

IN-LINE SKATING INJURIES IN CHILDREN IN EASTERN SYDNEY

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Injury is an important cause of deaths and hospitalisations of Eastern Sydney children¹. More than one-third of hospital admissions for injury in 1989-90 were due to falls¹. We investigated one cause of an epidemic of falls in children in Eastern Sydney in the early 1990s: the in-line skating 'craze'. In-line skates or rollerblades were invented in the United States in the early 1980s² and consist of a boot attached to a single row of wheels, usually four. They became popular in Australia in the early 1990s.

In Eastern Sydney, the Prince of Wales Children's Hospital (POWCH) contributes to the national Injury Surveillance and Information System (ISIS) database. We consulted the hospital's ISIS database for information about presentations of children to the Emergency Department for in-line skating injuries. Our aim was to quantify and describe the injuries, identify factors for preventive action and recommend and implement measures locally to prevent or reduce injuries.

METHODS

Data were collected for all children (0 - <16 years) who were recorded by ISIS as presenting to the Emergency Department with in-line skating injuries between June 30, 1991 and June 30, 1993. Audits have shown that about 70 per cent of all injury presentations and 100 per cent of injury admissions are captured by ISIS at POWCH. Data were analysed using Epi-Info.

Information on in-line skate design and safety issues was sought from the literature, the Trade Practices Commission, the Australian Consumers' Association, the Australian Standards Association, the In-line Skaters' Association and retail and hire outlets. Information on the regulation of in-

line skating in Eastern Sydney was sought from the six local councils.

RESULTS

The first presentation to the POWCH for an in-line skating injury was in June 1991. Until June 30, 1993 there had been 139 presentations recorded, of which 73 per cent were male and 27 per cent female (Figure 1). A large increase in attendances in summer 1992-93 decreased to about two presentations weekly in autumn 1993 (Figure 2). Half the presentations were from boys aged 10-14 years (Figure 1). Most injuries (94 per cent) occurred when the child lost control and fell while moving. For 26 per cent of presentations, injury occurred while skating on the footpath and for 17 per cent injury occurred while skating on a public road (Figure 3). Of the children injured on public roads, one child was involved in a collision with a motor vehicle.

There were 153 injuries recorded for the 139 presentations. Twenty-eight per cent of children were admitted and 62 per cent of the children not admitted had injuries sufficiently serious to warrant outpatient follow-up. Sixty-five per cent of injured children sustained a fracture. Forearm fractures were most frequent: 38 per cent of all injuries were a fracture of the radius and/or ulna and 16 per cent of all injuries were wrist fractures. Four children had fractures of the tibia/fibula and four were concussed. There were no skull fractures or spinal injuries but one child had a fractured coccyx.

Data on safety equipment including helmets, wrist guards and knee and elbow pads were available for 128

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Injury prevention strategy

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To improve support for the strategy a greater emphasis needs to be placed on the development of outcome indicators and evaluation methods, and the individual needs of selected groups such as Aborigines and migrants.

The results from this evaluation will be published in a more detailed report available from the NSW Health Department from October 1994³. It is hoped that this document will form the basis of continuing consultation with injury prevention workers in NSW and revision of the strategy.

ACKNOWLEDGMENTS

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TABLE 3

TRENDS IN INJURY RATES AT THE TIME THE NSW INJURY PREVENTION STRATEGY WAS ADOPTED IN 1992-93

Trend	Injury outcome
Decreasing rates	<ul style="list-style-type: none"> - All injury - Motor vehicle accidents - Road deaths due to alcohol consumption - Bicycle-related deaths - Injuries in rural areas
Stabilised	<ul style="list-style-type: none"> - Children's falls - Burns and scalds - Adults' falls - Children's drowning - Suicides
Increasing rates	<ul style="list-style-type: none"> - Poisoning and ingestion - Occupational injuries
Difficult to tell	<ul style="list-style-type: none"> - Sports injuries - Child abuse - Iatrogenesis - Domestic violence - Other forms of intentional injury

In-line skating injuries

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presentations. Twenty-seven per cent of presenting children wore some form of protective clothing. Only 9 per cent were wearing a helmet at the time of injury. Fifty-six per cent of children wearing protective clothing of any sort and 65 per cent of those who wore no protective clothing sustained a fracture or concussion ($\chi^2=0.87$, $df=1$, $p=0.35$).

FIGURE 1

PRESENTATIONS OF CHILDREN FOR IN-LINE SKATING INJURIES TO POWCH ACCIDENT AND EMERGENCY DEPARTMENT JUNE 1991-JUNE 1993, BY AGE AND SEX

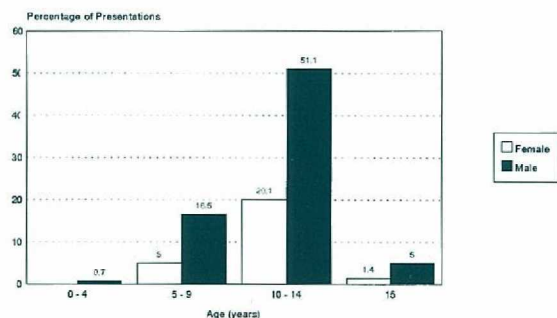


FIGURE 2

SEASONAL DISTRIBUTION OF CHILDREN'S PRESENTATIONS TO POWCH ACCIDENT AND EMERGENCY DEPARTMENT FOR IN-LINE SKATING INJURIES, WINTER 1991-AUTUMN 1993

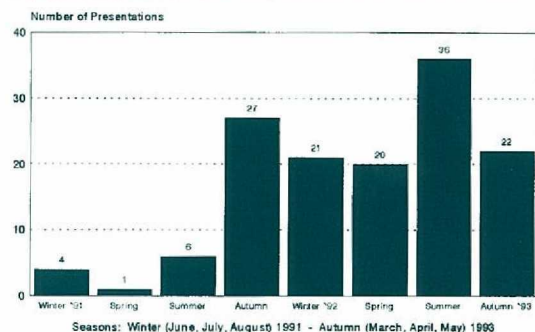
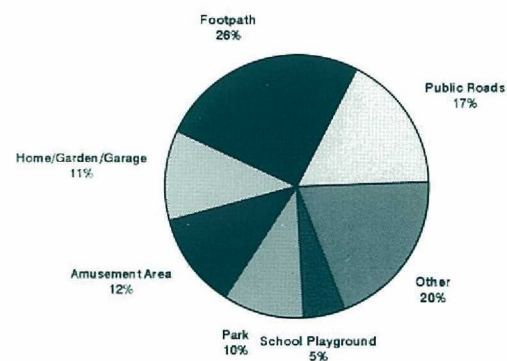


FIGURE 3

PLACE OF INJURY OF CHILDREN PRESENTING TO POWCH ACCIDENT AND EMERGENCY DEPARTMENT FOR IN-LINE SKATING INJURIES, JUNE 1991-JUNE 1993



DISCUSSION

The extent of the problem

The rapid popularity of new consumer products, such as skateboards or in-line skates, resulting in an epidemic of injuries has been previously documented^{3,4,5,6,7} and undermines advances in injury prevention and control. While there have been no child fatalities associated with in-line skating in NSW⁸, an epidemic of substantial injuries requiring hospital presentation has been recorded in Eastern Sydney since mid-1991. Other injury surveillance centres in NSW and Victoria report a similar epidemic and child injury profile^{9,10}. Children presenting to Emergency Departments because of in-line skating injuries probably represent the more severe end of the spectrum of injuries occurring in the underlying population of children engaging in the activity. Data about less severe injuries are not routinely available.

Safety issues

(i) Protective clothing

Protective clothing, including helmets, wrist guards and padding, is recommended by some manufacturers, the In-line Skaters' Association and others^{4,9,11}. Only 27 per cent of children presenting to POWCH with in-line skating injuries were wearing protective clothing at the time of their accidents. Protective clothing usage rates in the community may be higher, if children presenting with injuries are those less likely to be wearing it. Of the children presenting with injuries, wearing protective clothing was not associated with a reduced risk of fracture or concussion. Further study is needed to clarify the role of protective clothing. In the interim, it is not an expensive precaution – \$7-\$15 an item – in comparison with the cost of in-line skates – \$90-\$500 – and its regular usage should be encouraged. Spot checks in Eastern Sydney reveal that protective clothing is located beside in-line skates at points of sale and hire but encouragement of its purchase/usage is not routinely given.

(ii) Product safety

There is little information to indicate the role of the product in in-line skating injuries, e.g. are some brands more hazardous than others. Product brand details are not recorded in ISIS data. A large range of brands is imported into Australia but there is no Australian standard for in-line skates. A comprehensive mechanism for the evaluation of the safety of new consumer products is arguably needed in Australia. There is only a general safety provision under the Commonwealth Trade Practices Act whereby manufacturers or importers of 'defective goods' are liable to pay compensation if a defect causes injury, death or property damage¹². Under the act, 'defective goods' may include those inadequately labelled with safety instructions. Provision of safety information on in-line skate packaging varies from none to extensive advice on the use of protective clothing, the observation of traffic regulations, speed control and surfaces to avoid. Packaging should uniformly display this information and verbal advice should be given routinely at hire outlets.

(iii) The skating environment

Few areas are designated for skating in Eastern Sydney and increasingly walkways, shopping malls, cycleways and parks are bearing signs indicating prohibition of skating. Forty-two per cent of children presenting to POWCH with in-line skating injuries were injured on public roads or footpaths. Provision of more skating ramps, designated

IMPACT OF SYDNEY'S DEEPWATER OCEAN OUTFALLS ON GARIE BEACH

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In 1990 and 1991 three deepwater ocean sewage outfalls were commissioned (Malabar in September 1990, North Head in December 1990 and Bondi in August 1991) to alleviate the problem of frequent fouling of many of Sydney's premier ocean beaches¹. The main cause of the beach pollution was the discharge of inadequately treated sewage from nearby shoreline outlets.

The Sydney deepwater outfalls were sited a sufficient distance offshore so the waste field would be entrained in the predominant southerly, East Australia Current² and shoreline impacts would be minimised. But the implications of this alongshore transport in terms of ultimate contaminant fate are not fully understood^{1,2}.

A concern of environmental organisations and individuals was that disposing of effluent through deepwater ocean outfalls into strong offshore currents may result in the discharge polluting a long section of coastline³. The Review of Sydney's Beach Protection Program² provided some evidence that faecal contamination may be transported by winds and currents to areas which had been unaffected by sewage

contamination, particularly to the south.

A primary cause for concern is the transportation of "beach grease" which may contain viruses and bacteria. Through their encapsulation in grease balls, pathogens are protected from sunlight and seawater, which usually cause die-off. Grease particles released through the deepwater outfalls will immediately come to the surface. Studies of wind-driven transport of floatables suggest grease particles discharged through the deepwater outfalls could still arrive at Sydney's beaches and be more widespread than before the commissioning of the deepwater outfalls².

Contact with or direct ingestion of small grease particles may present an acute public health hazard. Potential waterborne disease symptoms associated with swimming in faecally contaminated water include:

- gastrointestinal – vomiting, diarrhoea, abdominal pain and nausea;
- respiratory – throat infections, coughs, colds; and
- general – ear and eye infections, skin lesions and fever.

The Sydney Beach Users Study⁴ provided evidence that the risk of illness from swimming increases with

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tracks and other facilities may encourage children away from these areas where collision with pedestrians or motor vehicles may result in injury or death. In the Hunter region councils and in-line skating groups have begun exploring possibilities for safe skating venues. In Eastern Sydney findings of this study are being fed back to local government officials.

PUBLIC HEALTH ACTION AND RECOMMENDATIONS

Public health action in Eastern Sydney has consisted of media releases to inform people of the risk and nature of injuries and to advise skaters to wear protective clothing and avoid skating on roads. Further measures are needed to prevent or reduce injuries and potential deaths from in-line skating and future similar products. They include:

- a mechanism for the independent evaluation of the safety of new consumer goods, particularly those directed at children. The Australian Consumers' Association recommends a national consumer product safety commission to assess and police product safety standards¹³. Such an organisation has been operating in the US since 1973, reportedly substantially reducing injuries and injury deaths¹³;
- the broadening of surveillance data to include product brand information;
- promotion of the usage of protective clothing at points of hire and sale and the provision of safety information (protective clothing usage, speed control, surfaces, legislation) on all product packaging; and
- provision of more designated skating venues to encourage children away from footpaths and roads. Multipurpose venues providing supervision of

children by parents, skating or community groups could be promoted for a range of activities including in-line skating, rollerskating, skateboarding and future recreational/sporting pursuits.

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