Preventing unintentional injuries in children: successful approaches

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Abstract

Throughout the world unintentional injury in children is a very important public health issue. It is a major cause of death in children and is responsible for considerable morbidity. However, the burden of injury is not equally shared, with those children who live in more deprived social circumstances being at greater risk. A range of effective strategies for preventing many types of childhood injuries now exist based on the approaches of education, environmental modification and legislation. Paediatricians have important roles to play in data collection, in identifying children at risk of injuries, in supporting parents, and as advocates for injury prevention. This article examines the scale of the problem and the evidence base for prevention strategies that have been successfully implemented.

Keywords adolescent; child; inequality; prevention; unintentional injury

Introduction

Unintentional injuries are a growing global public health concern. As progress is made in addressing the risks associated with contagious and infectious childhood diseases, so injury has emerged as a major public health problem. Injury rates can vary considerably; between countries and between the communities within them. In the UK injury prevention efforts have had a considerable success and a downward trend in injury mortality is apparent; however persistent social inequalities continue to place poorer children at greater risk of injury than their more affluent counterparts.

Unintentional injury is a significant burden on the health services. Recent figures from Public Health England report 40,000 emergency hospital admissions each year for under-fives following unintentional injuries and a far greater number of attendances. At an individual level, children suffer pain associated with the original injury and with possible subsequent treatment, and run the risk of physical damage that may limit their long-term development. Certain injury events, such as road traffic accidents and house fires, potentially expose those involved to psychological trauma. Some families report increased emotional and financial stress following injury to a child. Severe injuries in children can result in considerable loss of schooling.

Global interest in addressing the injury burden has identified a range of proven and promising interventions. These are summarised in the World and European Reports on Child Injury Prevention. However, changes in social trends can create new injury hazards. For example, although the admission rates for medicinal poisoning in pre-school children in England decreased by 23% from 2000 to 2011, admissions from ingestion of soaps and detergents doubled over the same time frame. The introduction of liquitab washing detergents in 2001 may have played a role in this. Other examples of “new” injury risks that have been identified include burns from hair straighteners and poisoning from ingesting the contents of e-cigarettes.

Besides describing the public health importance of child injury prevention this article examines the risk factors associated with injuries. It discusses recent international and national guidance, together with recommended approaches to prevention. Crucially it highlights the key actions that paediatricians can contribute to child injury prevention.

Risk factors associated with injury

Injury prevention efforts may be impeded by fatalistic attitudes, the notion that “accidents will happen”. An increasing body of research evidence shows however, that many of the risks associated with unintentional injury are predictable and amenable to intervention.

Stage of development

The likely nature of injury type and setting are associated with a child’s stage of development. Early childhood is characterised by a rapid increase in physical growth and cognitive functioning during which children become more mobile, independent and keen to explore their immediate environment. For pre-school children, home accidents, such as burns, scalds and poisonings, are more prevalent since the home is where they spend most of their time.

As children become older and greater independence allows them to range further from home, the risk of outdoor injury increases. The road environment presents a particular hazard, with children at risk as pedestrians, cyclists and subsequently as young drivers.

Gender

Boys outnumber girls for most injury types. This may reflect differential activity levels between the genders, a tendency for boys to be more adventurous, or differing expectations in the ways that boys and girls are socialised.

Individual characteristics

The characteristics and personality of individual children may influence their risk of injury. Some children are more inclined towards potentially hazardous activities, whilst others are more risk averse. A child’s educational, behavioural and physical capabilities are likely to influence the extent to which he or she perceives and responds to the risk of injury within a given situation.

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Social deprivation

Unintentional injuries at all severities display a steep social gradient, with children from poorer households being at significantly greater risk of death or injury than those living in more affluent circumstances. The disparity creates inequalities in health and is particularly marked in relation to certain injuries. Comparison of the death rate among children whose parents have never worked and those occupying higher managerial and professional posts suggests that poorer children have a 21 times higher risk of pedestrian death, and a 38 times higher risk of dying in a house fire. Underlying factors such as poor quality housing, over-crowding, parental mental health and inadequate supervision have been identified as potential contributing factors.

Recent guidance for injury prevention

The last decade has seen publication of two very important documents; the World and European reports on child injury prevention. These have been produced in an accessible format and they highlight injury as a significant public health issue. The reports examine five major injury types: drowning, falls, poisoning, burns and traffic. Both reports identify recent research evidence and effective approaches for tackling the main causes of injury-related mortality and morbidity.

The policy response to child injuries in England has suffered from lack of national co-ordination. However, several guides produced in recent years by the National Institute for Health and Care Excellence (NICE) have gone some way towards addressing this, with recommended strategies for preventing injuries to children and young people in the home and in the road settings. Public Health England has built on this work. Its current home safety guide specifically considers pre-school children, identifying a need for leadership and workforce training to progress action on injury. Recommendation is made that prevention work for the under-5's should focus on the five following injury types:

1. choking/suffocation/strangulation
2. falls
3. poisonings
4. burns/scalds
5. drowning

Active or passive approaches

Approaches to injury prevention are classified as active (behavioural) or passive (structural). Active approaches are those that require individuals to play a role in protection, for example by always replacing household chemicals out of the reach of young children. Such approaches are subject to variation in compliance between individuals and are more likely to be adversely influenced by factors such as stress, tiredness or unexpected events.

Passive approaches operate independently of individual action and can provide a level of general protection for the whole population. They may involve changes to products or modification of the environment. An example of a passive intervention is the lowering of the temperature setting on a domestic water heater as a means of preventing tap water scalds. Others include automatic sprinkler systems within buildings and structural modifications to vehicle design that improve safety.

For many injury types no passive interventions exist. For example, only adult vigilance will prevent small children from drowning in the bath, and only safe adult behaviour with hot drinks will prevent children from being scalded.

The relative merits of active and passive approaches have been subject to some debate. Currently there is a growing awareness of the benefits of integrating strategies, referred to by Christoffel and Gallagher as 'an active approach to passive prevention'. This acknowledges the need for human interaction in passive approaches, such as the correct replacement of a child resistant closure on medications every time these are used.

Levels of injury prevention

Injury prevention activities are traditionally grouped into three different levels based on the way in which they attempt to mediate the risk of injury:

- primary prevention
- secondary prevention
- tertiary prevention.

Primary prevention

Primary prevention aims to prevent the occurrence of an event that may lead to injury. It includes activities such as safety education, and the use of equipment such as safety gates on stairs that can prevent children from falling.

Secondary prevention

Secondary prevention does not prevent the event from happening, but aims to prevent or reduce the severity of injury in those events which do occur. Smoke detectors, car safety belts and cycle helmets are all examples of secondary preventive measures.

Tertiary prevention

Tertiary prevention aims to reduce the consequences of an injury that has already occurred. For example, the provision of immediate treatment at the scene of an injury may reduce its long term impact. Similarly, use of rehabilitation services may help to maximise possible future activity and quality of life following an injury.

The three E's of injury prevention

Injury prevention activities can be categorised into three general approaches: Education, Enforcement and Environmental modification. These three approaches are often referred to as the "Three E's" of injury control. The European Report on Child Injury Prevention uses a similar classification and provides evidence based examples for each approach.

Education

The first "E" is education. An educational approach to injury prevention may attempt to change what the client knows, feels or does. This may involve the provision of information in verbal, written or interactive format. Cognitive objectives can be assessed by an increase in knowledge, for example, knowing where to obtain safety equipment. Other educational interventions may aim to influence a client's attitudes, values or beliefs, for example their views about the use of certain items of safety equipment. Skills development may be used to encourage desirable behaviours,

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