

Childhood Burns and Scalds



FACTS

- Thermal injuries, which include house fires, contact burns and scalds, rank thirteenth among the leading causes of death in children aged 0-19 years in the WHO European Region. In the European Union, burns and scalds are the fifth leading cause of death¹. The highest death rates appear to be in those under 5 years old².
- A burn is defined as an injury to the skin or other human tissue caused by heat. It occurs when some or all of the cells in the skin or the other tissues are destroyed by hot liquids (scalds), hot solids (contact burns), or flames (flame burns)³.
- Young children are particularly vulnerable to burn-related injury and death as their skin is thinner than adults' and can suffer serious deep burns more quickly.
- Severe burn injuries cause tremendous pain, require multiple hospitalisations and lengthy treatment and may result in permanent disability and disfigurement.
- More than 55% of burn injuries occur to boys, with scalds and contact burns occurring predominantly to toddlers under the age of 2 years⁴. But the gender difference is smaller than for other injury types⁵.
- Lack of close supervision is the most frequent cause for a burn or scald injury⁶.
- Most childhood thermal injuries occur in the home, particularly in the kitchen, and are caused by commonly used items, such as saucepans, kettles, taps, stoves, hot beverages, irons and heaters⁷. Children suffer burns and scalds when they come in contact with hot liquids including tap water, touching hot appliances, and misuse of matches and cigarette lighters. In Athens, Greece 60% of children presented to the emergency department due to scalds caused by hot liquids in the kitchen, when a child reached for a cup of hot liquid from a kitchen surface or for a pot handle from the stove⁸.
- Every year in the United Kingdom for example there are over 20 deaths as the result of scald injuries from hot baths. Around 450 children under five are admitted to hospital with a severe scald caused by bath water and 2,000 children under five go to their local accident and emergency department^{9/10}.
- In the United Kingdom more than 5000 fires are caused each year by children under 10 years of age.
- The risk of death from fire is higher for children of lower socioeconomic class, as much as 16 times higher. A study done in a poor urban setting in the United Kingdom found that the major cause of burn injuries was unintentional house fires¹¹. Mattresses, bedding and upholstered furniture accounted for 70 percent of the materials first ignited in all house fires examined¹².
- Homes with smoke alarms typically have a death rate that is 40-50% **less** than the rate for homes without alarms¹³. For every 1 EUR spent on smoke alarms, 69 EUR are saved in fire-related costs. Furthermore, the combination of smoke detectors and sprinkler systems could reduce fire-related deaths by 82% and injuries by 46%¹⁴.
- Another cause of burns is fireworks. In the United Kingdom for example the number of children injured by fireworks increased by just over 35 per cent between 2000 and 2001, resulting in 685 children needing treatment at a hospital due to a firework injury. The majority of the injuries occurred in boys, 12 to 15 years of age¹⁵. The fact that boys in this age group are at high risk was also supported by a Greek study, which found 93% of children who suffered from a firework injury treated in the emergency departments of hospitals were boys¹⁶. The majority of injuries occurred in children 10-14 years old with self-inflicted injuries to boys, whereas girls suffered injuries as bystanders. Fireworks sold illegally sold fireworks caused most injuries, but in eight instances homemade firecrackers were responsible.
- Fires started due to smoking (cigarettes/ pipe, lighters or matches) tend to result in more deaths and higher property damages than other fires¹⁷. Having a smoker in the household seems to increase the risk of death in house fire by up to 4.8 times, and impairment by alcohol and drugs, by 7.5 times¹⁸.



- In Europe it is estimated that fires caused by children using cigarette lighters cost the taxpayers of Europe 95 million Euros each year¹⁹. Hospitalisations due to burns and their life long scars are even more costly and remain forever devastating.
- A study from the UK investigated the financial costs of managing uncomplicated, minor paediatric scalds. The mean average cost of treating such a case was 1850 Euro²⁰. In contrast, the cost of treating a severe scald in the United Kingdom has been estimated at 250 000 Euro²¹. These are direct medical costs only. To estimate total expenses, additional costs for patients' families must be added.
- In the United States the total annual cost of scald burn-related deaths and injuries among children aged 14 and under is estimated to be \$2.1 billion, with children aged 4 and younger accounting for \$1.2 billion¹⁷.
- An analysis of burn accident statistics suggests that at least half of all burn accidents could be prevented⁶.

Prevention Effectiveness

- Technology has been successful in the design of a number of products (such as smoke detectors) that assist in the reduction of burn deaths and injuries, but as in many injury issues, we need to ensure their proper and continued use.
- Smoke detectors - effective, reliable and inexpensive early warning devices assist in reducing residential fires by 71% when batteries are operational¹⁶.
- Water temperature and mixing valve regulations – legislation requiring a safe pre-set temperature (50°C) for all water heaters has proven to be a more effective method of reducing scalds burns than education to encourage parents to turn down water heaters²³. Also, thermostatic mixing valves on all boilers or water heaters provide control over the water temperature exiting the bath or shower faucet²⁴.
- Child resistant cigarette lighters - fire deaths associated with cigarette lighters dropped 43% in the United States with the adoption of child resistant designs and annual savings of \$125 million¹⁷.

- Flame retardant fabrics – setting flammability standards for mattresses, bedding, upholstered furniture and day and sleepwear. Following the passage of the Flammable Fabrics Act of 1972 in the United States¹⁷ there was a 75% reduction in hospital admissions due to sleepwear burns.
- Reduced ignition propensity cigarettes – the technology exists for producing reduced ignition of cigarettes that lower the risk of a fire hazard from smoking cigarettes²⁵.
- Adopting the following simple preventive measures in the kitchen helps in the reduction of burns injuries: using the rear positions of the cooker when cooking, keeping hot objects, foods and liquids in places where children have no access and avoiding the use of tablecloths on kitchen tables⁸.

Recommended Policy Actions

- Because of the varied causes of fire and flame injuries, diverse interventions are required which target those at highest risk: children, especially those living in poverty.

The following actions are therefore recommended to address this important public health problem:

Legislation

- For the European Commission to recommend to Member States to amend building codes to require the installation of smoke detectors in all private dwellings (new and existing)
- For the European Commission to recommend to Member States that to prevent scald injuries the water exiting bathroom taps in new and refurbished private dwellings should not exceed a maximum temperature of 50°C.
- For Member States to amend building codes for all dwellings to require installation of thermostatic mixing valves to ensure water exiting bathroom taps in new and refurbished private homes to not exceed a maximum temperature of 50°C, as well as the use of smoke detectors and fire retardant housing materials.
- For the European Commission to enforce the use of child resistant cigarette lighters throughout Europe.



- For the European Commission to make selling fireworks to children under 18 years of age illegal in all Member States (presently only some countries have enacted such a law).
- For the European Commission to implement mandatory flame retardant standards for mattresses, bedding, upholstered furniture and children's clothing, which are environmentally friendly.
- For the European Commission to require all tobacco manufacturers in the European Union to sell reduced ignition propensity cigarettes.

EU Collaboration

- For the European Commission to support a European wide campaign to raise awareness in parents and caregivers of burns and scald prevention for children based on evidence-based prevention measures.
- For the European Commission to support an exchange of good practices for burn and scalds prevention learned in various Member States and determine the ability to transfer the success factors to other locations.

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