The effectiveness and cost-effectiveness of public health interventions to prevent falls on stairs in children under 5

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Public Health Evaluations
Scarce health-care resources means public health (PH) decision making needs to be based on best available evidence. Tend to be complex, programmatic and context dependent

Effectiveness:
NICE (National Institute for Health and Care Excellence) guidelines recommend that evidence should be synthesised in a meta-analysis but is often difficult due to
• issues of study quality with a lack of randomised controlled trial evidence,
• heterogeneous and surrogate outcomes, and
• complex interventions.
Only 9(23%) of the 39 NICE PH appraisals between 2006 and 2012 included a meta-analysis.

Cost effectiveness:
• Comparing the costs and consequences of alternative interventions to ensure maximum health gain
• difficult due to very broad costs and benefits directed at populations rather than individuals

Effectiveness of Interventions
Twelve studies compared interventions to increase the possession of fitted safety gates to prevent falls down stairs.

Network meta-analysis (NMA)
• allows for a synthesis of the evidence for all interventions,
• provides estimates for comparisons not observed in the studies
• enables a ranking of the interventions in order of effectiveness.

Cost-effectiveness of Interventions
The NMA results were fed into a cost-utility model to estimate the mean costs and quality adjusted life years (QALYS) associated with the seven interventions.
A simulated cohort of 100,000 UK households with a new-born were followed through the intervention, for the first three years of life (aged 0-2) when a safety gate is recommended, and then long-term to 100 years. Costs were from a public sector/NHS perspective.
At a threshold value of £30,000 per QALY gained usual care was the only cost-effective intervention.

Findings and Conclusions
Effectiveness and cost-effectiveness analyses:
• evidence that home safety interventions increased the possession of fitted safety gates on the stairs to prevent falls in children under age 5 years
• the most intensive intervention was the most effective
• results used to inform an Injury Prevention Briefing
• interventions were much more costly than usual care and not cost-effective

Limitations and Further Work:
• interventions “lumped” due to heterogeneity, insufficient detail and lack of evidence from primary studies.
• high uncertainty around the cost-effectiveness estimates.
• safety gates were evaluated as a stand-alone intervention but often come as part of a package
• consider a wider perspective than just NHS costs and interventions aimed at particular sub-groups

References

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