

Unintentional injuries in the home: interventions for under 15s

Public health guideline

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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should [assess and reduce the environmental impact of implementing NICE recommendations](#) wherever possible.

Contents

Overview	5
Who is it for?	5
Recommendations.....	6
Context.....	6
Definitions	7
Whose health will benefit?	7
Recommendation 1 Prioritising households at greatest risk.....	8
Recommendation 2 Working in partnership	9
Recommendation 3 Coordinated delivery	10
Recommendation 4 Follow-up on home safety assessments and interventions	11
Recommendation 5 Integrating home safety into other home visits	12
Public health need and practice	13
Types of injury	13
Costs	13
Risk factors	14
Current policy and practice.....	14
Considerations.....	15
Recommendations for research	17
References	18
Appendix A: Membership of the Public Health Interventions Advisory Committee (PHIAC), the NICE project team and external contractors	19
Public Health Interventions Advisory Committee	19
NICE project team	21
External contractors.....	22
Appendix B: Summary of the methods used to develop this guidance	24
Introduction.....	24
Key questions	24

Reviewing the evidence.....	25
Economic analysis.....	28
Fieldwork.....	28
How PHIAC formulated the recommendations.....	29
Appendix C: The evidence	31
Evidence statements	31
Cost-effectiveness evidence	39
Fieldwork findings	40
Appendix D: Gaps in the evidence.....	42
Appendix E: Supporting documents.....	43
Finding more information and committee details.....	44
Update information	45

This guideline is the basis of QS107.

This guideline should be read in conjunction with PH29.

Overview

This guideline covers home safety assessments, supplying and installing safety equipment and providing education and advice. It aims to prevent unintentional injuries among all children and young people aged under 15 but, in particular, those living in disadvantaged circumstances.

NICE has also published [guidelines on unintentional injuries: prevention strategies for under 15s](#) and [unintentional injuries on the road: interventions for under 15s](#). (The former covers strategies for the home, on the road and outdoors.)

Who is it for?

- Commissioners and providers of health, environmental health and housing services and associations
- Local authority children's services, Sure Start and children's centres
- Health and wellbeing boards, local safeguarding children boards and local strategic partnerships
- Police, fire and rescue services
- Practitioners who visit families and carers of those aged under 15
- Children, young people, their parents and carers and other members of the public

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in [NICE's information on making decisions about your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

The evidence statements underpinning the recommendations are listed in [appendix C](#).

See also the [evidence reviews, supporting evidence statements and cost effectiveness modelling](#).

PHIAC considers that the recommended measures are cost effective. For the gaps in research, see [appendix D](#).

Context

The recommendations in this guidance should be implemented as part of a broader strategy to reduce unintentional injuries in the home. This would include the use of regulations and the provision of safety education to prevent such injuries. (Note that in November 2010, we published a [NICE guideline on unintentional injuries: prevention strategies for under 15s](#).)

This guidance focuses on home safety assessments and the supply and installation of home safety equipment, either delivered separately or together. It also covers education and advice when delivered as part of these interventions.

Implementation of all the recommendations should ensure a systematic approach can be adopted. This involves prioritising households at greatest risk of unintentional injuries and establishing partnerships to ensure coordinated delivery and follow-up on home safety assessments and equipment interventions. In addition, the recommendations make the

consideration of home safety issues a part of routine practice for all practitioners visiting children and young people at home.

Definitions

NICE uses the term 'unintentional injuries' rather than 'accidents', since 'most injuries and their precipitating events are predictable and preventable' (Davis R, Pless B (2001) BMJ bans 'accidents'. Accidents are not unpredictable. BMJ 322: 1320–21). The term 'accident' implies an unpredictable and therefore, unavoidable event.

The process of systematically identifying potential hazards in the home, evaluating the risks and providing information or advice on how to reduce them is described here as a home safety assessment. Other terms commonly used to describe the same process include 'home risk assessment' and 'home safety check'. It may be carried out by a trained assessor or by parents and other householders, using an appropriate checklist (Home safety assessment tools are available from [The Royal Society for the Prevention of Accidents](#) and SafeHome.)

In this guidance, home safety equipment is any device used to prevent injury in the home. This includes door guards and cupboard locks, safety gates and barriers, smoke and carbon monoxide alarms, thermostatic mixing valves and window restrictors.

For the purposes of this guidance, 'home' refers to inside the dwelling itself. It does not include the garden or outbuildings.

Whose health will benefit?

The recommendations aim to help children and young people aged under 15 years who are at greatest risk of an unintentional injury and their parents and carers. In particular, it is aimed at those living in disadvantaged circumstances.

Recommendation 1 Prioritising households at greatest risk

Who should take action?

- Local safeguarding children boards.
- Local authority children's services and their partnerships.
- Local strategic partnerships.
- Local authority health and wellbeing boards and partnerships (where they are not part of the local strategic partnership).

What action should they take?

- Determine the types of household where children and young people aged under 15 are at greatest risk of unintentional injury based on surveys, needs assessments and existing datasets (such as local council housing records).
- Prioritise the households identified above for home safety assessments and the supply and installation of home safety equipment (see recommendations 2 and 3). 'Priority households' could include those with children aged under 5, families living in rented or overcrowded conditions or families living on a low income. It could also include those living in a property where there is a lack of appropriately installed safety equipment, or one where hazards have been identified through the [Housing Health and Safety Rating System](#) (HHSRS; this is a risk assessment procedure for residential properties).
- Provide practitioners who visit children and young people at home with mechanisms (such as the Early Help Assessment) for sharing information about households that might need a home safety assessment. This includes health visitors, social workers and GPs.
- Ensure practitioners adhere to good practice on maintaining the confidentiality and security of personal information. (For example, this includes using end-to-end encryption when sharing data with other agencies. See for example, the [government's information sharing advice for safeguarding practitioners](#).)

Recommendation 2 Working in partnership

Who should take action?

- Strategic planners and leads with responsibility for child health.
- Fire and rescue services.
- Housing associations.
- Local authorities: leads for children's services, environmental health, accident prevention and home safety and housing.
- Sure Start and children's centres.

What action should they take?

- Establish local partnerships with relevant statutory and voluntary organisations or support existing ones. Partners could include:
 - local community and parent groups
 - organisations employing health and social practitioners who visit children and young people in their homes (for example, health visitors)
 - childcare agencies
 - others with a remit to improve the health and wellbeing of children aged under 15
 - local umbrella organisations for private and social landlords
 - those involved in lifestyle and other health initiatives.
- Use these partnerships to:
 - help collect information on specific households where children and young people aged under 15 may be at greatest risk of an unintentional injury (see recommendation 1). The collection and sharing of information should adhere to the standards referred to in recommendation 1
 - help determine and address barriers to creating a safe home environment. (For example, the cost of equipment, cultural norms, issues of trust or a lack of control

over the home environment may all be barriers to installing safety equipment)

- get the community involved (as outlined in the [NICE guideline on community engagement](#)). For example, local 'community champions' could be used to promote home safety interventions and help practitioners gain the trust of householders
- carry out home safety assessments and supply and install home safety equipment, in line with recommendation 3 (Home safety assessment tools are available from [The Royal Society for the Prevention of Accidents](#) and SafeHome.).

Recommendation 3 Coordinated delivery

Who should take action?

Those who carry out home safety assessments and provide home safety equipment (see recommendation 2).

What action should they take?

- Offer home safety assessments to the households prioritised in recommendations 1 and 2 (Home safety assessment tools are available from [The Royal Society for the Prevention of Accidents](#) and SafeHome.). Where appropriate, supply and install suitable, high quality home safety equipment. Home safety equipment should adhere to the British 'Kite mark' standards or the equivalent European standard. Where resources are limited, it may be necessary to narrow down further the households being prioritised (for example, to those with children under the age of 5 years).
- Ensure the assessment, supply and installation of equipment is tailored to meet the household's specific needs and circumstances. Factors to take into account include:
 - the developmental age of the children (in relation to any equipment installed)
 - whether or not a child or family member has a disability
 - cultural and religious beliefs
 - whether or not English is the first language
 - levels of literacy

- the level of control people have over their home environment. (Many people may not have the authority to agree to an installation, for example, tenants of social and private landlords and those who are unable to make household or financial decisions)
- the household's perception of, and degree of trust in, authority.
- Ensure education, advice and information is given during a home safety assessment, and during the supply and installation of home safety equipment. This should emphasise the need to be vigilant about home safety and explain how to maintain and check home safety equipment. It should also explain why safety equipment has been installed – and the danger of disabling it. In addition, useful links and contacts should be provided in case of a home safety problem.

Recommendation 4 Follow-up on home safety assessments and interventions

Who should take action?

Those who carry out home safety assessments and provide home safety equipment (see recommendations 2 and 3).

What action should they take?

- Prevent duplication of effort by keeping a record of households that have been given safety advice or equipment. (It may be possible to use an existing local database.) Ensure the records are accessible to all those with a direct or indirect responsibility for preventing unintentional injuries in the home.
- Adhere to the standards referred to in recommendation 1 in relation to the collection and sharing of information.
- Use the records to identify when maintenance and follow-up are required, to feed into strategic planning and to prioritise future interventions (see recommendation 1).
- Contact homes identified as being in need of an equipment maintenance check or follow-up. Offer to revisit them to see if the equipment is still appropriate and functional (and in case of a product recall or faults). Ascertain whether there are any

new requirements (for example, due to changes in the building or the family).
Reinforce home safety messages during these visits.

Recommendation 5 Integrating home safety into other home visits

Who should take action?

Practitioners who visit families and carers with children and young people aged under 15. This includes GPs, midwives, social workers and health visitors.

What action should they take?

- Recognise the importance of measures to prevent unintentional injuries in the home among children and young people aged under 15, particularly among those living in disadvantaged circumstances.
- Provide child-focused home safety advice. If the family or carers agree, refer them to agencies that can undertake a home safety assessment and can supply and install home safety equipment.
- Encourage parents, carers and others living with children and young people aged under 15 to conduct their own home safety assessment. They should use an appropriate tool, as outlined in recommendation 3.

Public health need and practice

Unintentional injury is a leading cause of death among children and young people aged 1–14 (Audit Commission and Healthcare Commission 2007). In England and Wales in 2008, 208 children and young people aged 0–14 died from such injuries (Office for National Statistics 2009).

In the UK, unintentional injury (in all environments) results in more than two million visits to accident and emergency (A&E) departments by children every year. Half of these injuries occur in the home (Audit Commission and Healthcare Commission 2007). In 2002, nearly 900,000 children and young people in the UK aged under 15 attended hospital following an unintentional injury in the home (Department of Trade and Industry 2002).

Children and young people who survive a serious unintentional injury can experience severe pain and may need lengthy treatment (including numerous stays in hospital). They could be permanently disabled or disfigured (Child Accident Prevention Trust 2008) and their injuries may have an impact on their social and psychological wellbeing.

Types of injury

Children and young children are vulnerable to a range of unintentional injuries in the home including falls, burns and scalds, drowning, suffocation and poisoning (Child Accident Prevention Trust 2008).

In the UK between 2000 and 2002, falls were the major cause of unintentional injury in the home among those aged under 15, according to home accidents surveillance system (HASS) data (Department of Trade and Industry 2002). 'Drowning and submersion' and 'other accidental threats to breathing' led to the most deaths in the home among this group between 2002 and 2005 (Office for National Statistics 2009). On average, 1200 children a year under the age of 11 are injured – and 35 are killed – in fires in the home (Directgov 2008).

Costs

Treating unintentional injuries among children and young people costs UK A&E departments approximately £146 million a year. Further treatment costs are significant, for

example, it can cost £250,000 to treat one severe bath water scald (Child Accident Prevention Trust 2008). The indirect costs include enforced absence from school and the need for children and young people to be supervised during their recovery (which could involve family and carers taking time off from work).

Risk factors

Epidemiological data indicate that the risk of an unintentional injury is greatest among households living in the most deprived circumstances. Children and young people from lower socioeconomic groups whose parents have never worked (or who are long-term unemployed) are 13 times more likely to die from such an injury than those whose parents are managers and professionals (Edwards et al. 2006).

The evidence also suggests that a range of interrelated factors can lead to a higher risk of injury. Apart from a low income and overcrowded housing conditions, they include a lack of safety equipment. Other factors include gender, age, culture, ethnicity and the household's level of control over their home environment. Although not necessarily the direct cause of injury, these factors can increase children and young people's risk of exposure to a potential hazard.

Current policy and practice

Local strategic partnerships and local safeguarding children boards have a duty to promote children and young people's health, wellbeing and general welfare. In addition, local area agreements provide an opportunity for local authorities, in partnership with the NHS and other organisations, to focus on unintentional injuries in the home. Practice is variable, but some areas are taking innovative approaches to home safety.

In February 2009, the Department for Children, Schools and Families launched 'Safe at home: the national home safety equipment scheme' (2009). The 3-year, £18 m scheme is being developed and evaluated by the Royal Society for the Prevention of Accidents (RoSPA). Local organisations, working in partnership with RoSPA, will provide home safety advice and information and equipment to the most disadvantaged families in 141 areas of England with the highest accident rates.

Considerations

The Public Health Interventions Advisory Committee (PHIAC) took account of a number of factors and issues when developing the recommendations.

- 1.1 Both generic and targeted interventions are used to prevent injuries in the home. The former could include legislation – for example, to improve the way homes are constructed. The latter could include the provision of safety equipment. Both generic and targeted interventions aim to do three things, either independently or in combination: change attitudes and behaviour, alter the environment, and provide information or training (Lund and Aarø 2004).
- 1.2 PHIAC noted that forthcoming NICE guidance will cover strategic approaches to reducing unintentional injuries among the under-15s.
- 1.3 The technical efficacy of safety equipment has been demonstrated and, in most cases, has improved since the research studies included in the evidence reviews were undertaken.
- 1.4 The evidence did not cover all the home safety equipment available. For example, there were no evaluations of interventions involving the installation of carbon monoxide alarms.
- 1.5 There was limited evidence on residential care homes. While some elements of the recommendations may apply, residential care homes are already subject to a range of legislation. This includes The Care Homes Regulations 2001 (HM Government 2001) and 'Children's homes: national minimum standards, children's homes regulations' (DH 2002).
- 1.6 PHIAC considered it very unfortunate that many injury prevention schemes do not include an integrated and robust evaluation process. This limits the evidence available on their impact.
- 1.7 Children and young people learn by taking risks and challenging themselves when playing and in other activities. Many areas of the home – and activities that take place there – pose an inherent risk. Safety equipment and education help to

keep children safe.

- 1.8 PHAC acknowledged that interventions need to take into account a household's everyday circumstances and routine practices – and how receptive families are to safety messages.
- 1.9 PHAC believes that it is important to raise awareness of safety issues.
- 1.10 Safety equipment has to be correctly used and maintained to be effective.
- 1.11 The cost-effectiveness modelling that underpins the recommendations is based on very limited data. It should not be regarded as a definitive analysis of cost-effectiveness. Rather, it explores the factors most likely to affect whether or not interventions to prevent unintentional injuries in the home represent good value for money. The analysis indicates that, from a public sector perspective, the cost effectiveness of such programmes is dependent on a number of factors (see cost effectiveness in appendix C).

Recommendations for research

PHIAC developed some provisional recommendations for research, based on the evidence and expert advice from cooptees. These were passed to the NICE committee that developed the related NICE guideline on unintentional injuries: prevention strategies for under 15s, for them to develop a comprehensive set of recommendations for research covering all types of unintentional injuries.

More detail on the gaps in the evidence identified during development of the guidance on preventing unintentional injuries in the home among under-15s is provided in appendix D.

References

Audit Commission and Healthcare Commission (2007) Better safe than sorry: preventing unintentional injury to children. London: Audit Commission

Davis R, Pless B (2001) BMJ bans 'accident'. *BMJ* 322: 1320–1

Child Accident Prevention Trust (2008) Child Accident Prevention Trust factsheet: preventing bath water scalds using thermostatic mixing valves. London: Child Accident Prevention Trust

Department of Health (2002) Children's homes: national minimum standards, children's homes regulations. London: Department of Health

Department of Trade and Industry (2002) Home accidents surveillance system (HASS)

Directgov (2008) Fire safety for parents and child carers [Accessed 20 January 2010]

Edwards P, Roberts I, Green J et al. (2006) Deaths from injury in children and employment status in family: analysis of trends in class specific death rates. *BMJ* 333: 119–21

HM Government (2001) The Care Homes Regulations 2001. London: HM Government

Lund J, Aarø LE (2004) Accident prevention. Presentation of a model placing emphasis on human, structural and cultural factors. *Safety Science* 42: 271–324

Office for National Statistics (2009) Mortality statistics: deaths registered in 2008. Review of the Registrar General on deaths in England and Wales

Appendix A: Membership of the Public Health Interventions Advisory Committee (PHIAC), the NICE project team and external contractors

Public Health Interventions Advisory Committee

NICE has set up a standing committee, the Public Health Interventions Advisory Committee (PHIAC), which reviews the evidence and develops recommendations on public health interventions. Membership of PHIAC is multidisciplinary, comprising public health practitioners, clinicians, local authority officers, teachers, social care professionals, representatives of the public, academics and technical experts as follows.

Professor Sue Atkinson CBE Independent Consultant and Visiting Professor, Department of Epidemiology and Public Health, University College London

Mr John F Barker Associate Foundation Stage Regional Adviser for the Parents as Partners in Early Learning Project, DfES National Strategies

Professor Michael Bury Emeritus Professor of Sociology, University of London. Honorary Professor of Sociology, University of Kent

Professor K K Cheng Professor of Epidemiology, University of Birmingham

Ms Joanne Cooke Programme Manager, Collaboration and Leadership in Applied Health Research and Care for South Yorkshire

Mr Philip Cutler Forums Support Manager, Bradford Alliance on Community Care

Ms Lesley Michele de Meza Personal, Social, Health and Economic (PSHE) Education Consultant, Trainer and Writer

Professor Ruth Hall Public Health Consultant

Ms Amanda Hoey Director, Consumer Health Consulting Limited

Mr Alasdair J Hogarth Educational Consultant and recently retired Head Teacher

Mr Andrew Hopkin Assistant Director, Local Environment, Derby City Council

Dr Ann Hoskins Director, Children, Young People and Maternity, NHS North West

Ms Muriel James Secretary, Northampton Healthy Communities Collaborative and the King Edward Road Surgery Patient Participation Group

Dr Matt Kearney General Practitioner, Castlefields, Runcorn. GP Public Health Practitioner, Knowsley PCT

CHAIR Professor Catherine Law Professor of Public Health and Epidemiology, UCL Institute of Child Health

Mr David McDaid Research Fellow, Department of Health and Social Care, London School of Economics and Political Science

Mr Bren McInerney Community Member

Professor Susan Michie Professor of Health Psychology, BPS Centre for Outcomes Research and Effectiveness, University College London

Professor Stephen Morris Professor of Health Economics, Department of Epidemiology and Public Health, University College London

Dr Adam Oliver RCUK Senior Academic Fellow, Health Economics and Policy, London School of Economics

Dr Mike Owen General Practitioner, William Budd Health Centre, Bristol

Dr Toby Prevost Reader in Medical Statistics, Department of Public Health Sciences, King's College London

Ms Jane Putsey Lay Member, Registered Tutor, Breastfeeding Network

Dr Mike Rayner Director, British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford

Mr Dale Robinson Chief Environmental Health Officer, South Cambridgeshire District Council

Ms Joyce Rothschild Children's Services Improvement Adviser, Solihull Metropolitan Borough Council

Dr Tracey Sach Senior Lecturer in Health Economics, University of East Anglia

Dr David Sloan Retired Director of Public Health

Dr Stephanie Taylor Reader in Applied Research, Centre for Health Sciences, Barts and The London School of Medicine and Dentistry

Dr Stephen Walters Reader in Medical Statistics, University of Sheffield

Dr Dagmar Zeuner Joint Director of Public Health, Hammersmith and Fulham PCT

Expert co-optees to PHIAC:

Carolyn Cripps OBE Member, London Home and Water Safety Council; Consultant and Trainer, burns prevention and home safety; Member, Institute of Home Safety; Consultant, Royal Society for the Prevention of Accidents; Trainer, 'Safe at home' scheme

Lisa Irving Public Health Nurse (accident prevention), Northumberland Care NHS Trust

Rob Taylor Station Manager, Community Fire Safety, Merseyside Fire and Rescue Service

Heather Ward Chair, NICE Programme Development Group for 'Strategies to prevent unintentional injuries among under-15s.'; Honorary Senior Research Fellow, Centre for Transport Studies, University College, London

NICE project team

Mike Kelly CPHE Director

Simon Ellis Associate Director

James Jagroo Lead Analyst

Hilary Chatterton Analyst

Lesley Owen Technical Adviser (Health Economics)

Sue Jelley Senior Editor

Alison Lake Editor

External contractors

Reviewers: evidence reviews

Review 1: 'Preventing unintentional injuries among under-15s in the home. Systematic reviews of effectiveness and cost-effectiveness of home safety equipment and risk assessment schemes' was carried out by Peninsula Technology Assessment Group (PenTAG). The principal authors were: Mark Pearson, Ruth Garside, Tiffany Moxham and Rob Anderson.

Review 2: 'Barriers to, and facilitators of the prevention of unintentional injury in children in the home: a systematic review of qualitative research' was carried out by PenTAG. The principal authors were: Janet Smithson and Tiffany Moxham.

Reviewers: cost-effectiveness modelling

'Preventing unintentional injuries among under-15s in the home. Report 3: cost-effectiveness modelling of home-based interventions aimed at reducing unintentional injuries in children' was carried out by PenTAG. The principal authors were: Martin Pitt, Rob Anderson and Tiffany Moxham.

Fieldwork

The fieldwork 'Preventing unintentional injuries in the home among under-15s: providing safety equipment and home-risk assessments: fieldwork report' was carried out by GHK

and Noble Denton.

Appendix B: Summary of the methods used to develop this guidance

Introduction

The reviews and cost effectiveness modelling report include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it.

The minutes of the PHIAC meetings provide further detail about the Committee's interpretation of the evidence and development of the recommendations.

All [supporting documents](#) are listed in appendix E.

Key questions

The key questions were established as part of the scope. They formed the starting point for the reviews of evidence and were used by PHIAC to help develop the recommendations. The overarching questions were:

Question 1: Which interventions involving the supply and/or installation of home safety equipment are effective and cost effective in preventing unintentional injuries among children and young people aged under 15 in the home?

Question 2: Are home-risk assessments effective and cost effective in preventing unintentional injuries among children and young people aged under 15?

Question 3: What are the barriers to, and facilitators of, interventions involving the supply and/or installation of home safety equipment and/or home-risk assessments?

These questions were made more specific for the reviews (see reviews for further details).

Reviewing the evidence

Two evidence reviews were carried out: one on effectiveness and cost effectiveness and one on the barriers to, and facilitators of, the prevention of unintentional injury in children in the home.

Identifying the evidence

The following databases were searched from 1990 up to March 2009, using a single strategy to identify relevant primary and qualitative research (no study design filters were applied):

- Applied Social Science Index and Abstracts (ASSIA)
- Bibliomap
- Centre for Review and Dissemination databases
- CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- Cochrane Library database of systematic reviews
- Database of Abstracts of Reviews of Effects (DARE)
- Database of Promoting Health Effectiveness Reviews (DoPHER)
- EconLit
- Evidence for Policy and Practice Information and Co-ordinating (EPPI) Centre databases
- Health Management Information Consortium (HMIC)
- ISI Web of Knowledge Social Science Citation Index (SSCI)
- Science Citation Index Expanded (SCI-EXPANDED)
- MEDLINE
- National Health Service Economic Evaluations Database (NHSEED)
- NHS Economic Evaluation Database (HTA)

- PsycINFO
- SafetyLit
- Trials Register of Promoting Health Interventions (TRoPHI)

A follow-up targeted search of named programmes was conducted in MEDLINE and using the search engine Google.

The following websites were also searched:

- [Child Accident Prevention Trust](#)
- Children in Wales
- [Eurosafe](#)
- [Injury Observatory for Britain & Ireland](#)
- Integris (EU Injuries programme for coordinating injury data)
- International Society for Child and Adolescent Injury Prevention
- [Public Health Observatory website for the South West](#) (lead on injuries)
- [The Royal Society for the Prevention of Accidents](#)

Further details of the databases, search terms and strategies are included in the reviews.

Selection criteria

Studies were included in the effectiveness and cost effectiveness review if they:

- were published from 1990 to March 2009 in English
- were conducted in member countries of the Organisation for Economic Cooperation and Development (OECD)
- reported injury related outcomes (for example, a reduction in injuries from smoke inhalation, an increase in the number of smoke alarms installed and improved knowledge of how to prevent other injuries in the home).

Studies were excluded if they did not:

- compare the injury-related outcome prior to or without the intervention report injury-related outcomes for children or young people aged under 15 (for examples, see above; however, studies that reported injury-related outcomes among, for example, those aged 5–18 years would be included if most of the data related to children aged 15 years or under.)
- for the cost-effectiveness review only, assess the cost and related benefits or effectiveness of the intervention (or class of intervention).

Quality appraisal

Included papers were assessed for methodological rigour and quality using the relevant NICE methodology checklist, as set out in the NICE technical manual 'Methods for the development of NICE public health guidance' (see [appendix E](#)). Each study was graded (++, +, –) to reflect the risk of potential bias arising from its design and execution.

Study quality

++ All or most of the methodology checklist criteria have been fulfilled. Where they have not been fulfilled, the conclusions are thought very unlikely to alter.

+ Some of the methodology checklist criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.

– Few or no methodology checklist criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

Summarising the evidence and making evidence statements

The review data was summarised in evidence tables (see full reviews).

The findings from the reviews were synthesised and used as the basis for evidence statements relating to each key question. The evidence statements were prepared by the public health collaborating centre (see [appendix A](#)). The statements reflect their judgement of the strength (quantity, type and quality) of evidence and its applicability to the populations and settings in the scope.

Economic analysis

The economic analysis consisted of a review of economic evaluations (the cost effectiveness part of review 1) and a cost-effectiveness model (report 3).

Cost effectiveness review (part of review 1)

As indicated above, a single search strategy was used to identify relevant economic evaluations from a wide range of databases (listed earlier).

Cost-effectiveness modelling

Two economic models were constructed to incorporate data from the evidence reviews.

First, the intervention model was used to analyse the effectiveness of an intervention to increase the number of people using a particular safety feature (such as a smoke alarm or stair gate) in the home.

The second stage outcomes model used the levels of installed safety equipment in the population (derived from the first model) to predict the number of resulting injuries and fatalities over the lifetime of the population cohort. It involved a cost-utility analysis undertaken from the NHS and personal social services perspective.

A number of assumptions were made which could underestimate or overestimate the cost effectiveness of the interventions (see review modelling report for further details).

The results are reported in: [Preventing unintentional injuries among under-15s in the home. Cost-effectiveness modelling of home-based interventions aimed at reducing unintentional injuries in children.](#)

Fieldwork

Fieldwork was carried out to evaluate how relevant and useful NICE's recommendations are for practitioners and how feasible it would be to put them into practice.

It was conducted with practitioners and commissioners who are involved in preventing unintentional injuries among under-15s. They included: unintentional injury prevention

specialists; practitioners working on local home-safety initiatives, including safety equipment distribution schemes; and practitioners with a broader remit for the welfare of children aged 0–15. The latter included: children's centre managers, health visitors, housing managers, public health practitioners, school nurses, social workers and others working in the NHS, local authorities, police and fire services, and voluntary sector organisations.

The fieldwork comprised nine focus groups carried out in different local authority areas and one in-depth interview. They were conducted by GHK (with Noble Denton) and involved a total of 65 participants.

The focus groups and in-depth interview were commissioned to ensure there was ample geographical coverage. The main issues arising are set out in [appendix C fieldwork findings](#). See the full report, [Preventing unintentional injuries in the home among under-15s: providing safety equipment and home-risk assessments: fieldwork report](#).

How PHIAC formulated the recommendations

At its meeting in September 2009 PHIAC considered the evidence of effectiveness and cost effectiveness to determine:

- whether there was sufficient evidence (in terms of quantity, quality and applicability) to form a judgement
- whether, on balance, the evidence demonstrates that the intervention is effective, ineffective or equivocal
- where there is an effect, the typical size of effect.

PHIAC developed draft recommendations through informal consensus, based on the following criteria.

- Strength (quality and quantity) of evidence of effectiveness and its applicability to the populations/settings referred to in the scope.
- Effect size and potential impact on the target population's health.
- Impact on inequalities in health between different groups of the population.
- Cost effectiveness (for the NHS and other public sector organisations).

- Balance of risks and benefits.
- Ease of implementation and any anticipated changes in practice.

Where possible, recommendations were linked to evidence statements (see [appendix C](#)). Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

The draft guidance, including the recommendations, was released for consultation in November 2009. At its meeting in January 2010, PHAC amended the guidance in light of comments from stakeholders, experts and the fieldwork. The guidance was signed off by the NICE Guidance Executive in March 2010.

Appendix C: The evidence

This appendix lists evidence statements from two [evidence reviews](#) provided by public health collaborating centres (see [appendix A](#)) and links them to the relevant recommendations. (See [appendix B](#) for the key to quality assessments.) The evidence statements are presented here without references – these can be found in the full review (see [appendix E](#)). It also sets out a brief summary of findings from the economic analysis.

Evidence statement number E4d indicates that the linked statement is numbered 4d in review 1 'Preventing unintentional injuries among under-15s in the home. Systematic reviews of effectiveness and cost-effectiveness of home safety equipment and risk assessment schemes'.

Evidence statement number B1 indicates that the linked statement is numbered 1 in review 2 'Barriers to, and facilitators of the prevention of unintentional injury in children in the home: a systematic review of qualitative research.'

Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by **IDE** (inference derived from the evidence) below.

Recommendation 1: economic modelling; IDE

Recommendation 2: evidence statements B4, B5, B6, B8, B9, B11, B12, B13, B14, B15; IDE

Recommendation 3: evidence statements E2a, E2b, E3b, E3c, E3d, E4b, E4c, E4d, E6b, E7b, E9b, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15; IDE

Recommendation 4: evidence statement B3; economic modelling, IDE

Recommendation 5: evidence statements E3e, E3f, E3h, E4b, B2, B9; IDE

Evidence statements

Please note that the wording of some evidence statements has been altered slightly from those in the review team's report to make them more consistent with each other and

NICE's standard house style.

Evidence statement E2a

There is inconsistent evidence about impact on injury from one cluster RCT (++) and one controlled before-and-after study (CBA) (+). There is evidence from the better quality cluster RCT that the free supply and installation of smoke alarms had no significant effect on the incidence of fire-related hospitalisations and deaths (rate ratio 1.0 [95% confidence interval {CI} 0.5, 2.0]). However, the CBA study suggests that the free supply and installation of smoke alarms decreased the incidence of fire-related injuries (within-group pre-post intervention comparison: 0.2 [95% CI 0.1, 0.4] for the intervention group and 1.1 [95% CI 0.7, 1.7] for the remainder of the city).

Evidence statement E2b

There is inconsistent evidence about impact on rates of installation of home safety equipment from two cluster RCTs (one [++], one [+]) and one CBA (+). There is evidence from the better quality cluster RCT that the free supply and installation of smoke alarms had no significant effect on the installation or functioning of smoke alarms within households (Rate ratio 1.0 [95% CI 0.4, 2.4]). However, there is evidence from the other cluster RCT that the free supply and installation of smoke alarms had a significant effect on the installation and functioning of smoke alarms: odds ratio (OR) 4.82 (95% CI 3.97, 5.85). The CBA study reported that 51% of intervention households (identified as being without a smoke alarm prior to the intervention) had a correctly installed and functioning smoke alarm at 12 months follow-up.

Evidence statement E3b

There is moderate evidence from three RCTs (one [++], one [+] and one [-]) that the free or discounted supply of smoke alarms in conjunction with safety education increases the rate of installation of these devices.

Evidence statement E3c

There is weak evidence from two RCTs (one [++] and one [+]) about interventions with free or discounted supply of home safety equipment in conjunction with safety education. Outcomes about three types of home safety equipment (buffers, electrical outlet covers and cupboard locks/latches) are reported, showing mixed evidence of effect. Outcomes

about other types of home safety equipment (non-slip bathroom items, window locks, fire guards and stair gates) are presented in one report, with only fire guards reported as being more likely to be present post-intervention (based on self-report).

Evidence statement E3d

There is weak evidence from one RCT (++) that the free or discounted supply of a range of safety equipment, in conjunction with safety education, increases the rate of installation of safety equipment as a whole (mean difference [MD] 21.1 [95% CI 13.90, 28.30]) (based on self-report).

Evidence statement E3e

There is strong evidence from four RCTs (two [++], one [+] and one [-]) that the free or discounted supply of a range of safety equipment, in conjunction with safety education, increases knowledge about the prevention of poisoning and scalds.

Evidence statement E3f

There is inconsistent evidence from three RCTs (two [++] and one [+]) about how a free or discounted supply of a range of safety equipment, in conjunction with safety education, affects knowledge about: the prevention of fires, falls and wounds.

Evidence statement E3h

There is weak evidence from one RCT (+) that the free or discounted supply of a range of safety equipment, in conjunction with safety education, increases knowledge about the prevention of suffocation.

Evidence statement E4b

There is weak evidence from one RCT (++) that free home safety equipment (or its delivery) and installation with safety education increases the use of smoke alarms at 12 months (OR 1.83 [95% CI 1.33, 2.53]) and 24 months (OR 1.67 [95% CI 1.21, 2.32]). The intervention did not have a statistically significant impact on reducing socioeconomic inequalities in the uptake and continued use (12 months post-intervention) of smoke alarms.

Evidence statement E4c

There is weak evidence from one RCT (++) that showed mixed evidence of effect of the supply of free home safety equipment (or its delivery) and installation with safety education. Outcomes showed no impact on fire guards being fitted and always used after 12 or 24 months, and increased use of stair gates and window locks at 12 months, but not 24 months. The intervention had a statistically significant impact on reducing socioeconomic inequalities in the uptake and continued use (12 months post-intervention) of stair gates.

Evidence statement E4d

There is weak evidence from one RCT (++) that free home safety equipment (or its delivery) and installation with safety education may increase the safe storage at 12 months of cleaning products and sharp objects, but these effects are no longer seen after 24 months for safe storage of sharp objects.

Evidence statement E6b

There is inconsistent evidence from two RCTs (one [+] and one [++]) and one CBA (+) about interventions with a home-risk assessment and free or discounted supply of home safety equipment that included a smoke alarm. Outcomes about the rates of installation of smoke alarms (all self-reported) show mixed evidence of effect (no effect, increased, increased).

Evidence statement E7b

Three studies (one CBA [+] and two before-and-after [BA] [{-}, {+}]) report on the continued presence and use of installed equipment after home-risk assessment and free or discounted supply and installation of home safety equipment. There is mixed evidence about the impact on continued working equipment. One study found that 60% of installed hot water tempering valves remained in situ after 6 to 9 months. One study found significant improvements in the numbers of households with working window guards and fire extinguishers post-intervention. Finally, two studies (one CBA [+] and one BA [+]) showed significantly more smoke alarms installed and working post-intervention ($p < 0.0001$; OR 0.30 [95% CI 0.24, 0.38: showing less alarm absence in the intervention group]).

Evidence statement E9b

There is inconsistent evidence from six robust studies (which use both observed outcome measures and a controlled study design) about the presence of functional smoke alarms. Four suggest that the intervention increased functioning presence (one RCT [+], one CBA [+], one RCT [-] and one CBA [+]) and two suggest that no significant impact was seen on smoke alarms (both RCT [++]).

Evidence statement B2

Three studies (three [-]) found that parents felt there was a lack of information or knowledge about existing policies or support. Examples included lack of knowledge of poison centre telephone number, and lack of 'direct information' on poisoning prevention.

A lack of communication about programmes to install smoke alarms limited uptake, especially for the most high-risk families (those in rented accommodation with a rapid turnover of tenants).

Timing of information was shown to be important. One study found that parents given information in hospital, at the time of a child's birth, did not retain this, while information provided subsequently in a community or physician setting was better retained.

Evidence statement B3

Three studies (all [-]) found that partnerships and collaborations between different service providers facilitated the effectiveness of interventions to reduce unintentional injuries to children in low income communities.

Collaborations perceived as useful included multi-agency partnerships between different agencies, and between agencies and hard-to-reach groups. These collaborations aided the effectiveness of a UK smoke alarm installation programme and a partnership between health officials and low income mothers in home safety visits offering advice and provision of safety equipment

The importance of devising information and advice in ways that suit the target community (in terms of language, style, examples used) was noted in both of these papers dealing with low income populations with many ethnic minorities.

Evidence statement B4

Nine studies (four [-], four [+] and one [++]) found that a major barrier to implementing safety equipment and childproofing a home was living in a home one was not free to modify.

The studies found that mothers particularly found a lack of control over their home environment due to living in rented accommodation, and/or with extended family. In rented accommodation, landlords were reported as unresponsive to requests for installation or maintenance of safety equipment. In extended family homes, often in overcrowded situations, young parents often did not have a say in how the home was arranged. Two studies noted that high turnover of tenants in cheap rented accommodation limited the effectiveness of projects to organise effective installation and maintenance. In two studies, having landlords with the ability and eagerness to make repairs led to more effective interventions.

Evidence statement B5

Four studies (two [-] and two [+]) found that faulty or poor quality equipment was a barrier to interventions to reduce unintentional injuries to children in the home. For example, mothers resorted to taping over electric sockets when safety plugs were not provided or did not work.

The four studies made recommendations for different or better equipment. Studies recommended the provision of tamper-proof smoke alarms with 10- year batteries, alternatives of sprinkler systems for some populations, smoke alarms with longer lasting batteries, help for fitting alarms, or simpler systems for older residents, and more systematic provision of child-resistant containers.

Suspicion by those in vulnerable communities of strangers coming into their homes to assess or install property, and suspicion of 'free' offers, needs to be mitigated in successful interventions.

Evidence statement B6

The two studies on smoke alarm installation (one [+], one [-]) both found that people balance immediate and longer term risks to health and wellbeing when they disable alarms. They were aware that it was less than ideal to disable smoke alarms, but weighed

this against other factors, especially the inconvenience and stress of malfunctioning alarms.

Evidence statement B7

Three studies (one [+] and two [-]) based on evaluation of specific interventions all found that training in installation and equipment use/replacement was a facilitator to reducing the incidence of unintentional injuries to children in the home.

Evidence statement B8

Cost emerged as a theme in five of the studies, always as a barrier to reducing accidents to children in the home, or to obtaining help if a child had been injured (two [-], two [+] and one [++]). Three studies found that the perceived cost of installing safety devices or making repairs was a major barrier in the correct use of smoke alarms and in general for safety equipment. However, in one study the provision of free safety equipment, in this case a smoke alarm, led to the equipment being rejected due to suspicions precisely because it was free, which suggests that making equipment or installations totally free may not always be appropriate.

Evidence statement B9

Four studies (one [-], two [+] and one [++]) found that young or poorly educated mothers found it hard to anticipate the child's rate of development in terms of ability to climb, open containers or locks, or light fires. One study, in contrast, found that mothers were good at anticipating developmental milestones and adjusting the home environment in advance of changes, thereby reducing the rate of unintentional injuries in the home (+).

Evidence statement B10

One study (++) found that exposure to a child poisoning incident, either in real life or in the media, increased awareness of that particular danger and was a motivator for implementing safety measures. This suggests that providing information on unintentional poisoning via media outlets might be an effective facilitator in raising awareness of risk.

Evidence statement B11

One study (-) found that adolescent mothers found it hard to deal with issues of blame, oscillating between ideas of the accident-prone child who would have accidents whatever you did, and the negligent adult who was responsible for their child's accidents. The study recommends that care providers approach the topic of injury in a forthright manner when working with adolescent mothers, challenging the idea that injuries are unavoidable while not assigning blame to the mother for injury to the child. It also suggests that 'helping mothers identify risks to their specific child in their specific environment may be the most effective intervention'.

Evidence statement B12

Five studies (two [-], two [+] and one [++]) noted the large and constant amount of effort which mothers put into preventing unintentional injuries in the home as a major facilitator of reducing unintentional injuries in the home. Authors picked up on several main components of this maternal safeguarding work – commonsense safeguarding, constant vigilance and teaching children about safety.

While these maternal safeguarding activities do act as a short-term facilitator to accident reduction, it is important to note that they are time and energy- intensive and that, for this reason, need supplementing with other forms of unintentional injury prevention.

Evidence statement B13

Three studies (two [+] and one [++]) noted cultural practices which, while they may have been adequate safety measures in the parents' culture of origin, were risky in a new cultural context. There were two aspects to this theme; lack of experience of the particular risks of a host context, and lack of understanding by health officials about different child safety norms and expectations in immigrants' cultures.

Mexican mothers in one US study mostly came from rural and semi-rural backgrounds, so had less experience with urban hazards such as multi-storey buildings and hot water taps which could cause falls or scalds. Mexican mothers were also more likely to use Mexican products, which were more likely to come without safety warnings/packaging. Two US studies found significant cultural differences in experience and expectations which led to health visitors classing behaviour as risky because of a lack of understanding of immigrants' perception of safety and risk.

Evidence Statement B14

Five studies (two [-], two [+] and one [++]) found that a major barrier to child safety in the home was mothers' worry that asking about child injury in any context, including unintentional injury prevention, or taking an unintentionally hurt child to hospital, would result in the child being removed/seen as at risk, and they would be accused of abuse or neglect. All of these studies were in the US or Canada and focused on low-income mothers, and additionally, most were adolescent mothers or immigrant mothers.

Evidence Statement B15

Two studies (one [+], one [++]) found that a major barrier to child safety in the home was mothers' lack of autonomy to make household or financial decisions. Policies/interventions might need to reconsider the often automatic targeting of mothers about safety equipment or behaviour, especially in populations where the fathers (or parents-in-law) traditionally make decisions about household purchases.

Cost-effectiveness evidence

To supplement the cost-effectiveness review, two cost-utility analyses were carried out using the same model of the lifetime costs and effectiveness of relevant home safety interventions.

The first analysis compared the supply and installation of free smoke alarms versus no intervention. It found that a free smoke alarm scheme would probably be cost effective (incremental cost-effectiveness ratio [ICER] £23,046). However, there were many uncertainties in this model and it should be noted that the empirical evidence is inconsistent.

The second analysis compared general home safety consultation and equipment provision versus no intervention. (This includes home safety consultation visits, provision of educational materials and advice, as well as the free supply and installation of a range of equipment.)

The sensitivity analyses demonstrate that, from a public sector perspective, cost-utility is likely to be highly dependent on:

- the proportion of households that participate, the prevalence of existing safety

devices in use and the proportion of households that correctly install or use any devices provided

- how long the device is effective ('functional decay') and whether or not other changes take place in the household which affect its use
- fixed or overhead costs of programmes relative to the number of households targeted
- number of people in a household and their age
- relative reduction in risk due to the device being properly fitted and used (or due to people adopting safer behaviour in the home).

Fieldwork findings

Fieldwork aimed to test the relevance, usefulness and the feasibility of putting the recommendations into practice. PHAC considered the findings when developing the final recommendations. For details, go to the [fieldwork section in appendix B](#) and [Preventing unintentional injuries in the home among under-15s: providing safety equipment and home-risk assessments: fieldwork report](#).

Fieldwork participants who work with children and young people aged under 15 and their parents and carers were very positive about the recommendations and their potential to help prevent unintentional injuries among this group in the home.

However, they thought they represented an ideal scenario and that, currently, it was not feasible to implement some of the advice. Lack of resources was a key issue. In addition, they pointed out that children under 5 have different needs compared with older children – and that these differences should be acknowledged.

Participants wanted to see a greater emphasis on educational interventions that are delivered alongside the installation of home safety equipment. It was also important to overcome any possible stigma that particular households or communities might experience as a result of being prioritised for free safety kit.

Lack of clear lines of responsibility was deemed a key barrier to implementing the recommendations locally. Most participants felt this was due to the lack of national targets and indicators for reducing unintentional injuries among children in the home.

Responsibility usually lay with local safeguarding children's boards in the focus group

areas, but this was not always the case.

Appendix D: Gaps in the evidence

PHIAC identified a number of gaps in the evidence relating to the interventions under examination, based on an assessment of the evidence. These gaps are set out below.

1. There is a lack of epidemiological data on unintentional injuries in the home among under-15s – the types, causes and severity of injuries (in particular, in relation to falls).
2. There is limited, high quality evidence from the UK on the effectiveness of:
 - a range of home safety equipment, for example, carbon monoxide detectors and equipment incorporating new technologies (the latter include 10-year batteries and hard-wired smoke alarms)
 - different approaches to installing and maintaining home safety equipment and on the comparative effectiveness of combining different approaches (for example, education combined with the installation of safety equipment)
 - targeted approaches and the effects of interventions on different population groups, including deprived and high-risk households
 - making people aware of home safety issues to increase the use of safety equipment.
3. There is a lack of cost-effectiveness studies and related data, such as the standard cost of home safety equipment and installation.
4. There is limited evidence on the reasons why deprived and other high-risk households may be unreceptive to home safety interventions and on what encourages them to take them up.

Appendix E: Supporting documents

Supporting documents include:

- Evidence reviews:
 - Review 1: 'Preventing unintentional injuries among under-15s in the home. Systematic reviews of effectiveness and cost-effectiveness of home safety equipment and risk assessment schemes'
 - Review 2: 'Barriers to, and facilitators of the prevention of unintentional injury in children in the home: a systematic review of qualitative research'.
- Cost-effectiveness modelling: 'Preventing unintentional injuries among under-15s in the home. Report 3: cost-effectiveness modelling of home-based interventions aimed at reducing unintentional injuries in children'.
- Fieldwork report: 'Preventing unintentional injuries in the home among under-15s: providing safety equipment and home-risk assessments: fieldwork report'

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the [NICE topic page on injuries, accidents and wounds](#).

For full details of the evidence and the guideline committee's discussions, see the [evidence](#). You can also find information about [how the guideline was developed](#), including details of the committee.

NICE has produced [tools and resources to help you put this guideline into practice](#). For general help and advice on putting our guidelines into practice, see [resources to help you put NICE guidance into practice](#).

Update information

Minor changes since publication

November 2019: Links and organisation names have been updated throughout.

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