Children are powerful agents of change and should be included during the development and implementation of child injury prevention projects at local, national and international levels.

The following is an essay written by sixteen-year-old Anupama Kumar of Kerala, India. She won the UNICEF Voices of the Youth road safety essay competition and received her award during the World Youth Assembly, held at the Palais des Nations of the United Nations in Geneva, Switzerland in April 2007.

“1.2 million die in road accidents each year. A child is killed in an accident every three minutes. Road safety is increasingly becoming a major killer and a worldwide concern, particularly for young people. What can we do to address the issue?

The media has been a largely overlooked factor in creating road safety awareness. Celebrity endorsements, coupled with television messages on prime-time slots and peer education programmes would provide an accessible and engaging means of promoting awareness, particularly among young people. They would convey the message that safe driving is “cool” driving, and constantly reinforce that drunken driving, using a cell phone on the road and driving without a seat-belt (or helmet) are not only dangerous, but “seriously unfashionable”. Celebrities could also actively encourage walking or cycling whenever and wherever possible.

Role-plays, “make-believe” situations, movies and field trips could be used as effective learning tools for children at school. Safe Road User awards at the school level would provide an incentive for many children to follow road safety rules. Road safety education programmes can also be extended to adults at the workplace, particularly those from disadvantaged backgrounds. This would hold particular importance for parents, and efforts must be made to involve them as much as possible.

There is a need for stricter licensing laws, particularly with regard to public transport operators. Laws could require prominent display of the driver’s licence on his or her vehicle while driving, in addition to safety regulations (such as adequate maintenance and the use of the seat-belt) and random breath testing policies. Policies could provide for the creation of better roads and pavements, supervised playing areas for children and monitored crossings near schools.

Citizens must campaign for safer, wider roads and better sidewalks to limit accidents. Speed governors in each vehicle would provide a low-cost solution to speeding. There is also a need to provide well-maintained, safe and efficient public transport systems, particularly in developing nations. Fingerprint identification systems, similar to those in laptop computers, could be used in each vehicle, with each vehicle responding only to a programmed set of fingerprints.

For any effective change in the safety of our roads, however, we need to consciously change our attitudes towards providing safer roads – not just for ourselves or for young people, but for everyone.”
Chapter 7
Conclusion and recommendations

Introduction
Earlier chapters have discussed in detail the nature and objectives of child injury prevention. In addition, for each of the five leading causes of unintentional injuries incurred during childhood, the magnitude of the problem, the risk factors and the specific interventions have been described. This chapter brings together the main points of the report and presents a set of generic recommendations that governments and others involved in the field of child injury should consider using to develop their national or local strategies to prevent child injury. The chapter concludes with suggestions as to how those concerned with the issue, including the children themselves, could become more involved in child injury prevention.

Main messages from the report
This report, the first world report on the topic of child injuries, presents the current knowledge about the five most important causes of unintentional injury to children under the age of 18 years as well as some of the actions that need to be taken in order to tackle the problem. The following are the report’s main messages.

Child injuries are a major public health issue
Injuries mar the lives of millions of young people and their families each year. The World Health Organization estimates that, in 2004, around 830 000 children under the age of 18 years died as a result of an unintentional injury. Recent community-based studies conducted by UNICEF, however, have suggested that the number could be much higher. Tens of millions more children are non-fatally injured and many of these require hospital treatment. For survivors, the impairment that injuries can cause and the resulting need for care and rehabilitation have far-reaching impacts on a child’s prospects for health, education and social inclusion and on their parents’ livelihood.

The unequal burden of injury is an additional reason to address the problem. Children in poorer countries and those from poorer families in better-off countries are the most vulnerable. More than 95% of injury deaths among children occur in low-income and middle-income countries. Approximately 40% of the deaths among those under 18 years of age in high-income countries are the result of an injury – an indication of the fact that these countries, although doing better, still have a serious problem.

If countries do not address their child injury problem it is likely to escalate and as a result, unnecessary lives will be lost to causes that are largely preventable.

Injuries directly affect child survival
Specific concern for the lives, health and well-being of children is voiced in a series of international agreements and initiatives. Most notable of these is the Convention on the Rights of the Child, adopted in November 1989 during a session of the United Nations General Assembly, which affirms that each child has the right to the highest attainable level of health and the right to a safe environment. The Convention requires that “all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse” are taken by countries (1). Most countries in the world have ratified this convention, and it represents a powerful statement of their collective views on the responsibilities towards children.

In addition, the fourth objective of the Millennium Development Goals is to reduce by two thirds the mortality of children under five years of age by the year 2015 (2). Most countries are focusing on reducing infectious diseases. However, in many places the relative proportion of deaths as a result of injuries in this age group is significant enough to hamper the attainment of the goal if it is not addressed at the same time.

Child survival has been described as “the most pressing moral dilemma of the new millennium” (3). As injuries are a leading cause of death and disability among children worldwide, to prevent those injuries is particularly important for the wider issue of child survival and the improvement globally of child health. Injury programmes need to be integrated into other child health strategies, with ministries of health playing a pivotal role. In addition, injuries need to be included as one of the indicators in overall child survival programmes.

Children are susceptible to injuries
There is a strong association between the stage of life and the type of injuries sustained by a child. The age of a child, the stage of his or her development, how the child interacts with the world, and the type of activities the child undertakes are all relevant to this association. Among infants, for instance, fires, drowning and falls are the leading causes of injury death. Among 1–4-year-olds, as children start to move more independently, drowning becomes the leading cause of injury-related death in many places, followed by road traffic crashes and fires – the three of which combined accounting for almost two
thirds of injury deaths in that age group. Over the age of five years, road traffic injuries, drowning and fires are the predominant causes.

In addition to these biological factors, there are other risk factors for child injuries. These include socioeconomic factors such as poverty, the absence of protective factors, and the environment in which children live. The quality, availability and access to medical care are important factors that can influence not only the likelihood of surviving an injury but also the long-term consequences.

"We have a duty to protect children from injury and violence. Children live in a world designed for adults, but they have special needs and are more vulnerable than adults to certain factors in their environment which may place them at additional risk of injury" Ann M. Veneman, Executive Director, UNICEF.

**Child injuries can be prevented**

Simply reproducing safe strategies that are relevant to adults will not protect children sufficiently. Various developmental issues, risk taking behaviours, levels of activity and the child’s degree of dependence make the matter more complicated. Prevention programmes that take into account these vulnerabilities and use a multidisciplinary approach have been shown to be the most effective for reducing child mortality as a result of injury. A number of countries have achieved remarkable reductions in their child injury death rates, in some cases by more than 50% (see Box 7.1).

There is no single blueprint for success but six basic principles underlie most of the successful child injury prevention programmes around the world. These are:

– legislation and regulations, and their enforcement;
– product modification;
– measures against drowning;
– safety measures in the home;
– home visits by health professionals;
– traffic safety measures – such as helmets and child-restraints – taking into account the limited capacity of small children to adopt safe practices in traffic;
– improved product safety and standards;
– improved health care services for children;
– safety measures at school.

**How did Sweden achieve its reductions in child injuries?**

Since the early 1950s, Sweden has seen a reduction in child injuries, championed largely by the paediatrician Dr Ragnar Berfens tam (4). In 1969 the injury death rate in Sweden for boys and girls under the age of 18 years was 24 per 100 000 and 11 per 100 000 children, respectively. Over the last three decades, Sweden has been able to bring the rates down to 5 per 100 000 for boys and 3 per 100 000 for girls. These dramatic reductions have been achieved using a range of approaches cutting across several sectors, and involving children and the community.

The health sector played an important and leading role in the initiation and follow-up on a wide range of actions which included:

– environmental planning: traffic was diverted away from residential areas and towns so that children could walk to school, play and return home without encountering busy streets; Sweden had originated the idea of Safe Communities long before it was taken up by others;
– measures against drowning: much of the early reduction in child injury was attributed to water safety interventions; rates among children aged 0–14 years fell from 8 per 100 000 in 1951 to 1 per 100 000 children in 1985 (4);
– safety measures in the home;
– home visits by health professionals;
– traffic safety measures – such as helmets and child-restraints – taking into account the limited capacity of small children to adopt safe practices in traffic;
– improved product safety and standards;
– improved health care services for children;
– safety measures at school.

[Graph: TRENDS IN CHILD INJURIES, SWEDEN, 1969–1999]
– environmental modification;
– supportive home visits;
– the promotion of safety devices;
– education and the teaching of skills.

In countries where the greatest reductions have been recorded, a combination of these approaches has been employed. In addition, countries that encourage a culture of safety and display strong political commitment have made great progress in reducing their child injury burden.

As important as the idea of "what works" is the notion of "what to avoid". Certain prevention strategies have been tested in high-income countries and found to have no beneficial effects. There are some that even have negative consequences. Countries planning child injury prevention programmes should be aware of these dangers.

Furthermore, reliance on the single, stand-alone injury prevention strategy of educating children (or their parents) in order to change children’s behaviour – while common – is sadly misplaced. This is not to say that education is unnecessary. It is indeed a valuable component that should be incorporated into most injury prevention strategies, and a useful tool to encourage the use of passive measures – actions that people have to do themselves, such as putting on a helmet. However, there is no evidence to show that education on its own can reduce injuries.

Child injury prevention strategies should be based on available evidence (see Table 7.1). Interventions should be prioritized after considering the scale of the problem, and the known effectiveness, cost-effectiveness and cost of each intervention.

“Evidence is the foundation for setting priorities, crafting policies, and measuring results. Evidence can have great persuasive power at the policy level.” Dr Margaret Chan, WHO Director-General.

The cost of doing nothing is unacceptable

For many parents, the grief of losing a child unexpectedly can take decades to heal and for many it never does. For some families the emotional pain is even greater if simple measures could have been taken to prevent the incident. Even if the outcome is not fatal, the medical costs and the special care that is often needed for a severely injured or disabled child can put a huge financial demand on parents and cause great difficulties for families or caretakers.

In addition to what parents, siblings, families and communities have to endure, child injuries also place a significant strain on often overstretched health care systems. The cost of primary prevention programmes is much cheaper than treating a child, sometimes for months, because of a preventable injury. Many wealthier countries have already implemented cost-effective primary prevention programmes that have led to a reduction in health-care costs. In the United States, for instance, it has been estimated that for every one US dollar spent on a child car seat, there is a saving of 29 dollars in direct and indirect health care costs and other costs to society. If similarly effective interventions to prevent child injury

<table>
<thead>
<tr>
<th>Key approaches</th>
<th>Traffic</th>
<th>Drowning</th>
<th>Burns</th>
<th>Falls</th>
<th>Poisoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation, regulations and enforcement</td>
<td>Speed limits; comprehensive drink-driving laws; child restraints</td>
<td>Four-sided pool fencing</td>
<td>Hot water tap temperature legislation; smoke alarms</td>
<td>Playground equipment standards</td>
<td>Manufacture, storage and distribution of harmful substances requiring safe packaging</td>
</tr>
<tr>
<td>Product modification</td>
<td>Vehicle-front modification; child restraint systems</td>
<td>Personal flotation devices</td>
<td>Non-tip lanterns and candle holders</td>
<td>Baby walker modification; safety glass</td>
<td>Medication packaging; child resistant closures</td>
</tr>
<tr>
<td>Environmental modification</td>
<td>Child friendly infrastructure; safer routes to school; safer play spaces</td>
<td>Barriers – such as well coverings and fencing</td>
<td>Separation of cooking area from living area</td>
<td>Window guards on tall buildings; roof railings; non-climbable banisters</td>
<td>Safe storage of potentially harmful substances</td>
</tr>
<tr>
<td>Education and skills development</td>
<td>Helmet wearing; using child restraints</td>
<td>Swimming training and supervision</td>
<td>First aid – “cool the burn”</td>
<td>Supportive home visitation to identify fall hazards</td>
<td>Immediate first aid</td>
</tr>
<tr>
<td>Emergency medical care</td>
<td>Child-sized equipment; child-friendly environment</td>
<td>Immediate resuscitation</td>
<td>Burns centres</td>
<td>Appropriate paediatric acute care</td>
<td>Poison control centres</td>
</tr>
</tbody>
</table>
were implemented around the world, many thousands of lives would be saved (see Box 7.2). Injury prevention can thus be a very cost-effective public health strategy, with the costs of interventions often much lower than the costs of the consequences of injury.

“…We cannot accept these injuries as just accidents that will happen. If a disease were killing our children at the rate that unintentional injuries are, the public would be unbelievably outraged and demand that this killer be stopped.” Former United States Surgeon General, C. Everett Koop, 2001.

**Few countries have good data on child injury**

Data on injury and its determinants are essential for identifying priority issues and high-risk groups, and also for understanding the underlying causes of injury. In addition, agreement on the definitions of specific injuries is essential for accurate measurement and comparability. The availability of good quality data and of trained people to analyse such data are therefore important in the search for effective prevention interventions (see Box 7.3). By the same token, a lack of data can hold back action for want of evidence, prevent priorities from being correctly set, and hamper research and the evaluation of interventions.

In developed countries, detailed analysis of sound data has undoubtedly been instrumental in achieving high rates of success in child injury prevention. Elsewhere, data on child death and injury are generally either of a poor quality or missing. Furthermore, discrepancies in data collected are sometimes used as excuses not to do anything, where they could instead serve as a foundation to strengthen information systems.

A major difficulty in child injury prevention, as with all injury prevention, is obtaining reliable estimates of the scale and pattern of child injury and death. To reach this, the volume, quality and availability of national and regional data needs to be increased through a combination of:
- better data collection systems;
- improved surveillance;
- use of hospital discharge systems (including ICD external cause codes);
- more community-based surveys on child injury (using standard protocols).

**Research on child injuries is too limited**

Reductions in child injury mortality have been achieved in some developed countries as a result of the application of evidence-based programmes based on rigorous research and priority-setting. Unfortunately, such research is not widespread even in all high-income countries and is particularly limited in low-income and middle-income countries, resulting in a significant gap in knowledge.

**BOX 7.2**

**Saving 1000 children a day**

In 2002 more than 875 000 children died from preventable injuries while millions more were injured or permanently disabled. Many of these injuries, such as poisonings, falls, and burns, occurred in or near the home. Others, including those caused by road traffic crashes, occurred as children were on their way to school or during other activities. Household and environmental factors also contribute to the overall risk of childhood injury.

In the past several decades, significant progress has been made in understanding better the epidemiology of injuries in children. Developing effective interventions to prevent these injuries, however, has not progressed as far. A number of intervention strategies — including the use of helmets, seat-belts, and pool fences — have been shown to be effective at preventing injury-related deaths in children. Sadly though, the benefits of these interventions have not been fully realized in many places. As a consequence, hundreds of thousands of children die every year.

To highlight what can be achieved through effective interventions, a comprehensive review of prevention strategies for childhood injuries was carried out, quantifying their unrealized benefits in terms of the number of children’s lives saved (5). More than 80 studies and 46 interventions were reviewed, from which quantifiable effectiveness data on 12 intervention strategies for injury prevention among children were identified. These strategies related to unintentional childhood injuries from road traffic, poisoning, drowning, and burns. Data on the effectiveness of these particular interventions were then applied to the global burden of fatal child injuries.

Among these interventions, the use of fences or other barriers preventing access to water bodies alone could save more than 50 000 lives of young children each year. Similarly over 50 000 deaths from fire-related burns are potentially preventable using smoke detectors. On a lower scale, the use of child-proof containers could prevent nearly 5000 deaths from kerosene poisoning.

For road traffic injuries, better data allow the modelling of more interventions. A very promising intervention is the strengthening of traffic codes and fines, including the suspension of licences for traffic violations, which could save 80 000 children’s lives annually. The use of motorcycle or bicycle helmets for children, daytime running lights for motorcycles, speed reduction measures, and child restraints can potentially save between 30 000 and 40 000 lives each if implemented alone, however, the combined effect of these interventions is not yet quantifiable.

Current data do not allow refined estimations of the potential benefits of a package of interventions for child injury prevention — a research agenda for the future. However, crude estimates indicate that if a set of 12 intervention strategies (which have been tested in a wide range of settings) covering road traffic, drowning, poisoning and burns were implemented around the world, more than 1000 children’s lives could be saved each day.

While the urgent need to research new intervention strategies for preventing injury deaths in children remains, this study has shown the huge benefits that can be realized by implementing interventions that have already been tried and tested. While the estimate obtained of the potential benefits of interventions to prevent child injuries is a somewhat crude one — due to limitations in the data available — the over-all message is clear: children all over the world are needlessly dying as a result of unintentional injuries for which there are known interventions.

Source: reference 5.
The Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP)

CHIRPP is an emergency department-based injury surveillance programme operated by the Public Health Agency of Canada (PHAC) in collaboration with 14 hospitals (6). The programme began in 1990 within Canada’s ten children’s hospitals. Although several general hospitals now participate, as of October 2007, 84% of the 1.8 million records in its database relate to children and young people less than 20 years old.

CHIRPP was set up to complement existing sources of information on injury mortality and hospitalization. Its main strength is the information it holds on the circumstances in which injuries occur. Information about such injuries is gathered in emergency departments directly from injured patients, or accompanying adults, who are asked to complete a one-page form containing open-ended questions about where and how the injury occurred. Clinical staff provide information on the type of injuries and their severity, the parts of the body affected, and whether the patients were admitted or discharged. Information from the forms is then coded and entered into a central electronic database at the PHAC.

Among the 40 variables used to describe the circumstances in which injuries occur is a narrative of up to 100 characters that describes the event. The narrative is particularly valuable as a source of information for which specific codes are not available. Events associated with particular places, activities (such as specific sports) or products that do not have International Classification of Disease codes are easy to identify in CHIRPP data. Between its detailed codes and its narratives, the database provides a wealth of information about how injuries happen.

Analysts at CHIRPP receive, on average, four to five requests each week for information on injuries. Responding to these requests may take anything from a few minutes to several months of work. About two thirds of requests come from the media. Most of the remainder are from Health Canada’s Product Safety Bureau and from nongovernmental organizations such as Safe Kids Canada.

CHIRPP produces reports on a wide range of injury issues. Many of its short reports, fact sheets and monographs are posted on the PHAC website (7). The areas it has examined include:
- the impact of legislation on bicycle helmet use;
- the effect of new regulations allowing body-checking in younger ice-hockey players;
- the impact of new Canadian standards for playground equipment.

CHIRPP’s reports containing detailed data on all aspects of injuries associated with baby walkers led to Health Canada’s Product Safety Bureau deciding that baby walkers posed significant and unnecessary risks to young children. This led in turn, in June 2007, to Canada’s Minister of Health upholding an earlier prohibition on baby walkers, including their advertising, sale and importing. Canada remains the only country to date to ban all types of baby walkers.

Other investigations being carried out by various organizations, using CHIRPP’s data, concern:
- the use of trampolines in homes and playgrounds;
- all-terrain vehicles;
- baby bath seats;
- the ingestion of magnets;
- falls from windows and balconies;
- injuries associated with diving structures;
- scalds from tap water;
- nursery products.

Research on child injury should not only concern the evaluation of intervention studies but also include:
- economic analyses;
- programme effectiveness studies;
- behavioural and developmental science research;
- health utilization analyses.

Research into the whole spectrum of child injuries in developing countries – from primary prevention through to rehabilitation – needs much higher levels of funding. Such research will not only benefit developing countries enormously, but has the potential to uncover solutions not yet found in high-income countries.

There are too few practitioners in child injury prevention

Most countries around the world have limited human capacity to prevent the epidemic of child injuries, deliver emergency and ongoing care following an injury, and provide appropriate rehabilitation services. This problem is particularly acute in poorer countries where the bur-den of child injury is greatest. In many
settings around the world public health training does not address issues related to child injury. Medical courses teach students how to treat trauma but usually overlook prevention. Furthermore, government staff in sectors relevant to child injury do not as a rule receive training on injuries and do not work in a structure that enables information on injury prevention to be shared effectively (see Box 7.4).

**BOX 7.4**

**Developing knowledge and skills for child injury prevention**

While capacity building in the field of child injury prevention is not limited to human resources, knowledge and skills are nonetheless a clear priority. One tool to develop the knowledge base around injury is TEACH-VIP. This is a comprehensive injury prevention and control curriculum, developed over three years through the efforts of WHO and a network of over 60 experts on injury prevention in 19 countries. The course material is designed for classroom instruction, and contains PowerPoint slide presentations, supporting lecture notes and learning exercises addressing a range of topics relevant to injury prevention and control.

TEACH-VIP is a modular curriculum, whose content allows for the flexible arrangement of lessons. Training courses may therefore be structured differently depending on the particular audience or physical setting.

Within a year of being launched in October 2005, TEACH-VIP was being used for training in over 60 countries. Experience has shown that it is suitable for a wide variety of audiences – including students in public health and medical and nursing sciences, injury prevention practitioners, injury response service providers and government personnel. This is important, as the prevention and control of injury requires collaboration across a range of sectors and disciplines, with participants working with a common understanding of the issues.

TEACH-VIP provides training that is of both general and specific relevance to child injury prevention. Lessons of general relevance include those relating to research methodologies, injury surveillance and coding, trauma care, the communication of injury information, and general injury prevention. Lessons that are specifically relevant cover road traffic injuries, falls, burns, drowning, animal bites and poisoning. In addition, TEACH-VIP contains a range of lessons on intentional injuries involving children and young people, including ones on youth violence and child abuse and neglect.

Aside from knowledge transfer, there is also a need for a more targeted development of skills. WHO has created a distance mentor-ing programme known as MENTOR-VIP, designed to assist junior injury practitioners in developing specific skills through a structured collaboration with a more experienced person who has volunteered to act as a mentor. MENTOR-VIP thus provides a means to match demand for technical guidance with offers to provide technical support.

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1 Available at the web site: http://www.who.int/violence_injury_prevention/capacitybuilding/teach_vip/en/index.html

2 Available at the web site: http://www.who.int/violence_injury_prevention/capacitybuilding/mentor_vip/en/index.html

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**Child injury prevention is the responsibility of many sectors**

Child injury prevention, by the very nature of the type of injuries involved, should be a responsibility shared between governments, nongovernmental organizations, academic institutions, international agencies and the business sector.

The health sector has a leading role to play (8), particularly with regard to:

- collecting and analysing data;
- carrying out research on risk factors;
- implementing, monitoring and evaluating interventions;
- delivering appropriate primary, secondary and tertiary care;
- campaigning for greater attention to the issue of child injuries.

All the same, a multisectoral approach is indeed necessary. The sectors of transport, police, education, law and environment all play a major role in the prevention and control of childhood injuries. Preventing injuries from falls in schools comes under the remit of the education ministry, for instance, while the legal sector will be responsible for legislating for mandatory child-resistant containers. The collaboration between sectors has to cross organizational boundaries, so that the public sector, private organizations and non-profit groups can combine their expertise.

**Child injury prevention is underfunded**

Well-targeted investment of financial resources is needed to tackle the problem of child injuries. Over the last decade, as countries have focused on the Millennium Development Goals, much funding has been provided to address infectious diseases – the major killer of children under five years of age. It would be a tragic mistake if this good investment were to be lost after children had survived their infancy, because injury prevention had earlier been ignored. The cost-effectiveness of some child injury prevention strategies has been found to be at least equal to that of other well-accepted strategies to prevent childhood illnesses.

It is essential to engage the donor community if interventions are to be tested and implemented, especially in poorer countries. Child injury prevention needs to be a stated priority of public and private funding agencies.

**Awareness needs to be created and maintained**

The magnitude, risk factors and preventability of child injuries are not widely appreciated at all levels, from policymakers and donors to the local community. This lack of understanding means that the resources required are not being allocated to prevention efforts and the political and organizational structures that are needed are not being put in place.
It is of prime importance to show that resources can be efficiently and effectively used in this area for the benefit of public health. Sustained campaigning is therefore required to raise awareness about the public health, social and economic impacts of child injuries, and how these injuries can be prevented. Awareness, of course, also needs to be created about how some risk factors are connected to other issues – such as obesity, mobility and disaster management – and how tackling these issues would reduce child injuries and improve children’s health overall.

**Recommended actions**

Governments and others involved are encouraged to consider the following seven recommendations when developing child injury prevention programmes.

**Recommendation 1: Integrate child injury into a comprehensive approach to child health and development**

A comprehensive strategy for child health and development should include all leading causes of ill health and disability among children, and therefore include injuries. Existing child survival programmes need to introduce child injury prevention strategies as part of the basic package of child health services. The current renewed emphasis on primary health care provides an opportunity for governments, ministries of health and civil society organizations to restructure their child health programmes to include child injuries.

The success of child health programmes should be measured not only by traditional measures of infectious disease mortality but also by other indicators of fatal and non-fatal injury.

**Recommendation 2: Develop and implement a child injury prevention policy and a plan of action**

Each country should prepare a child injury prevention and control policy bringing in a wide range of sectors. Agencies involved should include those concerned with transport, health, planning, consumer product safety, agriculture, education, and law. There should also be representation across the disciplines, with child development experts, injury epidemiologists, engineers, urban planners, clinicians, social scientists and others all participating. Concerned groups should be brought in from government, the private sector, nongovernmental organizations, the media and the general public.

The policy should take the needs of all children into account, particularly those who are vulnerable, such as poor and homeless children, children with disabilities and female children, and should be linked to other child health strategies.

A country’s child injury policy should promote the development of national standards and codes on issues that have a direct bearing on child injury, including such items as products and appliances, playground and school safety, and residential building regulations and laws.

A national strategy needs to set ambitious but realistic targets for at least five or ten years. It should have measurable outcomes and sufficient funding to develop, implement, manage, monitor and evaluate actions. Once the child injury prevention strategy is established, national and local action plans should be prepared laying down specific actions to be taken and allocating resources for these actions.

**Recommendation 3: Implement specific actions to prevent and control child injuries**

Specific actions are needed to prevent and control child injuries and to minimize their consequences. These actions – forming a part of the national child health strategy – should be based on sound evidence, be appropriate in terms of culture and other local context, and have been tested locally. The evaluation of interventions should be an integral part of the programme.

Chapters 1 to 6 discussed in detail specific interventions for each type of injury, their impact on the frequency and severity of injuries, and their cost-effectiveness where this was known. No standard package of interventions will be suitable for all countries. Table 7.1, though, summarized the main approaches, with some examples, that can be used.

If specific interventions are not introduced, it is unlikely that simple awareness on its own will bring about significant reductions in child injuries and deaths.

**Recommendation 4: Strengthen health systems to address child injuries**

The health system as a whole should be strengthened to provide high quality care to injured children, as well as rehabilitation and support services. These improvements should include:

- the development and maintenance of an efficient system of pre-hospital care;
- good quality acute management of injured children in hospitals and clinics, with appropriate child-specific equipment and drugs;
- suitable rehabilitation programmes, addressing both the physical and psychological long-term consequences of injuries;
– coordination with allied sectors to ensure holistic care and management of the injured child.

The health system should also be strengthened to provide financial protection and social support to the families and households of injured children. If this is not done, households may be pushed into poverty as a result of child injuries, especially in poorer countries.

Appropriate training programmes should be a priority. Many countries do not have sufficient personnel with the skills and experience needed to develop and implement an effective child injury prevention programme.

Governments should start this process by designating a focal person or coordinator for child injury prevention within the health ministry. The particular organizational model to be used may depend on the national situation, but it is important that accountability for child injury prevention and control is explicitly set out.

Where possible, these systems should be integrated into other child health information systems, such as demographic and health surveys, integrated management of childhood disease surveys and verbal autopsy studies.

Data should be widely shared among the relevant authorities and concerned groups, particularly those responsible for child health, education and social services, such as child development agencies.

There are scant data on the economic impact of child injuries in most countries, though it is known that the impact is substantial. There are also no studies on the cost-effectiveness of prevention interventions. Assessing the direct and indirect economic costs, where this is possible, as well as the proportion of gross national product attributable to child injuries, can help increase awareness of the scale of the problem.

 Recommendation 5: Enhance the quality and quantity of data for child injury prevention

An important element in dealing with child injuries is ascertaining the magnitude and characteristics of the problem, as well as assessing national policies on child injury and the capacity to handle such injuries. A thorough understanding is needed, not only of the volume of child injury deaths, non-fatal injuries and disabilities, but also of:
– the children who are most affected;
– the types of injury that are most prevalent;
– the geographic areas where the greatest problems are found;
– the particular risk factors;
– the child health policies, programmes and specific injury interventions that are in place.

In addition to these things, standardized definitions are needed that are used across countries, not only for injuries but for disability as well.

Sources of data can differ depending on the type of injury. Road traffic injury data, for instance, may be obtained from police, health ministry and health care settings, and transport ministries. Data on falls, on the other hand, may be obtained from injury surveillance systems, community-based surveys and paediatric admission records. In any case, the limitations of these sources of data and their potential to influence what needs to be observed, should be considered before making use of them.

Information systems on child injuries should be:
– simple and cost-effective to implement;
– appropriate to the levels of skill of the staff using them;
– consistent with national and international standards (including external cause coding).

 Sources of data can differ depending on the type of injury. Road traffic injury data, for instance, may be obtained from police, health ministry and health care settings, and transport ministries. Data on falls, on the other hand, may be obtained from injury surveillance systems, community-based surveys and paediatric admission records. In any case, the limitations of these sources of data and their potential to influence what needs to be observed, should be considered before making use of them.

Information systems on child injuries should be:
– simple and cost-effective to implement;
– appropriate to the levels of skill of the staff using them;
– consistent with national and international standards (including external cause coding).

 Recommendation 6: Define priorities for research, and support research on the causes, consequences, costs and prevention of child injuries

A research agenda for child injuries should be developed at regional and national levels. The agenda should be based on evidence from a broad range of sectors. Research in all the main areas related to child injury should be strengthened, including on:
– economic analysis – including the cost of child injuries and the cost of interventions;
– large-scale intervention trials, especially in poorer countries;
– non-fatal outcomes of injury and disability;
– how best to integrate injury interventions into child health programmes.

Research, if it is to be successful, requires focused investments in human and technical capacity, particularly in low-income and middle-income countries. A critical mass of trained researchers on injuries and their prevention needs to be built up.

Research skills should be strengthened in a range of disciplines, including those of:
– epidemiology;
– clinical trials;
– economics;
– engineering;
– sociology;
– behavioural and developmental psychology;
– product evaluation;
– policy analysis.

 Recommendation 7: Raise awareness of and target investments towards child injury prevention

That child injuries are predictable and preventable is often not understood, by the lay public and also by...
policy-makers, medical personnel and donors. It is vital, therefore, that awareness is created about the fact that these injuries can generally be prevented. It is an enormous advantage if well-known personalities or political leaders can actively champion the cause of child injury prevention. In addition, an active civil society movement for child injury prevention, grassroots local organizations for child safety, and sensitive and responsible media reports can all bring about the necessary cultural changes in society.

International conferences, furthermore, provide opportunities to exchange knowledge and establish networks and partnerships. Complementary strategies, such as introducing child injury prevention into school and university curricula, can also help sensitize young people to the risk of child injuries.

Well-targeted financial investments can reduce child injuries and deaths considerably. Assessing the costs against the benefits of specific interventions and setting priorities accordingly is important for all countries. International nongovernmental organizations and large corporations can help raise awareness at the global and national level, as can – at the local level – socially aware employers and ordinary committed citizens.

**Translating recommendations into reality**

The previous section presented seven recommendations which should be considered when implementing a child injury prevention strategy. Child injury prevention, though, is the responsibility of many. Reducing the risk of injury for children requires the involvement and commitment of a broad range of groups – from international agencies through to children themselves. The following are some of the actions which can be taken by the various groups involved.

**International, development and donor organizations**

- make – in a highly visible way – child injury prevention a priority at an international level;
- fund and promote research, interventions and evaluations on child injury prevention;
- encourage governments to take sustainable action on child injury prevention;
- support capacity-building efforts.

**Governments**

- make child injuries a priority;
- identify an agency or unit to lead child injury prevention – either within the broader child health strategy or the more specific child injury prevention plan;
- appoint at least one full-time person with responsibility for injury prevention, including child injuries, in an appropriate ministry;
- establish a sustainable data collection system based on the country’s needs and particular local issues related to children;
- develop a multisectoral plan of action for child injury prevention, including the setting of targets (see Box 7.5);
- coordinate activities and collaborate across sectors for the implementation and evaluation of child injury prevention programmes;
- enact, implement and enforce laws and standards that have been proven to reduce injuries;
- ensure sufficient funds and human resources for child injury prevention efforts;
- provide affordable access to all levels of health care and services for all children;
- promote the integration of health and safety concerns and an injury impact evaluation into all new projects;
- include children and young people in the development and implementation of projects at the national and local levels.

**Nongovernmental organizations**

- encourage governments to undertake proven child injury prevention activities and help in implementing such interventions;
- identify local safety problems;
- campaign for a safer environment, standards and behaviours;
- campaign for the rights of those affected by injury;
- undertake pilot prevention programmes on child injury in the community;
- support capacity-building;
- build and extend networks and partnerships with others involved in child injury prevention.

**The private sector**

- recognize the importance of child injuries and their prevention;
- apply “design for safety” from concept, through production, to quality control – including risk assessment and product approval;
- ensure that products comply with safety standards, regulations and codes;
- work with regulators to achieve harmonized standards and regulations worldwide;
- advertise merchandise responsibly and emphasize the safety aspects;
- fund ongoing research and development in the area of child injury prevention;
- fund the development and evaluation of safety-promoting educational material – such as games, toys, DVDs and videos.

**The media**

- report responsibly, accurately and sensitively the traumatic consequences of injuries – with information on prevention always included in reports;
- promote child injury prevention by featuring stories of young survivors and their families, highlighting good practices in injury prevention;
Parents

- create a safe environment for children to live in;
- properly store materials which are harmful to children – such as fireworks and poisoning agents;
- supervise potentially hazardous activities;
- inform and educate children about the risk factors for injuries as well as how injuries can be prevented;
- encourage children to wear safety devices;
- act as role models for children by adopting safe behaviour and using safety devices;
- lobby for change in the community.

Children and young people

- act as role models by adopting safe methods to reduce injury risks – such as using safety devices, and playing in safe locations;
- promote injury prevention among peers and family;
- refrain from engaging in high-risk behaviours;
- contribute to determining priorities for action;
- become involved in injury prevention campaigns and programmes (see Box 7.6).

Conclusion

The commitment to reduce the burden of childhood diseases has often been proclaimed by international

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**BOX 7.5**

**Developing a National Action Plan for child injury prevention: the experience of the Czech Republic**

In 2004, the Child Safety Action Plan was launched in 18 European countries under the umbrella of the European Child Safety Alliance (9). Its aim was to coordinate actions on child injury in the participating countries. A set of standard indicators was agreed on to assess the burden of injury, to facilitate comparisons between different countries and to provide compelling arguments for stronger national commitments to injury prevention. The Alliance gathered examples of best practice from partner countries, and shared them among the members (10). With the help of the secretariat and particular groups of experts, each country was encouraged to develop a National Child Safety Plan setting out goals and priorities for action on child safety.

In the Czech Republic, the initiative was taken up by the Ministry of Health, which, in 2005, established a multidisciplinary working group to address the problem. This group worked on a basic strategy and examined how all the relevant sectors – including those of traffic, public health, welfare, education, sports and consumer protection – could contribute to reducing the injury burden among children. From the beginning, a practical approach was stressed. Various models of good practices were endorsed, including those for “Safe Communities”, “Healthy Cities” and “Healthy Schools”. University departments served as the research centres.

With support provided by the European Child Safety Alliance and the involvement of WHO’s country office in Prague, the working group completed a draft National Action Plan for Child Injury Prevention. This plan is currently awaiting endorsement from the government. Its principal aim is to engage government departments and a wide range of other concerned organizations and individuals, including health care practitioners, to work together for a safer and healthier child population. The formation of a National Child Injury Register provides information on prevention activities and health care.

The plan stresses the safety of children on the road – including through modifications to the traffic environment – injuries in the home, school safety and child consumer protection.

- Road safety education in the Czech Republic has a long history. However, a fresh approach is now necessary to improve the road traffic competences of children. With proper training, a child can acquire knowledge, skills and the ability to analyse and solve safety problems.
- In the home environment, where the majority of injuries treated in health-care units occur, the situation still lags behind. Injuries in the home are generally less serious, but far more numerous, than those on the roads. One problem is that the role of health care practitioners in public safety education is still not properly accepted as part of injury prevention and care. It is usually the police who are the most active in education on personal safety, particularly as regards the prevention of violence.
- In the school environment – where injuries most often occur through sport – topics such as injury prevention and the prevention of obesity should be addressed at the same time as improving the general fitness of children.
- Czech laws and regulations should adopt the European standards and enforce them strictly. The country has had a good experience with European standards, which it adopted in 2002, relating to playground surfaces and equipment. In the following years, playground safety dramatically increased. The regulation for mandatory helmet use among child cyclists has lowered the number of head injuries, even though it only applies to public roads and not to cycling in other places.

WHO’s “Safe Community” programme has been introduced in the Czech Republic. One city has already been designated a “Safe Community” and there are other applicants in line. National injury-free days are celebrated each year in 17 “Healthy Cities”. Gradually, with strong commitment from the Working Group members and the Ministry of Health, the prevention of child injury is being firmly placed on the agenda of policy-makers and decision-makers.
and national declarations. All the same, high levels of childhood mortality, morbidity and disability still persist. In many countries one of the reasons for this is the impact of childhood injuries, affecting children of all ages.

**BOX 7.6**

**Youth Declaration for Road Safety**

The first ever World Youth Assembly for Road Safety was held at the United Nations in Geneva, Switzerland in April 2007. Nearly 400 delegates from over 100 countries met to share experiences and ideas and identify ways to strengthen road safety efforts in their home countries. In particular, they discussed how young people could be more involved in such efforts.

The two-day event was organized and led by young people. It culminated in the adoption of a Youth Declaration for Road Safety which was handed to the United Nations (77). In accepting the Declaration, Sheikha Haya Rashed Al Khalifa, President of the United Nations General Assembly, called it an important statement that the World Youth Ambassadors for Road Safety should use to campaign for much greater attention to road safety in their countries.

In an additional, moving tribute to victims of road traffic crashes, the delegates gathered on the steps of the Palais des Nations and released 1049 white balloons. As she released her balloon, Yomna Safwat from Egypt dedicated hers to her young brother killed in a road crash, saying “These balloons as many as they are, are without question outnumbered by the tears shed over loved ones needlessly lost on the road. In tribute to these young souls, each balloon is a cry out to the world to take action, to save the youth and to prevent road deaths and injuries. I send my balloon to my dear brother, Mohammed Karim, with a message that your life has not been lost in vain, but will fuel the efforts of the youth all around the world to make roads safer.”

The global community has the knowledge, an armoury of interventions and the resources to prevent this loss of healthy life in the youngest members of our community. This report is a plea for evidence-based interventions and sustained investments by all sectors – public, private and civil – in injury prevention and control for children. It is time to unleash the promise of governments and create a world where children can learn, play, grow up and live without being killed or injured.

**References**