



<b>Title</b>	<b>The Safety and Effectiveness of Different Methods of Ear Wax Removal: A Systematic Review and Economic Evaluation</b>
<b>Agency</b>	NETSCC, HTA, NIHR Evaluation and Trials Coordinating Centre Alpha House, University of Southampton Science Park, Southampton, SO16 7NS, United Kingdom; Tel: +44 2380 595 586, Fax: +44 2380 595 639; hta@soton.ac.uk, www.hta.ac.uk
<b>Reference</b>	Volume 14.28. ISSN 1366-5278. <a href="http://www.hta.ac.uk/project/1698.asp">www.hta.ac.uk/project/1698.asp</a>

## Aim

To synthesize evidence of the clinical and cost effectiveness of interventions available to soften and/or remove earwax and assessment of adverse events (AEs) associated with the interventions.

## Conclusions and results

Twenty-six clinical trials in primary care (14 studies), secondary care (8 studies), or other care settings (4 studies) met the inclusion criteria for the review. Interventions included 16 different softeners, with or without irrigation, and in various comparisons. Participants, outcomes, timing of intervention, follow-up, and methodological quality varied among studies. On measures of wax clearance: Cerumol, sodium bicarbonate, olive oil, and water are all more effective than no treatment; triethanolamine polypeptide (TP) is better than olive oil; wet irrigation is better than dry irrigation; sodium bicarbonate drops followed by irrigation by nurse is more effective than sodium bicarbonate drops followed by self-irrigation; softening with TP and self-irrigation is more effective than self-irrigation only; and endoscopic de-waxing is better than microscopic de-waxing. AEs appeared to be minor and limited. Results of the exploratory economic model found that softeners followed by self-irrigation were more likely to be cost effective at 24 433 pounds sterling (GBP) per quality-adjusted life-year (QALY) than softeners followed by irrigation in primary care (GBP 32 130 per QALY) when compared to no treatment. Comparing the two active treatments showed that the additional gain (softeners followed by irrigation in primary care over softeners followed by self-irrigation) cost GBP 340 000 per QALY. Compared to no treatment over a lifetime, the incremental cost-effectiveness ratios for softeners followed by self-irrigation and of softeners followed by irrigation in primary care were GBP 24 450 per QALY and GBP 32 136 per QALY, respectively.

## Recommendations

The systematic review of clinical and cost effectiveness

found limited good-quality evidence, making it difficult to differentiate between the various methods for removing earwax in terms of clearing wax, improving quality of life, satisfaction, AEs, or cost effectiveness. Although it showed that softeners have an effect in clearing earwax and as precursors to irrigation, the specific softeners that have an effect remain uncertain. Evidence on the effectiveness of irrigation methods or mechanical removal was equivocal. The limited evidence on benefits and costs of methods of earwax removal meant that the economic evaluation was speculative and for illustration only. Its findings should not be used for policy decisions. Hence, further research is required to improve the evidence base. A well-conducted RCT incorporating economic evaluation would appear to be the most appropriate method to assess the different ways of providing the service (ie, practice nurse provision in primary care versus self-care) and the effectiveness of the different removal methods (i.e. softeners and mechanical removal). In such research it would be important to assess the acceptability of the different approaches to patients and practitioners to ensure the most appropriate research structure. Other studies could be considered to improve specific data (eg, a costing study of primary care costs); however, the poor quality of evidence suggests additional research would be required.

## Methods

See Executive Summary link [www.hta.ac.uk/project/1698.asp](http://www.hta.ac.uk/project/1698.asp).

## Further research/reviews required

See Executive Summary link [www.hta.ac.uk/project/1698.asp](http://www.hta.ac.uk/project/1698.asp).