Preventing bath water scalds: a cost-effectiveness analysis of introducing bath thermostatic mixer valves in social housing


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 aim was to examine the cost-effectiveness of an intervention designed to prevent scald injuries from hot bath water, targeted at families with children under five years old, living in social housing. The authors concluded that the installation of thermostatic mixer valves, in new homes or during refurbishments, was likely to be cost saving for the public payer. The methods, analyses and results were mostly clear and thorough and the conclusions are a sound assessment of the analyses performed.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to examine the costs and effectiveness of an intervention designed to prevent scald injuries from hot bath water. The intervention was aimed at families with children under five years old who were living in social housing.

Interventions
The intervention was the installation, by qualified plumbers, of thermostatic mixer valves set to a maximum of 45°C. Educational leaflets were posted before the mixer valves were fitted and a waterproof educational guide on how to use the valves was provided. This was compared with families who were not offered this intervention until after the follow-up data had been collected.

Location/setting
UK/home.

Methods
Analytical approach:
An economic evaluation was undertaken alongside one randomised controlled trial. The authors stated that the perspective was that of the UK public sector.

Effectiveness data:
The effectiveness data were from a randomised controlled trial (Kendrick, et al. 2011, see ‘Other Publications of Related Interest’ below for bibliographic details), undertaken in Scotland. Epidemiology for the wider UK population was from the Royal Society for the Prevention of Accidents and the Department of Trade and Industry. The main clinical effectiveness estimates were the number of families with bath water temperatures limited to 45°C and the scald injuries avoided.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measures of benefit were the reduction in the percentage of families with bath water temperatures that could be over 45°C and the number of avoided scalds.

Cost data:
The cost categories included the installation and repair of the thermostatic mixer valves, the educational materials, and burn treatment. The unit costs were from City Buildings (Glasgow) Limited Liability Partnership, Housing Association documents, and personal communications. The costs for burn injuries were based on NHS reference values. All costs were reported in UK pounds sterling (£), at 2010 values.

Analysis of uncertainty:
One-way sensitivity analyses were undertaken on the key variables, which were the cost of installation; the risk reduction with the valves; the number of children aged zero to four years who had a bath water scald; and the percentage of scalds that were very severe. The results were presented in a table.

Results
With the intervention, there was a 68 point reduction in the percentage of families with possible bath temperatures of over 45°C. This was estimated to reduce the burn scald injuries by 209 per year. The total cost to the NHS of thermostatic mixer valve installation was £7,971,336 and the costs avoided were £11,200,344. The net savings with the intervention were £3,229,008.

The net saving per scald avoided was £7,273 and the net benefit per £1 spent was £1.41.

The sensitivity analyses showed that cost savings remained with changes to the installation costs, the number of children with severe scalds, the number of families in social housing, and other estimates. If the risk reduction with thermostatic mixer valves was reduced to 48 percentage points, the cost per scald avoided was £242. If the number of children with a scald each year was reduced to 457, the cost per scald avoided was £405.

Authors' conclusions
The authors concluded that the installation of thermostatic mixer valves, in new homes or during refurbishments, was likely to be cost saving for the public payer.

CRD commentary
Interventions:
The intervention and setting were well described and justified. The original trial publication should be consulted to assess the applicability to other settings of the socio-demographic characteristics of the trial participants.

Effectiveness/benefits:
The effectiveness data were from a randomised controlled trial, which was not described. The trial publication (Kendrick, et al. 2011) should be consulted to assess the quality of the data. The method used to extrapolate the epidemiological risk measures to the UK population was transparent and sound. The benefit measures appear to have been appropriate, but study specific, which might hinder comparisons with the results of studies of other public health interventions.

Costs:
The perspective
was that of the public sector and the relevant health provider and public housing resources were included. The resource types and quantities were well described and separately presented, and the analyses were appropriate. The time horizon was not stated, but appears to have been 12 months. The costs and effects were not discounted, which was appropriate for a 12-month time horizon.

Analysis and results:
The health outcomes and costs were appropriately combined into incremental cost-effectiveness ratios. A probabilistic sensitivity analysis could have addressed the overall impact of variation in the resources and outcomes. The results of the analyses were clearly presented and illustrated. A comparison was made with another intervention that had broadly similar findings.

Concluding remarks:
The methods, analyses, and results were mostly clear and comprehensive. The conclusions are a sound assessment of the analyses performed.

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