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Factsheet

CHILD MOTOR VEHICLE PASSENGER INJURIES

Overview

For children aged 0-14 years, one of the leading causes of child injury mortality due to trauma involves children as passengers in motor vehicles. In the five year period from 2000-2004, these deaths accounted for approximately 17 percent of all child fatalities.[1]

Hospitalisations are also frequent. Starship Children's Hospital admission data (Jan – Jun 2008) showed that at least one child a week has sustained injuries as an occupant in a motor vehicle following a crash – injuries severe enough to require admission to hospital.[2]

When correctly installed and used, child safety seats can reduce the risk of death by 70 percent for infants and 47-54 percent for toddlers. Correctly fitted child restraints can also reduce the need for hospitalisation by 69 percent for children aged 4 years and younger.[3] Booster seats have been shown as effective for reducing the risk of hospitalisation and death for primary school children by up to 59 percent.[4]

Incorrectly fitted child car restraints

As many as four out of five child seats are incorrectly fitted in one way or another (Brown and Bilston 2006[5]; Will and Geller, 2004[6]). This can greatly reduce the safety benefits (Will and Geller 2004[7]; - estimate overall safety benefits of booster seat use are reduced by half). Non-compliance and incorrectly fitted child car restraints is a major issue in New Zealand. A recent child restraint checking clinic throughout the city of Rotorua (Aug 2008) found that one in three children (n=168 children) were inadequately restrained and at risk of either being killed or injured in a motor vehicle accident.[8]

Death

In the five year period from 2000-2004, 81 New Zealand children died from injuries sustained where the motor vehicle they were travelling in was involved in a crash. This was an average of 16 child deaths per year.

Of the children killed whilst travelling as an occupant of the motor vehicle involved in a crash, the highest proportion of deaths involved pre-schoolers. They accounted for 38 percent of fatalities.[9]
Children of Maori descent were more likely than any other ethnic group to be killed as an occupant in a motor vehicle involved in a crash. Compared with other ethnic groups, Maori (36) were at least six times more likely to be killed than children of Asian (6) and Pacific Island decent (5).[10]

Hospitalisation

In the five year period from 2002-2006, an average of 279 children annually were admitted to hospitals throughout the country with injuries sustained while they were passengers in a motor vehicle.[11]

- Of these children, 46 percent were aged between 10 – 14 years, 29 percent were aged between 5 – 9 years, and 25 percent were under the age of five years.
- Both European (41 percent) and Maori (40 percent) children accounted for the highest proportions of any ethnic group admitted to hospital following a motor vehicle crash.[12]

The New Zealand Transport Agency (NZTA) Crash Analysis System (CAS) from 2003-2007 provides a profile for circumstances in which children were injured as motor vehicle passengers. It showed that of the reported cases during these years:

- On average, nearly two children (1.8) a day either died or sustained an injury as an occupant of a motor vehicle following a crash.
- The weekend accounted for 40 percent of all injuries.
- 52 percent of injuries occurred on the open road where the speed limit was 100 km/hr, whilst 39 percent occurred on urban roads where the speed limit was 50 km/hr.
- The numbers of injuries peaked between 3pm and 6pm (29 percent).[13]

Cost

In the 2007/2008 financial year, Accident Compensation Corporation (ACC) payments to families for injuries sustained by children who were passengers of a motor vehicle involved in a crash cost the scheme $12.8 million. These costs do not include the cost of hospital treatment incurred during admission to hospital.[14]

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Legislation

Children in Cars - What is the Law?

A driver must ensure that, while the vehicle is in motion on a road, every passenger under the age of 5 years is properly restrained by an approved child restraint appropriate for that passenger.

Driver must ensure passengers of or over 5 years but under 8 years use child restraint or seat belt. A driver must ensure that, while the motor vehicle is in motion on a road, every passenger of or over the age of 5 years but under the age of 8 years—
(a) is properly restrained by an approved child restraint appropriate for that passenger, if such a restraint is available in the vehicle; or
(b) if such a restraint is not available in the vehicle, is restrained as securely as practicable in the circumstances using any child restraint or seat belt that is available (whether or not that child restraint or seat belt is approved).

A driver must ensure that, while the motor vehicle is in motion on a road, passengers of or over the age of 8 years but under the age of 15 years occupying a seat that is fitted with a seat belt (whether that seat belt is an approved seat belt or not) wears the seat belt and keeps it securely fastened.

A driver must not, while the motor vehicle is in motion on a road, permit a passenger under the age of 15 years who is not properly restrained by an approved child restraint or seat belt appropriate for that passenger to be alongside the driver unless—
(a) the vehicle is not provided with sitting positions behind the driver's seat; or
(b) all the sitting positions behind the driver's seat are occupied by passengers under the age of 15 years.[15]

Standards markings

A child restraint must meet an approved standard. Child restraints certified for use in New Zealand will show an 'S' mark (New Zealand Standard NZS 1754), or a tick (Australian Standard AS 1754), or an 'E' mark (European Standard ECE 44). Restraints that comply with the United States Standard (FMVSS 213) must, in addition to any other markings, display the New Zealand Standard 'S' mark, to show they have been certified for use in New Zealand. With the addition of the Japanese Technical Standard, all in-built child restraints in a car that has been certified for use on New Zealand roads will meet one of the standards. Other Japanese child restraints are still excluded from use in New Zealand.[16]

Warning (Airbags) - Never place a rear-facing restraint in the front passenger seat of a vehicle with an airbag. If activated the airbag will force a rear-facing restraint up against the vehicle seat and the baby could be seriously injured or killed. Side airbags do not put children at risk of injury, provided they stay within the confines of the restraint shell.[17]

Lap Belt Injuries

A study of children admitted to Starship Children's Hospital with lap belt injures over seven years found that seat and lap belts incorrectly fitted led to the following injuries: severe head injury, spinal fractures, bowel transection, severe liver and spleen damage, and paraplegia.[18]

Overseas studies also describe similar injuries from the incorrect use of age appropriate restraints.

Seat Positioning:

'Serious consideration should be given to mandating rear seating for children….' This is the recommendation from the Centre for Accident Research and Road Safety - Queensland (CARRS-Q), who analysed over 30,000 Victorian (Australia) crash records from 1993-1998 and 1999-2004. Analysis of the crash records was used to calculate relative risk of death or serious injury for children. The analyses concluded that in the event of a traffic crash, the risk of fatality for children aged 0-12 years, seated in the front seat more than doubled than if they had been seated in the rear seat. However, being unrestrained increased the fatality risk four-fold. For children 4 years and under, the estimated risk of serious injury for restrained children sitting in the front seat was almost 60 percent higher than those seated in the rear.[19]

Sitting Safely? - Keeping Kids Safe in Cars
In early 2006, Chris Osbourne, his wife Sallie and 8 month old Samuel were travelling in their car in Mt Maunganui when an oncoming vehicle crossed the centre line and collided with them. Chris and Sallie sustained severe bruising from their safety belts and airbags, and Sallie received a sprained ankle. Samuel, who was securely strapped into a child restraint in the back seat, was virtually unscathed.[20]

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2 "Trauma Team Update", *Safekids News,* Issue 41, p. 4; Issue 42, p. 5, 2008.
3 *Child safety seat laws.* http://www.thecommunityguide.org/mvoi/#seats, accessed November 2008.
4 *Three steps to optimizing child passenger safety laws.* Partners for Child Passenger Safety (PCPS): http://stokes.chop.edu/programs/injury/educational_advocacy/fact_sheets.php, accessed November 2008.
5 *Brown J, Bilston L. "High back booster seats: in the field and in the laboratory." Annual Proceedings of the Association for the Advancement of Automotive Medicine. 2006, 50, pp. 345-59.*
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7 *Ibid.*
8 "Alarm Prompts Child Car-Seat Campaign", *The Daily Post,* 17 September 2008.
9 NZHIS data supplied to Safekids NZ by the Injury Prevention Research Unit (IPRU), University of Otago, 2008.
10 NZHIS data supplied to Safekids NZ by the Injury Prevention Research Unit (IPRU), University of Otago, 2008.
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12 NZHIS data supplied to Safekids NZ by the Injury Prevention Research Unit (IPRU), University of Otago, 2008.
13 Unpublished data of death and injury to children as motor vehicle passengers 2003-2007, Crash Analysis System (CAS), New Zealand Transport Agency (NZTA), Ministry of Transport.
14 ACC data supplied to Safekids NZ by the Accident Compensation Corporation (ACC), 2008.
15 *Land Transport (Road User) Rule 2004 (SR 2004/ 427) - Part 7 Driver Responsibility and Occupant Protection, Parts 7.6-7.9* http://www.legislation.govt.nz/regulation/public/2004/0427/latest/DLM302188.html.
16 Ibid.
17 *Safe2go Technicians Manual,* New Zealand Transport Agency (NZTA), Fourth edition, August 2008, p. 5.
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19 Lennon, Alexia et al. "Rear seat safer: Seating position, restraint use and injuries in children in traffic crashes in Victoria, Australia." *Accident Analysis and Prevention,* 2008, 40(2), pp. 829-834.
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This Factsheet was produced by Safekids NZ, April 2010.