Injury in Western Australia

A review of best practice,

stakeholder activity,

legislation and recommendations

for selected injury areas

The University of Western Australia

Department of Health
Government of Western Australia

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Injury in Western Australia: A review of best practice, stakeholder activity, legislation, and recommendations for selected injury areas

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Abstract

Injury is a leading cause of death, hospitalisation, disability and health care expenditure in Australia. In Western Australia, approximately 700 people die each year from injury, at a rate of 43.5 deaths per 100,000 population. The overall aim of this project was to develop 'evidence-based' recommended interventions to assist with the development of statewide priorities and countermeasures in the areas of burns and scalds, drowning, falls in the elderly, falls in children, poisoning in children, road crashes and suicide. The specific objectives of the project were to review existing stakeholders and their activities, existing legislation and published best practice interventions for each of the sources of injury.

Keywords

Injuries, Burns, Poisoning, Drowning, Falls, Suicide, Road Crashes

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EXECUTIVE SUMMARY

Background

Although death through injury has steadily declined in Australia over the last decade, injury remains a major cause of death, hospitalisation, disability and health care expenditure. In 1996, injury accounted for just under 6% of all deaths in Australia and constituted 11.3% of the total Years of Life Lost (YLL) in that year. Approximately 8.3%, or $2.6 billion, of Australia's total health expenditure in 1993/1994 related to direct health system costs due to injury. In Western Australia, an average of 733 persons die each year through injury, at a rate of 43.5 deaths per 100,000 population. Of the various sources of injury death, intentional harm (suicide), transportation, falls and poisonings are leading causes, accounting for approximately 81% of all injury deaths in Western Australia for 1998.

Objectives

The overall aim of this project was to develop 'evidence-based' recommended interventions for selected sources of injury in Western Australia to assist with the development of statewide priorities and countermeasures. The areas of injury selected for review were: Burns and Scalds, Drowning, Falls in the Elderly, Falls in Children, Poisoning in Children, Road Crashes and Suicide.

The objectives for each of the areas of injury were to:

- Identify the nature and extent of the injury problem,
- Describe major risk factors for the injury problem,
- Identify key stakeholders in Western Australia for the injury problem,
- Report on the current activities of the key stakeholders,
- Identify relevant, existing legislation for the injury problem, and
- Develop recommended interventions for the injury problem in line with published evidence on best practice and effective countermeasures.

Methods

Descriptive information on the extent and nature of the problem was identified from available data. Information on risk factors was identified for the published research literature. Key stakeholders and their injury initiatives were identified via the Injury Research Centre's network of contacts and from print and Internet sources. Interviews were conducted with stakeholders where necessary. Relevant legislation for each area of injury was identified and summarised for brevity. Key recommendations were based on the findings of systematic reviews, meta-analyses and key research articles for each of the injury areas. This information was identified in Medline and the Cochrane Database of Systematic Reviews for injury. Relevant studies have been cited to support the recommended interventions. For some areas of injury, summary reviews have been provided.

Findings and recommendations

Literature searches for each of the areas of injury provided considerable variation in the amount and quality of information concerning identified risk factors.

The review of Western Australian stakeholders and their activities, whilst not exhaustive, revealed a vast array of government and non-government agencies involved in the surveillance, research, prevention and control of injury. Some overlap and duplication of activities was evident.

Legislation for the selected areas of injury varied in terms of state and national responsibilities and the degree of regulation and control. From this, opportunities for legislative and regulatory reform were identified.

The literature search similarly demonstrated considerable variation in the quality and detail regarding the effectiveness of injury countermeasures. Based on this review, a number of recommendations were made for the development of injury countermeasures.

ACKNOWLEDGEMENTS

The Injury Research Centre would like to thank the identified stakeholders who contributed to this report. In particular, we would like to acknowledge the assistance of Dr Sven Silburn, Ms Kate Miller and Ms Stephanie Jackiewicz at the TVW Telethon Institute of Child Health Research.

1. INTRODUCTION

1.1 BACKGROUND

Since 1989, injury deaths in Australia have steadily declined from 51.3 deaths per 100,000 population to 42.4 per100,000 population in 1998 (see Figure 1). Despite this decline, injury remains a major cause of mortality, morbidity and disability in Australia, and places a substantial burden on health care expenditure. In 1996, injury accounted for just under 6% of all deaths and constituted 11.3% of the total Years of Life Lost (YLL) in that year (Mathers et al, 2000). Approximately 8.3%, or $2.6 billion, of total health expenditure in 1993/1994 related to direct health system costs due to injury (Mathers et al, 2000).

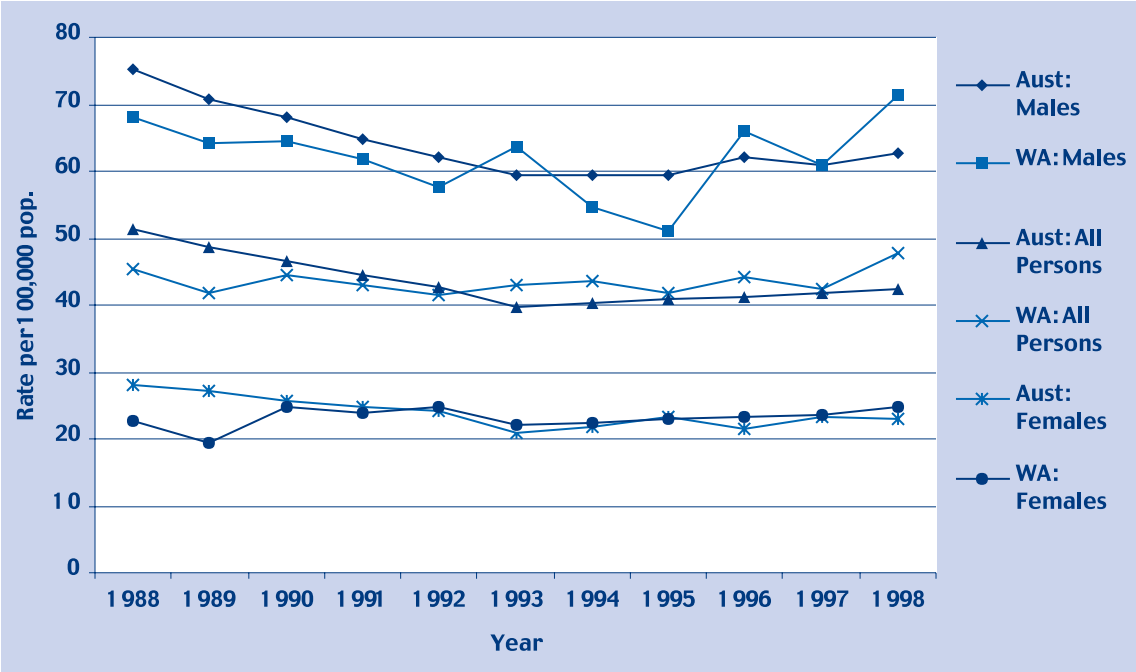

Figure 1: All-cause injury mortality rate for Australia and Western Australia 1989-1998; by all persons, males and females.
(Source: NISU 2002)

In Western Australia, the decline in the rate of injury death for the period 1989-1998 has been less consistent across all persons and genders. Over this period, an average of 733 West Australians (43.5 deaths per 100,000 population) died every year as a result of injury (NISU, 2002). Males and persons aged 15-34 years account for the bulk of the burden of injury, accounting for 72% and 41% respectively of all injury deaths in 1998 (NISU, 2002). Of the various sources of injury death, intentional harm (suicide), transportation, falls and poisonings are leading causes, accounting for approximately 81% of all injury deaths in Western Australia for 1998 (NISU, 2002).

1.2 OBJECTIVES OF THE PROJECT

The overall aim of this project was to develop 'evidence-based' recommended interventions for selected sources of injury in Western Australia to assist with the development of statewide priorities and countermeasures. In consultation with the Injury Prevention Unit of the Health Department of Western Australia, the following areas of injury were selected for review: Burns and Scalds, Drowning, Falls in the Elderly, Falls in Children, Poisoning in Children, Road Crashes and Suicide.

The objectives for each of the areas of injury were to:

- Identify the nature and extent of the injury problem,
- Describe major risk factors for the injury problem,
- Identify key stakeholders in Western Australia for the injury problem,
- Report on the current activities of the key stakeholders,
- Identify relevant, existing legislation for the injury problem, and
- Develop recommended interventions for the injury problem in line with published evidence on best practice and effective countermeasures.

1.3 METHODOLOGY

The methods used in the project are summarised in the following points:

- Descriptive information on the nature and extent of the problem was based on the most recent, available statistical data.
- Relevant risk factors for each of the areas were identified from the research literature.
- Key stakeholders for each of the areas in Western Australia were identified through the Injury Research Centre's network of contacts and relevant published information. Details of the stakeholder's initiatives were obtained from relevant websites and other published materials. Where necessary, key stakeholders were contacted and interviewed to obtain further details on their current injury initiatives. It should be noted that the details of stakeholders and their injury initiatives do not represent a complete audit of this information.
- Legislation relevant to each area of injury was identified and summarised for brevity. Where appropriate, both national and state legislation has been presented.
- To assist with the development of key recommendations, systematic reviews, meta-analyses, and key research articles relevant to the development of injury countermeasures were identified in Medline and the Cochrane Database of Systematic Reviews for injury. These studies have been cited to support recommended interventions. For some areas of injury, summary reviews have also been provided and are presented in the accompanying appendices.

1.4 REFERENCES

Mathers, C., Vos, T. and Stevenson, C. (1999). *The burden of disease and injury in Australia*. Canberra: Australian Institute for Health and Welfare.

National Injuries Surveillance Unit (2002). *Injury deaths Australia 1979-1998*. Adelaide: Flinders University. http://www.nisu.flinders.edu.au/index.php

2. BURNS AND SCALDS

2.1 NATURE AND EXTENT OF THE PROBLEM

Burns are a leading cause of unintentional injury among young Australian children. In Australia during 1995/96, there were 1297 hospital admissions for new burns injuries among the 0-4 year age group, accounting for 25% of all hospital admissions for new burns. This gives a yearly admission rate of 100-145 per 100,000 children between the ages of 0 and 4 years, with males at the higher end and females at the lower. Severe burn injuries will of course require more than one hospitalisation, so the total number of hospital admissions for burns injuries is higher than that stated above. The annual mortality rate from burns in the 0-4 year age group is 1-2 per 100,000 (NISU, 1998).

There are several types of burns: flame burns; scalds from hot liquids; contact burns from hot surfaces such as stoves, heaters and irons; and electrical burns. Preventive measures for each of these types of burns will be considered, with particular reference made to prevention in children. In terms of burns injury among young Australian children, scalds comprise about 60%. This is consistent with data from overseas studies including the Harstad Injury Prevention Study conducted in Norway, in which 64.3% of hospitalised burn injuries in childhood resulted from scalds, 31.4% from contact burns and 4.3% due to open flames (Ytterstad & Sogaard, 1995).

2.2 RISK FACTORS

Risk factors for residential fires:

Lower socioeconomic status

People of lower socioeconomic status are more likely to live in poor quality housing with substandard heating (space heaters, both electrical and kerosene types) and substandard electrical wiring. As a result of these factors, a fire may be ignited which may result in property loss and personal injury or death. ndeed, lower socioeconomic status is associated with higher death and injury rates from house fires (HIPRC, 2001).

Cigarette, alcohol and drug use

Cigarettes account for 28% of all fatal fires. Typically, the fire begins by igniting bedding or upholstery. Fires are also more likely to occur when adult occupants are impaired by the effects of alcohol or drugs.

Burns hazards in the home

There are a number of burns hazards that parents should consider when making the home safe for children. These hazards include hot drinks; hot tap water; ovens and stoves; kettles; irons; heaters and open fires; matches and lighters; and electrical outlets.

2.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government:
Department of Health
Public Health Units
Department of Consumer and Employment Protection
Department of Housing
Department of Education

Hospital Burns Units:
Princess Margaret Hospital
Royal Perth Hospital

Other Local:
Fire and Emergency Services Authority of Western Australia
Kidsafe Western Australia
Energy Corporations (Alinta Gas, Western Power)
Water Corporation of Western Australia
Master Plumbers and Gasfitters Association of Western Australia
Injury Control Council of Western Australia
Healthway (Western Australian Health Promotion Foundation)
Medical Practitioners
Local Councils

Western Australian Divisions of Medical and Allied Health Organisations:
Australian Medical Association
Public Health Association of Australia
Royal Australasian College of General Practice (Divisions of General Practice)
Royal Australasian College of Physicians (Paediatricians)
Royal Australasian College of Surgeons

Other National:
Standards Association of Australia

2.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Fire and Emergency Services Authority of Western Australia (FESA)

The Community Safety Division conducts research into safety issues within the community. This information is used to design suitable programs and strategies to support FESA volunteer and career personnel in increasing the safety of their communities. The division's work covers schools and community education, environmental issues, incident investigation and structural safety of buildings. Two programs are **Fire Inside Out** and **The Juvenile and Family Fire Awareness Program (JAFFA)**. Fire Inside Out is an education package for primary schools. In addition, this can be supported by firefighter visits to the schools and by an excursion to the Fire Education Centre and Museum. The JAFFA Program focuses on juvenile firelighters and helps youth to understand the dangers and consequences of playing with fire.

Kidsafe Australia

Kidsafe WA, the Child Accident Prevention Foundation of Australia, Western Australian Division, has coordinated two **"Hot Water Burns Like Fire"** campaigns, one in 1994 and another in 1999. The former focused on the prevention of scalds resulting from hot drink spillage, while the latter was designed to support the legislative changes requiring a reduction in hot water temperature in bathrooms. Funds for the 1999 campaign came from Healthway and from a number of commercial sponsors including Rinnai, Alinta Gas, RMC and Dux Hot Water. The Master Plumbers Association and the Plumbing and Painting Industry Skills and Technology Centre provided information for members, as well as technical assistance and training. Kidsafe provides useful information on its website: http://www.greenweb.com.au/kidsafe/html.

Western Australian Department of Consumer and Employment Protection

The Department runs a ThinkSafe Campaign including a HomeSafe component, which provides practical information on injury prevention in the home, particularly with respect to children. This is available on their website http://www.safetyline.wa.gov.au.

Western Australian Department of Health

Injury prevention staff in the Department and in the metropolitan and regional public health units have a role in burns prevention through health promotion activities.

Princess Margaret Hospital

On average, 150 children under five years of age present to Princess Margaret Hospital each year for the treatment of scalds alone. In Western Australia, specialized burns units are found at both Princess Margaret and Royal Perth Hospitals.

2.5 RELEVANT LEGISLATION AND STANDARDS

Smoke Alarms

In Western Australia and other Australian states, the installation of smoke alarms has been mandatory since the mid-1990s in all new homes and residences undergoing major renovations i.e. requiring local council building approval. The relevant standards with respect to smoke alarms include:

Australian Standard (AS) 1603.2-1997: Automatic fire detection and alarm systems - Point type smoke detectors

AS 1603.2-1997/Amdt 1-1998: Automatic fire detection and alarm systems - Point type smoke detectors

AS 1603.7-1996: Automatic fire detection and alarm systems - Optical beam smoke detectors

AS 1603.8-1996: Automatic fire detection and alarm systems - Multi-point aspirated smoke detectors

AS 1670.6-1997: Fire detection, warning, control and intercom systems - System design, installation and commissioning - Smoke alarms

AS 3786-1993: Smoke alarms

AS 3786-1993/Amdt 1-1995: Smoke alarms

AS 3786-1993/Amdt 2-1995: Smoke alarms

AS 3786-1993/Amdt 3-2001: Smoke alarms

The Australian Fire Protection Association (AFPA) also recommends that a smoke alarm be installed in residential properties. As good evidence of their effectiveness exists, we recommend that the requirement be applied retrospectively to ensure that all Western Australian residential properties, new/renovated and existing, are fitted with a smoke alarm(s).

Children's Nightwear

Currently, **AS/New Zealand Standard (NZS) 1249-1999**: *Children's nightwear and limited daywear having reduced fire hazard* deals with the labelling of children's nightwear with respect to flammability. Issues pertaining to children's nightclothes come under the Western Australian Fair Trading Act 1987, specifically, the Fair Trading (Children's night clothes-product information standard) Regulations 1988. There are three categories of labelling: "Low fire danger", "Styled to reduce fire danger" and "Warning- high fire danger- keep away from fire".

Hot Water Supply Systems

In Australia, hot water temperature control legislation has been enacted through **AS 3500.4.1-1997**: *National Plumbing and Drainage - Hot water supply systems - Performance requirements* and **AS/NZS 3500.4.2:1997**: *National Plumbing and Drainage - Hot water supply systems - Acceptable solutions*. These standards apply to all new buildings and require the safe delivery of hot water to sanitary fixtures, such as basins, baths and showers, at a temperature no greater than 50°C in domestic households and 45°C in early childhood centres, schools, hospitals and aged care facilities.

Fireworks

In Western Australia, the **Explosives and Dangerous Goods Act (1961)** limits the sale of most fireworks to permit holders over the age of 18 years. Legislation banning the manufacture and sale of dangerous fireworks, combined with enforcement, is the most effective way to restrict the supply and minimise the risk of injury relating to fireworks.

Electrical Safety Switches

Since 1993, all residential structures built in Australia have been fitted with an approved electrical safety switch. A safety switch is an electrical safety device which can detect leaks to the earth and switch off electricity to prevent an electric shock or electrocution. Three types of electrical safety switches are available: switchboard units which are installed on the main switchboard; power point units which provide single point or single circuit protection; and portable units which are suitable for use with extension cords and portable power tools.

The standards of interest with respect to electrical safety switches are:
AS/NZS 3175.1:1994: *Approval and test specification - Residual current-operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules*, **AS/NZS 3175.1-1994/Amdt 1-1995**, **AS/NZS 3175.2.1:1994**: *Approval and test specification - Residential current-operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Applicability of the general rules to RCCBs - Functionally independent of line voltage*, and **AS/NZS 3175.2.2:1994**: *Approval and test specification - Residual current-operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Applicability of the general rules to RCCBs - Functionally dependent on line voltage*.

2.6 RECOMMENDED INTERVENTIONS

(1) Requirement to install smoke alarms in all residential properties

For the prevention of flame burns, we recommend the installation of smoke alarms in all residential structures. This should be mandatory. While installation of smoke alarms in new homes and existing residences undergoing major renovation has been compulsory in Western Australia since July 1997, the requirement should be extended to include all homes.

Smoke alarm effectiveness

Smoke alarms are designed as early warning devices alerting residents that a fire has started so that they can vacate the premises and call the fire department. Smoke alarms appear to reduce the risk of injuries and death in residential fires as indicated by the 71% reduction in death among people living in houses fitted with a smoke alarm in the case control study conducted by Runyan et al. (1992).

Accordingly, we recommend smoke alarms in every dwelling, preferably wired or fitted with long-life lithium batteries (rated for 10 year use). Smoke alarms should be checked monthly and batteries, other than lithium, should be changed yearly to ensure good working order. They should be fitted close to sleeping areas, free from drafts, and away from cooking and heating appliances, which may set off false alarms. In two-storey homes, an (additional) alarm should be fitted above the staircase.

Interventions to increase smoke alarm use

Legislation is one means to increase smoke alarm use. Since February 1999, all Victorian homes have been required by law to have a smoke alarm and data from the Australian Bureau of Statistics revealed that the proportion of Melbourne households with smoke alarms rose from 32% to 84% between October 1992 and October 1998 in the lead up to introduction (ABS, 1999). Other factors that could contribute to increased use include low cost of alarms, marketing campaigns, programs by local fire departments and building code modifications.

Successful programs have had one specific goal: the installation of working smoke alarms. Legislation requiring installation of smoke alarms in new and existing housing combined with community campaigns and reduced price coupons seem to be best way to increase use (McLoughlin et al., 1985; Viscusi & Cavallo, 1994). In low income, high-risk areas, free smoke alarm programs have proven successful (Viscusi & Cavallo, 1994) and, in this state, Homeswest housing stock has been fitted with smoke alarm systems.

One final recommendation to increase smoke alarm use in all residential properties would be to legislate the installation of alarms as a condition for the sale and purchase of homes.

Key References

Australian Bureau of Statistics (ABS) (1999). Safety in the Home, Victoria. Catalogue No. 4387.2.

McLoughlin, E., Marchone, M., Hanger, S.L., German, P.S., & Baker, S.P. (1985). Smoke alarm legislation: its effect on owner-occupied homes. American Journal of Public Health, 75, 858-862.

Runyan, C.W., Bangdiwla, S.I., & Linzer, M.A. (1992). Risk factors for fatal residential fires. New England Journal of Medicine, 327, 859-863.

Viscusi, W.K., & Cavallo, G.O. (1994). The effect of product safety regulation on safety precautions. Risk Analysis, 14, 917-930.

(2) Flame retardant sleepwear for children

For the prevention of flame burns, we recommend that the legislation regarding flame retardant sleepwear for children be maintained.

Effectiveness of flame retardant sleepwear

Fabric type and garment style affects flammability. Children's sleepwear is of particular concern and, in 1978, labelling of children's nightwear to indicate flammability was made mandatory under Australian law. Legislation regulating flammability of sleepwear is effective in reducing burn injuries. An American study found a 75% reduction in burn unit admissions due to sleepwear following passage of the US Flammable Fabrics Act of 1972 (McLoughlin et al., 1977). Education and style changes from nightgowns to pyjamas have also contributed to injury reduction. Other areas for legislative action in this regard include child safe lighters and safety matches.

Key Reference

McLoughlin, E., Clarke, N., Stahl, K., & Crawford, J.D. (1977). One pediatric burn unit's experience with sleepwear-related injuries. Pediatrics, 60, 405-409.

(3) Product and Environmental Modification

For the prevention of scald burns, we recommend preset water heater temperatures and safety products including stove and heater guards.

Effectiveness of safe water temperatures and safety products

Research has demonstrated that legislation requiring a safe pre-set temperature for all water heaters is a more effective method of reducing scald burns than education to encourage parents to turn down water heaters (Erdmann et al., 1991). Accordingly, in Australia, legislation has been enacted through AS/NZS 3500.4:1997: National Plumbing and Drainage - Hot water supply systems. Safe temperatures can be maintained by building code inspections.

Well-designed safety products, such as wide-based ("no spill") cups and kitchen-stove rails, may also reduce the incidence of scald burns (Ytterstad & Sogaard, 1995). Rails and guards, which prevent children from coming into contact with hot stoves, irons and heaters, are also useful in reducing contact burns.

Key references

Erdmann T.C., Feldman K.W., Rivara F.P., Heimbach D.M., & Wall H.A. (1991). Tap water burn prevention: the effect of legislation. Pediatrics, 88, 572-577.

Ytterstad, B., & Sogaard, A.J. (1995). The Harstad Injury Prevention Study: Prevention of burns in small children by a community-based intervention. Burns, 21, 259-266.

(4) Electrical outlet covers and electrical safety switches

For the prevention of electrical burns, we recommend electrical outlet covers and electrical safety switches. The American Academy of Pediatrics recommends electrical outlet covers for unused electrical sockets to prevent electrical burns, which is a reasonable suggestion in homes with young children in the Australian setting. Electrical safety switches provide added protection and we recommend their use to reduce the risk of fire from faulty wiring or products in all residential structures, both new and existing. Switchboard and power point safety switch units should only be installed by a licensed electrical contractor and they should be tested monthly by pressing the test button to ensure good working order.

(5) Education

We recommend education to increase smoke alarm ownership and knowledge of burns hazards.

Fire skills training

The purpose of fire skills training is to prepare children to react properly in an emergency and teaches them what actions to take when a fire breaks out. While studies using behavioural training have demonstrated an increase in fire skills knowledge, there is no information to indicate these educational techniques produce behaviour change in a real-life fire situation.

The role of education

The injury prevention education campaigns that have demonstrated success have used a narrow specific message aimed at a well-defined target. Involving a range of community organisations, media, government, health professionals, schools and other institutions, improves the chance of success. Targeting parents with young children appears particularly effective and it seems appropriate to focus education strategies at parents and primary school children (DiGuiseppi & Higgins, 2000).

Key Reference

DiGuiseppi C., & Higgins J.P. (2000). Systematic review of controlled trials of interventions to promote smoke alarms. Archives of Disease in Childhood, 82, 341-348.

2.7 EMERGING ISSUES AND FUTURE DIRECTIONS

When designing a program, injury interventions with strong evidence of efficacy should be targeted and an evaluation component should be incorporated into the project. Where possible, large randomised control trials of community intervention programs should be performed and injury outcomes should be measured to confirm that the program is associated with a reduced incidence of burn injury.

There are a number of interventions that can reduce the risk of burns among children in the home. It is now be time to consider other risk situations. A recent Australian study (Choo et al., 2002) has revealed that campfire burns comprise a small, but important group. Hot ashes and coals from inadequately extinguished campfires were particularly important in this respect. A campaign to increase camper awareness on campfire safety may be warranted in the future.

2.8 REFERENCES

Australian Bureau of Statistics (ABS) (1999). Safety in the Home, Victoria. Catalogue No. 4387.2.

Choo, K.L., Fraser, J.F., & Kimble, R.M. (2002). Campfire burns in children: an Australian experience. *Burns*, 28, 374-378.

DiGuiseppi C., & Higgins J.P. (2000). Systematic review of controlled trials of interventions to promote smoke alarms. *Archives of Disease in Childhood*, 82, 341-348.

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Harborview Injury Prevention and Research Center (HIPRC) (2001). *Systematic Reviews of Injury Prevention Interventions: Childhood injury: Fires and Burns*. USA: University of Washington.

McLoughlin, E., Clarke, N., Stahl, K., & Crawford, J.D. (1977). One pediatric burn unit's experience with sleepwear-related injuries. *Pediatrics*, 60, 405-409.

McLoughlin, E., Marchone, M., Hanger, S.L., German, P.S., & Baker, S.P. (1985). Smoke alarm legislation: its effect on owner-occupied homes. *American Journal of Public Health*, 75, 858-862.

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Viscusi, W.K., & Cavallo, G.O. (1994). The effect of product safety regulation on safety precautions. *Risk Analysis*, 14, 917-930.

Ytterstad, B., & Sogaard, A.J. (1995). The Harstad Injury Prevention Study: Prevention of burns in small children by a community-based intervention. *Burns*, 21, 259-266.

3. DROWNING

3.1 NATURE AND EXTENT OF THE PROBLEM

Australia's climate and geographical conditions have contributed to a comparatively high level of water-related activity among this country's population. Unfortunately, these activities can be associated with unintentional drowning or near-drowning incidents.

The location of drowning incidents is influenced by warmer climates. The majority of drownings in such climates occur in private swimming pools, whereas in colder areas, drowning tends to occur in natural bodies of water, such as oceans, rivers and lakes (Waters, 1998).

Drowning is defined as death from suffocation by submersion in a liquid, usually freshwater or seawater. 'Near drowning' is the term used to describe submersion in a liquid in which the victim survives, at least temporarily. In this document, the term 'drowning' will be used to include both drowning and near drowning events.

In Australia, locations such as lakes, rivers and dams remain the most dangerous when it comes to drowning (RLSSA, 2001). Although drowning-related mortality occurs across all age groups, the greatest over-representation is among children younger than five years old (Waters, 1998; Cass et al, 1996; NCIPC, 2001; Nixon et al, 1995; HDWA, 1988). In Australia, drowning is the most common cause of accidental death for children younger than five years old, of whom 70% are aged between one and three years (Fisher and Balanda, 1997; Byard and Lipsett, 1999; Pitt and Balanda, 1991; Blum and Shield, 2000).

Thirty five children younger than five years old died in Australia over the 12 month period between July 2000 and June 2001, and for every drowning death a further three children were admitted to hospital following a serious immersion incident. The consequence of serious immersion incidents is considerable, with up to 20% of children suffering brain damage (RLSSA, 2001).

3.2 RISK FACTORS

Swimming inability

The inability to swim is frequently mentioned as an important risk factor for drowning (Smith and Brenner, 1995).

Lakes, rivers and dams

Studies both nationally and internationally have identified rivers, lakes and dams as a common drowning site for older children, particularly males. Higher fatality rates occur because of the site's isolation and delayed rescue and resuscitation efforts (Waters, 1998).

Bathtubs, fish/garden ponds and wading pools

All recent Australian studies identify bathtubs as the second most common site for childhood drowning, with children less than one year being at greatest risk. In a review of WA infant drowning, all had either been left alone for short periods (two to five minutes) in the care of a sibling, were playing in the bath unsupervised, or the bathtub had not been emptied from a previous occasion. Wading pools still remain a potential hazard if not emptied immediately after use or when an adult does not directly supervise children (Waters, 1998).

Inadequate swimming pool fencing and ineffective safety barriers

The absence of a safety barrier is one of the most frequent factors identified in childhood drowning and near drowning occurring in private swimming pools. Unintended access to a pool was a contributing factor in 86% of drownings in a study of the adequacy of inspections of barriers to private swimming pools in WA. The child was able to gain unintended access due to no barrier between the pool and the house in 50% of all drownings (Stevenson, 2001).

Lack of adult supervision

The lack of adequate adult supervision has been identified as an important causal factor in childhood immersions. The Brisbane Drowning Study identified lack of parental supervision as a contributing factor in 71% of all serious childhood immersions (Waters, 1998). None of the reports considered the parents or carers to be neglectful in regard to their duty of care. According to the study on the adequacy of inspections of barriers to private swimming pools, lack of close supervision by the parent or primary caregiver was reported as a contributing factor in 96% of drownings among children younger than five years old who drowned in private swimming pools in Western Australia (Stevenson, 2001).

Alcohol use

Estimates of alcohol involvement in drowning vary widely because of variable age groupings, incomplete testing rates and failure to account for the production of endogenous alcohol resulting from prolonged immersion of the body. Alcohol can affect both judgment and performance. In the case of drowning, it is believed to have direct physiological effects that may affect survival once a submersion incident has occurred, through mechanisms such as increasing hypothermia and retarding protective laryngospasm (Smith and Brenner, 1995).

3.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government:
Department of Conservation and Land Management
Department of Health, Injury Prevention Unit
Department of Sport and Recreation
Department of Land Administration
Department of Transport (Marine Safety)
Water and Rivers Commission
Water Corporation

Organisations:
Royal Life Saving Society
Kidsafe
St John Ambulance
Surf Lifesaving

Research Institutions:
Injury Research Centre, UWA

Western Australian Water Police

Local Governments

3.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Initiatives for the prevention of drowning have begun in the following health regions:

- *Great Southern* — Residential injury program: undertaken/ongoing regarding drowning in pools and bath-tubs.
- *Midwest* — Child safety campaigns targeting schools, with an emphasis on parent education.
- *North Metro* — Support of Royal Life Saving Society 'Keep Watch' Program; liaising with local government on residential pool fencing; assisting community nurses with the drowning campaign.
- *Pilbara* — Possible capacity building with community nurses for next financial year.
- *South West* — A childhood injury prevention needs assessment outlined water safety as an area where training is needed.

The following section gives a brief overview of the drowning prevention strategies of various government and non-government agencies in Western Australia.

Department of Conservation and Land Management (CALM)

Policy Statement No. 53 – Visitor Risk Management guides CALM in risk management as a whole, and by extension includes risk management as it relates to water safety and drowning prevention. Strategies include:

- The preparation and implementation of a safety audit program to ensure procedures are developed to monitor all known risks,
- Ensuring visitor safety and risk management is an integral component in undertaking works programs and capital developments in parks managed by CALM, and
- Providing information to visitors that highlights potentially hazardous areas, activities and appropriate preventative actions and emergency procedures (Section 39).

Royal Life Saving Society

The Society aims to create awareness of the importance of constant vigilance of children in and around pools and other bodies of water in an attempt to reduce the incidence of drowning in WA. This was the thrust behind the 'Keep Watch' media campaign of the Royal Life Saving Society in November 2000.

The Society's business plan for 2001 – 2004 articulates a comprehensive series of programs that focus on achieving:

- An improvement in the home environment (ensuring adequate pool fencing),
- An improvement in the lifestyle/behaviour of the target market (supervision, water familiarisation and resuscitation).

These programs support existing public health policy (pool inspections every four years) and health promotion interventions and aim to create incentives for safer behaviour.

The Royal Life Saving Society focuses their public awareness campaigns on four strategies for reducing toddler drowning – supervision, pool fencing, water familiarisation and resuscitation. The Society also runs a 'Swim and Survive' program teaching children swimming and water safety skill.

Water and Rivers Commission

The priority of the commission is to ensure that Public Drinking Water Source Areas (PDWSA) are protected from environmental degradation and that environmental values are preserved for future generations. At this time, the policies of the Water and Rivers Commission do not specifically address drowning prevention.

Water Corporation

Site Security and Public Safety Guidelines – SGO81 (WA) Water Corporation, October 1999.

Risk assessments are regularly performed by Water Corporation staff to improve security and safety at public dams. To maintain water quality and reduce access to the public, the Water Corporation has prohibited zones around public dams. These zones have prominent signs indicating that the catchment area is prohibited, as well as fencing to form a barrier from publicly accessible sections of the dam. Rangers also patrol around the dam to ensure that nobody is upstream of the dam. An additional safety feature for dams is grading so that if a person gets past the barriers and slips or falls, there is not a sudden drop into deep water.

Surf Lifesaving

Surf lifesaving in Western Australia is a volunteer based community service association, providing an essential emergency service in the form of surveillance, protection, medical assistance and rescue services at all patrolled beaches in WA.

The association comprises the Surf Life Saving Western Australia Inc. (SLSWA) which primarily governs and co-ordinates surf lifesaving in WA, and 20 Surf Life Saving Clubs strategically located around the Western Australian coastline. They have the primary vision - "Safer Enjoyable Beaches". This is achieved by:

- Offering educational and training courses in surf rescue, first aid and resuscitation to members and the community.
- Offering a sport as a major incentive for the community to join, and members to stay fit and involved.
- Providing activities for junior and youth members as a feeder system into becoming surf lifesavers.

Department of Transport (Marine Safety)

Transport's Recreational Boating Branch is responsible for promoting the Department's policy of boating safety through education, more so than regulation. It is acknowledged that some regulation is necessary, but in general they believe that informed people taking responsibility for their own safety achieve the best results. 'Kids and Boats' and 'BoatSmart' are examples of the Department's initiatives, and are dedicated to improving the boating knowledge and skills of people from primary school age to maturity.

Local Government Pool Inspection Process

Regulation for fencing of swimming pools in Western Australia is legislated by the state and enforced by local government inspections. In response to requests from the Royal Life Saving Society and subsequent support from the WA Municipal Association, the Minister for Local Government introduced changes to the Local Government Act in November 1997.

The changes relate to Section 245A of the Local Government Act which altered the wording in section 245A from an "authorised officer" to an "authorised person". This amendment made it possible for the Royal Life Saving Society Australia to offer a home pool inspection service and so assist local government with the periodic inspection of pools.

Water Police Western Australia Branch

The Western Australian Police Service, in collaboration with Western Australian Transport (Marine Safety) and the Royal Life Saving Society of Australia has commenced the Water and Alcohol Drug Education (WADE) project. This joint initiative is the result of concern regarding the increase in alcohol related drowning and accidents on WA waterways.

The project is based upon the successful Water and Alcohol Safety Project (WASP) that has operated in Queensland since 1997. The objective of WASP was to increase awareness of the dangers of irresponsible consumption of alcohol while engaged in recreational aquatic activities. WADE shares this objective. The target group is males aged between 18 and 54 who represent the group most at risk of drowning while under the influence of alcohol.

The Western Australian Water Police have a strong ongoing relationship with both *The West Australian* newspaper and Channel 7. They hope to use these relationships for the development of the project's promotion. Their marketing strategy involves comprehensive broadcast advertising targeted at the general community for recreation activities, strong editorials and advertising within the print media, and regular publications in the commercial marine industry.

In addition, promotional activities will include:

- Mail-outs utilising the Department of Fisheries database,
- Presence at boat shows and public events displaying logos and information,
- Distribution of promotional resources through the WA Fishing Industry Council, and
- Education through RLSSA learn-to-swim courses.

The administration of the project has been funded through the National Drug Strategy Law Enforcement Fund. The project is based within the Water Police office at Fremantle and has developed stakeholder relationships with other interested government and corporate entities. The project is seeking to initiate the second phase of collaboration between the Water Police and a corporate sponsor that will represent a unique and high profile promotional opportunity.

This project maintains a fully collaborative approach with stakeholders in order to gain the best outcome. This involves keeping a high public profile for the project in order to ensure that the message is delivered to and retained by the target group. It is hoped that through this project, the target group may be able to make better-informed decisions about their safety and the safety of others on Western Australia's waterways.

Injury Research Centre (IRC)

The Department of Health in collaboration with the Department of Local Government and Regional Development initiated a research project in May 2001, conducted by the IRC, in order to further elucidate the causes of child drowning in private swimming pools. In particular, these Departments wanted to identify opportunities to improve the inspection and enforcement of current legislation related to the enclosures surrounding private swimming pools (Stevenson, 2001).

St. John Ambulance

During 2000, St John in Western Australia formed the College of Pre-Hospital Care to encompass all aspects of first aid and ambulance training provided by St John in the state. The College provides training for both paid and volunteer ambulance officers under the banner of the Ambulance Training Centre (St John Ambulance, 2000).

3.5 RELEVANT LEGISLATION

Western Australian legislation for swimming pool barriers

Prior to 1989 in Western Australia, private swimming pools were subject to the Western Australian Uniform Private Swimming Pool By-laws (HDWA, 1988). Amendments to Part 10 of the Building Regulations (1989) (Local Government Act, 1960) instituted additional requirements including adherence to Australian Standards AS 1926.1 for pool fencing, and asserted that for pools installed after 28 July 1989, the pool gate must open away from the pool.

Section 38B covers the enclosure requirements for private swimming pools. Under this section, the owner or occupier is required to install or provide around the pool an enclosure suitable to restrict access by young children (younger than five years old) to the pool.

Section 38C concerns access to the pool from the building (residence). This section states that if a swimming pool is a pre-July 1992 pool, its enclosure may include a wall that contains a door or window permitting direct access between the enclosed area and the residence. A swimming pool installed after July 1992 can be either isolated from the residence, or its enclosure may include a wall that contains a door or window permitting access if that door or window satisfies the requirements of the Australian Standard AS 1926.1 (Stevenson et al, 2001).

Also, as part of the Australian Standard, it is required that all barriers surrounding private swimming pools must be inspected once every four years.

Currently, the WA State Government is in the process of implementing changes to the existing legislation. The legislative changes will require new and existing pool owners to adhere to more stringent barrier requirements. Prior to the amendments, new pool owners could comply with the requirements by ensuring that doors or windows that accessed the pool area were self-closing and locking.

New pool owners are now required to have an isolation fence around the pool that satisfies the legislative requirements. This means that the fence must isolate the pool from the residence and restrict access from outside the property. The requirements for older pools have also been amended, which brings pre-July 1992 pools into line with other pools installed prior to the 5th of November 2001. The minimum requirement for these pools is to ensure that doors or windows accessing the pool area are self closing and locking, and that they also deny access to young children (under five years) from outside the property. Further legislative details are included in the Appendix.

3.6 RECOMMENDED INTERVENTIONS

(1) Increase public awareness of the legislation

Comprehensive public education is necessary to raise awareness of the legislation (as well as other safety issues) among swimming pool owners. There is a role for retailers and other industry partners to participate in the public education (Stevenson et al, 2001).

(2) Public education

Regular extensive public education on the risks of toddler drowning and the need for secure barriers around private swimming pools is important in prevention of toddler drowning (Stevenson et al, 2001).

(3) Control of alcohol use

Increased awareness of the hazards of alcohol use on the water and restricting alcohol sales in aquatic settings may to help reduce the number of alcohol-related drownings (Smith and Brenner, 1995).

(4) Barriers around private swimming pools

The study on the adequacy of inspections of barriers to private swimming pools estimated that there is almost a two-fold increased risk (approximately 78% increased risk) of a child drowning in a swimming pool with perimeter versus isolation fencing.

The majority of these drownings could have been prevented by a change in legislation from perimeter to isolation fencing, or at least by uniform legislation requiring a secured access from the residence with three-sided fencing, as unintended access to the pool was a contributing factor in 86% of drownings. The findings from this study suggest that uniform legislation for barriers between the house and the pool installed prior to July 1992 is necessary (Stevenson et al, 2001).

Tourist operators may need to consider providing interpreters or written instructions regarding water safety in the relevant languages.

There are a number of government and non-government agencies which deal with water related issues including the Department of Health, Department of Conservation and Land Management, Royal Life Saving Society, Local Government, Department of Transport,

Department of Sport and Recreation, Water Corporation, Department of Land Administration and Water and Rivers Commission. The role of each agency needs to be defined to avoid overlapping to ensure that available resources are put to the best use.

3.7 EMERGING ISSUES AND FUTURE DIRECTIONS

Swimming ability

The relationship of swimming ability and drowning risk is obviously complex and more research is needed on swimming instruction, perception of swimming ability, exposure to water and risk-taking, and the relationship to drowning risk (Smith and Brenner, 1995).

Maintenance of swimming pool barriers

Extensive public education on the need for isolation fencing with functioning self-closing/lacking pool gate mechanism is necessary (Stevenson et al., 2001).

Legislation assessment

Evaluation of the implementation and effectiveness of the legislative changes regarding pool fencing is required. This should include an evaluation of the knowledge, attitudes and behaviour of pool owners and a review of outcomes in respect to drowning and near drowning events.

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3.8 APPENDICES

Standards and Legislation

Regulation for fencing of swimming pools in Western Australia is legislated by the state and enforced by local government inspections. The State Government has introduced new legislation (March 2002) which requires that all new private swimming pools must have isolation fencing. This means that the fence must isolate the pool from the residence and restrict access from outside the property.

The relevant legislation and standards are listed below.

WESTERN AUSTRALIA

Local Government (Miscellaneous Provisions) Act 1960
Building Regulations 1989
Part 10 – Private swimming pools
The owner or occupier of premises on which there is a swimming pool shall install or provide around the pool an enclosure suitable to restrict access by young children to the pool.

Local Government (Miscellaneous Provisions) Act 1960
Part VII – Private swimming pools
254A Private swimming pools
Local laws may be made for requiring the owner or occupier of land on which there is a swimming pool to install or provide such structures or devices as are prescribed for the protection of the safety of persons who may, with or without the knowledge or consent of the owner, enter upon that land.

- Local government can have an authorised person inspect the pool periodically so that a period of not more than four years elapses between inspections.
- An authorised person can serve a notice to ensure these requirements are met within a time that is deemed reasonable.

- If the owner/occupier does not comply with the requirements after being served a notice the authorised person may take measures they consider necessary in order to prevent the swimming pool from being a danger to the public, the costs of which can be recovered from the owner/occupier.

Australian Standards
AS 1926.1-1993
Swimming pool safety
Part 1: Fencing for swimming pools
This standard specifies requirements for the design, construction and performance of fences, gates, retaining walls, windows, door sets and balconies intended to form part of a barrier that will restrict the access of young children to swimming pools.

Australian Standards
AS 1926.2-1995
Swimming pool safety
Part 2: Location of fencing for private swimming pools
This standard sets out options for the location of fencing that provides an effective barrier which will restrict the access of young children to private swimming pools.

Australian Standards
AS 2818-1993
Guide to swimming pool safety
This standard provides guidance on the prevention of accidental drownings and injuries in private swimming pools and spa pools and identifies potential hazards in the use and maintenance of private swimming pools.

Australian Standards
AS 2820-1993
Gate units for private swimming pools
This standard sets out the requirements for the design, construction and performance of gate units intended to be installed as part of a fence which complies with the requirements of AS 1926.1, which will restrict the access of young children to private swimming pools.

NATIONAL

Trade Practices Act 1974
Sections 65(B), 65(C), 65(E), 65(F), 65(L), 65(Q) and 65(R)
Product Safety Standards
These sections state that the Minister is able to publish a notice in the Gazette to notify of products under investigation that cause injury and the risks involved in the use of these products; declare prepared or approved standards regarding consumer products that may have or have the potential to cause injury; and Gazette goods without delay that pose an imminent risk of death, serious illness or injury.

The Minister also has the power to recall a product that may cause injury, goods that do not comply with prescribed safety standards and goods where the supplier has not taken satisfactory action to prevent these goods causing injury to any person.

Building Code of Australia
Section G.1.1
Swimming pools
Provides that swimming pools associated with Class 1, 2 and 3 buildings, with a depth of over 300mm, must have suitable barriers to restrict access by young children to the immediate pool surrounds, of safety fencing in accordance with AS 2818 and AS 1926.1.

Australian Standards
AS 2416-1995
Design and application of swimming pool signs
This standard sets out requirements for the design and application of flags and safety signs, including signs incorporating graphic symbols, intended for use where water sports may be undertaken or where there are other activities close to bodies of water such as the seaside, rivers, creeks, dams and open drains.

Australian Standards
AS 1900-1991
Flotation toys and swimming aids for children
This standard specifies requirements for flotation toys and swimming aids which are either worn on the body or unattached, and are likely to be used by children aged up to 15 years in recreational activities and to assist in swimming tuition. This standard does not deal with personal flotation devices which would otherwise come within the terms of this standard but have been approved by marine authorities as being suitable for use on boats, nor with articles which would otherwise come within the terms of this standard but are designed only for therapeutic use or use by disabled persons.

Australian Standards
AS 2259-1996
General requirements for buoyancy aids
This standard specifies general requirements applicable to buoyancy aids specified in the following Australian Standards: AS 1499 Personal flotation devices type 2
AS 1512 Personal flotation devices type 1
AS 2260 Personal flotation devices type 3
AS 2261 Rescue buoys
AS 2262 Float-off buoyancy aids.

Australian Standards
AS 1512-1996
Personal flotation devices – type 1
This standard specifies requirements for personal flotation devices intended to maintain the wearer in a safe floating position. It is applicable to devices intended for use aboard pleasure boats in waters where early rescue may be expected.

Australian Standards
AS 1499-1996
Personal flotation devices – type 2
Specifies requirements for personal flotation devices designed to assist flotation during short term immersion in sheltered waters during daylight hours, and intended for participants in aquatic sports such as canoeing or sailboarding where the wearer requires freedom of movement and is able to swim in the event of capsize or immersion. Appendices include comparative test methods for adequately supporting the wearer in water.

Australian Standards
AS 2260-1996
Personal flotation devices – type 3
This standard specifies requirements for personal flotation devices intended for use in supervised situations to assist flotation during short-term immersion in sheltered waters during daylight hours.

It is applicable to devices intended to be used in water sports or as clothing for special situations, and may not be in the high visibility colours required for PFD type 2s. NOTE: Marine authorities have regulations covering pleasure boating and related activities, including the type of PFDs which need to be worn or carried on board when using various waterways.

Australian Standards
AS 2261-1990
Rescue buoys
This standard specifies the requirements for rescue buoys intended to be thrown or dropped to a person in water to assist in effecting rescue. It does not apply to lifebuoys required to be carried by commercial vessels.

Australian Standards
AS 1926.3-1993
Swimming pool safety – water recirculation and filtration systems
This standard sets out requirements for skimmer boxes, and other permanent water inlets and outlets in swimming pools.

4. FALLS IN THE ELDERLY

4.1 NATURE AND EXTENT OF THE PROBLEM

The nature and extent of falls and their related injury have been recognised as a National Health Priority since 1992. Despite this, the number of fall-related injury admissions to hospitals continues to increase in parallel with the increase of older persons in the population.

Approximately 35% to 45% of community-dwelling people aged 65 and over fall each year (Graafman et al, 1996). For those individuals living in nursing homes or hospitals, the incident rate for falling is almost three times that of community-dwelling persons aged 65 and over (Hill et al, 2000).

In Western Australia in 1995 there were 3,321 hospital admissions and over 30,000 bed days utilised by people over the age of 65 (Hill et al, 1998). Along with this burden on hospital admissions, there is recognition of the personal, societal and economic impacts of falls and their related injury. In order to reduce the incidence of falls and fall-related injuries, a systematic approach to addressing current falls prevention programs along with the identification of key stakeholders and funding opportunities is imperative.

The seriousness of this issue has been expressed through the Commonwealth Government's establishment of the National Falls Prevention for Older People Initiative that focuses on reducing the incidence, morbidity and mortality associated with falls in people aged 65 and over.

4.2 RISK FACTORS

The theoretical framework underlying falls prevention programs is the targeting of identified risk factors. These risk factors can be categorised into intrinsic and extrinsic risk factors. Intrinsic risk factors can include biological, psychological and musculoskeletal diseases and/or impairments. Extrinsic risk factors include environmental conditions as well as socio-economic conditions.

A number of risk factors have been identified in the research, and the following are the more common targets of falls prevention programs (Graafmans et al, 1996; Tromp et al, 2001).

Decreased mobility

Muscle weakness and gait impairments can be related to increased postural sway, decreased gait velocity, stride length, step height, prolonged reaction time, decreased visual acuity and depth perception (Rubenstein et al, 1996).

Medications and polypharmacy

The use of multiple medications (polypharmacy), inappropriate prescribing, misuse, inappropriate dosage and the potential for medication interactions can increase the risk of falling. As well, a number of specific drugs, such as antipsychotics, antidepressants, and benzodiazepines have been associated with an increased risk of falling.

Pre-existing medical conditions

A decline in physical and mental functioning, along with acute and chronic diseases, has been associated with an increased risk of falling. Parkinson's disease, depression, stroke, visual and auditory impairments, osteoporosis and dementia are a few of the conditions that increase a person's propensity for falling.

Dizziness

Dizziness can arise from a number of diseases and conditions, including; medication, disorders of the vestibular apparatus and cardiovascular disease (ie, orthostatic postural hypotension).

Fear of falling

Fear of falling can be related to 'post-fall syndrome' or can arise from a lack of confidence in the ability to carry out activities of daily living. This fear of falling can trigger an increase in sedentary lifestyles that can further increase the risk of falling.

History of falling

Older persons who have sustained a fall are at higher risk for suffering another fall (Nevitt et al, 1989).

Footwear

Footwear that does not provide support, has worn soles, a slippery surface or heels may increase the risk of falling.

Environmental hazards

A number of environmental hazards have been identified in the literature including:

- stairs
- loose rugs and cords
- poor lighting
- furniture height
- slippery floor surfaces.

It is important to assess these specific risk factors in order to identify emerging problems and also to target appropriate and effective programs to reduce the incidence of falls. Falls prevention programs that target both intrinsic and extrinsic risk factors through multi-factorial interventions will meet the needs of a larger target population compared with interventions that only target single risk factors.

4.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Individuals:
Persons over the age of 65 at risk of falling

Health professionals:
Occupational therapists
Physiotherapists
Nurses
Diversional therapists
Optometrists

Geriatricians
Gerontologists
General practitioners
Social workers

Organisations:
Council on the Ageing
Injury Control Council of WA
Silver Chain Nursing Association of Australia
Older Women's Network
Older person's organisations and advocacy groups
Exercise, sporting and physical activity organisations
Osteoporosis and Arthritis Foundation
WA Physiotherapy Association
Master Builders Association
Royal Australian College of Practitioners
Royal Australian College of Physicians

Health Related Services:
Retirement villages
Aged day care services
Residential aged-care facilities
Home and Community Care Services
Aged Care Assessment Teams (ACAT)

Research Institutions:
Curtin University
University of Western Australia
Edith Cowan University

Hospitals:
Joondalup Health Campus
Sir Charles Gairdner Hospital
Fremantle Hospital
Mounts Bay Hospital
Royal Perth Hospital (including Shenton Park Campus)
St. John of God Hospital
Osborne Park Hospital
Bentley Hospital
Armadale Health Service
Glengarry Hospital

Government:
Local government
Injury Prevention Unit, Department of Health
Department of Sports and Recreation
Public Health Units
Department of Veteran Affairs
Department of Transport

4.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Bunbury Primary Health Service's Seniors Health Program

The objectives of this program are to increase and enhance the health of its seniors' community through the contribution of volunteers. Included in this is their involvement in the peer educators program as part of the Stay on Your Feet WA (see below: Injury Prevention Unit).

Coastal and Wheatbelt Public Health Unit

Recently this Public Health Unit received funding to promote activities (eg lawn bowling) that encourage seniors to participate in physical activity.

Curtin University

1. The School of Nursing currently runs a program that targets the community using assessment of risk, physiotherapy interventions, and podiatry (National Ageing Research Institute, 2001).
2. The Freemasons Centre for Research into Aged Care Services is conducting research in relation to maximising adherence to physical activity among the aged.

Department of Health, Injury Prevention Unit

Stay on Your Feet WA (SOYFWA): this is a five-year program that commenced in 1998. The aim of SOYFWA is to reduce the expected rate of fall-related injuries in seniors living independently in Western Australia by 10% by the year 2003. It focuses on reducing falls in the community through a number of projects. These projects are currently coordinated through the Injury Control Council of Western Australia (see below).

Department of Sport and Recreation

The Seniors Recreation Council annually sponsor 'Have a Go Day' which supports lifelong physical activity.

Edith Cowan University

The Exercise and Sports Science Research Group are currently conducting research in the area of exercise in relation to falls prevention programs.

Gascoyne Public Health Unit and Carnarvon Shire Council

The Gascoyne Public Health Unit, in conjunction with the Carnarvon Shire Council, recently began a "Safe Walkways' program aimed at ensuring the provision of a safe environment for the community. This program focuses on the identification and remediation of danger spots on roads and walkways in order to help prevent people from falling.

Injury Control Council of WA (ICCWA)

SOYFWA – ICCWA has been involved in the recent coordination of the general awareness raising and focus on physical activity, balance and gait phases, as follows.

1. The general awareness raising program includes presentations to different senior groups, professional development with allied health (including an optometry phase), media such as radio and articles in senior specific newspapers, production of SOYFWA newsletter (publication of 5000), and other events (eg shopping centre displays).

2. A focus on medications through awareness raising programs involving GPs and the in-home aged. The review of this phase has been completed and a pharmacist is working on the implementations of the recommendations from it.
3. A focus on physical activity, balance and gait through professional development, awareness raising and physical activity promotional events (eg April Falls Day).
4. A focus on safe environments through home hazard identification and modification in both public and private places.
5. A focus on chronic illness aims to increase the awareness among older persons and target groups (eg General Practitioners) that chronic health conditions such as arthritis, diabetes and heart disease are important risk factors for falls.

Falls Prevention Network (FPN): the FPN encourages partnerships and sharing between people working within professions that have an interest in falls prevention through seminars to raise awareness. It also includes database development (broad health professional base).

Local Councils

A number of councils have initiated falls prevention components into their current services, including the City of Melville's Aged Services Network, City of Belmont, City of Vincent and the City of Nedlands.

Ravensthorpe Health Service

Ravensthorpe Health Service maintains a program that targets the community through gentle gym, business gym, nutrition education for the elderly, hazard in the home assessment for Home and Community Care clients, hazard in the town assessment, and policy guidelines for meals on wheels regarding nutrition for the elderly (National Ageing Research Institute, 2001).

Residential Aged Care Settings

A number of falls prevention programs have been put in place by managing organisations in their respective nursing homes and hostels. The prevention programs are unique to each facility and fulfil the requirements of national accreditation standards. These programs commonly include falls risk assessments, physical activity, medication review and environmental modifications.

Shire of Busselton

'Seniors Footpath Patrol' is a public safety program involving older people participating in the identification of hazardous footpaths (National Ageing Research Institute, 2001).

Silver Chain Nursing Association

The goal of the 'Home Independence Project' (HIP) is to develop and test a more cost-effective model for home care by designing services that will maintain or improve individuals' functional independence, promote autonomy and self efficacy, encourage use of existing informal community services and thus reduce, or limit, their need for formal services.

Sir Charles Gairdner Hospital

1. Stepping Out – Passport to Falls Prevention: this project addresses the roles of existing services in order to identify gaps in the delivery of services relating to the prevention and management of falls. This program is part of the funded National Falls Prevention for Older People Initiative instituted by the Commonwealth Department of Health and Aged Care.
2. Rehabilitation: implementation and evaluation of a multi-strategic falls prevention program. The interventions include use of risk assessment tool on admission, identifying high risk patients, implementation of strategies identified on a standard care plan, staff education/conscious raising, review of incident forms, medication review, and continence management (National Ageing Research Institute, 2001).
3. Falls Clinics: available for older individuals who require a multi-dimensional assessment, intervention and targeted management approach to falls.
4. Falls Specialists: provide an individual assessment in the home environment and address issues of personal safety and education regarding falls prevention. The Falls Specialists are attached to the Community Rehabilitation Program.

University of Western Australia

1. Department of Anatomy and Human Biology – research of the structure and function of the human hip in relation to hip fractures in the aged.
2. Department of Human Movement – research on the control and determinants of joint posture and movement in relation to older persons and the biomechanics surrounding a fall.
3. Department of Public Health – research using the aged care linked data to analyse population attributable risk for fall-related injury and cost-benefit analysis of falls.

4.5 RELEVANT LEGISLATION

Legislation specifically for older persons in Australia can be divided into two areas: community welfare and nursing home and retirement village regulation. Falls prevention programs do not fit synonymously with these legislative areas. However, regulatory approaches where the objective is to change policy and/or regulations for advocating these changes, may provide more of an opportunity for a realistic shift in the legislative process. A number of studies included in the systematic reviews (see Appendix A) did not address regulatory approaches directly, but remarked on a component of the programs addressing increased promotion of risks and hazards identification within their settings through policy development. Falls prevention programs need to target potential areas where policy can be adopted that will focus on the reduction of falls.

4.6 RECOMMENDED INTERVENTIONS

Evidence for multifactorial and multidisciplinary falls prevention programs have been widely accepted by state, national and international teams, as no one panacea for the reduction of falls exists. Along with the multifactorial nature of falls, the notion that programs must match their target audience must be progressed. The evidence-base supports the differentiation of community-dwelling, residential aged care and acute care based individuals as integral to the effectiveness of these programs. We also need to maintain support for both large and small target areas for maximal in falls and fall-related injury.

Therefore support for all falls prevention programs, despite their target size, is warranted. A systematic review of the literature pertaining to falls prevention programs is included in the Appendix.

It is important to address programs that focus on individuals in the appropriate setting. It is acknowledged that some of the programs overlap the three target groups, however, the actual emphasis of the program will most likely differ according to the group. For example, while medication review is important for all older persons; community-dwelling individuals may need to identify medications that can cause postural hypotension, and residential aged care settings may need to implement programs that target individuals on certain medications. The following evidence-based recommended interventions are listed according to the target population:

(1) Community-dwelling:

- An increase in muscle strength, flexibility, balance and endurance will reduce the risk for falling (Chandler et al, 1998).
- Reductions in the dosage and number of medications prescribed are associated with a decreased risk of falling (Campbell et al, 1999).
- Osteoporosis identification, prevention and treatment are important components of a fall-related injury prevention program. Mass screening for the identification of low bone density is not advocated due to the high costs associated with mass screening (Commonwealth Department of Health and Family Services, 1999).

(2) Residential Aged Care Settings:

- Early identification of falls risk, incorporated with multiple risk factor modification programs and referral to other specialist services if required, have been identified as successful components to falls prevention programs (Close et al, 1999).
- Research has shown that exercise can increase an individual's independence in performing activities of daily living through an increase in muscle strength, endurance, flexibility and balance (Rudissil and Toole, 1992; Rubenstein et al, 1996).
- Several studies have provided evidence to support interventions that improve prescribing practices and reduce the incidence of polypharmacy in nursing homes (Avorn and Gurwitz, 1995; Gurwitz, Soumerai and Avorn, 1990).
- Vitamin D and calcium deficiencies are major nutritional factors associated with bone loss and hip fractures. Supplementation of vitamin D and calcium were associated with a reduction in hip fractures (Lips, et al, 1996).
- External hip protectors, as a means of reducing the risk of a hip fracture sustained by a fall, have been identified as an effective injury minimisation program (Lauritzen, Pederson and Lund, 1993).
- Management of postural hypotension is important, however, it can stem from a number of causes that must first be identified. If postural hypotension is due to autonomic dysfunction, sleeping in a bed with the head raised to minimise a sudden drop in blood pressure on rising, wearing elastic stockings to minimise venous pooling in the legs, and rising slowly or sitting on the side of the bed for several minutes before standing are a few of the techniques identified to reduce this risk of falling (Rubenstein, Josephson, Osterweil, 1996).
- Staff education and training programs are a necessary component of the multidisciplinary approach to falls prevention (Ray et al., 1997).

(3) Acute Care Dwelling:

- Bed alarm systems that warn hospital staff when patients who are unable to leave their beds unassisted are attempting to do so have been identified as effective in reducing the rate of falls (Tideiksaar et al, 1993).
- The first one to two weeks of hospitalisation can be associated with a high rate of falls due to the unfamiliarity of the environment, new procedures and lack of staff familiarity with the patient's abilities and risks (Hill, Johnson and Garrett, 1988). Staff education can play a key role in falls prevention initiatives in hospital settings.

4.7 EMERGING ISSUES AND FUTURE DIRECTIONS

A recent report written for the government suggests the following emerging points after a systematic review of falls prevention programs (Hill et al, 2000):

Falls prevention approaches for healthy and frail older people will differ:

- Falls prevention approaches within community, residential aged care and hospital settings will differ,
- Multi-faceted interventions are preferable to single risk factor interventions, in all settings,
- Workforce training needs to be addressed, including a range of relevant professional groups, using effective work place learning and practice change strategies,
- Economic evaluation of falls prevention programs is required, and
- There are major gaps in the falls and fall related injury research literature, particularly in residential aged care and hospital settings.

Again it needs to be emphasised that there has been no single identified program in any population that is 'most' effective. Instead the literature suggests that programs must be directed towards identified risk factors among the specified target group and include: multiple components aimed at the multifactorial nature of falls; a multidisciplinary approach; and an evaluation component in order to establish their effectiveness at reducing falls.

It is evident that ongoing comprehensive investigations into the current falls prevention programs in WA are essential. At present, other than the "Falls Prevention Activities for Older People: A National Stocktake", there has been no local survey of state falls prevention activities (National Ageing Research Institute, 2001). As well, a number of falls prevention programs exist in WA and may not have been captured by the "National Stocktake" due to their informal nature. For example, community walking programs that focus on maintaining fitness among older persons are effective in increasing muscle strength and endurance and should be recognised as a falls prevention program.

Recommendations for a state inventory of all programs designed to reduce falls or fall-related injuries among community, residential aged care and acute-care dwelling persons are central to addressing this issue methodically. The key stakeholders must be committed to the concept that identification of the current programs will bring people together in a coordinated system to help continually improve falls education, leading edge programs, research and information and technology.

The importance of falls prevention programs has been placed as a national health priority issue. Escalating health care costs associated with fall related injuries and the personal and societal impacts will help fuel the approaches taken to reduce falls among older people. Drawing together a range of professionals, voluntary bodies, government agencies and others with an interest in this area, will lead to a reduction of the risk factors related to falls and ultimately prevent falls. By identifying new programs and new partnerships, we can endeavour to promote the prevention of falls in the community, residential aged care setting and acute-care settings.

4.8 REFERENCES

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4.9 APPENDICES

Systematic Review

To be included in this inventory of recent systematic reviews, the reviews had to meet all of the following criteria:

- Falls prevention programs
- Relevant to any and/or all persons residing in the community, residential aged care settings or acute-care settings
- National and/or international
- Older persons population
- Single and/or multiple risk factors.

Injury Area: Falls		
Review Citation (including country where the review was conducted)	**Intervention Title (specify each intervention evaluated in the review)**	**Conclusive Remarks (recommended, promising, inconclusive, no evidence, or insufficient evidence)**
National Ageing Research Institute (2001). *Falls prevention activities for older people: a national stocktake*. Commonwealth Department of Health and Aged Care Injury Prevention Section, Canberra.	A stocktake on national falls prevention and fall related injury prevention programs.	Recommendations: Communication Resource sharing Program evaluation and research Workforce training Coordinated effort
Hill, K., Smith, R., Murray, K., Sims, J., Gough, J., Darzins, P., Vrantsidis, F., Clark, R. (2000). *An analysis of research on preventing falls and falls injury in older people: community, residential aged care and acute care settings*. Commonwealth Department of Health and Aged Care Injury Prevention Section, Canberra.	Falls prevention activities in community, residential aged care and acute care settings. **Education/health promotion** **Exercise** **Environmental safety** **Clinical assessment** **Multiple intervention strategies** **Other interventions** **Injury minimisation**	Recommended interventions: **Community**: *Targeting single falls risk factors (home exercise programs, group exercise programs, vitamin D and calcium supplementation, trained volunteers providing in-home health promotion, health screening and falls prevention info, psychotropic medication review, home visits by OTs incorporated with home modifications). *Group exercise programs *Targeting multiple risk factors **Residential aged care** *Multidisciplinary falls risk assessments *Post-fall assessment and targeted multiple risk factor management program *Vitamin D and calcium supplementation **Hospital settings** *Targeted multifactorial intervention program
Evans, D., Hodgkinson, B., Lambert, L., Wood, J., Kowanako, I. (1998). *Falls in Acute Hospitals: A systematic review*. The Joanna Briggs Institute, Melbourne.	Interventions to reduce the incidence of falls in patients during hospitalisations. ***Pressure alarms** ***Identification wrist bracelets**	Inconclusive evidence for both pressure alarms and identification wrist bracelets.

Injury Area: Falls		
Review Citation (including country where the review was conducted)	**Intervention Title (specify each intervention evaluated in the review)**	**Conclusive Remarks (recommended, promising, inconclusive, no evidence, or insufficient evidence)**
Feder, G. (2000). Guidelines for the prevention of falls in people over 65. *British Medical Journal,* **321,** 1007-1011. London	Assessments of individuals living in a community or residential setting. **Exercise interventions** **Multifaceted interventions**	Recommendations: Multifaceted interventions and assessment of high risk nursing home residents. Single trials show that assessment and modification of risk factors after a fall and hip protectors No evidence: home assessment.
Gardner, M., Robertson, M., Campbell, A. (2000). Exercise in preventing falls and fall related injuries in older people: a review of randomised controlled trials. *British Journal of Sports Medicine,* **34,** 7-17. New Zealand	"A review of controlled clinical trials designed with the aim of lowering the risk of falling and/or fall injuries through an **exercise only intervention *or* an intervention that included an exercise component**."	Promising: a significant reduction in the rate of falls or the risk of falling in the intervention groups.
Gillespie, L., Gillespie, W., Cumming, R., Lamb, S., Rowe, B. (2001). Interventions for preventing falls in the elderly. *The Cochrane Library,* **1,** 1-93. New Zealand	Assessment of community-dwelling, institutional or hospital care: **Exercise/physical therapy interventions** **Home hazard modification** **Cognitive/behavioural interventions** **Medication withdrawal/adjustment** **Nutritional/vitamin supplementation** **Hormonal and other pharmacological therapies** **Multidisciplinary, multifactorial, health/environmental risk factor screening and intervention** **System modifications to prevent falls in high risk hospital patients.**	Effective interventions: muscle strengthening and balance retraining Tai Chi group exercise Home hazard assessment and modification Withdrawal of psychotropic medication Multidisciplinary, multifactorial, health/environment risk factor screening.

Injury Area: Falls		
Review Citation (including country where the review was conducted)	**Intervention Title (specify each intervention evaluated in the review)**	**Conclusive Remarks (recommended, promising, inconclusive, no evidence, or insufficient evidence)**
American Geriatrics Society, British Geriatrics Society, American Academy of Orthopaedic Surgeons, Panel on Falls Prevention (2001). Guideline for the Prevention of Falls in Older Persons. *Journal of the American Medical Association,* **49,** 664-672. USA	Falls prevention programs in community settings, long-term care facility and acute hospital units. Interventions addressed: **Gait training, assistive devices, review and modification of medication, exercise programs, treatment of postural hypotension, modification of environmental hazards, treatment of cardiovascular disorders, training, behavioural and education programs, restraints, bone strengthening medications, cardiovascular interventions, vision, footwear**	Recommendations: *Community- Gait training, assistive devices, review and modification of medication, exercise programs, treatment of postural hypotension, modification of environmental hazards and treatment of cardiovascular disorders. *Long-term/assisted living – staff education programs, gait and assistive device training, review and modification of medications. *Acute hospitals – insufficient evidence. Promising *Long-term care - comprehensive assessment, staff education, assistive devices and reduction of medications.
Province, M., Hadley, E., Hornbrook, M., Lipsitz, L., Miller, J., Mulrow, C., Ory, M., Sattin, R., Tinetti, M., Wolf, S. (1995). The effect of exercise on falls in elderly patients: A preplanned meta-analysis of the FICSIT trials. *Journal of the American Medical Association,* **273,** 1341-1347. USA	Interventions included **exercise components that varied across studies in character, duration, frequency, and intensity**. Training was performed in one area or more of endurance, flexibility, balance platform, Tai Chi (dynamic balance) and resistance. Several treatment arms included additional non-exercise components, such as behavioural components, medication changes, education, functional activity, or nutritional supplements.	General exercise and those that include balance reduced the incidence of falls. No exercise component was significant for injurious falls (but power was low to detect this outcome).
van Haastregt, J., Diederiks, J., van Rossum, E., de Witte, L., Crebolder, H. (2000). Effects of preventative home visits to elderly people living in the community: systematic review. *British Medical Journal,* **320,** 754-758. The Netherlands	Assessment of **preventive home visits.**	No clear evidence was found for the effectiveness of preventive home visits.

Injury Area: Falls		
Review Citation (including country where the review was conducted)	**Intervention Title (specify each intervention evaluated in the review)**	**Conclusive Remarks (recommended, promising, inconclusive, no evidence, or insufficient evidence)**
Carter, N., Kannus, P., Khan, K. (2001). Exercise in the prevention of falls in older people: A systematic literature review examining the rationale and the evidence. *Sports Medicine,* **31,** 427-438. Canada	A systematic review of **exercise interventions** to modify risk factors for falling and influence fall rates. More specifically exercise components such as **strength, flexibility, balance and reaction times**.	Promising: exercise can theoretically modify the intrinsic fall risk factors. Inconclusive: the optimal exercise prescription to prevent falls has not yet been defined.
Evans, D., Hodgkinson, B., Lambert, L. (2001). Falls risk factors in the hospital setting: A systematic review. *International Journal of Nursing Practice,* **7,** 38-45. Australia	*Summary of evidence on the **factors that escalate the risk** of patients falling during hospitalisation.*	*"The factors identified that are associated with an increased risk of falling include impaired mental status, special toileting needs, impaired mobility, and a history of falling".*
King, M., Tinetti, M. (1996). A multifactorial approach to reducing injurious falls. *Clinics in Geriatric Medicine,* **12,** 745-769. *USA*	*"Review of epidemiology of fall injuries in community-dwelling older adults, identifies intrinsic risk factors and characteristics of the fall that predispose an older person to injury and discussed the results of intervention studies that have examined the effect on fall-related injuries."*	*Evidence suggests that it is possible to distinguish potentially treatable risk factors for fall injury.*
Commonwealth Department of Health and Aged Care (2000). *National Falls Prevention for Older People Initiative 1999-2003. 'Step out with confidence' Background Paper.* Commonwealth Department of Health and Aged Care Injury Prevention Section, Canberra.	*The purpose of this background paper is to provide information on the context, aims and activities of the National Falls in Older People Initiative.*	*There are six key activities which form the foundation of the programs* **Community focused demonstration projects* **Development of best practice in residential aged care and acute care* *Development of falls prevention competencies for the workforce* **Closing the gaps in knowledge though research* **Progress and performance measurement through evaluation and monitoring, and* **Information and liaison activities.*

Injury Area: Falls		
Review Citation (including country where the review was conducted)	**Intervention Title (specify each intervention evaluated in the review)**	**Conclusive Remarks (recommended, promising, inconclusive, no evidence, or insufficient evidence)**
Parker, M., Gillespie, L., Gillespie, W. (2001). Hip protectors for preventing hip fractures in the elderly. *The Cochrane Library,* **1,** 1-23. **UK**	*Assessment of the effectiveness of* ***hip protectors*** *in the reduction of hip fractures after a fall.*	*"Hip protectors appear to reduce the risk of hip fracture within a selected population at high risk of sustaining a hip fracture."*
Schwendimann, R. (2000). Fall prevention in acute hospital care. A literature review. *Pflege,* **13,** 169-179. *Germany*	*Risk assessment and preventive care measures that focused on reducing the risks of falling in everyday clinical life by increasing* ***attention and presence of the staff caring for patients****.*	*In German – abstract results only: Inconclusive: there were no significant relationships between preventive measures and a reduction in patient falls.*

An ongoing problem that was highlighted in a number of the systematic reviews was the limitations of a number of studies and the inability to include them in the respective systematic review. Methodological quality must be included in the process of systematic reviews, however, a number of studies with important findings may have been disregarded because of this.

5. FALLS IN CHILDREN

5.1 NATURE AND EXTENT OF THE PROBLEM

The National Injury Intervention Plan (Commonwealth of Australia, 2001) identified falls among children as an area of high priority for injury prevention in Australia. Between 1979 and 1998 there was an average of 11 childhood deaths due to falls annually. While this represents a small proportion of child deaths due to injury or poisoning (2.3%), falls are the leading cause of hospitalisation due to injury among children aged 0-14 years. In 1999-2000, there were 26,202 hospitalisations of children aged 0-14 years for injuries from falls, with a hospitalisation rate of 666.2 per 100,000 (Al-Yaman et al, 2002).

Males had a higher hospitalisation rate of 791.5 per 100,000 compared to 534.4 per 100,000 for females. The age group with the highest rate for falls in both sexes was children aged five to nine years with a rate of 781.9 per 100,000. The age group for females with the highest hospitalisation rate is the five to nine year age group with a rate of 696.8 per 100,000, whilst males 10-14 years old have the highest hospitalisation rate of 871.4 per 100,000, which is 2.4 times higher than the female rate for the same age group (Al-Yaman et al, 2002).

The age of the children dictates the circumstances leading to fall injuries. Children aged 0-4 years were often injured at home (50%) and nearly 60% of hospitalisations were due to falls from one level to another involving furniture such as beds and chairs. Victorian emergency department data indicate that 90% of falls in this age group were falls up to one metre. Children this age generally suffer more head and face injuries than older children, probably due to their head being proportionately bigger at this age, and that these children are less likely to break their fall using their hands (Steenkamp and Cripps, 2001).

Children aged five to nine have less injuries occurring at home (22%) with injuries also occurring at places of recreation or sport (15%) or public buildings including schools (14%). In this age group, about 60% of fall-related injuries were from one level to another, but a larger proportion of these, compared to the 0-4 year age group, involved playground equipment. Children aged 10-14 years are least likely to be injured at home (12%) with the largest proportion of injuries occurring at places of sport and recreation (25%).

Both the five to nine and 10-14 year age groups had similar areas of concern for fall-related injuries when looking at the Victorian emergency department data. It was found that falls were most likely to occur from play equipment including trampolines, bicycles and small wheeled equipment, trees, some sporting activities and bunk beds. Children aged five to nine years were also injured from falls involving stairs and steps. In these age groups, injuries are more likely to be to the forearms, and in the 10-14 age group fractures to the lower limbs were also common (Steenkamp and Cripps, 2001).

5.2 RISK FACTORS

Nursery furniture and baby walkers

These products are risk factors for falls in younger children aged 0-4 years. Baby walkers represent a fall related risk factor because they are not presently required to have braking mechanisms when one or more wheels drop off the riding surface. Nursery furniture has a greater risk of causing falls in young children due to the greater contact that this age of child has with these products, and the lack of mandatory standards to make these products safer (Watson et al, 1997).

Tables, stools and chairs

These items of furniture are hazardous for young children aged 0-4 years. They are not specifically designed for use by young children, but with increasing mobility young children become more likely to climb, sit on and fall off tables, stools and chairs (Steenkamp and Cripps, 2001).

Beds and bunk beds

These products represent a hazard for children aged 0-14 years. This is primarily due to their height, with normal beds a risk factor for young children aged 0-4 years and bunk beds a risk for older children aged five to 14 years (Steenkamp and Cripps, 2001; Watson et al, 1997).

Stairs and steps

Stairs and steps represent a fall hazard for all children aged 0-14 years (Steenkamp and Cripps, 2001).

Playground equipment and playground surfacing

Playground areas are by the nature of their use hazards that are associated with a high number of child fall injuries. In particular there is greater risk associated with monkey bars with a fall height greater than 1.5 metres (Chalmers et al, 1996; Macarthur et al, 2000). Using appropriate playground surfacing has also been effective in reducing fall related injuries (Sibert et al, 1999).

Other play equipment and activities: trampolines, bicycles, skateboards, in-line skates, scooters, trees and horse riding

The above play equipment and activities are associated with a large number of fall injuries in children aged five to 14 years (Steenkamp and Cripps, 2001).

Lack of training for children riding bicycles, horses, and small-wheeled equipment

It has been proposed that one factor contributing to the high rates of injury associated with the above activities is a lack of training. As a certain amount of expertise is required to safely use this equipment or ride horses, a lack of training in these activities is a risk factor for fall injuries for children (Ashby and Corbo, 2000; Steenkamp and Cripps, 2001).

5.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government:
Department of Health WA
Education Department WA
Department of Consumer and Employment Protection
Department for Community Development

Commonwealth Government:
Commonwealth Office of Road Safety

Commonwealth Regulatory Body:
Standards Association of **Health Services:**
WA Teaching Hospitals
St John Ambulance
Child Health Nurses
General Practitioners

Other Local:
Kidsafe WA
Healthway
Playsafe Advisory Association
Local Governments and Shires
Schools

5.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Department of Consumer and Employment Protection

This Department runs the Think-Safe program. In relation to childhood injuries they have the Think-Safe club and website which promotes and actively encourages children to "Spot the hazard. Assess the risk. Make the changes" for unsafe situations (http://www.safetyline.wa.gov.au/club/). These are arranged on the website so that children can look through them, or teachers can print off activity sheets for children to write on and talk about hazardous situations. Most of the hazardous situations that are described relate to situations where falls could be an issue. This Department has also issued media releases concerning the safe use of trampolines.

Department of Health WA

The public health division of the Health Department of Western Australia produce a brochure titled *Let's Look at Head Injuries* (http://www.public.health.wa.gov.au/LLA/3028llaheadinjuries.pdf). It discusses potential hazards in the home such as cots, bunk beds and play equipment, and suggests prevention strategies which may minimise risks associated with falls. This is part of a child and infant health information series of brochures which are distributed to parents through community health nurses and general practitioners.

Safety Rules OK

The Safety Rules OK program is a school based project focussing on promoting safety in schools. The project is a joint initiative of Kidsafe WA, the Department of Consumer and Employment Protection, Department of Health WA, Healthway and the Department of Education of WA. A large number of schools participated in the program in 1998 and 1999 with multiple activities, fact sheets, a quiz and other methods used to promote injury prevention. The Safety Rules OK program continues to promote safety through schools and has also been promoted through various arts centres or theatre companies such as Spare Parts Puppet Theatre. While the focus is on school based injury prevention, most of the information provided to students is relevant to injury prevention out of school and in the home. Relevant to falls prevention is safety information for skateboarding and in-line skating, the use of bicycle helmets and playground safety. Information is provided to teachers about many safety areas, along with checklists to ensure that playgrounds are safe, and home and farm safety checklists that can be given to students. The Safety Rules OK website can be viewed at: http://www.safetyrules.health.wa.gov.au/

Kidsafe WA

Kidsafe runs a Safety Demonstration House and Resource Centre in Perth. The safety house highlights situations which could be hazardous for young children around the home, and illustrates prevention methods which can be used to reduce the risk of injury. The resource centre has a range of brochures which are available for parents to reduce the risk of injury. Falls in children, being the cause of many child injuries, are a focus of this safety awareness.

BP Bike Ed

The BP Bike Ed is a joint initiative of BP, Kidsafe and the Commonwealth Office of Road Safety. The program gives resources to primary school teachers to promote the safe use of bicycles. This program is designed to teach children road rules and make them more competent riders. It also promotes the safe use of bicycles and in doing so is a prevention strategy which may help to reduce the number or the impact of falls from bicycles.

Playsafe Advisory Association

The Playsafe Advisory Association helps groups in the community to design safe playgrounds. Their aim is to help design play environments which strike a balance between children enjoying themselves on the play equipment and the safety of the equipment.

Department for Community Development

The Parenting Line is operated through the Department for Community Development to provide advice and education to parents.

- **Parenting Line** Metro: 9272 1466; Regional: 1800 654 432

5.5 RELEVANT LEGISLATION

Playground equipment

Australian Standard AS 1924.1, 1924.2 – 1981 Playground Equipment for Parks, Schools, and Domestic Use

These standards provide general requirements for playground equipment in order to minimise risks of injury for children. They include details regarding construction materials and general design requirements. They specify the requirements for guard railings which is

especially important in reducing the likelihood of falls. They also specify the maximum height for specific apparatus, with static equipment such as monkey bars required to be 2.5 metres or less.

Australian Standard AS 4422 – 1996 Playground Surfacing – Specifications, Requirements and Test Method
This standard specifies the requirements for surface materials directly below and surrounding playground equipment. It specifies that the maximum deceleration experienced during impact with the surface (in areas with a fall height over 50cm) must be less than or equal to 200*g, or 200 times the acceleration due to gravity. It also specifies the methods required for testing the various materials for deceleration levels.

Australian Standard AS 4486.1 – 1997 Playgrounds and Playground Equipment: Development, Installation, Inspection, Maintenance and Operation
This standard provides guidelines for the planning and development of playgrounds in a manner which will minimise the risk of injury to children. It refers the reader to the other relevant standards (1924.1, 1924.2, 4422) and incorporates these into a framework for building and maintaining playgrounds in a safe manner.

Draft Australian Standard DR01348 Trampolines
While not an official Australian Standard yet, this draft proposal provides specifications for components, assembly, and instructional material for the safe use of trampolines.

Stairs
Australian Standard AS 1657 – 1992 Fixed Platforms, Walkways, Stairways and Ladders – Design, Construction and Installation
This standard specifies the dimension and strength requirements of stairs walkways and ladders. It does not specifically make these structures 'safe' for children. The specifications are designed to make them safe for general use.

Furniture
Australian Standard AS 4220 – 1994 Bunk Beds
This standard specifies the requirements for bunk beds in terms of material, construction, design and performance specifications. Of specific importance to the safety requirements which should minimise falls are the requirements for guardrails on the top bunk, and the maximum height of the top mattress being 1550mm, or 1650mm where the top mattress is above a play area or workstation.

Australian Standard AS 2172 – 1995 Cots for Household Use – Safety Requirements
This standard specifies design, construction and material requirements for cots. It also specifies labelling, marking and performance criteria which are related to safety. Of importance in reducing falls in children, the standard includes requirements for the depth of cots from the top of the edge of the lowest side to the top of the mattress. In fixed cots this is 600mm, and in all cots the warning instructions are designed so that a minimum of 500mm distance is maintained.

Draft Australian Standard DR 99531 High Chairs – Safety Requirements
This draft proposal specifies the design, materials and construction for high chairs. It includes the specifications for harness points which are especially important in reducing the risk of falls.

Prams and baby walkers

Australian Standard AS 2088 – 2000 Prams and Strollers – Safety Requirements
This standard specifies the requirements for the construction of prams and strollers. Requirements include a parking device, a permanently attached harness, and informative labelling.

Australian Standard AS 3747 – 1989 Harnesses for use in Prams, Strollers and High Chairs
This standard specifies the requirement of a 3-point crotch strap to be fitted to all strollers and prams.

In late 2002 a new mandatory consumer product standard for baby walkers will be declared under the *Trade Practices Act*. This standard will be based on the US standard, which 70-80% of baby walkers on the market already comply with. This standard requires a braking mechanism when one or more wheels drop off the riding surface, designed to reduce falls down stairs (Injury Issues Monitor, 2002).

Bicycle helmets

Australian Standard AS 2063 – 1996 Pedal Cycle Helmets
Cyclists are required to wear helmets which conform to this Australian Standard. It is designed to provide head protection in the event of a crash or falling from a bicycle.

5.6 RECOMMENDED INTERVENTIONS

Preventing falls in children requires the use of multiple strategies. This is due to falls being associated with different situations as children develop physically, cognitively and socially. Children aged 0-4 years are more likely to be injured in the home, with associated stairs or furniture such as beds, bunk beds, chairs, tables, baby walkers and nursery furniture. Children aged five to 14 are more likely to have fall related injuries due to bicycles, skateboards, in-line skates, playground equipment, trampolines and some sporting activities. Bunk beds were indicated as being involved in falls at these ages, as were stairs and steps (Ashby and Corbo, 2000; Steenkamp and Cripps, 2001). Given these associated factors interventions need to be targeted at the relevant activities for the associated age groups.

(1) Develop Australian Standards for some products, and mandate existing standards for nursery furniture

The use of the Australian standards should reduce injury rated due to falls on the relevant nursery furniture. The imminent introduction of standards for high chairs and baby walkers should further help in reducing the risk of fall related injury in young children. It has also been suggested that a standard be developed for change tables (Watson et al, 1997). The use of a full 5-point shoulder harness has been recommended as the best harness to reduce fall injuries from prams and strollers (Watson and Ozanne-Smith, 1993). The inclusion of the 5-point harnesses for high-chairs, prams and strollers could cause a significant reduction in falls from this equipment.

Of relevance to older children aged five to 9 years, it has been found that complying with the current Australian Standard for bunk beds reduces injuries by 30% (SAHC, 1990), and that the use of side rails significantly reduces head and face injuries (Selbst et al., 1990). It has also been suggested that the voluntary standards for bunk beds, prams and cots should be mandated due to the lack of compliance in the marketplace (Watson et al., 1997).

(2) Mandate standards for baby walkers, or ban due to other (non-fall) hazards

The creation of standards for baby walkers is, however, a more difficult issue. The adoption of the American standard should help to reduce fall related injury in young children, as it has done in America (Scott, 2002), however, a large proportion of baby walker victims are injured due to other hazards such as reaching stoves, power points and kettle cords which they would not be able to reach without a walker (Thompson, 2002).

(3) Education of parents about fall hazards for children

Education campaigns which are aimed at informing the public and professionals through the use of injury data have been effective in reducing injury rates associated with baby walkers. It has also been recommended that these types of campaigns be additional to point of sale information and brochures about the correct use of products and the hazards associated with the relevant products. Community service TV advertisements have also been recommended as a method to increase parental awareness about fall related injuries to children (Watson et al, 1997)

General safety education of parents such as the Safe Living Program run in a Victorian shire have found a moderate gain in awareness of injury hazards, but no reduction in hospitalisation for injuries (Ozanne-Smith et al, 2002). Injury prevention education, through extended safety counselling and children's safety centres with educational materials and where safety products can be purchased, has also been successful at improving home safety practices (Gielen et al., 2002; State of Victoria, 2001). The use of multiple education strategies is recommended as the best approach to reduce fall related injuries to children.

(4) Review playground standards

The implementation of a recent Australian standard (AS 4481.1 – 1997) should be of some benefit in reducing falls in playgrounds. Being a new standard, which is implemented on a voluntary basis, it is unlikely that many existing playgrounds will be redesigned, built and maintained according to these standards. Therefore current playground equipment will still pose the same injury risks. This standard does not impact on the height requirements of equipment and the existing standard states that static equipment should not exceed 2.5 metres in height. Monkey bars are indicated in many injuries of children aged five to 9 years and previous research has found that children falling from over 1.5 metres have a much greater risk than those falling from below 1.5 metres (Chalmers et al, 1996; Macarthur et al, 2000). This indicates that an evidence based safety standard needs to replace the existing standards (AS 1924.1 and AS 1924.2).

(5) Mandate the use of appropriate under-surfacing in playgrounds

The use of impact absorbing surfaces is another design feature of play areas that needs to be adhered to. There is an existing standard (AS 4422 – 1996) which specifies the depth of surface and the minimum allowable absorption of 200*g. Increasing the depth of surface has been effective in reducing fall injuries (Sibert et al, 1999), and another study has shown that less injuries occur when the absorption is less than 150*g (Laforest et al, 2001). In a survey of 240 public playgrounds in NSW it was found that 45.4% had appropriate under-surfacing and only 12.8% had a sufficient depth of under-surfacing (Kidsafe, 1995). While impact-absorbing surfaces have been demonstrated as effective in reducing injury, the standard needs to be adhered to (or improved upon) to be effective.

(6) School based education and formal instruction and safety training for children when learning to bicycle, skateboard, in-line skate and horse ride

To prevent falls in children aged five to 14, there is considerable scope for intervention programs in the form of school based and other forms of education programs. Firstly, in the use of bicycles, in-line skates and scooters it has been recommended that formal instructions or lessons be given to children learning to ride these safely (Ashby and Corbo, 2000). The use of appropriate protective equipment such as bicycle helmets, wrist guards, knee and elbow pads also needs to be promoted as essential when riding, as these will help to reduce injuries when falls occur (Routley, 1997). Safety training, and hazard awareness, for children involved in horse riding is another area where education needs to be provided due to the high numbers of injuries.

5.7 EMERGING ISSUES AND FUTURE DIRECTIONS

Watson et al (2000) have highlighted the lack of in-depth exposure, case series and case control studies to determine specific risks associated with fall related injuries. This research needs to investigate the contribution of physical features and other factors involved in fall injuries associated with playground equipment, playground under-surfacing, other play equipment, nursery furniture, other furniture and other situations. This research is required to guide new product standards and for review of existing standards to make safer equipment with a decreased risk of fall injuries in children. It could also guide other injury prevention strategies such as skills training and education for parents and children.

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6. POISONING IN CHILDREN

6.1 NATURE AND EXTENT OF THE PROBLEM

The National Injury Intervention Plan (Commonwealth of Australia, 2001) identified poisoning among children as an area of high priority for injury prevention in Australia. Poisoning is very rarely a cause of mortality in children; however, in young children (0-4 years) poisoning represents the second highest cause of morbidity due to injury in Australia. In 1999-2000, there were 3,711 hospitalisations of children aged 0-14 for accidental poisoning, with a hospitalisation rate of 96.9 per 100,000 (Al-Yaman et al, 2002). The rate is highest in children aged one to four years with a hospitalisation rate of 285.7 per 100,000 children.

Males represented 54% of cases admitted to hospital in children aged zero to four years, and higher hospitalisation rates were apparent for children living in rural areas (O'Connor, 2001). In Western Australia from 1988-1993, males had a higher hospitalisation rate of 357 per 100,000 compared to 294 per 100,000 for females for children aged zero to four years. Children in rural areas were more likely to be hospitalised due to poisoning, at a rate of 511 per 100,000 population, compared to a metropolitan rate of 227 per 100,000 population. Aboriginal children were also at greater risk of accidental poisoning in Western Australia from 1988-1993 with a hospitalisation rate of 619 compared to a non-Aboriginal rate of 303 per 100,000 (Gillam et al, 1995).

Children are accidentally poisoned with various agents. The Poisons Information Centre (PIC) is usually the first place contacted in cases of poisoning. From July 1993 – June 1997 medicinal products were involved in 33% of poisoning related calls for children aged less than 18 years; household products, pesticides and chemicals were involved in 46% of cases; bites and stings were responsible for 11%; and plants or food were the cause of 10% of poisoning related calls (Finn et al, 1998).

Of all Western Australian children aged zero to four years hospitalised by poisoning during 1988-1993, medicinal substances accounted for 59% of accidental poisonings. Non-medicinal substances including gardening, hardware, petroleum and cleaning products were involved in 26% of cases. Solids, liquids, gasses and vapours (including carbon monoxide) not classified in the above categories accounted for 8% of cases. Foodstuffs and poisonous plants represented 6% of poison related hospital admissions and alcoholic beverages and alcohol-based products made up the remaining 1%. Of the medications that children were accidentally poisoned with, 17% of cases were due to sedative-hypnotics and other psychotropic agents; 16% of cases were due to analgesics (such as paracetamol), antipyretics and antirheumatics; 12% of cases due to other drugs acting on the central nervous system; and the remaining 55% of cases were accidentally poisoned by various other drugs (Gillam et al, 1995).

6.2 RISK FACTORS

Poisons not kept in Child-Resistant Closures (CRC's) and poisons kept in reach of children

With children aged zero to four years most at risk of poisoning, the storage of poisons is especially important in reducing the chances of poisoning incidents. Reduction in poisoning rates due to the use of CRC's has demonstrated that poisons not kept in CRC's are at greater risk of causing a poisoning incident (Clark and Walton, 1979; Rodgers, 1996; Scherz, 1970; Sibert et al., 1977; Walton, 1982). While CRC's are helpful in reducing risk, the safe storage of poisons is also required to reduce poisoning incidents (Hoy et al, 1999).

Lack of parental awareness of poisons

Parental knowledge about poisons, and the various prevention strategies, is also important. Several studies have demonstrated that increasing parental awareness about poisoning leads to improvements in home safety practices, such as knowing the PIC phone number and storing poisons safely (Krenzelok and Garber, 1981; Woolf et al, 1987, 1992).

Medicinal products, household cleaning products pesticides and herbicides

Medicinal products represent a great risk for serious poisoning, with 59% of poisoning related hospitalisations of children aged zero to four years being due to medicinal substances. Household cleaning products, pesticides and herbicides were also at high risk of causing hospitalisation (Gillam et al, 1995).

6.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government:
Department for Community Development
Department of Health
Environmental health division
Department for Consumer and Employment Protection
Department of Housing and Works (Homeswest)
Department of Education

Federal:
Therapeutic Goods Administration (Australian Department of Health and Aged Care)
Standards Association of Australia
National Return and Disposal of Unwanted Medicines Ltd

Health Services:
WA Teaching Hospitals
St John Ambulance
Poisons Information Centre
General Practitioners

Other Local:
Kidsafe WA, The Child Accident Prevention Foundation of Australia
Healthway
Manufacturers of drugs and poisons
Child care centres

6.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

WA Poisons Information Centre

The Western Australian Poisons Information Centre (PIC) is a government funded telephone information service. Its function is to provide members of the general public and health professionals with information about poisoning. The centre provides emergency first-aid advice in the event of poisoning or suspected poisoning, follow-up treatment advice and also provides information on the safe use, storage and disposal of toxic materials. From 1993/94 to 1996/7 in Western Australia the average number of calls to the PIC was 27,160 per year, or about 75 calls per day. The majority (66%) of poisoning related calls to the PIC were related to patients under the age of 18, with 45% relating to children one to four years of age (Finn et al, 1998).

Of importance to the health system is that only 20% of callers were advised to see a doctor or go to hospital. This helps prevent an unnecessary burden on hospital emergency departments. The PIC is also in a position to provide information about safe use, storage and disposal of poisons to people at high risk of poisoning. This information is provided verbally and in the form of pamphlets, stickers with the telephone number on it, posters and fact sheets.

- **Poisons Information Centre** phone 13 11 26

Kidsafe WA and Healthway

The Poisons Prevention Project was undertaken by Kidsafe WA between September 1995 and February 1997. The project was aimed at reducing the number of children hospitalised as a result of accidental poisoning. This was done through health promotion which targeted parents and carers of children under five years of age. The project was funded by Healthway with the main message of the campaign focussing on the safe storage of poisons with the catch phrase of “Poisons. Lock up and away.” This message was used for its simplicity and because it was believed that preventing children gaining access to poisons was the best intervention to prevent poisoning. The Kidsafe Resource Centre also stocked cabinets with child resistant locks. The campaign also promoted ringing the PIC as the recommended first action in a poisoning incident (Duncan and Wilshire, 1997).

The campaign message was conveyed through a launch of the program which received news coverage, radio, newspaper and shop-a-docket advertising, and shopping centre promotions. The message was also distributed through health care professionals such as nurses, pharmacists, general practitioners, midwives and community nurses. Display kits were also supplied to interested libraries, hospitals and public health units (Duncan and Wilshire, 1997).

The campaign was evaluated through pre and post-testing of parents with children under the age of five. It was successful in increasing knowledge and the use of locking poisons away from children prevention strategy, but was unsuccessful in increasing awareness of the strategy of keeping poisons out of reach. Ringing the PIC was more likely to be a first action in a poisoning emergency and the PIC number was also more likely to be beside the telephone at post-testing. While the Poisons Prevention Project is not a current activity, it did raise public awareness and increase the use of poisons prevention strategies. The use of healthcare professionals to distribute information to target parents and carers of young children should have an ongoing impact on poisoning prevention through continued

promotion of the need for safe storage of poisons, and the use of the PIC as first action in a poisoning incident (Duncan and Wilshire, 1997).

Return Unwanted Medicines (RUM) project

The RUM project is a free disposal service for out of date and unwanted medicines. It operates through pharmacies and is backed through Commonwealth funding from the Australian Department of Health and Aged Care. One of the principal aims of this project is to reduce the likelihood of poisoning from medicinal products. By encouraging the disposal of medicines at pharmacies, it should reduce the amount of poisons near young children (in the home), and by doing so reduce the chance of poisoning. In media releases relating to this project other poison prevention messages are also promoted, such as the use of child resistant containers and child restraint locks.

Department for Community Development

The Parenting Line is operated through the Department for Community Development to provide advice and education to parents. It provides no specific poison prevention education sessions but provides home safety advice and general safety information to parents.
Parenting Line Metro: 9272 1466; Regional: 1800 654 432

Department of Consumer and Employment Protection

This Department runs the Think-Safe program. In relation to childhood injuries they have the Think-Safe club and website which promotes and actively encourages children to "Spot the hazard. Assess the risk. Make the changes" for unsafe situations (http://www.safetyline.wa.gov.au/club/). These are arranged on the website so that children can look through them, or teachers can print off activity sheets for children to write on and talk about hazardous situations. One of these situations includes the storage of medicines and poisons.

Safety Rules OK

The Safety Rules OK program is a school based project focussing on promoting safety in schools. The project is a joint initiative of Kidsafe WA, the Department for Consumer and Employment protection, Department of Health WA, Healthway and the Department of Education of WA. A large number of schools participated in the program in 1998 and 1999 with multiple activities, fact sheets, a quiz and other methods used to promote injury prevention. While the focus is on school based injury prevention, the fact sheet for poisoning is relevant to home poisoning and provides general information about who is most at risk, common poisoning agents and statistics on how poisoning occurs in the home with examples. The following prevention strategies are promoted in this fact sheet: disposing of unnecessary poisons, keeping poisons out of reach and sight in locked cupboards if possible, keeping poisons in original packaging (with warnings and child resistant closures) and keeping the PIC number near the phone in case of emergency. The Safety Rules OK website can be viewed at: http://www.safetyrules.health.wa.gov.au/

Homeswest

Homeswest fit one cabinet with a child resistant lock on a bathroom, laundry and kitchen cupboard in all of their new homes.

6.5 RELEVANT LEGISLATION

Commonwealth
Therapeutic Goods Act 1989

Commonwealth requirements for the labelling and packaging of poisons are set out in the *Standard for the Uniform Scheduling of Drugs and Poisons* (SUSDP: Commonwealth of Australia, 2001b). Manufacturers of drugs and poisons must comply with this standard under the Therapeutic Goods Act 1989. In this standard the labelling and packaging requirements are stated for drugs and poisons from each classification schedule. There are nine schedules. These include three schedules for pharmacy and prescription medicines (Schedules 2, 3 and 4), four schedules for other poisons (Schedules 5, 6, 7, and 8), one schedule for substances prohibited by law except for scientific purposes approved by federal or state health authorities (Schedule 9), and one (Schedule 1) which is intentionally left blank. The labelling and packaging requirements vary depending on the classification schedule of the product.

Each schedule has particular requirements for labelling of the product. These requirements include minimum sizes for each warning or instruction. For example a Schedule 6 poison requires the following warning at the top of the label:

POISON
KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

This warning is altered depending on the size of the bottle, and must also state the name and concentration of the poisonous substance, safety directions and first aid instructions. The warnings on packaging are designed to be informative and promote the safe storage and use of drugs and poisons.

Australian Standard AS 2216 – 1997 Packaging for Poisonous Substances
The SUSDP stipulates that poisons must meet the requirements of *Australian Standard AS 22167 – 1997, Packaging for Poisonous Substances* for packaging of solid and liquid poisons. This standard does not apply to medicines.

Australian Standard AS 1928 – 2001 Child-Resistant Packages
This standard stipulates the requirements of Child-Resistant Closures (CRC's) on specified poisons. The poisons that must have CRC's are a list of various oils, alkaline salts, acids, hydrocarbons, and some other substances, however, not medicines. Included in this standard are requirements for non-reclosable packages such as blister and strip packages that medicines are typically packaged in. The standard does not require testing of these packages to determine whether children find these packages difficult to open. The standard for these packages is to ensure that these packages provide a physical barrier, that medicines cannot leak, and that they will show signs of tampering.

State

Poisons Prevention Act 1964

This legislation is designed to regulate and control the possession, sale and use of poisons. It regulates licensing and authorisation of people who can sell and produce poisons. This legislation does not impact on the use of CRCs and the scheduling of drugs and poisons as set out in the SUSDP.

6.6 RECOMMENDED INTERVENTIONS

(1) Increase use of child-resistant closures (CRCs)

The emphasis on primary prevention from accidental poisoning has focussed on the use of child resistant packaging. Primary prevention of poisoning through the introduction of CRCs in the late 1970's and early 1980's in Australia and other countries has proved to be successful in reducing the rates of death and hospitalisation from accidental poisoning (Clark and Walton, 1979; Rodgers, 1996; Scherz, 1970; Sibert et al, 1977; Walton, 1982). While CRCs are clearly stated in the SUSDP for some poisonous substances, this list does not include medicinal products.

Given the strong support in the literature it is recommended that the use of CRCs be continued and expanded for use with medications. As a large proportion of child poisoning hospitalisations are due to medicinal substances, the regulation of child resistant packaging for all medications where there is potential for poisoning should be explored.

(2) Make CRCs more user friendly (while maintaining child resistant properties)

While CRCs do provide considerable protection to children they are not necessarily 'child proof' (O'Connor, 2001). For instance, many poisonings occurred when the CRC had been removed while the substance was in use, or between uses, when the child managed to remove the CRC, or the poison had been transferred into an alternative container without a CRC (Gillam et al, 1995). Transferring of poisons often results from difficulties older people have with CRCs, and steps have been taken in the United States to improve child-resistant packaging so that older people can use them with minimal effort whilst still maintaining child-resistant characteristics (Rodgers, 1996). The more user friendly the closures are the more likely they are to be used as intended.

(3) Evaluate the effectiveness of non-reclosable packaging for reducing poisoning in children

Non-reclosable packaging such as blister packs and foil wrappers to package medicines is included in the Australian Standard for child-resistant packaging, however, there appears to be no specific evidence that these forms of packaging are child resistant and reduce child poisoning. They are not required to be tested to determine whether children find these packages difficult to open. Testing of these packages merely tests that the packaging provides a physical barrier to ensure medicines cannot leak, and show signs of tampering.

Given the lack of supporting evidence for the child-resistance of blister and strip packaging, CRCs would be better suited to medicinal products commonly associated with poisoning. Blister and strip packages should be tested for child-resistant properties. In the United

Kingdom this will be implemented shortly and Australian Standards should follow and be based on this (BSI, 2002). Further research is required to determine if non-reclosable packaging provides any assistance in reducing poisoning in children.

(4) Parental education to increase awareness about poisons

Education programs typically advocate safe storage of poisons, detail what types of substances can be poisonous to children (and adults) and promote the use of the PIC if poisoning occurs. While child resistant packaging of poisons has been described as the most effective measure to reduce accidental child poisoning, Hoy et al. (1999) have stated that poisoning prevention is optimal when this is combined with safe storage. Safe storage is promoted through legislation which requires the phrase "keep out of reach of children" to be present on poisonous products, however, this can also be done through education campaigns.

Educational interventions aimed at families with children aged five years and under have found that knowledge of what substances are poisonous and the PIC number was higher, cupboard locks were used more frequently and poisons were disposed of more often in the intervention groups (Krenzelok and Garber, 1981; Woolf et al, 1987, 1992). General safety education for parents in the form of safety counselling and community based programs combined with the presence of a child safety centre where information and products relating to home safety are available have also been evaluated and found to be effective in increasing awareness of injury hazards and improving home safety practices (Gielen et al., 2002; Ozanne-Smith et al, 2002). In a recent review of child injury prevention it was stated that education was most likely to be effective in reducing injuries if there was a focus on enhancing access to discounted safety devices, and when education was delivered over several occasions or the program took 30 minutes or more (State of Victoria, 2001).

Whilst future research is required to determine if education programs do reduce the rate of hospitalisation due to poisoning, they have been demonstrated to be effective in changing attitudes and behaviour, and therefore should continue. Education in the form of seminars over an extended period of time was most effective and it is recommended that future poisons prevention be conducted in this manner, possibly as part of general home safety awareness programs. Safety device discounts at safety centres like the safety house run by Kidsafe WA were also effective in increasing prevention strategy use, therefore Kidsafe WA should continue to stock these devices and discounts for these products should be considered.

(5) Maintain Poisons Information Centres

Poisons Information Centres provide valuable emergency first-aid information in the event of poisoning or suspected poisoning, follow-up medical treatment, and advice and information on the safe use, storage and disposal of poisonous material (Finn et al, 1998). Their role in emergency situations is valuable to the health system in terms of morbidity and mortality because they provide expert advice when it is required. Of importance to the health system is that only 20% of callers are advised to see a doctor or go to hospital. This helps prevent an unnecessary burden on hospital emergency departments. In Louisiana, where a PIC was closed, self referral to health care facilities increased to four times that of a state which previously had an equivalent rate but that continued to fund a PIC. The annual cost of closing the PIC was three times that of the PIC budget before it was closed

(King and Palmisano, 1991). Given these findings, the funding of a PIC with a 24 hour hotline is recommended to continue.

The PIC is also in a position to provide information to people who ask for methods to minimise the risk of poisoning in children. Importantly the PIC can also provide information to parents and guardians of children who have had a poisoning incident. This information focuses on prevention strategies such as storage of medicines and other poisons. It also provides stickers with the PIC phone number on it to place on or near the telephone. While the impact of this role on the incidence of poisoning in children has not been evaluated (and it would be difficult to do so) it is clear that the PIC should continue in its education role for risk minimisation.

6.7 EMERGING ISSUES AND FUTURE DIRECTIONS

With respect to primary prevention, the use of CRCs is the most successful method in reducing rates of poisoning in children. Whilst other countermeasures such as education and PICs play a role in prevention, harm and health system cost reduction, their impact on poisoning rates has not been determined. Likewise the Return Unwanted Medicines (RUM) project needs to be evaluated for its impact on poisoning rates. Future research should focus on hospitalisation (and PIC call rates) based outcomes to determine whether prevention measures other than safe storage are indeed effective at reducing the risk of poisoning in children. Furthermore meaningful data collection and analysis of PIC events and hospital and emergency admissions is needed in Western Australia to determine if there are specific products, circumstances or groups of people who are at greater risk of poisoning. This research is required to guide prevention programs, legislation and education to target specific poisoning risks.

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7. ROAD CRASHES

7.1 NATURE AND EXTENT OF THE PROBLEM

Since 1981, death and hospitalisation due to road crashes in Western Australia have gradually declined. Despite this decline, Western Australia's crude road fatality rate of 11.3 per 100,000 population is second only to the Northern Territory at 26.6/100,000 population (Legge et al, 2001). In 2000, there were 213 fatalities and 2,137 hospitalisations resulting from 38,137 police reported road crashes in Western Australia. The total cost of these crashes has been estimated at $1,373.4 million (Legge et al, 2001).

Of the various road user groups, drivers and motor vehicle passengers represent the majority of serious road injury in Western Australia, respectively accounting for 50% and 27% in 2000 (Legge et al, 2001). There are a number of well-known risk factors for motor vehicle crashes and injury to occupants, five of which will be addressed in the following sections. Recommendations to reduce road injury among drivers and passengers will be based on these five major risk factors.

7.2 RISK FACTORS

Young drivers

The over-involvement of young drivers in motor vehicle crashes is a well-documented problem across all highly motorised western countries. This problem is particularly evident in Western Australia, where drivers aged 17-24 years, who represent 14% of licensed motor car drivers, account for 34% of all driver fatalities and 30% of all driver hospitalisations (Legge et al, 2001). The factors contributing to their over-representation in crashes include inexperience, lack of skill, risk taking and other youthful motivations, and exposure to high-risk situations such as night time driving and the carriage of passengers (Catchpole et al, 1994).

With respect to newly licensed drivers, recent research has shown that 17-year old Western Australian drivers in their first year of licensing are three and half times more likely to be involved in a crash compared with drivers licensed for 10 years, and over twice as likely to crash compared with drivers licensed for five years (Palamara et al, 2001).

Drink driving

Laboratory based studies have consistently demonstrated that alcohol impairs the performance of some driving skills at very low levels of Blood Alcohol Concentration (BAC) levels. Significant impairment of driving skills has been reported at BAC levels of 0.05gm% (Moskowitz and Fiorentino, 2000). Consequently, alcohol is a major cause of road crashes and injury. Approximately 22% (n=41) of all WA fatal crashes in 2000 involved a driver (or motorcycle rider) with a BAC level of 0.05gm% or higher, with the majority (63%) evidencing BAC levels ≥ 0.15gm%. Seventy-percent of all alcohol involved fatalities (ie, BACL ≥ 0.05gm%) occurred in rural areas of Western Australia (Legge et al, 2001).

Alcohol is particularly problematic for young drivers. They are known to have a greater risk of crashing even at low BAC levels because of the compounding effect of their limited driving experience and skills (Mayhew et al, 1986). Fifty-two percent of all drivers (and riders) aged 17-24 years involved in fatal crashes in 2000 recorded a positive BAC, compared with 19% for drivers (and riders) aged 25 year and older (where BAC was known) (Legge et al, 2001).

Speeding

The transgression of road speed limits is considered to be the most common problem driver behaviour (Coesel and Rietveld, 1998). Efforts to reduce speeding are particularly important, as the risk of crashing and the severity of injury increases with higher vehicle travel speeds (Vasi, 1998; Kloeden and McLean, 1998). In Western Australia, speeding was considered to be a contributing factor in 31% of all fatal crashes in 2000. The data also shows that males and drivers aged 17-24 are over-represented in fatal crashes involving speeding (Legge et al, 2001).

Occupant restraint use

Adult seat belts and child motor vehicle safety restraints have been heralded as a major initiative in vehicle occupant protection and injury reduction. Seat belts and child restraints protect the occupant from being ejected from the vehicle and from making contact with the interior of the vehicle, thus reducing the likelihood of injury in the event of a crash. Adult seat belts are reported to be 45% effective in reducing the likelihood of fatal injury, and 50%-83% effective in reducing the likelihood of serious injury (Dinh-Zarr et al, 2001). Similarly, child restraints are estimated to be over 70% effective in reducing death and serious injury among children (Dinh-Zarr et al, 2001).

Despite the legislation and the much-publicised benefits of restraint use, vehicle occupants continue to travel unrestrained, and in the case of some children, improperly restrained. The most recent survey data of occupant restraint use in Western Australia indicates that approximately 10% of adult occupants travel unrestrained, with 20% of child occupants either unrestrained or improperly restrained (Injury Control Program, HDWA, 1997). In regard to occupant fatalities in Western Australia, approximately 36% of those killed in 2000 (for whom restraint use could be determined) were reported by police not to have worn a safety restraint (Legge et al, 2001).

Fatigue

Driver fatigue or sleepiness is considered to be an important cause of road crashes and injury. However, very few studies have substantiated the risk of crashing associated with sleep deprivation, sleep restriction, sleep disorders or acute and chronic sleepiness. Recent published investigations indicate that the risk of being involved in an injury crash is substantially elevated through sleep apnoea (Connor et al, 2001), high levels of acute sleepiness, low levels of alertness (Connor et al, 2002), and limited sleep in the preceding 24-hour period (Cummings et al, 2001; Connor et al, 2002). The circumstances of the trip, such as driving in the early hours of the morning (2.00am to 5.00am) (Connor et al, 2002) and driving long distances (Cummings et al, 2001) have also been found to increase the risk of crashing. Taking travel breaks and drinking coffee were identified to protect against crash involvement (Cummings et al, 2001).

7.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government
Road Safety Council of Western Australia
Office of Road Safety, Transport
Department of Planning and Infrastructure, Licensing Division
Department of Planning and Infrastructure, Transport Systems Division
Western Australian Police Service
Department of Health Western Australia
Drug and Alcohol Office
Department of Education
Insurance Commission of Western Australia
Main Roads Western Australia
Department of Justice
Office for Children and Young People's Policy *(formerly Office of Youth Affairs)*
Department of Consumer and Employment Protection, Worksafe Division
Western Australian Health Promotion Foundation (Healthway)

Research organisations
Injury Research Centre, The University of Western Australia
Institute for Research in Safety and Transport, Murdoch University
Crime Research Centre, The University of Western Australia
WA Centre for Health Promotion and Research, Curtin University of Technology

National Drug Research Institute, Curtin University of Technology
AARB Transport Research Ltd

Royal Automobile Club (WA) Inc.

Roadwise

Kidsafe WA

Australian College of Road Safety (WA Chapter)

Injury Control Council of Western Australia

Australian Council for Health Physical Education and Recreation (ACHPHER)

Contact persons and details for key stakeholders are presented in Appendix 1.

7.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Road Safety Council of Western Australia

The Road Safety Council (RSC) is the peak co-coordinating body for road safety in Western Australia. The Council, established in 1997, is made up of representatives from state agencies involved in road safety and various community stakeholders in the area. The Council is supported by a RSC Officer Support Group and 10 task forces. On a day-to-day basis, its activities are managed and coordinated by the Office of Road Safety (see below). Central to the Council's activities is the Road Trauma Trust Fund, which is used to fund road safety initiatives in Western Australia, and the Council's Research Program, which is administered by the Council's Research Advisory Group.

Office of Road Safety, Transport WA

The Office of Road Safety (ORS) is responsible for managing and coordinating the activities of the RSC, including the management of the Road Trauma Trust Fund and the 10 road safety task forces. The ORS actively coordinates the state's road safety campaigns and project manages road safety research undertaken via competitive and non-competitive funding of research groups.

Specific driver behaviours targeted by the ORS include fatigue, speeding, drink driving, and motor vehicle occupant safety. The ORS also targets various road user groups, such as youth, seniors, rural residents, and occupational drivers. These behaviours and road user groups are targeted through legislative reform - as in the case of the recently introduced Graduated Driver Training and Licensing program - community education, the development of enhanced enforcement strategies in conjunction with the police, and research.

The ORS undertakes a year-long calendar of road safety campaigning
[see: http://www.transport.wa.gov.au/roadsafety/FramesetGenerator.jsp?Section=Calendar]

- Membership of the Road Safety Council and the RSC Officer Support Group
- Membership of the Research Advisory Group
- Membership of all task forces.

Department of Planning and Infrastructure, Licensing Division

The Licensing Division is directly responsible for the development and implementation of policies and procedures related to the training and licensing of motor vehicle drivers. It is also responsible for vehicle licensing and safety. A major activity of Licensing over the last six years has been the development and implementation of the new Graduated Driver Training and Licensing program.

- Membership and Chair of the Driver Training and Licensing task force
- Membership of the Occupant Restraint task force.

Department of Planning and Infrastructure, Transport Systems Division

- Membership of the Fatigue task force
- Development of a code of practice and industry accreditation for the heavy haulage industry (fatigue related).

Western Australian Police Service

The WA Police Service is directly responsible for the enforcement of the Western Australian Road Traffic Act 1975 and the Road Traffic Code 2000. This is undertaken through general traffic duties and specialised programs such as roadside random breath testing of drivers for drink driving (RBT), the Multanova speed camera, and the red light intersection camera programs.

The Police Service also undertakes various road safety activities, mostly through the Road Safety Section. These include:

- Membership of the Road Safety Council and RSC Officer Support Group
- Membership of the RSC Research Advisory Group.
- Membership of all task forces
- Membership of the Young Road Users working group
- Aboriginal Road Safety programs
- Defensive Driver Training program
- Bike Education program
- Training of school road crossing wardens
- Road safety road show
- Road safety exhibition at Scitech.

Department of Health Western Australia

- Membership of the Road Safety Council and the RSC Officer Support Group
- Membership and Chair of the Occupant Restraint task force.

Drug and Alcohol Office

- Membership of the Young Road Users and Drink/Drug Driving task forces
- Drug Aware: Youth Drug Driving Education Project.

Department of Education

- Membership of the Road Safety Council and the RSC Officer Support Group
- Membership of the Young Road User, Driver Training and Licensing, Road Safety Around Schools task forces
- Across the state, individual schools maintain road safety education programs, and in some case, pre-learner and pre-driver training programs.

Insurance Commission of Western Australia

- Membership of the Road Safety Council and the RSC Officer Support Group
- Membership of the Young Road Users and Workplace Road Safety task forces
- Financial support for the development of the Office of Road Safety's school and community based road safety programs for 16-20 year olds
- Sponsorship of the 'Buzz' theatre production addressing speeding and reckless driving
- Sponsorship of the WA Police Service Random Breath Testing buses
- Sponsorship of the 'Belt Up' Cup, WA Australian Rules Football Development Trust.

Main Roads Western Australia

Main Roads WA is tasked to provide a safe and accessible road system in Western Australia, through continuous development and improvement of the road network. Main Roads WA also has a strong commitment to road safety through its Road Safety branch and road safety strategy. Its activities include:

- Membership of the Road Safety Council and the RSC Officer Support Group
- Membership of the RSC Research Advisory Group
- Membership and Chair of the Speed Management and Vulnerable Road User task forces
- Membership of the Road Safety Around Schools, Fatigue, Driver Training and Licensing task forces
- Federal and state Black Spot Programs
- Maintenance of road management and inventory system (including crash database)
- Coordination of road safety audit training
- Crash investigation research
- Development of road safety policy
- Contribution to the development of the Austroads guidelines
- General traffic and safety training
- 50km/h speed limit evaluation
- Red light camera evaluation
- Speed camera placement research
- 40km/h markings for school zones
- Speed compliance surveys
- Trial of painted speed limits on open roads
- Monitoring and evaluation of road improvement strategies.

Department of Justice

- Membership of the Driver Training and Licensing task force
- Driver Education and Training for Adult Offenders program
- Driving Under the Influence of Alcohol and Drugs program (for repeat offenders).

Office for Children and Young People's Policy

- Membership and Chair of the Young Road Users task force
- Administration of the Roadsmart Grants program.

Department of Consumer and Employment Protection, Worksafe Division

- Membership and Chair of the Workplace Road Safety task force
- Membership of the Fatigue task force
- Investigation of the need to improve data for work related road crashes project
- Commercial driver fatigue project (funded through the Road Trauma Trust Fund)
- Fleet safety in the public sector project.

Western Australian Health Promotion Foundation (Healthway)

Healthway has in the past funded several high profile road injury projects in Western Australia, such as the Child Pedestrian Injury Prevention Program and the Western Australian Young Driver Cohort Study. It is presently funding an Aboriginal pedestrian injuries program in the North West of the state.

Injury Research Centre, the University of Western Australia

The Injury Research Centre, formerly the Road Accident Prevention Research Unit, is located in the Department of Public Health, the University of Western Australia. Its main focus is to undertake research to minimise the frequency and severity of injury, including road injury. A key activity of the centre is the maintenance and investigation of the Western Australian Road Injury database on behalf of the state. Using this database, the centre produces on an annual basis the *Road Crashes in Western Australia* report for the Road Safety Council. The centre is a designated World Health Organisation collaborating centre for road injury.

It is presently undertaking research into the following areas of road safety:

- Young driver crash and traffic offence involvement and risk taking
- Evaluation of graduated driver training and licensing
- Drink driving
- Alcohol interlock devices
- Random breath testing
- Fatigue
- Work related crashes
- Transient risk factors in road crashes
- Costing of road injuries
- Occupant protection
- Aboriginal people's road injuries
- Road injuries in the south-east Asia region
- Relationship between vehicle power-weight ratio and crash involvement among young drivers.

The centre also offers research support to the Office of Road Safety and contributes to the following task forces:

- Membership and Chair of the Drink/Drugs Driving task force
- Membership of the Young Road User, Driver Training and Licensing, Aboriginal Road Safety, Occupant Restraint, Fatigue, and Vulnerable Road Users task forces.

Institute for Research in Safety and Transport, Murdoch University

The institute is a research and consultancy organisation specialising in safety and transport research and training. It is internationally recognised for its on-going work in the area of fatigue and road safety and its coordination of the annual international conference on fatigue and transportation.

- Membership and Chair of the Fatigue task force
- Membership of the Driver Training and Licensing task force
- Shift work mapping and road safety (fatigue related research).

Crime Research Centre, the University of Western Australia

The Crime Research Centre is a joint initiative of the Law School of the University of Western Australia and the state government. The activities of the centre include the collection and analysis of statistical data on crime, including road behaviour offences such as drink driving. The centre is currently conducting research into the following road-related areas:

- Descriptive investigation of road rage in Western Australia
- Investigation of factors relevant to the use of license suspension as a legal sanction.

WA Centre for Health Promotion and Research, Curtin University of Technology

The WA Centre for Health Promotion and Research is located in the School of Public Health at Curtin University. Whilst the centre maintains a broad research focus, one of the key areas of activity is injury prevention strategies. More recently it was responsible for the management of the Child Pedestrian Injury Prevention Project. Its current road safety activities include:

- School Bicycle Safety project
- Process evaluation of WA School Road Safety project
- "Stepping Out Safely": seniors pedestrian project.

National Drug Research Institute, Curtin University of Technology

The National Drug Research Institute conducts research and interventions to minimise the harm associated with drug use, both illicit and licit. With respect to road safety, the institute has a long-standing interest in drink driving. Its current activities in this area include:

- Membership of the Drink/Drugs Drive task force
- Driving after drinking on licensed premises research
- Drink drive recidivism research
- National indicators of alcohol: consumption and related harm project
- Impact of cannabis decriminalisation on road safety research.

AARB Transport Research Ltd

AARB is an independent provider of technical and research services for transport problems. Road safety research and evaluation is an integral part of AARB's activities. Current road safety activities of the Perth branch of AARB include:

- Development of a training package for the installation of child motor vehicle safety seats
- Pro active fatigue management system development
- Urban speed and rural speed enforcement strategies
- Rural and remote road safety, Indigenous road safety
- Age and gender relevant to crash involvement
- Road safety audits
- Effects of courtesy speed checking systems
- Speed limits painted on the road.

Royal Automobile Club (WA) Inc.

- Membership of the Road Safety Council of WA
- Membership of the RSC Research Advisory Group
- Membership on the Driver Training and Licensing Task Force
- Financial support of the RAC (WA) Research Fellow in road safety at the Injury Research Centre, UWA
- Pre-licence, defensive, advanced, and corporate driver training courses
- Parent-tutor program for learner-driver supervision
- Community Education Programs
    - Annual Regional Road Safety Week
    - Road Safety in Schools
    - Road Safety for Seniors
    - "Know your Car"
    - Advanced Road Safety.

Roadwise

Roadwise represents the local government road safety strategy. It is a partnership between the Road Safety Council and the Western Australian Local Government Association. The aim of Roadwise is to work with local government and the community to address local road safety issues. It undertakes a range of activities across the state, including:

- Membership of the Road Safety Council Officer Support Group
- Membership of the Road Safety Council Research Advisory Group
- Membership of the Driver Training and Licensing, Young Road Users, Vulnerable Road Users, Aboriginal Road Safety, Road Safety Around Schools, Fatigue, Speed Management and Child Restraint sub-committee of the Occupant Restraint task forces
- Heavy Haulage in Western Australia program
- Aboriginal Road Safety program
- Road Trauma Management program in rural Western Australia
- Road Trauma Counselling program (in conjunction with Life-Line)
- "Kids in Cars": pre-learner and defensive driver skills program
- Road Safety Survival Guide for tourist drivers program
- Learner-Driver Assistance Scheme
- Driver-Reviver program for fatigue management
- Coffee Stop program for fatigue management
- White Ribbon Campaign
- Safe Routes to School program
- Community grants for road safety program
- Elderly and Pedestrians Under the Influence program
- School holiday road safety programs for kids (in conjunction with various local governments
- Roadwise officer liaison program covering metropolitan and rural WA local governments and shires.

Kidsafe WA

- Provision of information to the public on child motor vehicle safety restraint products and fitting
- Assistance with fitting of child motor vehicle safety restraints
- Operation of a child motor vehicle safety capsule and seat hire scheme.

College of Road Safety (WA Chapter)

The College is a multi disciplinary association of individuals and organisations working in the area of road safety. The College is involved in the development of a range of road safety policies and countermeasures and the dissemination of road safety information.

- Monthly forums for road safety stakeholders
- Twice-yearly forums on specialised road safety topics.

Injury Control Council of Western Australia

- Membership of the Vulnerable Road Users, Aboriginal Road Safety, and Speed Management task forces
- Membership of the Main Roads WA pedestrian advisory group
- Corporate Membership of the College of Road Safety (WA Chapter).

Australian Council for Health Physical Education and Recreation (ACHPHER)

- Membership of the RSC Officer Support Group
- Membership of the Young Road Users and Driver Training and Licensing task forces
- Management of the WA School Road Safety Program.

7.5. RELEVANT LEGISLATION

Legislation relevant to driver training and licensing, occupant restraint use, drink driving and speeding is covered by the Western Australian Road Traffic Act 1975 (with amendments) and the Road Traffic Code 2000 (with amendments) [http://www.slp.wa.gov.au/statutes/swans.nsf]. There is no legislation for fatigue related driving per se. However, drivers may be prosecuted under various sections of the Act covering dangerous, careless or reckless driving.

Due to the complexity and breadth of the relevant legislation, the following is a summary of the main regulatory aspects for the above areas.

Driver licensing

The new Graduated Driver Training and Licensing Program (GDTLP) was introduced across Western Australia on 5 February 2001. Under the program, a motor vehicle learner-driver permit may now be obtained at 16 years of age, nine months earlier than under the previous system. At 16 years and six months of age, the learner-driver can complete the Phase One on-road assessment of their practical driving skills. Once having completed the on-road assessment, a probationary motor vehicle driver's licence may be obtained at 17 years of age, providing the driver has accumulated and logged 25 hours of supervised driving and successfully completed the computerised Hazard Perception Test. The mandatory probationary period has been extended from one year to two years, and the previous speed restriction on probationary drivers removed. A BAC level of 0.02gm% remains in place for the duration of the probationary period. The GDTLP does not require learner-drivers to undertake professional lessons, nor is there a minimum holding period for the learner-driver permit.

Occupant restraint use

Motor vehicle occupant restraint use legislation specifies that all vehicle occupants must occupy, where available, a seating position fitted with a seat-belt and that the seat-belt must be used. Children may alternatively use a suitably approved child restraint device. Under the legislation, drivers have responsibility for the seating position and restraint use of some passengers. Drivers must ensure that all passengers occupy an available seating position fitted with a seat belt, and secondly, they must ensure that children 16 years and younger use a seat-belt or approved child restraint device. Drivers are not legally responsible for the restraint use of passengers older than 16 years. The penalty for restraint use offences is a combination of demerit points and monetary units for drivers, and monetary units for offences committed by passengers older than 16 years.

Drink driving

Probationary licence holders are subject to a BACL of 0.02gm%. Detection of the contravening of this requirement will result in a traffic conviction and loss of licence. For a full licence holder, it is an offence to drive with a BACL equal to or exceeding 0.05gm%. The level of offence is dependent on the detected level of BAC gm%; the penalty is dependent on the level of offence and any prior history of drink driving offences. In brief, drivers with a BACL of 0.05gm% to 0.079gm% will be issued with a Traffic Infringement Notice. A BACL equal to or exceeding 0.08gm% will result in a Traffic Conviction. Drink driving legislation in Western Australia is enforced through a program of random breath testing using hand-held breathalysers. Random breath testing is conducted via highly visible 'Booze-Bus' operations and smaller scale patrols.

Speeding

All public roads in Western Australia are subject to speed limits, the maximum being 110km/h. There is no distinction between speed limits for probationary and full licence holders. Speeding offences and penalties vary with the road environment and the number of kilometres per hour the vehicle is travelling in excess of the posted speed limit. Penalties are a combination of demerit points and monetary penalty units, except for the minimum offence of exceeding the posted speed limit by up to 9km/h. The penalty for this offence is one monetary penalty unit (ie $50). Speeding legislation is enforced by a program of speed camera operation (Multanovas) and hand-held radar/laser devices operated by police officers.

Dangerous, careless and reckless driving

In contrast to the above legislative areas, the legislation pertaining to dangerous, careless and reckless driving does not contain objective and easily identified criteria upon which to judge the occurrence of an offence. The legislation for these offences refers generally to driver behaviour that lacks care and attention and is likely to be dangerous to the public. Speed is mentioned as an expression of dangerous and reckless driving, but not careless driving. There is no specific reference to fatigue, sleepiness, or lack of alertness. The penalties for dangerous, careless and reckless driving offences rival those for higher-level drink driving and speeding offences and can include imprisonment.

7.6 RECOMMENDED INTERVENTIONS

Based on the identified risk factors for crashing and injury, the following recommendations for intervention are provided. The recommendations have been identified through published systematic reviews of best practice and other research demonstrating support for the effectiveness of the intervention.

Young drivers

(1) Development of a comprehensive Graduated Driver Training and Licensing Program

In comparison with graduated training and licensing programs operating in North America, Canada, and New Zealand, Western Australia's GDTLP lacks a number of features that research has shown to be integral to the reduction of young driver crashes and injury. The

features in question, which are absent from WA's existing program, include: a minimum learner-driver permit period; substantial hours of mandatory supervised driving to develop driving experience and skill; restrictions in the early period of licensing to reduce exposure to high risk driving situations (eg, passenger limits, night time driving restrictions), and restrictions on the graduation of drivers from a provisional to full licence based on past driving behaviour. It is recommended that Western Australia review its current GDTLP in light of the evaluations conducted internationally.

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(2) Increased police enforcement of young driver behaviour

Recent Western Australian research has demonstrated that young drivers have a greater likelihood of incurring a traffic offence (infringement and/or conviction) compared with older, more experienced drivers, and that their risk of crashing within a twelve-month period is substantially increased as a result of incurring either offence. Consequently, it is recommended that deterrence and enforcement be increased to control the on-road behaviour of young drivers. This should be undertaken in conjunction with changes to the licensing system in regard to demerit point allowances and the progression to full licensure. Increased enforcement is expected to alter both the perception of the likelihood of detection and the likely detection of offence behaviour. The net effect is expected to be a reduction in the occurrence of risky driving behaviour related to crash involvement and injury.

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Drink driving

(3) Reduced Blood Alcohol Concentration levels for probationary drivers: from 0.02gm% to 0.00gm%

As newly licensed drivers are particularly susceptible to the effects of alcohol and are over-represented in alcohol related crashes, it is recommended that BAC levels for this population of drivers be reduced to zero. There is evidence to show that a BAC level of zero can contribute to a reduction in crashes and injuries among newly licensed drivers. There is also good evidence to suggest that the introduction of lower BAC levels, such as zero, for a particular target group of drivers will also have the effect of reducing recorded BAC levels for non-target drivers.

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(4) Increased levels of random alcohol screening (Random Breath Testing)

Random alcohol screening, otherwise known as Random Breath Testing (RBT), has been shown to be effective both nationally and internationally in reducing alcohol related crashes and injuries. To be effective, RBT must be highly visual, random and continuous to sustain its long-term deterrent impact. Furthermore, its effectiveness is highly dependent on the resulting punishment being certain, swift, and severe. The continued high level of involvement of alcohol in fatal crashes suggests that a much higher level of enforcement of drink-driving intervention is required, particularly in rural Western Australia.

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Peek-Asa, C. (1999). The effect of random alcohol screening in reducing motor vehicle crash injuries. *American Journal of Preventive Medicine*; *16(1S),* 57-67.

Shults, R. et al. (2001). Reviews of evidence regarding interventions to reduce alcohol-impaired driving. *American Journal of Preventive Medicine*, *21(4S),* 66-88.

(5) Introduction of ignition interlock devices for repeat drink drivers

Recent research has shown that approximately 2.4% of male drivers and 2.8% of female drivers apprehended for a drink-driving offence will incur a subsequent drink-driving offence. Recidivist drink-drivers, whilst small in number, are regarded as highly dangerous drivers due to their increased propensity for alcohol dependency. Because of this dependency, they are less likely to be influenced by traditional drink-drive countermeasures such as high penalties and licence cancellation. In an attempt to reduce the incidence of repeat drink driving among this population of drivers, alcohol ignition interlock devices have been trialed. The findings of these studies show good support for the effectiveness of the devices in reducing drink-drive recidivism, though further research is required to determine which sub-groups of drink-drivers are most likely to benefit from the countermeasure. In light of the positive findings to date, it is recommended that Western Australia trial the use of alcohol ignition interlocks for drink-drive recidivists.

Key References

Coben J., and Larkin G. (1999) Effectiveness of ignition interlock devices in reducing drink driving recidivism. *American Journal of Preventive Medicine*; **16(1S)**: 81-87.

Rosman D. (2000) *Drink driving, speeding and road crashes in Western Australia, 1996-1998*. Perth: Road Accident Prevention Research Unit. RR100.

Speeding

(6) Increased enforcement and penalties for speeding

Speeding is the most frequently occurring road traffic offence and in many respects is the most difficult on-road behaviour to control. There is evidence to suggest, however, that increased enforcement activity and increased penalties will contribute to a reduction in the incidence of speeding and influence drivers' attitudes to speeding. It is therefore recommended that Western Australia review its speed enforcement activities, particularly the level of and type and placement of speed camera operation, to increase driver perception of the likelihood and randomness of being detected (see Recommendation 7). In addition to this, penalties for speeding should be reviewed and amended to reflect the seriousness and severity of the problem.

Key References

Holland, C., and Conner, M. (1996). Exceeding the speed limit: An evaluation of the effectiveness of a police intervention. *Accident Analysis and Prevention*, *28*, 587-597.

Corbett, C., and Simon, F. (1999). *The effects of speed camera: How drivers respond*. UK: Centre for Criminal Justice Research, Department of Law, Brunel University.

(7) Introduction of a hidden speed camera program

Research suggests that speed camera operation programs that are hidden as opposed to visible (such as those operating in Western Australia), are associated with net falls in observed speeding, crashes and casualties in both camera and non-camera areas. It has also been found that hidden camera programs are associated with positive changes in attitudes to speeding and speed enforcement, and are found to have a greater general deterrent effect compared with a visible camera program. It is therefore recommended that Western Australia trial a hidden speed camera program.

Key References

Keall, M., Povey, L., and Frith, W. (1999). The relative effectiveness of hidden versus visible speed cameras. In proceedings of the *1999 Research Policing Education Road Safety Conference*, Canberra 28-30 November.

Corbett, C., and Simon, F. (1999). *The effects of speed camera: How drivers respond*. UK: Centre for Criminal Justice Research, Department of Law, Brunel University.

Occupant restraint use

(8) Maintain comprehensive seat belt and child safety restraint use laws

(9) Development of child and adult restraint education programs coupled with enhanced enforcement of legislation

(10) Promote child safety seat distribution schemes (ie, hire/loan programs).

There is strong evidence to support the effectiveness of all three recommended interventions. The research evidence suggests that the effect of education/promotion alone diminishes rapidly, and is therefore relatively ineffective as a 'stand alone' countermeasure. Legislation and enforcement, in conjunction with education and loan/hire schemes for child restraints, have been found to be effective in promoting both adult and child restraint use.

Key References

Zaza, S. et al. (2001). Reviews of evidence regarding interventions to increase use of child safety seats. *American Journal of Preventive Medicine*, *21(4S),* 31-47.

Dinh-Zarr, T. et al. (2001). Reviews of the evidence regarding interventions to increase the use of seat belts. *American Journal of Preventive Medicine*, *21(4S),* 48-65.

Fatigue

(11) Development and evaluation of controlled trials of driver fatigue countermeasures

No published reliable studies dealing with the development and effectiveness of countermeasures to reduce fatigue related driving and crashes were found. Hence, there is a need to conduct controlled trials of well-planned fatigue countermeasure programs.

In the meantime, interventions such as educative media campaigns should continue to promote the identified risk and protective factors for fatigue related driving and crashes. These include avoiding driving long distances and prolonged driving without regular breaks, having at least six hours sleep in the 24-hour period prior to driving, and sharing the driving at regular intervals.

Key Reference

Cummings, P., Koepsell, T., Moffat, J., and Rivara, F. (2001). Drowsiness, counter-measures to drowsiness, and the risk of motor vehicle crash. *Injury Prevention*, *7,* 194-199.

7.7 EMERGING ISSUES AND FUTURE DIRECTIONS

Road crashes and injuries in Australia have steadily declined since the early 1970's, particularly since the introduction of adult seat belt and child safety restraint legislation. Other initiatives, such as vehicle design changes, roadway development and increased enforcement for drink driving and speeding, have all contributed to the overall reduction in road injuries. It is widely accepted that technological innovation, legislation and increased police enforcement are paramount to the reduction in risky driving and the associated reduction in road injury. Countermeasures that focus solely on improving knowledge, skill or producing attitudinal change -particularly in the young driver area- are least likely to be effective.

Those responsible for the funding and implementation of road safety countermeasures are tasked to provide 'results' in the face of limited public funds and resources. Consequently, such agencies have an increased responsibility to implement evidence based 'best-practice' countermeasures and to conduct thorough evaluations of new, previously untrialed initiatives.

7.8 REFERENCES

Catchpole, J, Cairney, P, and Macdonald W. (1994). *Why are young drivers over-represented in traffic accidents?* Victoria: ARRB Special Report 50.

Coesel, N., and Rietveld, P. (1998). Time to tame our speed?. In proceedings, 9^{th} *International Conference for Road Safety in Europe*, Germany, September 21-23rd, 3-21.

Connor, J., Whitlock, G., Norton, R., and Jackson, R. (2001). The role of driver sleepiness in car crashes: a systematic review of epidemiological studies. *Accident Analysis and Prevention*, *33,* 31-41.

Connor, J. Norton, R., Ameratunga, S., Robinson, E., Civil, I., Dunn, R., Bailey, J., and Jackson, R. (2002). Driver sleepiness and the risk of serious injury to car occupants: population based case control study. *British Medical Journal*, *324*, 2-5.

Cummings, P., Koepsell, T., Moffat, J., and Rivara, F. (2001). Drowsiness, counter-measures to drowsiness, and the risk of motor vehicle crash. *Injury Prevention*, *7,* 194-199.

Dinh-Zarr, T. et al. (2001). Reviews of the evidence regarding interventions to increase the use of seat belts. *American Journal of Preventive Medicine*, *21(4S),* 48-65.

Injury Control Program, HDWA (1997). *Child car restraint use in WA. Western Australia*. Perth: Health Department of Western Australia.

Kloeden, C., McLean, J. (1998). Speed and the risk of involvement in a casualty crash. In proceedings, *1998 Road Safety Research Policing and Education Conference*, Wellington, New Zealand, 16-17 November 1998.

Legge, M., Kirov, C., and Cercarelli., R., (2001). *Reported road crashes in Western Australia 2000*. Road Safety Council of Western Australia.

Mayhew, D., Donelson, A., Beirness, D., and Simpson, H. (1986). Youth, alcohol and relative risk of crash involvement. *Accident Analysis and Prevention*, *18*, 273-287.

Moskowitz, H., and Fiorentino, D. (2000). *A review of the literature on the effects of low doses of alcohol on driving-related skills*. Washington: National Highway Traffic Safety Administration.

Palamara, P., Legge, M., and Stevenson, M. (2001). *An investigation of the relationship between years of licensing, traffic offences, and crash involvement: A comparison of first year drivers with drivers licensed for 10 years and 5 years*. Perth: Injury Research Centre, The University of Western Australia RR117.

Vasi, P. (1998). Faster and faster. In proceedings, 9^{th} *International Conference for Road Safety in Europe*, Germany, September 21-23rd, 23-35.

7.8 APPENDICES

Table 1: Key Western Australian road safety stakeholders and contact details

Agency	Contact Details
AARB Transport Research Ltd	Mr Peter Damen Manager WA (08) 9227 3000 peterd@arrb.com.au www.arrb.org.au
Australian Council for Health Physical Education and Recreation (ACHPER)	Ms Jill Darby School Road Safety Co-ordinator (08) 9264 4076 jill.darby@eddept.wa.edu.au www.eddept.wa.edu.au/centoff/hpe/projects
Australian College of Road Safety (WA Chapter)	Mr Peter Waugh President and WA Chapter Representative 08 9273 3848 bsdinfra@bsd.com.au http://www.acrs.org.au/
Department of Consumer and Employment Protection Worksafe Division	Mr Brian Bradley Director (08) 9327 8777 safety@docep.wa.gov.au http://www.safetyline.wa.gov.au
Crime Research Centre The University of Western Australia	Mr Frank Morgan Director (08) 9380 3412 frank.morgan@uwa.edu.au http://www.law.ecel.uwa.edu.au/crc/
Department of Education	Mrs Rose Moroz Acting Executive Director Curriculum Policy and Support (08) 9264-5383 rose.moroz@eddept.wa.edu.au http://www.eddept.wa.edu.au/
Department of Justice Education and Vocational Training	Mr Mark Conti Director, Operational Policy (08) 9229 6581 marc.conti@justice.wa.gov.au

Agency	Contact Details
Department of Planning and Infrastructure Licensing Division	Mr Greg Forbes Director, Operational Policy (08) 9216 8000 gforbes@transport.wa.gov.au http://www.transport.wa.gov.au
Department of Planning and Infrastructure Transport Systems Division	Mr Lance Poore Senior Project Manager (08) 9216 8000 lpoore@transport.wa.gov.au http://www.transport.wa.gov.au
Drug and Alcohol Office	Ms Eleanor Costello Senior Health Promotion Office (08) 9370 0333 Eleanor.Costello@health.wa.gov.au
Health Department of Western Australia	Dr Margaret Stevens Principal Medical Officer, Population Health (08) 9222 2314 margaret.stevens@health.wa.gov.au http://www.health.wa.gov.au
Health Promotion Foundation of Western Australia (Healthway)	Dr Joanne Clarkson Director, Health Promotion (08) 476 6000 jclarkson@healthway.wa.gov.au http://www.healthway.wa.gov.au/
Injury Control Council of Western Australia	Ms Chris Costa Executive Officer (08) 9420 7212 ccosta@iccwa.org.au http://www.iccwa.org.au/
Injury Research Centre University of Western Australia Associate	Professor Mark Stevenson Director (08) 9380 1262 marks@dph.uwa.edu.au www.irc.uwa.edu.au
Institute for Research in Safety and Transport Murdoch University	Associate Professor Laurence Hartley Director (08) 9360 2398 hartley@socs.murdoch.edu.au http://wwwsoc.murdoch.edu.au/irst.htm

Agency	Contact Details
Insurance Commission of Western Australia	Mr Vic Evans Managing Director 9264 3227 vevans@icwa.wa.gov.au http://www.icwa.wa.gov.au/
Kidsafe WA	Ms Sue Wicks Executive Officer (08) 9340 8509 DandSWicks@bigpond.com
Main Roads WA	Mr Rob Harvey Manager Metro Traffic Operations (08) 9311 8367 rob.harvey@mrwa.wa.gov.au http://www.mrwa.wa.gov.au/
National Drug Research Institute Curtin University of Technology	Professor Tim Stockwell Director (08) 9426 4200 tim@ndri.curtin.edu.au http://www.curtin.edu.au/curtin/centre/ndri/
Office for Children and Young People's Policy (*formerly the Office of Youth Affairs*)	Mr Paul O'Connor Manager, Program Services (08) 9476 2000 paulbeo@dcd.wa.gov.au http://www.youthaffairs.wa.gov.au
Transport	Office of Road Safety Mr Iain Cameron Executive Director (08) 9216 8508 icameron@transport.wa.gov.au http://www.transport.wa.gov.au
WA Centre for Health Promotion and Research Curtin University of Technology	Dr Greg Hamilton Director (08) 9266 3768 g.hamilton@curtin.edu.au http://www.curtin.edu.au/curtin/dept/health/WACHPR/
Western Australian Police Service	Assistant Commissioner Mel Hay Traffic and Operations Support 9222 1442 pd82766@wapol.gov.au http://www.police.wa.gov.au/

Agency	Contact Details
Road Safety Council	Mr Grant Dorrington Independent Chairperson, Road Safety Council (08) 9381 5599 gdorrington@wasc.com.au http://www.transport.wa.gov.au/roadsafety/
Roadwise	Ms Julie Parsons Manager (08) 9213 2054 jparsons@walga.asn.au http://www.walga.asn.au/projServices/transport_roads/roadwise/index.html
Royal Automobile Club (WA) Inc.	Mr Richard Stott Manager, Public Policy (08) 9421 4470 Dick.Stott@rac.com.au http://www.rac.com.au/ecar/index.cfm

8. SUICIDE

8.1 NATURE AND EXTENT OF THE PROBLEM

Between 1986 and 1997, the lives of 2,420 West Australians were lost as a result of suicide. This included 1,964 males and 456 females. Each male suicide resulted in an average of 32.2 years of potential life lost (Hillman et al, 2000). In addition to this burden, for each of these deaths, several-fold more attempted suicide. Indeed, from 1981 to 1998, the age-standardised admission rate for deliberate self-harm was 117.2 and 175.0 per 100,000 among males and females respectively (Serafino et al, 2000). In the 12 years to 1997, hanging and carbon monoxide poisoning were the most common methods of completed suicide in West Australian males, while overdose, hanging and carbon monoxide poisoning were the most common methods among West Australian females (Hillman et al, 2000).

Australia also has the fourth highest incidence of youth suicide (15-24 years) in the world. In 1998, the youth suicide rate in Australia was 16.7 per 100,000 15-24 year olds. The rate was higher in Western Australia (WA) at 20.2 per 100,000 15-24 year olds. The suicide rate in young males was five to six-fold greater than in young females (Hillman et al, 2000). Suicide attempts by adolescents were frequent and admission to hospital because of intentional self-injury was over 15 times more common than completed suicide (HMDS data, Youth Affairs website). Indeed, between one-quarter and one-third of youths who complete suicide, have made a prior attempt. The WA Child Health Survey, conducted in 1993, reported that 16 per cent of the cohort aged between 12 and 16 years had contemplated suicide in the preceding six months (Zubrick et al, 1995).

The statistics on suicide in Australia are alarming and have prompted a response from the state and Commonwealth Governments to investigate the reasons for suicide and to develop effective suicide prevention strategies.

8.2 Risk Factors

Psychiatric problems, especially depression

Among cases of completed suicide, studies have shown that the overall prevalence of mental disorders is between 80%-100%. While depression is of particular concern, suicide has been associated with all types of mood disorders, schizophrenia and personality disorders, especially antisocial traits.

Past history of suicide attempts

In Western Australia, males and females who have previously attempted suicide are over 20 times more likely to die from suicide in the future when compared with the general population. Between 25% and 50% of people completing suicide have made a prior suicide attempt.

Substance use

Alcoholism and illicit drug use have been associated with an increased risk of suicide. Among alcoholics, specific factors of concern with respect to suicide risk include early onset of alcoholism, a long history of drinking, depressed mood and family history of alcoholism.

Chronic illness
The risk of suicide is increased among cancer and HIV/AIDS patients and people with neurological disorders, such as epilepsy, spinal and brain injuries.

Stressful life events: interpersonal losses, legal or disciplinary problems
Between 70%-97% of suicides are preceded by stressful life events in psychological autopsy studies. However, one must keep in mind that stressful events are common in the general population and it may be that such events merely precipitate suicide among individuals who are already predisposed.

Family history of suicidal behaviour
Several reports have suggested that a family history of suicidal behaviour is associated with an increased risk of suicide or suicide attempts.

Parental psychopathology
Studies have indicated that the rates of suicide and deliberate self-harm are increased among people with a history of exposure to parental psychopathology including mood disorders, substance misuse and antisocial personalities. Poor family cohesion and parental discord have also been associated with an elevated suicide attempt rate.

History of child abuse
Child abuse, in particular childhood sexual abuse, is associated with suicide. A history of sexual abuse appears to be an independent risk factor for suicide and suicide attempts. This means that sexual abuse remains a risk factor even after adjustments are made for other confounding factors.

(Beautrais, 2000; Burns and Patton, 2000; Gould and Kramer, 2001; Ploeg et al., 1996; Serafino et al., 2000; World Health Organisation, 2000).

8.3 KEY STAKEHOLDERS IN WESTERN AUSTRALIA

State Government:
Department of Health including Public Health Units, Mental Health Division and Injury Prevention Unit
Department for Community Development (Office of Children and Young People's Policy)
Department of Education
Department of Justice (Health Services Directorate)

TVW Telethon Institute for Child Health Research

Western Australian Police Service

Teaching Hospitals (Perth metropolitan area):
Royal Perth Hospital
Sir Charles Gairdner Hospital
Fremantle Hospital
Princess Margaret Hospital

Child and Adolescent Mental Health Services (Perth metropolitan area)
Bentley Family Clinic (WAY Centre)
Clarkson Clinic
Kalamunda Child and Adolescent Mental Health Service
Kelmscott Child and Adolescent Mental Health Service
Peel Community Child and Adolescent Mental Health Service
Selby Child and Adolescent Mental Health Service
South Metropolitan Child and Adolescent Mental Health Service
Swan Child and Adolescent Mental Health Services
Warwick Child and Adolescent Mental Health Service
Youthlink (Inner City Health Service)

Child and Adolescent Mental Health Services (country)
Albany Child and Adolescent Mental Health Services
Bunbury Child and Adolescent Mental Health Services
Geraldton Community Mental Health Service
Goldfields Child and Adolescent Mental Health Service
Narrogin Child and Adolescent Mental Health Service

Adult Mental Health Services/Clinics (Perth metropolitan area):
Alma St Centre (Fremantle)
Armadale Clinic
Avro Clinic (Subiaco)
Bentley Clinic
Graylands Hospital (Mt Claremont)
Jarrah Rd Centre (East Vic Park)
Mirrabooka Clinic
Osborne Clinic (Stirling)
Peel Community Mental Health (Mandurah)
Rockingham Community Mental Health
Swan Clinic (Middle Swan)

Adult Mental Health Services (country):
Eastern Wheatbelt Health Service (Merredin)
Gascoyne Mental Health Service
Geraldton Community Mental Health Service
Midwest Health Service (Geraldton)
Northwest Mental Health Service (Kimberley/Pilbara)
South East Coastal Mental Health Service (Esperance)

Other local:
Divisions of General Practice
Medical Practitioners
Psychologists
Local Councils
Healthway
University research departments
Injury Control Council of Western Australia

A list of relevant organisations and their contact numbers (as at June 2002) are included in Appendix A.

8.4 CURRENT ACTIVITIES OF KEY STAKEHOLDERS IN WESTERN AUSTRALIA

Ministerial Council for Suicide Prevention

Western Australia was the first state to initiate a youth suicide prevention strategy, with the formation of the Youth Suicide Advisory Committee (YSAC) in 1989. This committee has now expanded to cover all age groups and is known as the Ministerial Council for Suicide Prevention (http://www.ichr.uwa.edu.au/sp/). Its goals are to reduce the incidence of suicide and the prevalence of self-harming behaviours among West Australians by developing, maintaining and disseminating information about the status and needs of those at risk of suicide; promoting and developing programs that enhance capacity and resilience in individuals, families and communities; and advising and influencing decision makers to provide a range of high quality services to support individuals, families and communities.
There are a number of projects currently being undertaken by the Ministerial Council for Suicide Prevention through the TVW Telethon Institute for Child Health Research:

- **Public education for suicide prevention in WA**. The project team is developing educational resources in suicide prevention.
- **Development of an information pack for families bereaved by suicide**. This project was completed in 2001 and is listed in the resources included in Appendix B.
- **WA regional trainers' sustainability plan**. This plan will establish a network of regional trainers throughout WA.
- **Consumer consultation and participation group**. The pilot program will collect data on males between 17-35 years to inform the development of services and strategies tailored for this risk group.
- **Record linkage projects**. These will combine data from the Hospital Morbidity Data System, the Mortality Register and the WA Coroner's Database. A separate case control study will also link the Maternal and Child Health Research Database to the aforementioned data sets to examine perinatal factors and subsequent suicide.

Western Australian Department for Community Development, Office of Children and Young People's Policy

This Department has a number of useful websites for WA teenagers (see Appendix A). A WA youth suicide prevention kit and statistical information are available at:
http://www.youthaffairs.wa.gov.au/programs/suicide/index.html
http://www.youthaffairs.wa.gov.au/programs/suicide/statistics.html

Western Australian Department of Education

The Department of Education has been involved in gatekeeper training programs to educate teachers and other adults in the recognition of warning signs for suicide.

Western Australian Department of Health

The Department of Health has a Mental Health Division and an Injury Prevention Unit. It also supports a number of 24 hour help lines and information services for West Australians including:

- **Alcohol and Drug Information Service** (Metro: 9442 5000; Regional: 1800 198 024)
- **Mental Health Direct** (1800 220 400)
- **Parent Drug Information Line** (Metro: 9442 5050; Regional: 1800 653 203)
- **Poisons Information Centre** (13 11 26)
- **Psychiatric Emergency Team** (Metro: 1300 555 788; Regional: 1800 676 822).

Western Australian Police Service

The Police Service has a School Based Police Unit and conducts a Youth Suicide Prevention Workshop for police recruits.

Commonwealth Government

In response to the high youth suicide rate, the Commonwealth Government established the National Youth Suicide Prevention Strategy. Between 1995 and 1999, a total of $31 million was allocated to this initiative. There are a number of websites of interest related to this initiative listed in Appendix A.

In 1999, the National Suicide Prevention Strategy (NSPS) was started. This shift in policy reflected growing concern about the suicide rate across broader age groups. The total funding in suicide prevention to 2002/03 has been $66.4 million. Currently, the National Advisory Council for Suicide Prevention, chaired by Professor Ian Webster, guides NSPS activities and funding allocations. The government also supports the National Mental Health Strategy, whose projects include MindMatters, a mental health promotion program for secondary schools.

As a result of these initiatives, the Commonwealth Government funds several projects in Western Australia, which include:

- **Metropolitan projects**: Attitudes and responses of young Aboriginal men to intervention services (University of Notre Dame); Peel suicide prevention (Rockingham); Learning for life project (Ruah Community Services); and the Aboriginal and Torres Strait Islander prisoners suicide prevention project (Aboriginal Legal Services of WA Inc).
- **Regional projects**: Wyndham young men's group; Burdekin Youth In Action Inc (Broome); Nurturing youth aspirations and drop in centre feasibility project (Halls Creek); Bardi youth project (One Arm Point); Promoting resilience in primary schools: the FRIENDS programme (Albany); Wheatbelt Alive and Well (Northam).

Descriptions and contact details for these projects are to be posted on the Ministerial Council for Suicide Prevention's website: http://www.ichr.uwa.edu.au/sp

Healthway

Healthway also funds mental health projects. These include the Aboriginal imaging project at Murdoch University to examine resilience and image issues, and the Mental Health Campaign to promote community awareness and understanding of mental illness.

Telephone Counselling, information and referral services

In addition to the phone numbers listed above, other telephone services include:

- **Crisis Care** (24 hour; Metro: 9223 1111; Regional: 1800 199 008)
- **Family Helpline** (Metro: 9223 1100; Regional 1800 643 000)
- **Gay and Lesbian Counselling Service** (Youth: Tues 1-4pm, else 7.30pm-10.30pm; Metro: 9420 7201; Regional: 1800 184 527)
- **Kids Help Line** (1800 55 1800)
- **Lifeline** (24 hour; 13 11 14)
- **Men's Line Australia** (24 hour; 1300 789 978)
- **Parenting Line** (Metro: 9272 2466; Regional 1800 654 432)
- **Salvo Care Line** (24 hour; 9227 8655)

- **Samaritans Suicide Emergency Service** (Metro: 9381 5555; Regional: 1800 198 313)
- **Samaritans Youthline** (Metro: 9388 2500; Regional: 1800 198 313).

Other research

Many WA universities are involved in suicide prevention and research in addition to those previously listed. For example, Curtin University of Technology, in conjunction with the Department of Education and Coastal and Wheatbelt Public Health Unit, conducted a school-based research project entitled, Promoting Optimism WA (POWA).

8.5 RELEVANT LEGISLATION

The relevant areas of legislation with respect to suicide prevention include firearms control, overdose, poisoning and the regulation of carbon monoxide emissions from car exhausts.

Firearms control in Western Australia comes under the **Firearm Act 1973**. This covers licensing procedures, ammunition sales and firearm safety and storage. The most significant recent amendments were made on December 6, 1996. These modifications followed the Port Arthur massacre in April of that year. Following this event, the Commonwealth proposed reforms including a firearm buy-back scheme, which ended on 30 September 1997, and a temporary amnesty across Australia to allow for the handing-in of any firearm or ammunition without prosecution.

The Commonwealth **Therapeutic Goods Act of 1989** regulates the scheduling, labelling and packaging of drugs and poisons, including warning labels. Medications may be purchased over-the-counter (Schedule 2), on pharmacist advice (Schedule 3), with a doctor's prescription (Schedule 4) or with an authority script requiring government approval (Schedule 8). Schedules 5 to 7 deal with poisons. Schedule 5 poisons are considered low hazard, while Schedule 7 poisons have a high toxicity risk and are restricted use only. These measures limit patient access to many drugs and poisons of concern.

Since 1986, all new cars in Australia have been fitted with a catalytic converter. However, this has not been accompanied by a fall in deaths from motor vehicle exhausts (Burns and Patton, 2000).

8.6 RECOMMENDED INTERVENTIONS

The number of proven effective interventions for suicide is extremely limited. While many interventions have been implemented, few have been evaluated rigorously. The evaluation of suicide prevention programs is very difficult because suicide is a relatively rare outcome measure, and because many suicide attempts are not reported. Thus, statistically significant reductions in suicide rates are difficult to show and require very large samples.

As a result, most of the studies that have been conducted have examined changes in knowledge and attitudes among the target groups. However, the injury prevention literature is replete with studies that show that there is little correlation between knowledge and attitudes and behaviour modification, which renders the interpretation of these studies difficult. Here we present the programs that have been evaluated. *On the basis of the*

current best-available evidence, we do not recommend the use of many of these strategies, so please read the summaries carefully. For further details, a systematic review of the literature is included in Appendix C.

(1) Primary prevention of mental health problems

The aim of primary prevention programs is to promote resiliency by teaching life skills and coping strategies, thereby preventing the onset of mental illness. Examples include school-based educational programs, general community education programs and peer counselling. To date, only school-based programs have been evaluated.

(1.1) *School-Based Suicide Prevention Programs*

The goals of school based suicide prevention programs are to increase awareness, train participants to identify at-risk students, provide education on community mental health resources, and enhance the coping abilities of teenagers. Interventions have varied from brief, single sessions through to semester-long programs.

A number of studies have evaluated school-based programs with respect to changes in knowledge and attitudes to suicide. However, these studies have methodological weaknesses, including low participation and follow up rates, non-random allocation to the intervention or control groups, and inadequate control for potential confounders (Ploeg et al, 1996). Interventions targeting secondary schools may also miss groups at high-risk for suicidal behaviour and psychopathology, such as, chronic absentees and school dropouts (Burns and Patton, 2000).

Even fewer evaluations of school-based programs have included suicide or suicide attempts as outcome measures. Six have been identified and all were ecological designs. The results varied from no reduction in suicide or suicide attempts to reductions of up to 80%. However, the ecological design is weak and no change was statistically significant (Harborview Injury Prevention and Research Center, 2001).

The current evidence for the effectiveness of school-based suicide prevention programs is weak and we do not recommend their use. However, it is possible that suicide education could prove more useful if incorporated into a comprehensive health education program addressing life skills and social wellbeing. Of course, thorough evaluation of such a program would be required (Burns and Patton, 2000).

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

Ploeg, J., Ciliska, D., Dobbins, M., Hayward, S., Thomas, H., and Underwood, J. (1996). A systematic overview of adolescent suicide prevention programs. *Canadian Journal of Public Health*, *87*, 319-24.

(2) Detection and management of mental health problems

The aim of early detection is to identify persons at-risk for suicide and provide adequate referral and services. Examples of initiatives that have been used for this purpose include school-based screening; gatekeeper programs; population-based screening; improved availability and training of health care professionals and mental health services; and crisis centres and hotlines. Those that have been evaluated are described below.

(2.1) *Direct screening*

Direct screening involves systematic screening of school populations to identify individuals at increased risk for depression and suicide. At-risk youth are subsequently referred to mental health professionals for management.

The sensitivity and specificity of the instrument needs consideration. Programs have generally recorded high numbers of false positive screens and this may limit the cost-effectiveness of the intervention. Moreover, as the suicide risk varies over time, it may be that multiple screenings are required to minimise false negative diagnoses. Ultimately, appropriate referral and compliance is vital to the success of this strategy. To date, reports on the effectiveness of direct screening have been mixed (inconclusive to promising) and its role on youth suicide rates is unknown.

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

Ploeg, J., Ciliska, D., Dobbins, M., Hayward, S., Thomas, H., and Underwood, J. (1996). A systematic overview of adolescent suicide prevention programs. *Canadian Journal of Public Health*, *87*, 319-24.

(2.2) *Gatekeeper training*

Gatekeeper training is based on the premise that youth at-risk for suicide may come into contact with "gatekeepers", such as teachers, police, youth workers, coaches and doctors. Gatekeepers complete a training program to enhance their recognition of at-risk individuals and improve their knowledge of the mental health-care system.

While significant gains in the knowledge and attitudes of gatekeepers have been documented, the effectiveness of this strategy in post-training implementation and suicide prevention is unknown. Further evaluation of this approach is warranted.

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

Shaffer D., and Craft L. (1999). Methods of adolescent suicide prevention. *Journal of Clinical Psychiatry, 60 (Suppl 2)*, 70-6, 113-6.

(2.3) *Physician education programs*

The majority of individuals who commit suicide have a prior history of mental health problems. Training physicians to diagnose and manage mental health problems better may decrease the rate of suicide. At present, interventions to train physicians and to improve follow-up look promising, but require further study.

Key Reference

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

(2.4) *Crisis centres and hotlines*

Crisis centres and hotlines are based on the premise that suicide is often associated with a critical stress event. Their objective is to convince the caller that there are ways of solving the problem other than suicide. Some hotlines are aimed specifically at children and teenagers (eg Kids Helpline).

The research that has been performed on the impact of crisis services has been correlational, examining the relationship between the establishment of a hotline and the suicide rate in the catchment region. Such studies are subject to ecological fallacy.

Accordingly, there are no convincing data that centres and hotlines are effective in reducing suicide rates, except perhaps in young white females. Notably, no effect has been demonstrated in young males, the group most at risk. At the present time, while these centres may offer other benefits in times of crisis, they cannot be recommended as a primary prevention strategy for suicide per se.

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

(3) Restriction of access to lethal means of suicide

The aim of this strategy is to limit the means with which to attempt or complete suicide. Examples include gun restrictions (eg legislation, safe storage); reduction of carbon monoxide emission; restricted access to drugs and poisons; and barriers on bridges.

(3.1) Gun restrictions

A number of studies examining the impact of gun laws on suicide rates have been performed. These have been primarily ecological comparisons of different jurisdictions. As a result, the conclusions that can be drawn on the impact of firearm restrictions are not clear. Case control studies have also been conducted to examine gun availability in homes where there has been a suicide compared to homes where there has not been a suicide. Some studies, but not all, have found an association between gun availability at home and suicide, particularly for adolescents. We recommend decreased access to guns through safe storage and firearms legislation.

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

(3.2) *Restricting other means: carbon monoxide and drugs*

While short term falls in overall suicide rates were documented in Australia with the phasing out of coal gas and legislation restricting the availability of barbiturates, the longer-term effects have been questionable (Burns and Patton, 2000).

Studies assessing the role of legislation restricting pack sizes of paracetamol and salicylates have shown a decrease in the mortality and morbidity associated with overdose using these drugs in the United Kingdom and France. However, the effect on the overall suicide rate has not been assessed (Hawton et al, 2001b).

The poisons schedule should be maintained and legislation to limit public access to drugs with an overdose potential appears prudent.

Key References

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Hawton, K., Townsend, E., Deeks, J., Appleby, L. et al. (2001). Effects of legislation restricting pack sizes of paracetamol and salicylate on self-poisoning in the United Kingdom: Before and after study. *British Medical Journal, 322*, 1-7.

(4) Postvention strategies

The aim of postvention strategies is to assist surviving individuals (eg family, friends, students) in the aftermath of a suicide in order to reduce subsequent morbidity and mortality in those individuals. The Centre for Disease Control has published a response plan for the prevention and containment of suicide clusters (CDC, 1988). While the use of such a plan seems reasonable, there is insufficient evidence to date on the effectiveness of the strategy and further research is required.

Key References

Centers for Disease Control (CDC) (1988). Recommendations for a community plan for the prevention and containment of suicide clusters. *Morbidity and Mortality Weekly Report*, *37*, 1-12.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

(5) Secondary prevention of deliberate self-harm

There is currently insufficient evidence on which to make firm recommendations about the most effective forms of treatment among patients who deliberately self-harm, though the results for problem-solving therapy (Hawton et al, 2001a), especially cognitive behaviour therapy (van der Sande et al, 1997), and the provision of an emergency access card (Hawton et al, 2001a), in conjunction with standard aftercare, are encouraging.

Overall, trials to date have had a number of methodological limitations: small sample sizes, varying definitions of deliberate self-harm, and inadequate explanations of standard aftercare (Hawton et al, 2001a). While promising, further research into the value of cognitive behaviour therapy, antidepressant treatment and emergency access cards is indicated.

Key References

Hawton, K., Townsend, E., Arensman, E. et al. (2001). Psychosocial and pharmacological treatments for deliberate self harm. *Cochrane database of systematic reviews*. Most recent update: 2001.

Van der Sande, R., Buskens, E., Allart, E., van der Graaf, Y., and van Engeland, H. (1997). Psychosocial intervention following suicide attempt: a systematic review of treatment interventions. *Acta Psychiatrica Scandinavica*, *96*, 43-50.

8.7 EMERGING ISSUES AND FUTURE DIRECTIONS

Burns and Patton (2000) commented that "the lack of investment in research designs that can demonstrate (the) effectiveness of piloted interventions is arguably the greatest gap in the current Australian initiative". These authors stress the need for large randomised control trials and other well-designed evaluation strategies with clearly defined outcome measures. Achieving these goals presents a challenge to all Australian researchers in the field and highlights the need for research based on sound epidemiological principles.

With this in mind, further research into suicide prevention is recommended in several areas, including:

- ***Primary prevention:*** Development and evaluation of a comprehensive school-based, health education program addressing life skills and social wellbeing.
- ***Early detection and management of mental health problems:*** Evaluation of gatekeeper training programs, particularly with respect to impact measures (ie are at-risk groups being identified and referred?) and outcome measures (ie are these programs reducing the incidence of suicides and suicide attempts?).

- ***Secondary prevention:*** Development of evidence-based practices for the optimal management of patients with a history of suicide attempts.

8.8 REFERENCES

Beautrais A.L. (2000). Risk factors for suicide and attempted suicide among young people. *Australian and New Zealand Journal of Psychology, 34*, 420-36.

Burns, J.M., and Patton, G.C. (2000). Preventive interventions for youth suicide: a risk factor based approach. *Australian and New Zealand Journal of Psychology, 34*, 388-407.

Centers for Disease Control (CDC) (1988). Recommendations for a community plan for the prevention and containment of suicide clusters. *Morbidity and Mortality Weekly Report*, *37*, 1-12.

Gould, M.S., and Kramer, R.A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31 (Suppl),* 6-31.

Harborview Injury Prevention and Research Center (2001). *Systematic Reviews of Injury Prevention Interventions – Youth Suicide*. USA: University of Washington.

Hawton, K., Townsend, E., Arensman, E. et al. (2001). Psychosocial and pharmacological treatments for deliberate self harm. *Cochrane database of systematic reviews*. Most recent update: 2001.

Hawton, K., Townsend, E., Deeks, J., Appleby, L. et al. (2001). Effects of legislation restricting pack sizes of paracetamol and salicylate on self-poisoning in the United Kingdom: Before and after study. *British Medical Journal, 322*, 1-7.

Hillman, S.D., Silburn, S.R., Zubrick, S.R., and Nyugen, H. (2000). *Suicide in Western Australia, 1986-1997*. Youth Suicide Advisory Committee, TVW Telethon Institute for Child Health Research and Centre for Child Health Research, Faculty of Medicine and Dentistry, The University of Western Australia, Perth 2000, ISBN 0 646 39298 0.

Ploeg, J., Ciliska, D., Dobbins, M., Hayward, S., Thomas, H., and Underwood, J. (1996). A systematic overview of adolescent suicide prevention programs. *Canadian Journal of Public Health*, *87*, 319-24.

Serafino S., Somerford P., and Codde J. (2000). *Hospitalisation as a consequence of deliberate self-harm in Western Australia, 1981-1998*. Health Department of Western Australia, Perth, ISSN 1329 7252.

Shaffer D., and Craft L. (1999). Methods of adolescent suicide prevention. *Journal of Clinical Psychiatry, 60 (Suppl 2)*, 70-6, 113-6.

Van der Sande, R., Buskens, E., Allart, E., van der Graaf, Y., and van Engeland, H. (1997). Psychosocial intervention following suicide attempt: a systematic review of treatment interventions. *Acta Psychiatrica Scandinavica*, *96*, 43-50.

World Health Organization (2000). Preventing suicide, a guide for general physicians. Geneva.

Zubrick, S.R., Silburn, S.R., Garton, A., Burton, P. et al. (1995). *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties*. Perth, Western Australia: Australian Bureau of Statistics and Institute for Child Health Research 1995, Catalogue No. 4303.5, ISBN 0 642 20754 2.

8.9 APPENDICES

APPENDIX A

The following is a contact list of various agencies involved in suicide prevention at the state and national level. It can serve as a resource for Department of Health staff and others. Details are current to June 2002.

Western Australia
State Government

Department of Health	www.health.wa.gov.au	1300 135 030 9222 4222
Mental Health Division (DOH) Public Health Units		9222 4099
Department of Education (Gatekeeper training)	www.eddept.wa.gov.au	9264 4111
Department of Justice (Health Services Directorate)	www.justice.wa.gov.au	9264 1384
Department for Community Development, Youth Affairs (Wellington St Perth)	www.dotu.wa.gov.au www.youthaffairs.wa.gov.au	9476 2000
Western Australian Police Service	General enquiries School Based Police Unit Youth Suicide Prevention Workshop for police recruits	13 1444 9356 0555 9424 4200

Government websites of interest:
http://www.dotu.wa.gov.au/index.html:
http://www.dotu.wa.gov.au/live/index.html
http://www.youthaffairs.wa.gov.au/
http://www.youthaffairs.wa.gov.au/programs/suicide/index.html
http://www.youthaffairs.wa.gov.au/programs/suicide/statistics.html
Ministerial Council for Suicide Prevention: www.ichr.uwa.edu.au/sp/

Teaching Hospitals (Perth metropolitan area)

Royal Perth Hospital	www.rph.wa.gov.au	9224 2244
Sir Charles Gairdner Hospital	www.scgh.health.wa.gov.au	9346 3333
Fremantle Hospital	www.fh.health.wa.gov.au	9431 3333
Princess Margaret Hospital	www.pmh.wa.gov.au	9340 8222
King Edward Memorial Hospital	www.kemh.wa.gov.au	9340 2222

Child and Adolescent Mental Health Services (Perth metropolitan area)

Bentley Family Clinic (WAY Centre)	9334 3900
Clarkson Clinic	9304 6200
Kalamunda Child and Adolescent Mental Health Service	9454 2698
Kelmscott Child and Adolescent Mental Health Service	9390 1135
Peel Community Child and Adolescent Mental Health Service	9531 8080
Selby Child and Adolescent Mental Health Service	9382 0773
South Metropolitan Child and Adolescent Mental Health Service	9336 3099
Swan Child and Adolescent Mental Health Services	9250 5777
Warwick Child and Adolescent Mental Health Service	9448 5544
Youthlink (Inner City Health Service)	9224 1700 (Metro) 1800 803 356 (Rural)

Child and Adolescent Mental Health Services (country)

Albany Child and Adolescent Mental Health Services	9892 2440
Bunbury Child and Adolescent Mental Health Services	9791 4355

Geraldton Community Mental Health Service	9921 7833
Goldfields Child and Adolescent Mental Health Service	9021 6200
Narrogin Child and Adolescent Mental Health Service	9881 4888

Adult Mental Health Services/Clinics (Perth metropolitan area)

Alma St Centre (Fremantle)	9432 3555
Armadale Clinic	9391 2400
Avro Clinic (Subiaco)	9381 4977
Bentley Clinic (Mills St)	9334 3666
Graylands Hospital (Mt Claremont)	9347 6600
Jarrah Rd Centre (East Vic Park)	9361 5406
Mirrabooka Clinic	9344 5400
Osborne Clinic (Stirling)	9346 8350
Peel Community Mental Health (Mandurah)	9531 8080
Rockingham Community Mental Health	9527 9299
Swan Clinic (Middle Swan)	9347 5797

Adult Mental Health Services (country)

Gascoyne Mental Health Service	9941 4141
Geraldton Community Mental Health Service	9921 7833
Midwest Health Service (Geraldton)	9964 4953
Eastern Wheatbelt Health Service (Merredin)	9041 2977
Northwest Mental Health Service (Kimberley/Pilbara)	9192 3322

South East Coastal Mental Health Service (Esperance)		9071 7677
Telephone Counselling, Information and Referral Services		
Alcohol and Drug Information Service		9442 5000 (Metro) 1800 198 024 (Rural)
Crisis Care (24 hour crisis line)		9223 1111 (Metro) 1800 199 008 (Rural)
Family Helpline		9223 1100 (Metro) 1800 643 000 (Rural)
Gay and Lesbian Counselling Service (Youth: Tues 1-4pm, else 7.30pm-10.30pm)		9420 7201 (Metro) 1800 184 527 (Rural)
Kids Help Line	www.kidshelp.com.au	1800 55 1800
Lifeline (24 hour service)		13 11 14
Men's Line Australia (24 hour service)		1300 789 978
Mental Health Direct (24 hour mental health information)		1800 220 400
Parent Drug Information Line		9442 5050 (Metro) 1800 653 203 (Rural)
Parenting Line		9272 2466 (Metro) 1800 654 432 (Rural)
Poisons Information Centre		13 11 26
Psychiatric Emergency Team		1300 555 788 (Metro) 1800 676 822 (Rural)
Salvo Care Line (24 hour crisis line)		9227 8655
Samaritans Suicide Emergency Service		9381 5555 (Metro) 1800 198 313 (Rural)
Samaritans Youthline		9388 2500 (Metro) 1800 198 313 (Rural)

Translating and interpreting service (24 hour service)		13 14 50
Other local		
Institute for Child Health Research	www.ichr.uwa.edu.au	9489 7711
Divisions of General Practice	See General Practice Divisions of WA Ltd under Business Listings of White Pages	
Medical Practitioners	See Medical Practitioners in Yellow Pages	
Local Councils	See Government Section of White Pages	
Anglicare Western Australia	Perth	9325 8544
Association for Relatives and Friends of the Mentally Ill	(see ARAFMI under White Pages' Business Listings)	9228 0577 (Metro) 1800 811 747 (Rural)
Centrecare Marriage and Family Service	Perth	9325 6644
Compassionate Friends (bereavement service)	West Perth	9227 5698
The Freedom Centre, WA AIDS Council	Northbridge	9228 0354
Geraldton Family Counselling Service	Geraldton	9921 4477
GROW in Western Australia	Perth	9328 3344
Non Government Schools Psychology Service	Leederville	9212 9310
Rockingham Youth Services	Rockingham	9527 5624
Young Men's Christian Association	Perth	9227 4111
Young Active People, Young Women's Christian Association	Osborne Park	9440 3501
Youth Services Program, Hills Community Support Group Incorporated	Mundaring	9295 6155

National
Commonwealth Government

Australian Department of Health and Aged Care	www.health.gov.au
Commonwealth Department of Education, Science and Training	www.detya.gov.au
Commonwealth Department of Family and Community Services	www.facs.gov.au

National programs:

National Youth Suicide Prevention Strategy	
National Suicide Prevention Strategy	
National Mental Health Strategy:	http://www.mentalhealth.gov.au http://www.health.gov.au/hsdd/mentalhe/ MindMatters, a mental health promotion program for secondary schools: http://online.curriculum.edu.au/mindmatters/.

Other: Information and Statistics

Australian Bureau of Statistics	www.abs.gov.au
Australian Institute for Family Studies	www.aifs.org.au Suicide Prevention Communications Project: www.aifs.org.au/ysp/menu
Australian Institute of Health and Welfare	www.aihw.gov.au
Australian Infant, Child, Adolescent and Family Mental Health Association	www.aicafmha.net.au
Reach Out (internet site for suicide prevention)	www.reachout.asn.au
Other Australian internet sites:	www.suicidedoctor.com www.depressiondoctor.com

Other: non-government agencies

Alcohol and Other Drugs Council	www.adca.org.au	
Anglicare		9325 7033
Compassionate Friends (support for bereaved parents)		9486 8711 1800 628 118
Mental Health Council of Australia	www.mhca.com.au	
St Vincent de Paul	See White Pages' Business Listings	
Salvation Army	See White Pages' Business Listings	
SANE Australia (mental illness support site)	http://www.sane.org	
The Smith Family	Launched in WA in 2001	
Wesley Mission	See White Pages' Business Listings	

Other: Research

Many universities Australia-wide are involved in suicide prevention research.

Other: Medical and Allied Health

Australian Medical Association
Australian Mental Health Consumer Network
Australian and New Zealand College of Mental Health Nurses
Australian Nursing Federation
Australian Psychological Society
Doctors' Reform Society
Royal Australasian College of General Practitioners
Royal Australian and New Zealand College of Psychiatrists
Pharmacy Guild
Pharmaceutical Society of Australia
Public Health Association of Australia

Other: Media

Australian Press Council
Federation of Australian Broadcasters
Federation of Australian Commercial Television Stations

APPENDIX B

RESOURCES

A number of resources are available for the general public, school teachers, healthcare professionals, the media and the bereaved. These are listed below.

Australian Institute of Family Studies. Youth suicide prevention programs and activities: **national stocktake** October 1999. Commonwealth of Australia 1999. ISBN 0 642 39468 7.

Commonwealth Department of Health and Aged Care 2000. Learnings about suicide, LIFE: a framework for **prevention of suicide** and self-harm in Australia, Commonwealth Department of Health and Aged Care, Canberra (Amended Feb 2001). Three volumes: ISBN 0 642 44693 8, 0 642 44692 X, 0 642 44691 1.

Injury Control Program Disease Control Health Department of Western Australia and Injury Control Council of Western Australia. **Injury prevention**: Resource package. Health Department of Western Australia 1996. Chapter 7.1 Suicide p215-39. ISBN 0 7309 8236X.

Taylor B, Howard J. MindMatters. Commonwealth Department of Health and Aged Care 2000. ISBN 0 642 36755 8. A resource for **Australian secondary schools**. Project funded by the National Suicide Prevention Strategy and the National Mental Health Strategy.

Martin G, Clark S, Beckinsale P, Stacey K and Skene C. Keep yourself alive. Prevention of suicide in young people: A manual for **health professionals**. Foundation Studios, Adelaide South Australia, 1997. ISBN 0 646 32424 1.

Penny Mitchell. **Evaluation** of the National Youth Suicide Prevention Strategy. Building capacity for life promotion. Technical Report Volume 1. Australian Institute of Family Studies- Commonwealth of Australia 2000. ISBN 0 642 39476 8.
Primary prevention and early intervention. Technical Report Volume 2. Australian Institute of Family Studies- Commonwealth of Australia 2000. ISBN 0 642 39481 4.
Crisis intervention and primary care. Technical Report Volume 3. Australian Institute of Family Studies- Commonwealth of Australia 2000. ISBN 0 642 39479 2.
Treatment and support. Technical Report Volume 4. Australian Institute of Family Studies- Commonwealth of Australia 2000. ISBN 0 642 39480 6.

Penrose-Wall J, Baume P, Martin G. **Media resource** for the reporting and portrayal of suicide. ISBN 0 642 39426 1 and Life promoting media strategy, A positive approach. A strategy to encourage the responsible reporting and portrayal of suicide. ISBN 0 642 39428 8. Publications Production Unit (Public Affairs, Parliamentary and Access Branch), Commonwealth Department of Health and Aged Care 1999 (Amended 2000) From: Achieving the balance. A resource kit for Australian media professionals for the reporting and portrayal of suicide and mental illnesses.

Clark SJ, Hillman SD and WA Youth Suicide Advisory Committee. Information and Support Pack: for those **bereaved** by suicide or other sudden death. WA Youth Suicide Advisory Committee. Perth 2001. ISBN 0 9579494 0 5.

APPENDIX C.

Systematic Reviews of Prevention Interventions

Review Citation (Including country where the review was conducted)	Intervention Title (Specify each intervention evaluated in the review)	Conclusive Remarks* (Recommended, Promising, Inconclusive, No evidence, Insufficient evidence)
Burns JM, Patton GC (2000). Australia	***Depression*** 1) Cognitive behavioural therapy (CBT) for depressed adolescents 2) Pharmacological treatment of depressed adolescents 3) School sampling for case finding. Identifying and treating depressed youth in schools. Intervention: CBT 4) Population-based strategy for prevention. Target: Middle school students. Intervention: CBT ***Suicidal behaviour*** 1) Clinical follow-up of a suicide attempt in youth 2) Crisis centres and hotlines 3) Suicide education programs in secondary schools 4) Community gatekeeper training	***Depression*** 1) **CBT** for depressed adolescents: **Promising**, quicker symptom remission. Also relapse prevention in adults. Needs investigating in adolescents. 2) **Pharmacological treatment: Inconclusive**, more research required in youth. 3) **Case finding: Inconclusive**. Participation rates low, false positives. 4) **Population-based approach**: Inconclusive. Small sample sizes, more research required. ***Suicidal behaviour*** 1) Clinical **follow-up** of suicide attempt: **No evidence**, non attendance is a major problem. 2) **Crisis centres and hotlines**: **No evidence** except in young white females. 3) **School-based programs: Inconclusive**, mixed results. 4) **Community gatekeeper training: Insufficient evidence**; research is required.

Review Citation (Including country where the review was conducted)	**Intervention Title** (Specify each intervention evaluated in the review)	**Conclusive Remarks*** (Recommended, Promising, Inconclusive, No evidence, Insufficient evidence)
Burns JM, Patton GC (2000), continued Australia	***Availability of lethal methods*** 1) Firearm restrictions: Interrupted time series analyses 2) Availability of paracetamol 3) Carbon-monoxide poisoning 4) Hanging ***Media portrayal of suicide*** 1) Media guidelines	***Availability of lethal methods*** The potential for **substitution** in the long term remains a problem for each: 1) **Firearm restrictions: Inconclusive/promising** in areas of high gun ownership. Long arm legislation in Queensland resulted in substantial falls in firearm suicides in metropolitan and provincial but not rural regions. Falls marked in young males (15-29 years). 2) **Paracetamol restrictions**: Evidence of **weak beneficial effect** reported. 3) **Carbon-monoxide poisoning**: evidence for catalytic converters **weak.** 4) **Hanging**: restriction viable in **limited** settings (inpatient psychiatric services and correctional facilities). ***Media portrayal of suicide*** 1) Media guidelines: Two reports have suggested an effect. Media guidelines introduced in Vienna, Austria resulted in a sustained reduction in suicides (20% over 4 years).

Review Citation (Including country where the review was conducted)	**Intervention Title** (Specify each intervention evaluated in the review)	**Conclusive Remarks*** (Recommended, Promising, Inconclusive, No evidence, Insufficient evidence)
Gould MS, Kramer RA (2001). United States	***Case finding strategies*** 1) School-based suicide awareness curricula 2) School-wide screenings 3) Gatekeeper training including teachers, counsellors, coaches, paediatricians, police and clergy 4) Crisis centres and hotlines ***Risk factor reduction strategies*** 1) Restriction of lethal means 2) Media education 3) Postvention/Crisis intervention following a suicide 4) Skills training: youth training in problem solving, coping and cognitive skills. May be part of a broader health education curriculum.	***Case finding strategies*** 1) **School-based suicide awareness curricula**: **Inconclusive**, results vary from modest increases in knowledge, attitudes and behaviour, to no effect and still others, to detrimental effects. Hence, focus has shifted to skills training. 2) **School-wide screenings: Promising**, screening questionnaires generally have high sensitivity, though specificity is generally low (false positives high). Effectiveness of referral not discussed. Unknown impact on suicide rates. 3) **Gatekeeper training: Promising** significant improvements in gatekeeper intervention skills. Unknown impact on suicide rates. 4) **Crisis centres and hotlines: Inconclusive.** ***Risk factor reduction strategies*** 1) Restriction of lethal means • **Firearms: Inconclusive but promising** • **Hangings: restriction potential limited.** 2) **Media education**: Austrian example **promising.** 3) **Postvention/Crisis intervention: Insufficient evidence**: research is required. 4) **Skills training: Promising**, coping skills improved. Unknown impact on suicide rates.

Review Citation (Including country where the review was conducted)	**Intervention Title** (Specify each intervention evaluated in the review)	**Conclusive Remarks*** (Recommended, Promising, Inconclusive, No evidence, Insufficient evidence)
Harborview Injury Prevention and Research Center (2001), "Systematic Reviews of Injury Prevention Interventions – Youth Suicide", University of Washington. USA	***Review of youth suicide prevention strategies*** 1) School-based programs 2) Physician education programs 3) Crisis centres and hotlines 4) Restriction of access to means.	***Review of youth suicide prevention strategies*** 1) **School-based programs: Inconclusive**. Recommend large scale randomised control trial (RCT). 2) **Physician education programs: Inconclusive though promising**. RCTs required. 3) **Crisis centres and hotlines: No evidence**, except in young white females. 4) Restriction of access to means: **Gun availability: Inconclusive**. **Other means: Inconclusive though promising**. Substitution effect needs further assessment.
Ploeg J *et al*. (1996). Canada	***School/college-based suicide prevention programs*** Eleven studies reviewed: quasi-random, Solomon four group and cohort designs.	***School/college-based suicide prevention programs*** **Inconclusive**. In most studies, knowledge improved, however, studies have found both beneficial and harmful effects on attitudes relating to suicide. Long term follow up of intervention and control groups has generally not been performed.
Shaffer D, Craft L (1999). United States	***Review of youth suicide prevention strategies*** 1) School-based programs 2) Gatekeeper training 3) Direct screening: 3-stage screening process.	***Review of youth suicide prevention strategies*** 1) **School-based programs**: Inconclusive, may be harmful. 2) **Gatekeeper training**: problematic in practice, external signs of suicidality may be absent. 3) **Direct screening**: The authors describe their method, which they claim is cost effective. Many false positives recorded.

Review Citation (Including country where the review was conducted)	**Intervention Title** (Specify each intervention evaluated in the review)	**Conclusive Remarks*** (Recommended, Promising, Inconclusive, No evidence, Insufficient evidence)
Hawton K *et al*. (Rev 2001) • Cochrane review of randomised control trials of interventions post deliberate self-harm. United Kingdom	***Secondary prevention of deliberate self-harm*** Outcome: repeated self harm (fatal or non-fatal) 1) Problem solving therapy versus standard aftercare. ***Secondary prevention of deliberate self-harm*** Outcome: repeated self harm (fatal or non-fatal) 1) Emergency card versus standard aftercare 2) Antidepressants versus placebo 3) Long-term versus short-term therapy.	***Secondary prevention of deliberate self-harm*** 1) **Problem solving therapy versus standard aftercare**: Reduced repetition of deliberate self harm but not statistically significant (summary OR 0.7, 95% CI 0.45-1.11). ***Secondary prevention of deliberate self-harm*** Outcome: repeated self harm (fatal or non-fatal) **1) Emergency card versus standard aftercare**: Reduced repetition of deliberate self harm but not statistically significant (summary OR 0.45, 95% CI 0.19-1.07). **2) Antidepressants versus placebo**: No benefit for patients treated with mianserin, benefit for patients with less than 5 attempts treated with paroxetine, but not 5 or more (One study, post hoc subgroup analysis). **3) Long-term versus short-term therapy**: One study: no difference, OR 1.0 (95% CI 0.35-2.86).
Van der Sande R *et al*. (1997) • Randomised control trials of interventions post deliberate self-harm. The Netherlands	***Secondary prevention of deliberate self-harm*** Outcome: repeated self harm 1) Psychiatric management of poor compliance 2) Guaranteed in-patient shelter in cases of emergency: emergency card given 3) Psychosocial crisis intervention: problem solving therapy with a focus on the resolution of current problems. 4) Cognitive behavioural therapy: focuses on the ability to solve interpersonal problems and regulate emotions.	***Secondary prevention of deliberate self-harm*** 1) **Psychiatric management** of poor compliance: **No evidence.** 2)) Guaranteed **in-patient shelter** in cases of emergency: **Insufficient evidence.** 3) **Psychosocial crisis intervention: No significant reduction** in repeated suicide attempts. 4) **Cognitive behavioural therapy: Promising**, small studies to date and only one trial was analysed according to intention-to-treat principle. Further research required.

Key

Recommended:	Evidence for beneficial effect demonstrated in a number of trials
Promising:	Some evidence of beneficial effect though further research is required
Inconclusive:	Evidence of effect has varied across trials. Further research is required
No evidence:	Evidence from trials has indicated no beneficial effect
Insufficient evidence:	Limited evidence at present. Further research is required