

3. Preventing unintentional injuries

Health status

Key point

► *Unintentional injuries are a leading cause of deaths and hospitalisations among New Zealand children. Tamariki Māori are significantly over-represented in the statistics.*

- In the five years 1990–94, 635 children under the age of 15 years died from injuries, giving a rate of 16.0 per 100 000 population per year.
- The overall injury death rate for Māori children (20.3 per 100 000) was 33 percent higher than the rate for all other children (15.3 per 100 000).
- Fifty-three percent of injury-related deaths were in the under-five years age group.
- Road traffic injuries were the leading cause of injury death of children in the period 1990–94, followed by submersion/suffocation.
- Injuries are the leading cause of death in the age group 1–14 years.
- Injuries are the second leading cause of hospitalisation of children, after respiratory diseases.
- Seventeen thousand injury hospitalisations of children under the age of 15 years occurred in 1995 (includes readmissions and transfers).
- Injuries caused Māori children to be hospitalised at a rate 86 percent higher than other children in 1995.
- Falls are the major specific cause of injury-related hospitalisations in the 0–14 years age group.
- Unintentional poisonings account for 6 percent of ‘injury’ hospitalisations (NZHIS 1998).
- New Zealand’s child injury mortality rates in 1994 were nearly twice as high as rates reported for Australia (Moller and Kreisfeld 1997).

Implications

Key point

► *Long-term disability and disfigurement are significant consequences of childhood injury.*

Injuries can lead to chronic disability, for example, brain damage from motor vehicle injuries, near-drowning and poisoning. Scarring from poisoning and burn injuries can lead to particularly devastating long-term effects on physical and mental health.

Factors influencing health status

Key point

- ▶ *The following factors are significantly associated with increased risk of childhood injury: being male, being Māori, coming from a lower socioeconomic group, and being under five years old.*

Injuries rates are higher among the following groups:

- tamariki Māori
- Pacific children (Safekids 1995)
- males
- children in lower socioeconomic groups
- children under five years old and over 14 years of age (NZHIS 1998).

Protective factors include:

- safe environments and products
- developmental and behavioural factors
- use of specific protective measures or interventions.

Children are at increased risk of specific causes, or mechanisms, of injury at different ages.

- Preschoolers are at particular risk of drowning in private swimming pools and poisonings, children in their middle years (5–10 years) are at risk of pedestrian injuries and playground falls and for older children (11–14 years) sport-related injuries are common (Safekids 1995).
- Māori and Pacific children are at increased risk of injury from burns and scalds, pedestrian injuries and injuries sustained as passengers in motor vehicles. European children are at increased risk from poisoning and drowning in private swimming pools (Safekids 1995).

Interventions

Introduction

There is good evidence for the effectiveness of a number of interventions in reducing child injuries (Dowswell et al 1996). Interventions that have been shown to be effective include bicycle helmet legislation to prevent cyclist head injuries, area-wide traffic calming measures to prevent pedestrian and cyclist injuries, child safety restraint legislation to reduce motor vehicle occupant injuries, child-resistant packaging to prevent poisoning, window bars to prevent falls, domestic swimming pool fencing, and standards for playground equipment.

For a range of other interventions, there is good evidence of the effectiveness in changing behaviour, but less clear evidence on whether this necessarily translates into fewer injuries. Such interventions include bicycle helmet education, child restraint loan schemes, child restraint educational campaigns, pedestrian education aimed at children and parents, provision of smoke detectors, and education of parents on home hazard reduction.

1 Control of environmental and product hazards

Key point

- ▶ *The most effective measures in controlling injuries are structural or passive interventions which do not rely on the potential victim to adopt protective behaviours.*

The most effective measures in controlling injuries are structural or passive interventions which do not rely on the potential victim to adopt protective behaviours (USPSTF 1996). Health promotion and counselling by health care workers and others has limitations in that it takes time and requires active co-operation from parents. Nevertheless, such approaches are probably a necessary complement to structural change (Runyan 1993).

Key point

- ▶ *The evidence for using child-resistant packaging (CRP) is good.*

The evidence for using child-resistant packaging (CRP) is good. International evidence indicates that use of child-resistant packaging has led to a decline in the number of childhood poisonings (CDC 1983; Rogers 1996; Temple 1986). Legislation exists for CRP for some products and there is a New Zealand Standard for CRP. There are plans to introduce a voluntary code for toxic substances in July 1998 (Ministry of Health 1998). The Ministry of Health intends to amend the Toxic Substances Regulations 1993 and to refer to the code.

2 Local injury prevention programmes (See also Implications for Policy and Services below.)

There is a wide range of evidence-based interventions that require local body implementation (such as playground surfacing, traffic management programmes, 'child-proof' fencing, etc).

The reduction of childhood injuries in local communities requires the systematic identification of injury patterns, the contributing factors and planning appropriate interventions. Examples include providing cycle lanes – work reviewed by the United States Preventive Task Force (USPSTF 1996) indicated that separating bicyclists from vehicle traffic has reduced bicycle crashes, though risks at intersections with traffic may be increased. Absence of play areas has been identified as a risk factor for childhood injuries. Rivara and Brownstein (1994) suggest that comprehensive traffic 'calming' schemes have been very successful in reducing child pedestrian injuries in Sweden, the Netherlands and Germany.

3 Home visiting and health education interventions

Key point

- ▶ *Home visiting and health education services have been found to be effective in reducing injuries.*

There is strong evidence for the effectiveness of home-visiting interventions in reducing childhood injuries. A systematic review of 11 randomised control trials (RCTs) showed a significant preventive effect of home visiting on the occurrence of childhood injury (Roberts

et al 1996). A review of 20 studies concluded that evidence supports childhood injury prevention counselling as part of routine health supervision (Bass et al 1993). In particular, one RCT has demonstrated a reduction in home hazards associated with providing an individualised course on child safety during well-baby visits (Kelly et al 1987).

4 Educational approaches to influence knowledge, attitudes and behaviours related to injury prevention

Key point

- ▶ While there is evidence that education approaches improve knowledge of safety behaviour, evidence in terms of injury rate reduction is not so strong.

Counselling parents of young children on safety-related behaviour: The USPSTF (1996) considers that there is good evidence from controlled trials that counselling the parents of young children on safety-related behaviour (for example, lowering hot water temperatures, reducing home hazards, installing smoke detectors) is effective. Other studies support childhood injury prevention counselling as part of routine health supervision (Bass et al 1993; Kelly et al 1987). While the overall evidence supports a beneficial effect of counselling on safety-related knowledge and behaviour, the evidence is less clear about it actually lowering injury rates (USPSTF 1996). There is evidence that counselling is effective, particularly where it is combined with safety regulations and other measures to promote compliance (Spiegel and Lindaman 1977; Gallagher et al 1985).

School-based programmes to teach safety skills, for example, pedestrian skills and safe bicycle behaviour: Some improvement in attitudes and skills has been identified in evaluating school-based programmes (Renaus and Suissa 1989; Rivara et al 1991; USPSTF 1996). None of the pedestrian safety programmes currently being implemented in New Zealand have been shown to reduce injury rates (Roberts et al 1994).

Use of bicycle helmets: This is an education and legislative issue. New Zealand legislation has required cyclists to wear helmets since 1994. USPSTF (1996) reviews indicate that bicycle helmets reduce fatalities, head injuries and hospitalisations. New Zealand data do not show that increasing helmet use has a positive effect on serious head injury rates (Scuffham and Langley 1997).

National safety campaigns: There is limited material on the effectiveness of mass media campaigns in general. Studies of campaigns to lower hot water temperatures in New Zealand have indicated some qualified success (Waller et al 1993). International experience shows limited success (Katcher 1987). Sun avoidance for children and adolescents has been extensively promoted in New Zealand. There is some evidence that there has been an increase in public awareness of skin cancer and some associated behavioural change (McGee and Williams 1992).

Implications for policy and services

1 General

With injuries being the major cause of death and second highest cause of hospitalisation of children, injury control deserves special emphasis. In a recent review Rivara and Grossman (1996) considered that nearly one-third of child injury deaths in the United States were readily preventable.

Key point

► *Effective interventions appear to require a comprehensive, multifaceted approach.*

There are four strategic policy and service issues that need to be considered. They are:

- further intersectoral regulatory initiatives to remove environmental and product hazards through bylaws, standards, policies, safe design, codes of practice, regulations, and legislation (for example, swimming pool fencing)
- local and national public health programmes that systematically identify and mitigate environmental hazards in homes and local communities
- home visiting and health education and support services for families with children that assist parents to create safe home environments and parenting practices (for example, car seat rental schemes)
- further development of injury surveillance and analysis for policy and programme interventions.

Regulatory controls can be used to require passive interventions to be introduced, but they can also support messages provided through counselling or through mass media campaigns. Legislation and regulations may be most effective when they are part of comprehensive programmes that include education, environmental modification and safe product design. This comprehensive approach may explain the success that Sweden has had in reducing childhood injuries (Bergman and Rivara 1991).

Safekids (R Kokotailo, personal communication, April 1998) advocates a 'Spectrum of Prevention' for reducing unintentional injuries in children. The Spectrum advocates building on a solid base of information in layers as follows:

- fostering coalitions and networks
- strengthening individual knowledge and skills
- promoting community education
- educating providers
- changing organisational practices
- influencing policy and legislation.

Any particular programme must be repeated in a cyclical pattern because one-off campaigns do not reach new generations of parents.

2 Controlling environmental and product hazards

Key point

- ▶ *Intersectoral initiatives to remove environmental and product hazards through bylaws, codes of practice, regulations, standards, policies, and legislation should be extended.*

There is scope for using or enhancing existing regulatory measures to further control injuries in New Zealand, for example pre-setting hot water thermostats, banning off-road motor cycle use by under-15 year olds, increasing the enforcement of the Graduated Driver Licence System, requiring cycle paths, requiring smoke detectors and sprinklers in houses, introducing child resistant cigarette lighters, and strengthening requirements for child-resistant packaging for medicines and poisons (a Code of Practice covering toxic and caustic products is soon to be released (Ministry of Health 1998)). Consideration of legislative strategies needs to involve a balance of the potential for health gain with the possible compliance costs imposed on society and restrictions to individual freedom. The work involved in ensuring that interventions are successful is extensive and takes time and expertise, involving intersectoral and inter-agency co-operation and both a local and a national focus.

3 Local injury prevention programmes

Key point

- ▶ *Consideration should be given to extending public health programmes that systematically identify and mitigate environmental hazards to children in local communities.*

Local injury prevention initiatives are currently underway in some New Zealand communities, including four community injury prevention projects (CIPP). The benefits in terms of mortality reduction in New Zealand from greater use of traffic calming have been estimated (Roberts et al 1994). The possible benefits of reduced curb parking (Roberts et al 1995) and fencing residential driveways (Roberts et al 1995) have also been raised.

There are arguments for targeting community intervention programmes at areas most in need. Studies indicate that socioeconomic disadvantage is strongly correlated with childhood injuries (Rivara 1994; Roberts et al 1992). One explanation for this is that children from disadvantaged areas are exposed to more traffic hazards such as high speed traffic. One United States programme has successfully enhanced injury prevention measures in a poor community (Schwarz et al 1993).

While there is evidence supporting selected health protection interventions in local hazard control, further analysis of the broad community development approach is needed.

4 Child mortality review (See section on Key Interventions to Improve Health Gain for Children and Improve Family Functioning, at the front of this report.)

5 Home visiting and other health education interventions (See section on Key Interventions to Improve Health Gain for Children and Improve Family Functioning, at the front of this report.)

6 Injury surveillance systems

Key point

- ▶ Consideration should be given to further developing injury surveillance and analysis and using information gained for policy and programme interventions.

Injury control is a complex area with a diverse range of injury types and associated risk factors. The development of successful intervention strategies depends on systematic local and national surveillance of injuries and associated pre-event factors. Injury surveillance systems in New Zealand rely almost exclusively on hospital discharge statistics. They have been valuable in identifying the causes of more serious injuries in children but are being downgraded by unsatisfactory coding practices in some parts of New Zealand (D Chalmers, personal communication, May 1998). The New Zealand Health Information Service is addressing this issue but the rectification of coding practices will take time. The Accident Rehabilitation and Compensation Insurance Corporation claims system also has the potential to collect good data for 'treatment only' claims but this has been downgraded in recent times due to changed operational needs (D Chalmers *ibid*).

Data on unintentional injuries are incomplete because of lack of information from primary services and from emergency departments. Further progress in child injury control will require the development of injury surveillance systems similar to those in Australia, the United Kingdom, and the United States.

Existing systems of data collection need to be strengthened to include more information about the circumstances of the injury such as could be provided by setting up an expanded free text field in computer databases. There is room for developing a database field for specific questions related to specific injuries.

Injury prevention is an area likely to benefit from the institution of a national child mortality review system (see section on Key Interventions to Improve Health Gain for Children and Improve Family Functioning, at the front of this report).

7 Culturally effective interventions

Tamariki Māori and Pacific children have higher unintentional injury rates than European children and attention must be paid to the factors which place these children at higher risk as well as designing interventions which are culturally effective.

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