

EFFECTIVENESS MATTERS – HOUSING IMPROVEMENT AND HOME SAFETY (categorised by intervention type; in descending order by date of publication)

Housing improvement

Author, Title, Study details	Intervention	Population	Outcomes	Findings
<p>Thomson et al 2013[9]</p> <p>Number of relevant studies: Approx 27/39(15 Warmth/energy efficiency, 12 neighbourhood renewal which will include some relevant studies.)</p> <p>Study designs: 5 RCTs, 22 (approx) experimental; approx 12 qualitative.</p>	Interventions included: warmth and energy efficiency improvements (post-1985), rehousing or retrofitting ± neighbourhood renewal (post-1995).	Any population undergoing housing improvement including general population in public/social housing, households with members with cardiac or respiratory conditions, elderly, or in deprived areas.	Outcome measures included any measure which could be interpreted as a direct measure of health or mental and physical illness, general measures of self-reported well-being, and quality of life measures. (Not health service use)	<p>Data from studies of warmth and energy efficiency interventions suggested that improvements in general health, respiratory health, and mental health are possible. Studies which targeted those with inadequate warmth and existing chronic respiratory disease were most likely to report health improvement. Impacts following housing-led neighbourhood renewal were less clear; these interventions targeted areas rather than individual households in most need. There were few reports of adverse health impacts following housing improvement. A small number of studies gathered data on social and socioeconomic impacts associated with housing improvement. Warmth improvements were associated with increased usable space, increased privacy, and improved social relationships; absences from work or school due to illness were also reduced.</p> <p>Studies conducted in the UK, USA, Europe, Australia/New Zealand.</p>

Improving home safety

Author, Title, Study details	Intervention	Population	Outcomes	Findings
<p>Gillespie et al 2012 [10]</p> <p>Number of relevant studies: 159 but only 9 evaluate modifications in the home.</p> <p>Study designs: RCTs</p>	Of the 9 studies which evaluated modifications in the home: home safety assessment and modifications (6 RCTs), occupational therapy visit and equipment provided (2 RCTs), surveillance only (1 RCT)	Participants over 60 living at home	Reduction in falls	<p>Overall, home safety assessment and modification interventions were effective in reducing rate of falls (Relative Risk 0.81, 95% CI 0.68 to 0.97; 4208 participants, 6 trials) and risk of falling (relative risk 0.88, 95% CI 0.80 to 0.96; 4051 participants, 7 trials). There was no significant reduction in risk of fracture (relative risk 1.32, 95% CI 0.30 to 5.87; 360 participants, 1 trial).</p> <p>Studies conducted in the UK, France, Germany, Taiwan, Australia and New Zealand.</p>
<p>Kendrick et al 2012 [14]</p> <p>Number of relevant studies: 98</p> <p>Study designs: 38 RCTs, 17 CRCTs, 8 NRCT, 35 ClusterCBA</p>	<p>Home safety interventions provided by health or social care professionals, school teachers, lay workers, voluntary or other organisations.</p> <p>Included thermal injury prevention; poison preventions; child fall prevention; electrical injury prevention; prevention of lacerations or bruising; suffocation prevention.</p>	Children and young people (aged 19 years and under) and their families.	Injury, poisoning rates, smoke alarms, fire plans, other hazard outcomes	<p>Home safety interventions most commonly provided as one-to-one, face-to-face education, especially with the provision of safety equipment, are effective in increasing a range of safety practices.</p> <p>Studies conducted in the UK, North & South America, Australia/New Zealand, Europe, Asia and the Middle East.</p>

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Smithson et al 2011 [13] Number of relevant studies: 3 Study design: Qualitative	Interventions of relevance are smoke alarms (2 studies) and injury prevention (1 study) Linked to Pearson et al [ref]	Parents, low income mothers, health practitioners	Barriers and facilitators	Effective provision of safety equipment involves ongoing support with installation and maintenance. Take up and success of interventions depends on adjusting interventions according to practical limitations and parents' cultural expectations. A particular barrier was parents' inability to modify rented or shared accommodation. Studies conducted in UK, USA, Canada and Australia
Turner et al 2011 [11] Number of relevant studies: 29 Study designs: RCTs	Modification to physical hazards including the building fabric or 'fixtures and fittings' (eg removable items within a property that are fastened or attached to the building fabric) in the domestic environment, and where modifications such as the installation of grab rails, stair gates, fireguards, cupboard locks, hot-water tap adaptations and lighting adjustments, have been included.	Included families in inner-city, lower-income areas with children under five years; caregivers of children under five; parents of newborn infants; independent community-dwelling older people; staff of nursing homes; venues for older people; nursing home residents and in-patients of geriatric wards who had returned home; older people with visual acuity problems, cognitive impairment or functional vulnerability; emergency department patients; primary care patients; children from nursery and toddler groups; children attending secondary care paediatric clinics and specialist physicians in training.	Change in injury rate or risk. Change in prevalence of safety features. Change in prevalence of hazards	None of the studies focusing on children or older people demonstrated a reduction in injuries that were a direct result of environmental modification in the home. One study in older people demonstrated a reduction in falls and one a reduction in falls and injurious falls that may have been due to hazard reduction. One meta-analysis was performed which examined the effects on falls of multifactorial interventions consisting of home hazard assessment and modification, medication review, health and bone assessment and exercise (risk ratio 1.09, 95% CI 0.97 to 1.23). Some UK studies – unclear how many. Other studies conducted in Europe, USA, Australia.
DiGuseppi et al (updated 2010)[15] Number of relevant studies: 26 Study designs: RCTs, NRCTs	Any interventions designed (either wholly or in part) to increase the prevalence of owned or properly functioning smoke alarms	Community dwelling participants	Prevalence of owned and working smoke alarms and the incidence of fires and burns and other fire-related injuries.	This review found that programmes to promote smoke alarms increased smoke alarm ownership and function modestly, if at all, and have not demonstrated a beneficial effect on fires or fire-related injuries. Counselling by health care workers, as part of child health care, may increase ownership and use of smoke alarms in homes but effects on injuries have not been examined. There is little evidence to support community-wide mass media or educational programmes or programmes to give away free smoke alarms as effective methods to promote smoke alarms or reduce injuries from fire. More research is needed to examine community-wide smoke alarm installation programmes. Setting – countries not fully reported
Pearson et al 2010 [12] Number of relevant studies: 19	Supplying and installing home safety equipment (includes smoke alarms)	Low socio-economic status, social housing, low income	Hospital admission, deaths, preventable hospital admission and death	Few programmes reduced injury rates in children except where home safety equipment is supplied in conjunction with a risk assessment, although only evident in households where child had previously suffered an unintentional injury. The distribution of smoke alarms alone is insufficient for improving installation rates; programmes containing an

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Study designs: 9 RCTs, 3 cluster RCTs, 3 CBA, 4 B/A studies	Linked to Smithson [ref]			education component showed more success. Other data reported Studies were conducted in the UK, USA, Canada and Europe
McClure et al 2008[16] Number of relevant studies: 6 Study designs: Described as controlled population-based intervention studies.	Community wide multi-strategy interventions for reducing fall related injuries in older adults. Included education and engagement of clinicians; exercise; environmental modifications; training of healthcare workers; promotion of footwear/exercise/hazard reduction.	“Older People”	Rate of fall-related injuries	Significant decreases or downward trends in fall-related injuries were reported in each of the included studies, with the relative reduction in fall-related injuries ranging from 6% to 33%. Studies were conducted in Sweden, Denmark, Norway, Australia and Taiwan.

Home interventions for people with respiratory disease

Author, Title, Endnote ref	Intervention	Population	Outcomes	Findings
Singh et al 2013 [17] Number of relevant studies: 2 Study designs: RCTs	Controlled humidity of the home environment (mechanical ventilation, both portable and fixed). The review only considered environmental remediation as an intervention, provided that the provision of dehumidification was standardised within the intervention group.	Participants of any age with asthma	Included airway function, symptoms, use of rescue medication, steroid use, ER attendance, hospital admission	No significant difference in morning peak flow (mean difference (MD) 13.59; 95% confidence interval (CI) -2.66 to 29.84), which was the primary outcome of the trial. However, there was a statistically significant improvement in evening peak flow only (MD 24.56; 95% CI 8.97 to 40.15). There was no significant difference in quality of life, rescue medication, requirement for oral corticosteroids, visits to the GP, emergency department (ED) or hospitalisations for asthma. There was no significant difference in the house dust mite count and the antigen levels in the new trial, in contrast to the previous trial. Studies conducted in the UK
Crocker et al 2011 [20] Number of relevant studies: 23 Study designs: 13 RCT, 16 CBA	Home-based, multi-trigger, multicomponent interventions with an environmental focus to improve asthma-related morbidity outcomes including environmental assessment, remediation and education, self management education, asthma education, co-ordinated care, social services.	Households with adults, adolescents or children with asthma	Quality of life, healthcare utilisation, productivity (school/work days missed); physiologic outcomes (eg pulmonary function). Other secondary outcomes reported	In the 20 studies targeting children and adolescents, the number of days with asthma symptoms (symptom-days) was reduced by 0.8 days per 2 weeks, which is equivalent to 21.0 symptom-days per year (range of values: reduction of 0.6 to 2.3 days per year); school days missed were reduced by 12.3 days per year (range of values: reduction of 3.4 to 31.2 days per year); and the number of asthma acute care visits were reduced by 0.57 visits per year (interquartile interval: reduction of 0.33 to 1.71 visits per year). Only three studies reported outcomes among adults with asthma, with inconsistent results.” Studies conducted in the UK, USA, Canada and Japan.
Gøtzsche et al 2011 [19] Number of relevant studies: 55	a) Chemical (acaricides). b) Physical (for example mattress covers, vacuum-cleaning, heating, ventilation, freezing, washing,	Participants with physician-diagnosed bronchial asthma; mite sensitisation assessed by either skin testing,	Peak Flow, asthma scores and medication usage.	For the most frequently reported outcome, peak flow in the morning (1665 patients), the standardised mean difference (SMD) was 0.01 (95% confidence interval (CI) -0.08 to 0.11). There were no statistically significant differences either in number of patients improved (risk ratio 1.01, 95% CI 0.80 to 1.27), asthma symptom scores (SMD -0.06, 95% CI

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Study designs: RCTs	air-filtration and ionisers). c) Combinations of these	bronchial provocation tests or serum assays for specific IgE antibodies.		-0.16 to 0.05), or in medication usage (SMD -0.05, 95% CI -0.17 to 0.07). Setting – countries not reported
Sheikh et al 2010 [18] Number of relevant studies: 9 only 2 trials investigated HEPA filters, the rest investigated bedding etc. Study designs: RCTs	These included studies in which house dust mite control measures were compared with placebo, or in which different types of control measures were compared.	All patients with a diagnosis of allergic rhinitis made by a qualified physician. Children and adults of all ages and both sexes were included.	Quality of life, general well-being. Days off/sick leave from school/work. Nasal symptom scores. Any adverse outcome as reported in trials.	Mixed results from two studies on the filters. Setting – countries not reported

Abbreviations: B/A – before and after; CBA – controlled before and after; CRCT – cluster randomised controlled trial; NRCT – non-randomised controlled trial; RCT – randomised controlled trial.

Note: All these reviews met the following quality criteria:

- Conducted an adequate search
- Adequate reporting of inclusion criteria
- Conducted an appropriate synthesis
- Assessed individual study quality
- Reported sufficient detail of the primary studies