------|
| > 37.5 | 51 | 34 | 66.7 |
| ≤ 37.5 | 166 | 123 | 74.1 |



Table II. Accuracy of decisions compared with mercury thermometer axillary readings (paediatric subjects only)

| Thermometer reading (°C) | Total subjects | No. of correct decisions made | Percentage |
|--------------------------|----------------|-------------------------------|------------|
| > 37.5 | 16 | 13 | 81.3 |
| ≤ 37.5 | 61 | 39 | 63.9 |

Table III. Sensitivity and specificity of palpating for fever – results from a selection of previous studies

| Study | Year | Sensitivity (%) | Specificity (%) |
|--------------------------------------|------|-----------------|-----------------|
| Bergeson and Stienfeld ³ | 1974 | 58 | 98 |
| Banco and Veltri ⁴ | 1984 | 78 | 86 |
| Jones <i>et al.</i> ⁵ | 1993 | 89 | 59 |
| Hooker <i>et al.</i> ⁶ | 1996 | 82 | 77 |
| Nwanyanwu <i>et al.</i> ² | 1997 | 82 | 68 |

Results of this study and others like it reinforce the need to resist the temptation to use palpation alone to diagnose fever where thermometers are available.

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2. Nwanyanwu O, Redd S, Luby S. Palpation as a method of fever determination in Malawian children who are less than 5 years old: how reliable is it? *Ann Trop Med Parasitol* 1997; 91: 359-363.

3. Bergeson P, Stienfeld H. How dependable is palpation as a screening method for fever? Can touch substitute for thermometer readings? *Clin Pediatr* 1974; 13: 350-351.
4. Banco L, Veltri D. Ability of mothers to subjectively assess the presence of fever in their children. *Am J Dis Child* 1984; 138: 976-978.
5. Jones R, O'Dempsey T, Greenwood B. Screening for a raised rectal temperature in Africa. *Arch Dis Child* 1993; 69:437-439.
6. Hooker E, Smith S, Miles T, King L. Subjective assessment of fever by parents: Comparison with measurement by noncontact tympanic thermometer and calibrated rectal glass mercury thermometer. *Ann Emerg Med* 1996; 28: 313-317.

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