



Title	The Clinical Effectiveness and Cost Effectiveness of Central Venous Catheters Treated with Anti-Infective Agents in Preventing Bloodstream Infections: A Systematic Review and Economic Evaluation
Agency	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
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Aim

To assess the clinical and cost effectiveness of central venous catheters (CVCs) treated with anti-infective agents (AI-CVCs) in preventing catheter-related bloodstream infections (CRBSIs).

Conclusions and results

Thirty-two trials met the clinical inclusion criteria, including 7 different AI-CVCs. Generally, the trials were of a poor quality in terms of reported methodology, microbiological relevance, and control of confounding variables. Pooled results suggest a statistically significant advantage for AI-CVCs compared to standard CVCs in reducing CRBSI (OR 0.45 [95% CI: 0.34 to 0.60], fixed effects).

Recommendations

The use of AI-CVCs reduces the rates of CRBSI for durations of between 5 and 12 days and >20 days when CVCs are inserted in the femoral or jugular veins. Published evidence suggests that AI-CVCs are cost effective for high-risk patients compared to standard CVCs. Our simple decision model estimated the incremental cost-effectiveness ratios (ICERs) for a range of assumptions and demonstrated that all reasonable scenarios show AI-CVCs to be dominant, ie, in terms of cost effectiveness (they are cheaper and more effective). Overall, AI-CVCs are clinically effective and relatively inexpensive, and their integration into standard care can be justified. However, the use of these anti-infective catheters without the appropriate use of other practical care initiatives will have only a limited effect on preventing CRBSIs.

Methods

See Executive Summary link www.nchta.org/execsumm/summ1212.shtml

Further research/reviews required

To take account of all relevant clinical parameters (including mortality) related to the effectiveness of AI-CVCs, a single clinical trial would need to include

an estimated 10 000 patients in each study arm. It is highly unlikely that such a trial would ever be funded. Comparative trials are required to determine which, if any, of the treated catheters is the most effective. This review has demonstrated that AI-CVCs can be effective in reducing the number of CRBSIs compared with standard CVCs. Results of the included studies also indicate that rates of CRBSI can be minimized when standard CVCs are used. Hence, recommendations for pragmatic research related to the effectiveness of 'bundles' of care that may be effective in reducing rates of CRBSI are warranted. Such research would require local audits of CRBSI rates and assessment of current care practices in order to evaluate the clinical and cost effectiveness of implementing a package of care to reduce CRBSI rates.