We determined the generalisability and cost-impact of adopting antibiotic-impregnated CVCs in all paediatric intensive care units (PICUs) in England, based on results from a large randomised controlled trial (the CATCH trial; ISRCTN34884569)" Harron et al (2016).

Abstract:

BACKGROUND: We determined the generalisability and cost-impact of adopting antibiotic-impregnated CVCs in all paediatric intensive care units (PICUs) in England, based on results from a large randomised controlled trial (the CATCH trial; ISRCTN34884569).

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METHODS: BSI rates using standard CVCs were estimated through linkage of national PICU audit data (PICANet) with laboratory surveillance data. We estimated the number of BSI averted if PICUs switched from standard to antibiotic-impregnated CVCs by applying the CATCH trial rate-ratio (0.40; 95% CI 0.17,0.97) to the BSI rate using standard CVCs. The value of healthcare resources made available by averting one BSI as estimated from the trial economic analysis was £10,975; 95% CI -£2,801,£24,751.

RESULTS: The BSI rate using standard CVCs was 4.58 (95% CI 4.42,4.74) per 1000 CVC-days in 2012. Applying the rate-ratio gave 232 BSI averted using antibiotic CVCs. The additional cost of purchasing antibiotic-impregnated compared with standard CVCs was £36 for each child, corresponding to additional costs of £317,916 for an estimated 8831 CVCs required in PICUs in 2012. Based on 2012 BSI rates, management of BSI in PICUs cost £2.5 million annually (95% uncertainty interval: -£160,986, £5,603,005). The additional cost of antibiotic CVCs would be less than the value of resources associated with managing BSI in PICUs with standard BSI rates >1.2 per 1000 CVC-days.

CONCLUSIONS: The cost of introducing antibiotic-impregnated CVCs is less than the cost associated with managing BSIs occurring with standard CVCs. The long-term benefits of preventing BSI could mean that antibiotic CVCs are cost-effective even in PICUs with extremely low BSI rates.

Reference:

Harron, K., Mok, Q., Hughes, D., Muller-Pebody, B., Parslow, R., Ramnarayan, P. and Gilbert, R. (2016) Generalisability and Cost-Impact of Antibiotic-Impregnated Central Venous Catheters for Reducing Risk of Bloodstream Infection in Paediatric Intensive Care Units in England. PLoS One. 11(3), p.e0151348.

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