Economic value of dispensing home-based preoperative chlorhexidine bathing cloths to prevent surgical site infection

Bailey RR, Stuckey DR, Norman BA, Duggan AP, Bacon KM, Connor DL, Lee I, Muder RR, Lee BY

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to estimate the cost-effectiveness of providing chlorhexidine bathing cloths to patients at home before an orthopaedic operation, to prevent surgical site infection. The authors concluded that even with low patient compliance and chlorhexidine cloth efficacy, their provision was cost-effective. There were some limitations in the reporting of the study and the authors' conclusions should be treated with caution.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to estimate the cost-effectiveness of providing chlorhexidine bathing cloths to patients at home before an orthopaedic operation, to prevent surgical site infection (SSI).

Interventions
The standard in-hospital prevention procedures before and after surgery were compared with these standard procedures plus the chlorhexidine bathing kits for use at home. These kits were distributed to patients who were due to undergo hip or knee surgery. The chlorhexidine-soaked polyester cloths were used the evening before and on the morning of the surgical procedure, to disinfect the patient's head, abdomen, arms, legs, back, and the surgical site.

Location/setting
USA/home.

Methods
Analytical approach:
A stochastic decision-analytic model was developed to synthesise the cost and outcome data. The time horizon was one year and the authors reported that a hospital perspective was adopted.

Effectiveness data:
The effectiveness data were from published studies. These data included the probability of compliance, the probability of a SSI without the bathing kit, and the additional stay due to an infection. The main measure of effectiveness was the probability of a SSI.

Monetary benefit and utility valuations:
The utility values were from the published literature.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the summary benefit measure.

Cost data:
The analysis included those costs associated with the chlorhexidine cloths and the hospital treatment of SSIs. The costs of the chlorhexidine cloths were from published studies. All costs were reported in 2010 US dollars ($).

Analysis of uncertainty:
The sensitivity analysis involved varying the key model inputs in one-way and two-way deterministic analyses. The key
inputs included patient compliance, patient age, chlorhexidine cloth efficacy, additional stay due to an SSI, and costs.

Results
In the base case, the provision of chlorhexidine cloths dominated usual care, as they were more effective and less costly.

The chlorhexidine cloths dominated usual care, when their efficacy was reduced to 10% (25% in the base case) and compliance was 1.5 times the baseline value (15.3%) or more, or when efficacy was 25% and compliance was 75% of baseline or more, or when efficacy was 50% and compliance was 50% of baseline or more.

The results were most sensitive to variations in the cost of the cloth, the additional hospital stay, the compliance rates, and the cloth efficacy, but the intervention remained cost-effective or dominant in all analyses.

Authors' conclusions
The authors concluded that even with low patient compliance and chlorhexidine cloth efficacy, their provision was cost-effective in preventing SSIs.

CRD commentary
Interventions:
The intervention was well described and was appropriate in the authors' setting.

Effectiveness/benefits:
No information was provided on the method used to identify the studies that supplied the effectiveness estimates, and it is unclear if all the best available evidence was used. The methods and patient groups analysed in these studies were not reported, making it difficult to judge the validity of the estimates. The estimates were reported and were varied in the sensitivity analysis. QALYs were an appropriate outcome measure, given the potential impact of SSIs on both quality and length of life. Little detail was provided on how the quality weights were derived, making the quality of these estimates unclear. As the time horizon was one year, the benefit measure was not discounted.

Costs:
The cost categories appear to have been consistent with the stated perspective. Little information was provided on the sources of the economic data, reducing the transparency of the analysis. The price year was reported. The authors stated that a 3% rate was used to convert costs to 2010 prices. Discounting was not necessary as the time horizon was one year.

Analysis and results:
An appropriate incremental analysis appears to have been undertaken, but the results were poorly reported. The dominance of the intervention was reported, with the results of the sensitivity analysis given as either dominant or having an incremental cost-effectiveness ratio greater than $1 million (not cost-effective). The deterministic sensitivity analysis was extensive, but probabilistic analysis could have provided an indication of the overall uncertainty in the model. The authors noted some limitations to their analysis.

Concluding remarks:
There were some limitations in the reporting of the study and the authors' conclusions should be treated with caution.

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