the rate of gastrointestinal haemorrhage was found between two different doses of aspirin.[13] In this study, aspirin was efficacious at a dose of 30 mg a day, but a threshold dose for either the therapeutic or adverse effects of aspirin has yet to be established, and further attempts at dosage reduction might compromise therapeutic efficacy before adverse effects are eliminated completely.

Insufficient evidence exists to support the view that modified release formulations are safer, in terms of gastrointestinal haemorrhage, than standard formulations. Here we have studied the effect of dose and formulation on the incidence of gastrointestinal haemorrhage only; it may be that other symptomatic gastrointestinal adverse effects, such as nausea and epigastric pain, can be significantly reduced.[13]

The incidence of gastrointestinal haemorrhage with aspirin is relatively low, and to avoid factors that could have led us to underestimate the risk, we set inclusion and exclusion criteria such that only trials of a certain quality, with adequate numbers and follow up, would be selected. Although there is some asymmetry in the funnel plot (see figure on *BMJ*'s website), suggesting the possibility of selection bias, adjustment for the likely effect of bias using "trim and fill" gave a pooled odds ratio of 1.62, which is only a slight change from our estimate of 1.68.[14] Our meta-analysis seems reasonably robust to the asymmetry observed in the funnel plot.

We believe that the findings of our study are relevant to everyday practice. No significant heterogeneity was found, even though the studies we analysed encompassed a broad selection of patients with varying clinical indications. All the trials excluded patients at increased risk of gastrointestinal haemorrhage or with aspirin intolerance, but this is consistent with current advice on the use of aspirin and does not invalidate the relevance of our findings. Nevertheless, aspirin is available over the counter, and the risk of gastrointestinal haemorrhage could be higher in patients who take it without consulting a doctor.

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Contributors: YKL conceptualised the review, developed the protocol, provided clinical interpretation of the trials, abstracted data, and undertook most of the statistical analyses. SD contributed to the development of the protocol, abstracted data, and prepared the manuscript. Both authors will act as guarantors for the paper.

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1 Bayer Pharmaceuticals. *Facts about aspirin*. www.wonderdrug.com/press/factsheets/aspirin_fact_sheet.pdf (accessed 28 July 2000).
2 Roderick PJ, Wilkes HC, Meade TW. The gastrointestinal toxicity of aspirin: an overview of randomised controlled trials. *Br J Clin Pharmacol* 1993;35:219-26.
3 Eypasch E, Lefering R, Kum CK, Troidl H. Probability of adverse events that have not yet occurred: a statistical reminder. *BMJ* 1995;311:619-20.
4 Zanchetti A, Hansson L. Risk of major gastrointestinal bleeding with aspirin. *Lancet* 1999;353:148-50.
5 Collaborative overview of randomised trials of antiplatelet therapy—I: Prevention of death, myocardial infarction, and stroke by prolonged antiplatelet therapy in various categories of patients. Antiplatelet Trialists' Collaboration. *BMJ* 1994;308:81-106.
6 Clarke M, Oxman AD, eds. Optimal search strategies for RCTs. Cochrane reviewers' handbook 4.0 (appendix 5c). In: *Review Manager (RevMan)* [computer program]. Version 4.0. Oxford: Cochrane Collaboration, 1999.
7 Loke YK, Edwards J, Derry S. Conventional search strategies cannot easily identify those trials of drug therapy which provide quantitative adverse effects data [abstract]. *Proceedings of the VII Cochrane Colloquium, Rome 1999*. www.clinpharm.ox.ac.uk/SearchStrategy.htm (accessed 28 July 2000).
8 Deeks JJ, Bradburn MJ, Localio R, Berlin J. Much ado about nothing: meta-analysis for rare events [abstract]. *Proceedings of 2nd symposium on systematic reviews: beyond the basics, Oxford 1999*. www.ihs.ox.ac.uk/csm/talks.html#p23 (accessed 28 July 2000).
9 Sharp S. she 23: meta-analysis regression. *Stata Technical Bulletin* 1998;42:16-22.
10 Tramer MR, Moore RA, Reynolds DJM, McQuay HJ. Quantitative estimation of rare adverse events which follow a biological progression: a new model applied to chronic NSAID use. *Pain* 2000;85:169-82.
11 Weil J, Colin-Jones D, Langman M, Lawson D, Logan R, Murphy M, et al. Prophylactic aspirin and risk of peptic ulcer bleeding. *BMJ* 1995;310:827-30.
12 Kelly JP, Kaufman DW, Jurgelon JM, Sheehan J, Koff RS, Shapiro S. Risk of aspirin-associated major upper-gastrointestinal bleeding with enteric-coated or buffered product. *Lancet* 1996;348:1413-6.
13 Dutch TIA Trial Study Group. A comparison of two doses of aspirin (30 mg vs 283 mg a day) in patients after a transient ischemic attack or minor ischemic stroke. *N Engl J Med* 1991;325:1261-6.
14 Duval S, Tweedie R. Nonparametric "trim and fill" method for accounting for publication bias in meta-analysis. *J Am Stat Assoc* 2000;95:89-98.

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Wet combing versus traditional scalp inspection to detect head lice in schoolchildren: observational study

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Lice infestation is a problem in local communities, probably because reservoirs remain undetected. Wet combing (combing systematically through wet, well conditioned hair with a fine toothed comb) has been presented as a cheap, ecological, self sufficient, and feasible technique for diagnosis and treatment of head lice.[1–3] Compared with traditional scalp inspection it uses five elements to make living lice more visible, to better distinguish them from dandruff, and to assess the maturity of the infestation: water, conditioner, a fine toothed comb, a systematic sweep of the scalp, and a magnifying glass (10×). However, its efficacy as a diagnostic tool and as a therapeutic intervention has not been proved; hence it is not evidence based.

Subjects, methods, and results

We did an observational study comparing detection of head lice using traditional scalp inspection and wet combing. After ethical approval had been obtained, all 260 pupils, aged 2-12 years, of a primary school in a socially deprived urban area in Ghent, Belgium, were invited for a screening test during a three day campaign to detect head lice in November and

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Traditional scalp inspection versus wet combing to detect head lice in schoolchildren

	Wet combing		
Classical scalp inspection	Not infected	Infected	Total
Not infected	161	17	178
Infected	14	32	46
Total	175	49	224

December 1999. We obtained informed consent from parents. All children at school during the screening period were inspected consecutively and independently by two teams of six trained screeners. The first team did traditional scalp inspection, the second team did wet combing. The results of the first screening team were not communicated to the children, the school staff, or the second screening team. All children found to have head lice by the wet combing technique were given a number of treatment options, which were to be given at home by parents. All children found to have head lice by either of the two methods were reinspected 14 days later.

Association between the results of the two screening techniques was obtained using the kappa statistic. The positive and negative predictive value of traditional scalp inspection (criterion validity) was estimated, using wet combing as the gold standard.[4]

We screened 224 children (99 (44%) were 2-5 years old and 92 (41%) were female). Forty nine children (22%) were found to have head lice with the wet combing method (of whom 17 (8%) had been found not to have lice using the traditional scalp inspection) and 175 (78%) were found not to have head lice (of whom 14 (6%) were said to have lice using the traditional inspection method) (table). These 14 children were reinspected after 15 days. One of them reported symptoms and was indeed infected. There were no spontaneous reports of infestation among children who were not found to have lice using either technique. Of the 49 children found to have head lice by wet combing (and treated using a variety of products or by combing), 53% no longer had lice at reinspection.

The point prevalence of lice measured with the wet combing method was 21.9% (95% confidence interval 16.5% to 27.3%). We found a poor association between the results of the two tests ($\kappa = 0.59$, 0.46 to 0.72). Compared with wet combing, the positive predictive value of the traditional scalp inspection method is 0.70 (0.54 to 0.82) and the negative predictive value is 0.90 (0.85 to 0.94).

Comment

Traditional scalp inspection is a poor technique for detecting head lice, as 30% of its "positive" results and 10% of its "negative" results are false (provided that wet combing is indeed the best method of detecting head lice). High values for false positives and false negatives call into question a test's screening efficiency, especially when the prevalence of the disease exceeds 1%.[5] Too many lice-free children receive unnecessary treatment, and too many infestations escape detection, jeopardising the control of an epidemic. The gold standard character of wet combing for detection of head lice needs confirmation to legitimise the extra logistic effort of screening campaigns that use wet combing.

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1 Bingham P, Kirk S, Hill N, Figueroa J. The methodology and operation of a pilot randomized control trial of the effectiveness of the bug busting method against a single application of insecticide product for head louse treatment. *Public Health* 2000 (in press).
2 Ibarra J, Hill N. *Towards the establishment of bug busting in the public calendar*. London: King's Fund, 1994.
3 Figueroa J, Hall S, Ibarra J. *Primary health care guide to common UK parasitic diseases*. London: Community Hygiene Concern, 1998:1-16.
4 Abramson JH. *Making sense of data. A self-instruction manual on the interpretation of epidemiologic data*. New York: Oxford University Press, 1988.
5 Sackett DL, Haynes RB, Guyatt GH, Tugwell P. *Clinical epidemiology. A basis science for clinical medicine*. Boston: Little, Brown, 1985.

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