

Chapter 3

Infrastructure developments in injury prevention and control

3.1 Prevention

The *First Report on National Health Priority Areas 1996* (AIHW & DHFS 1997) emphasised that injury is preventable and that primary prevention is the best means of injury control.

The following overview of infrastructure and program developments in the area of injury prevention includes: progress at the State and Territory level; the role of national bodies in coordinating broad injury prevention policy and activities; recent injury prevention interventions in Australia and their effectiveness; and progress towards improving trauma-related data.

State and Territory progress

While the following is not a comprehensive record of injury prevention action by the States and Territories, it does provide an indication of developments and progress towards national goals and targets. Particular emphasis is given to:

- achievements in injury prevention;
- progress towards a strategic plan;
- initiatives involving intersectoral collaboration;
- provision and funding of training in the area of injury;
- injury research and evaluation activities; and
- future plans for achieving significant gains in injury prevention.

New South Wales

In response to the original National Health and Goals Targets process, NSW Health established the Injury Lead Agency Forum where facilitation of planning and action on each of the targets was accepted as the responsibility of one of nine government or non-government organisations. The Forum has New South Wales Cabinet endorsement, and a State-wide all agency report on current activity is due to be submitted to the New South Wales Premier in 1998. A formal evaluation of the forum process will be undertaken.

NSW Health's Injury Prevention Policy Unit funds the position of coordinator for the Lead Agency Forum. Emerging from its lead agency responsibilities, the Unit has formulated a strategic plan with respect to its three areas of focus: falls in older people; childhood poisoning; and burns and scalds.

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Major recent achievements in injury prevention include:

- the completion of two phases of the State-wide scald prevention campaign (the third phase is being conducted through Kidsafe);
- implementation of a smoke alarm promotion program, in partnership with the New South Wales Fire Brigade and local councils, within four Area Health Services where house fire rates are high and smoke alarm installation rates are comparatively low;
- implementation of campaigns promoting smoke alarm installation within Vietnamese and Chinese communities; and
- commencement of a prospective study (identifying cases as they occur), with the Poisons Information Centre, to better identify how children access major household poisons.

Other projects include:

- the production of a resource manual and training seminar for public health workers and those in other sectors, on firearm injuries and the new firearm laws (delivered State-wide);
- support for the development of a State-wide, playground safety advisory service;
- an Aboriginal Injury Surveillance program in Bourke, covering all injuries at multiple treatment centres (medical and community health services);
- participation on the Public Health Committee for the Sydney 2000 Olympic Games; and
- the maintenance of a network of injury prevention workers around the State.

Key training opportunities within the past few years have been an annual inter-sectoral two-day workshop for injury control practitioners conducted with the National Centre for Health Promotion. Major research initiatives have been the evaluation of the scald prevention campaign, the smoke alarm campaign and a falls prevention program on the NSW north coast. Future areas of focus include establishing a workable emergency department-based injury surveillance system and establishing a centre for injury prevention research.

Victoria

The Victorian intersectoral plan for injury prevention *Taking Injury Prevention Forward* was launched in 1994 (Department of Health and Community Services 1994). A number of specific working groups and the Victorian Injury Prevention Committee were established to develop the injury prevention plan and coordinate implementation of injury prevention activities. Recent work has focused on increasing the capacity and commitment of other sectors of injury prevention, for example, through the municipal public health planning process and through jointly funded projects with other sectors. Efforts have also been directed towards establishing injury prevention as part of core business of primary health care providers within the health sector.

Major program achievements include:

- a State-wide scalds prevention campaign and the completion of a process evaluation of that campaign;
- a program at the Royal Children's Hospital addressing injury prevention issues for community groups in languages other than English; and
- an annual State-wide Community Safety Week, which commenced in 1997.

The Victorian Department of Human Services has administered regional injury prevention grants for a variety of community-based initiatives to assist in identifying effective preventive strategies and to increase the capacity of communities to undertake injury prevention. One of the larger projects is a sports injury prevention initiative in the City of Hume. The project focuses on evaluating the impact of club or association safety policies on sports injuries.

The injury control section of the Victorian Department of Human Services is involved in several jointly funded initiatives with other sectors including a State-wide rural safety project and the promotion of sports safety through existing infrastructures. It is also funding an evaluation study of strategies to address falls prevention in older people. The study is examining the combined and individual effects of exercise strategies, home modification, and strategies that address vision. Important legislative changes have also been introduced, including the compulsory installation of smoke alarms, the compulsory erection of swimming pool fences, and changes to domestic animal control.

The Department has identified training in injury prevention and control as a priority. It has been working to establish an injury prevention Chair at Monash University, and has provided assistance to some new injury prevention workers to attend a short course in injury control conducted by the Monash University Accident Research Centre (MUARC). It has also provided seminars and forums on an annual basis for practitioners working at the local level.

Future directions for the injury control section include a greater focus on:

- sport and recreational injuries;
- children's injuries including poisoning prevention; and
- rural safety, through greater collaboration with a growing number of Farm Safety Action Groups.

Other considerations include assisting research that identifies the direct and indirect costs (to all sectors) of different types of injuries and use of this information to identify injury prevention priorities and to engage other sectors.

Queensland

The approach of Queensland Health to planning and evaluating injury prevention and control is being redeveloped with the Injury Health Outcomes Plan expected to be completed in 1998. Strategic planning of State-wide injury prevention initiatives will be undertaken by an Injury Outcomes Area Team made up of a diverse group of public health staff.

For the past three years, Queensland Health's injury activities have focused on the prevention of burns and scalds in children and on toddler drowning. The latest phase of the Hot Water Burns Like Fire program was a media campaign in August 1997

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which was combined with a stronger emphasis on working with manufacturers and industry. The focus on industry will continue in 1998 with the introduction of the Australian Standard for hot water delivery (AS 3500.4).

A comprehensive campaign addressing pool drownings is in progress. Laurie Lawrence has championed the Kids Alive: Do the Five program and created a high profile for toddler drowning within the State. This has produced an environment ready for more targeted strategies. Research aimed at obtaining a clear understanding of the context in which drowning occurs and the potential contribution of different prevention strategies will inform the next phase of the project.

The Safety Action program to reduce alcohol-related violence and injury within the licensed environment has been piloted in Surfers Paradise and successfully replicated in Mackay, Townsville and Cairns. Within nightclubs and licensed venues the program has reduced the incidence of physical assault and increased periods free from drunkenness.

Following the collection and analysis of information about the high rate of injury experienced by Indigenous peoples from NISU and the Cairns Tropical Public Health Unit, a number of Indigenous injury prevention programs have been initiated in the Far North and in Central Queensland. These community-based programs are focusing upon developing culturally appropriate injury prevention strategies which address the specific needs of each community.

Western Australia

Injury control in Western Australia is currently operating under a decentralised system, with Public Health Units each identifying their own priorities. At the central level, the focus is on providing training, establishing which programs could be undertaken by partners in injury control, and progressing a number of separate intervention projects.

In the area of training, the injury program has produced a resource manual for injury prevention practitioners and has conducted training seminars around the State based on the manual. The Injury Control Council of Western Australia (an intersectoral council committed to injury prevention), and Healthway (a foundation set up to fund health promotion activities), have provided seeding money for model projects such as those addressing exercise as a falls prevention strategy for older people, and bike helmet promotion. These projects provide further training opportunities and increase the capacity of organisations to address injury prevention. With new data on household safety devices available through participation in the Australian Bureau of Statistics Supplementary Labour Force survey in 1996, there has been a focus on the prevention of poisoning, scalds (with action towards legislation for hot water heaters) and burns (with the adoption, in mid-1997, of smoke alarm legislation for new houses, and house renovations requiring council approval).

The Injury Unit of the Western Australian Health Department became a partner in road safety in 1997, being involved in strategic planning in enforcement and other campaigns. It has also undertaken a collaborative research study with the National Centre for Drug Abuse: a case-control study of the relationship between alcohol, drugs and injury.

Developments in surveillance include a monitoring project at the Broome Hospital emergency department to examine the potential of adding alcohol questions to the Injury Minimum Data Set. The data collection has also served to monitor the impact of a trial program, an accord on safe drinking premises, where owners of licensed premises and police and health authorities, work together to reduce the alcohol problem. There are currently no resources to expand this initiative to further sites.

Major future initiatives include the development of a State-wide strategic plan for injury prevention, developing a greater focus on intentional injuries, especially interpersonal violence among young men, and playing a greater role in the road safety area.

South Australia

The South Australian Health Commission's Injury Surveillance and Control Unit has been undertaking injury surveillance, through hospital and mortality data and sentinel emergency department data collection systems, since 1985. Most recently, it has been involved in significant research projects in the areas of falls prevention among older people, and dog attacks. The results of these studies have been published in the *Medical Journal of Australia* (Thompson 1996) and a report, on the involvement of general practitioners in falls prevention initiatives with older people, is currently in press. Major achievements in injury prevention include initiatives in falls prevention in older people, hot water temperature control, and home fire prevention, and the introduction of a playground safety-surface standard.

The Unit has a strong commitment to training injury prevention workers, having an ongoing program of paid apprenticeships of 6–18 months duration for recent university graduates in the health sciences. There have been six such trainees since 1994.

No strategic plan for injury prevention has been developed nor is one intended for the future. Future plans, however, include:

- establishment of a national playground testing network;
- development of a pump-suction safety device for pools and spas;
- development of national standards for safe kerbside dining; and
- development of methods to promote falls prevention through general practitioners.

In addition, South Australia has chosen violence and abuse as a State Health Priority Area. Indicators and targets cover death from child abuse and neglect, and mortality and morbidity from interpersonal violence such as domestic violence, rape, sexual assault and elder abuse.

Tasmania

Broad strategic direction for the development of injury prevention activities is provided by the Tasmanian Health Goals and Targets, in which injury is one of nine priorities. The Tasmanian Injury Coalition was established as an intersectoral planning group to collaboratively address injury priorities within Tasmania. In 1996, the Coalition provided training in approaches to effective injury prevention to a range of stakeholders.

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Major achievements by the Department of Community and Health Services in injury surveillance and prevention within the last few years include:

- implementation and evaluation of a hot water scalds prevention campaign targeting children aged 0–4 years. Results indicated a significant reduction of hospitalisations due to burns and scalds in this age group (39 per cent) over the four years from 1990–91 to 1994–95. This result well exceeds the national target of a 20 per cent reduction set for the Year 2000;
- establishment of a strategic alliance with the Department of Transport to develop an injury prevention campaign targeting elderly drivers;
- provision of funding to establish the Tasmanian Resource Centre for Falls in the Elderly, to provide strategic direction and advice on best practice in falls prevention; and
- provision of ongoing support to non-government organisations that provide State-wide injury prevention services, including Kidsafe, the Tasmanian Injury Coalition and the Tasmanian Injury Surveillance and Prevention Program.

Currently, key priority target groups for injury prevention activities are children aged 0–4 years, young people (particularly males aged 15–29 years) and people aged over 70 years.

Future initiatives include the development of strategic priorities for health and wellbeing outcomes for Tasmania. This is to be a key task for the newly established Health and Wellbeing Unit of the Department of Community and Health Services.

Australian Capital Territory

Injury was identified as a health priority in the 1994 report *Health Goals and Targets for the Year 2000* (ACT Department of Health & Community Care 1994) and by the Health Outcomes Reference Group, which was established in 1995. In 1996, a report on the epidemiology of injury in the Australian Capital Territory was published (Gilbert & Gordon 1996), and following its recommendations, an intersectoral Australian Capital Territory Injury Prevention and Control Taskforce was established.

Using a strategic and evidence-based approach, the taskforce has identified four key areas:

- falls in the elderly;
- sports and recreation injuries;
- workplace injuries; and
- bicycle injuries.

Initially the taskforce is focusing on falls in the elderly, and sports and recreation injuries. Working groups have identified a number of priorities in both areas, including sports injury surveillance and the continuing development of clinical protocols and pathways for the prevention, treatment and management of falls in older people.

A major achievement has been the inclusion of performance indicators for assessing progress in the management and prevention of falls in the elderly, in the Department's 1997–98 contract with the Canberra Hospital. Where staff training has occurred, the number of falls in hospital has decreased. Further work is underway on the prevention of falls in the community. Progress will be measured against performance indicators.

The Canberra Hospital has appointed its first trauma surgeon and will be appointing a Professor of Road Trauma and Emergency Medicine at the Canberra Clinical School (University of Sydney) with funding provided by the National Roads and Motorists Association.

The Injury Prevention and Control Taskforce is using the Department's health outcomes framework, *Outcomes 2000* (ACT Department of Health & Community Care 1997), to develop strategic and coordinated plans with stakeholders in identified areas of focus.

Northern Territory

Territory Health Services has identified alcohol misuse as the major preventable cause of injury in the Northern Territory. The Northern Territory has the highest alcohol consumption per capita, as well as the highest injury mortality in the country.

A specific injury prevention strategy has not been developed in the Northern Territory. There are currently no injury prevention policy officers or designated injury prevention workers within the health sector, and no local injury prevention training program for health sector workers. While injury is a greater problem in the Northern Territory than elsewhere in the country, and certainly one of the highest priority health issues, focusing attention on alcohol-related harm is seen as the most effective means of preventing injury and addressing the other serious effects of alcohol misuse.

The major effort in injury prevention is the Living With Alcohol program, which is an intersectoral initiative funded by a levy on alcohol sales. This program is based on a responsible drinking and harm minimisation strategy, and supports a range of health promotion, treatment, rehabilitation and research initiatives, as well as initiatives in the hospitality industry and in law enforcement. A specific Living With Alcohol program addresses similar issues in the Aboriginal community, although often in quite different ways.

Recent injury prevention achievements in other sectors have been legislation requiring roll cages to be fitted to open utility and truck trays that are used for passenger transport (falls from open trays are a significant cause of road injury in remote areas), and the introduction of speed cameras.

As a result of the Living With Alcohol program, research activity related to injury is also concerned with alcohol misuse, including the evaluation of the effectiveness of the 'Alcohol-free Thursdays' in Tennant Creek where alcohol sales are restricted on Thursdays (pay and social security days) in response to community pressure. The evaluation of the strategy included an assessment of its effect on local hospital presentations due to injury. There is also a trial currently underway of a system in Alice Springs Hospital to identify and monitor alcohol-related injuries presenting to the emergency department.

Coordination at national level

Commonwealth Department of Health and Family Services

Prime responsibility for national coordination of injury prevention and control activity within the health sector rests with the Commonwealth Department of Health and Family Services. The focus is on supporting the establishment and maintenance of injury prevention infrastructure and capacity.

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This includes fostering or taking a lead agency role in intersectoral cooperation and collaboration, provision of funding support for national data collections, analysis and dissemination of these data, and support for training initiatives and relevant research.

In recent years, intersectoral activity has included:

- sponsoring the First National Conference, and the Third International Conference on Injury Prevention and Control in 1995 and 1996 respectively, and the forthcoming Second National Conference to be held in 1998;
- joint funding of bilateral activities, including the Australian Advisory Committee on Road Trauma, and the Australian Sports Injury Prevention Taskforce which has recently produced the National Sports Safety Framework;
- coordination of a national response to standards issues (eg to prevent weakening of domestic hot water standards as part of the mutual recognition process);
- coordination of national support for the World Health Assembly Resolution on Violence as a Public Health Issue; and
- formation of the National Injury Prevention Advisory Council (NIPAC).

Data activity has included:

- funding for the AIHW National Injury Surveillance Unit (NISU), especially to improve data on Indigenous peoples' injury and on emergency department injury presentations; and
- funding for analysis of specific injury issues, including a review of risk-taking behaviours among young men, 'do-it-yourself' injuries, product-related child fall injuries, and a review of countermeasures to reduce near-drowning and spinal injuries.

AIHW National Injury Surveillance Unit

The AIHW National Injury Surveillance Unit (NISU) has played an active role. It publishes the *Australian Injury Prevention Bulletin* and the *Injury Issues Monitor*, and supports the formal and informal interchange of data and information on injury issues. NISU's move to the new Flinders University Research Centre for Injury Studies will facilitate a broader approach to injury prevention.

Other organisations

There are a number of other organisations involved in coordinating injury prevention activities at a national level. Kidsafe, the Child Accident Prevention Foundation of Australia, is the peak injury prevention organisation for children. Its work includes the development of injury data collections and demonstration injury prevention programs. Farmsafe Australia has taken national leadership for farm safety and the related issues of rural injury. The Australian Agricultural Health Unit has played a central role in data analysis, developing and evaluating educational and environmental prevention strategies, and contributing to the cooperative structures involving farmers' organisations, occupational health and safety agencies and State and regional health agencies. The Office for Aboriginal and Torres Strait Islander Health Services (OATSIHS), located within the Commonwealth Department of Health and Family Services, has coordinated and funded a number of injury-related programs and research activities targeting Indigenous peoples. The Australian Sports Commission jointly funded the Australian Sports Injury Prevention Taskforce with

the Commonwealth Department of Health and Family Services. The focus of the Taskforce's report, *SportsSafe Australia: A National Sports Safety Framework* (1997) provides a foundation for the future direction of sport and recreational injury prevention in Australia.

Effective preventive programs in Australia

This section describes several major recent preventive interventions in Australia and their evaluated effectiveness. The strategies discussed are not intended to provide a comprehensive coverage of major injury prevention strategies within Australia. Rather, they illustrate a cross-section of approaches and injury areas where preventive programs appear to have resulted in significant gains.

These examples illustrate the scope for successful preventive action if the problem is well understood, appropriate resources are allocated to ensure that the changes are accepted within the community, and policy structures are amenable to change. They also illustrate the scope for coordinated action by the States and Territories. However, implementation of these strategies is currently not consistent across States and Territories and no mechanisms exist to rapidly and efficiently develop nationally consistent approaches.

Scalds prevention

Hot water at 60–70°C (the factory setting for most hot water heaters in Australia) takes less than one second to cause third degree burns to a young child's skin. It is therefore possible to lower the number and severity of tap water scalds by lowering the delivery temperature of the water. In response to evidence of the effectiveness of scalds prevention strategies in the United States, almost all Australian States and Territories have undertaken significant work in the area of scalds prevention over the past few years.

The model of intervention adopted in the United States followed that developed by Katcher (1987) which comprises data collection, education in the form of multi-strategy campaigns directed to decision makers in the industry as well as consumers, and legislation. A 50 per cent reduction in scalds within the first five years of legislation was reported (Katcher 1987; Erdman et al 1991).

Australian understanding of the problem was supported by Injury Surveillance Information System (ISIS) data from a sample of up to 50 hospitals around the country. Combined efforts in advocacy and action on scalds prevention by States and Territories in Australia have resulted in an amendment to the Australian Standard for hot water delivery in the home (AS 3500.4), and currently several States are working towards legislation of the recommended delivery temperature of 50°C in bathrooms. Educational strategies targeting households with existing hot water heaters have been directed primarily at consumers, plumbers and electricians.

Data from NSW Health's admitted patient statistics collection have been examined for the six years before and two years following the new Australian Standard and the affiliated campaign. Major changes in data classification relating to observation and short-stay cases have made interpretation of less serious scalds problematic. Despite this problem, data indicate significant changes in the hospital presentations for serious scalds in children under five years of age in New South Wales. For 1988–94, a yearly average of 171 children aged 0–4 years required at least five days in hospital as a result of a scald. This compares with 109 cases during the first year following

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the campaign and the adoption of the new standard, and 90 cases in the second year (personal communication, Injury Prevention Policy Unit, New South Wales). The reduction (of nearly 50 per cent within two years) is dramatic and if it is mirrored in all other States and Territories, there will be over 200 young children saved annually from a serious scalding event, which would have resulted in costly treatment and ongoing rehabilitation, permanent scarring and possible permanent disability.

This example demonstrates the scope of the modification of a clearly identifiable hazard through standards, legislation and education.

Bicycle helmets

The use of bicycle helmets has been shown conclusively to significantly reduce the incidence and severity of head and brain injuries, as well as serious upper facial injuries among cyclists (National Committee for Injury Prevention and Control 1989; NHMRC 1997a).

Bicycle helmet promotions in Australia began in Victoria during the early 1980s. Compulsory helmet wearing laws were introduced in that State in 1990, and subsequently in other States and Territories. Evaluation of the Victorian experience indicated that the all-ages helmet wearing rates increased from 24 per cent in 1988, to a pre-law level of 31 per cent in 1990, to 76 per cent by 1992 (Cameron et al 1994). There was a concomitant reduction in bicycle-related head injuries; the number killed or hospitalised fell by 48 per cent the first year after the law was introduced and by 78 per cent the second year. For other types of injuries, there was a 23 per cent and 28 per cent reduction in the first and second years respectively in part attributable to a reduction in cycling (Henderson 1995).

Helmet wearing laws were introduced in New South Wales in 1991 and data show a strong relationship between an increase in helmet wearing rates and reductions in head injury rates. Two years post legislation, a 29 per cent reduction in head injuries was observed for riders under 16 years, and a 38 per cent reduction was observed for riders 16 years or over (Roads and Traffic Authority 1994).

The available data indicate that increased helmet wearing has a positive effect on the head injury rate. The challenge lies in maintaining, across all States and Territories, high helmet wearing rates and increasing correct wearing practices (well-fitted, properly strapped helmets) among those under 16 years of age (Henderson 1995).

Protective eyewear for squash and racquetball players

In sports such as squash and racquetball, the risk of severe eye injury is quite high (Coleman et al 1996). The use of protective eyewear in these sports has led to a dramatic reduction in eye injuries, with one Canadian study reporting a 90 per cent reduction of all sport and recreational eye injuries with the introduction of the mandatory use of protective eyewear for squash and racquetball players (Pashby 1992).

In light of this evidence and in line with standards in the United States and Canada, sports governing bodies plan to make the use of eyewear mandatory for all squash and racquetball players in Australia (NHMRC 1997a). Currently, eyewear protection is compulsory for squash players under 19 years of age during competitions. An educational campaign is underway to increase protective eyewear use by squash and racquetball players at all levels of play, with a view to expanding the regulations to these groups within the next few years (Paul Veer, Victorian Squash Federation, personal communication).

Emergency department surveillance systems could be usefully employed to monitor eye injuries associated with those sports in which the policy changes are proposed.

Child-resistant cigarette lighters

From 1 March 1997, the importation of non-child resistant cigarette lighters (which are easily operated by young children and, because of their design, produce a large and long-burning flame) was banned across Australia and their sale was prohibited from 1 July 1997. This initiative was made possible through the collaborative efforts of Commonwealth and State and Territory Departments of Consumer Affairs, and many health, coronial and fire authorities, which provided data and evidence about the problem and the need for uniform regulations.

The exact number of injuries and deaths linked to house fires caused by cigarette lighters is not known. In many cases, the role of lighters may not be reported due to embarrassment or insurance considerations. However, evidence from the available statistics is as follows:

- in 1994 in New South Wales, there were 74 fires involving children playing with cigarette lighters in the home, resulting in \$1.4 million in damage;
- one study of fires in the area from northern Sydney to Newcastle found that, of 158 reported child-related fire incidents, 104 (66 per cent) were due to disposable cigarette lighters (Ministerial Council on Consumer Affairs 1996);
- injuries associated with cigarette lighters tend to be severe (51–66 per cent admission rate among those seeking emergency department care) and young children (under five years) are at greatest risk (Valuri 1994; National Injury Surveillance Unit 1994); and
- coroners from New South Wales and Victoria have identified many deaths (at least 10 in these two States within the last eight years) due to house fires caused by disposable cigarette lighters (Ministerial Council on Consumer Affairs 1996).

It is too early to evaluate the impact of the ban on non child resistant cigarette lighters. Australia has temporarily adopted the United States Consumer Product Safety Commission (US CPSC) product standard pending the development of an Australian standard. The US CPSC does not expect a review of their mandatory standard until 1998, but it was agreed that Australia should not await the results of that review because of the threat to lives. In this instance, decisive action has been taken as a result of established links between a serious injury outcome and a clearly identifiable hazard.

Community-based injury prevention programs

Community-based injury prevention approaches have gained considerable support both within Australia and overseas. The World Health Organisation (WHO) in particular, has increased the profile of such prevention approaches by establishing a program in which communities that satisfy WHO criteria for a safe community receive formal accreditation. Several Australian communities have received or are in the process of receiving such accreditation. The WHO also organises annual international Safe Com conferences and associated travelling seminars in order to facilitate the exchange of information about safe communities.

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Until recently, there has been little empirical evidence within Australia of the effectiveness of this strategy, which is an 'all injuries, all ages' approach based on building strategic partnerships to increase the emphasis on safe environments and safe choices at the local level.

Results from an evaluation of Australia's first 'safe community', the LaTrobe Valley Better Health Project, are now available (Day et al 1997). The aim of the project was to reduce the incidence of injury. Consistent with this aim, there was a 27 per cent reduction in injury-related emergency department presentations over the five years following the program. The study was limited by the absence of a comparison community. However, the outcome is comparable to the 28 per cent reduction in injuries reported by the founding safe community project in Falköping, Sweden (Schelp 1987).

Although there was an overall reduction in injuries, the program did not result in a reduction in all major risk factors. Use of household safety devices, for example, was not reported to have increased over the study period. However, many environmental modifications to public facilities were clearly evident, such as changes in public playgrounds and sporting grounds, roads and pedestrian facilities.

In the LaTrobe study, it was estimated that the program cost (excluding in-kind time and other contributions) was \$272 per injury saved. With its potential savings, this multi-agency approach combining a variety of interventions would appear to be a worthwhile investment. Additional targeted evaluation of specific injury areas would assist in further understanding of the impact of safe community projects.

Balancing need, evidence and action

Apart from the examples illustrated above, there is a striking imbalance between the relative burden or the level of need for intervention, evidence to choose the intervention, and the amount of action taken.

According to the WHO, research in injury prevention is best directed to those areas where the burden of disease is high (WHO 1996). Where burden (need) is high and evidence poor, a strategy of applied research and evaluation is advisable. Where need is low and evidence is equivocal or lacking, action should be limited. There will also be some issues where need is low to moderate, the evidence for effect is strong and where action can and should be pursued.

Table 3.1 provides examples of issues that illustrate that the amount of action is not necessarily based on need and sound evidence. The examples in the table were chosen following consultation with several expert researchers and practitioners in the field of injury surveillance and prevention, and on the basis of selected literature in the field of injury prevention. The table aims to show examples of different mixes of need, evidence, action and result, rather than a comprehensive analysis. There is a clear need to improve the availability of sound evidence for interventions.

Table 3.1 Selected injury issues illustrating the different mixes of need, evidence and action

Injury	Need	Evidence	Action	Result
Suicide prevention	++++	+ -	+++	??
Bicycle helmets	++	++	+	++
Alcohol-related injuries	+++	++	+	+
Smoke detectors	++	++	+	+
Preventing falls in older people	++++	+ -	++++	??
Child safety counselling, early childhood centres	+	??	+++	??

Key: + Indicates importance of the category
+ - Indicates equivocal evidence
?? Indicates that there is little confirmed evidence relating to this category

Trauma-related data collection focusing on prevention

The *Better Health Outcomes for Australians* report (DHFS 1994) recommended an improvement in the collection of data from trauma treatment centres, especially hospital emergency departments, for the purposes of guiding prevention.

A detailed data collection from sentinel emergency departments began in 1986 but became unsustainable by 1994 with the shift in focus to universal patient management systems in emergency departments. This led the NISU to develop a minimum data set, known as the National Data Set for Injury Surveillance (NDSIS), which could be used within the current data management systems.

NDSIS contains two levels. Level one provides for very basic data and permits broad descriptions of injury patterns presenting to emergency departments in a manner broadly compatible with the major headings in the International Classification of Diseases. Level two allows more detailed coding, although the level of detail is less than in the Injury Surveillance Information System (ISIS) system. Users interested in risk assessment and management, such as the Consumer Affairs Division of the Department of Industry, Science and Tourism, the Building Codes Board, and injury prevention researchers and policy makers more generally, have expressed a need for the higher level of detail. Provision for more detailed coding is being made in drafting the next edition of NDSIS, along with explicit mapping to ICD-10.

The implementation of NDSIS in patient management systems most commonly only uses level one data, and provides only limited text descriptions of the events leading to injury.

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Table 3.2 Current progress in collecting injury prevention-related data from emergency departments in each State/Territory

State/Territory	Status of injury data collection
New South Wales	<ul style="list-style-type: none"> • data collected largely through NSW Health Survey • several attempts to systematically collect injury data through emergency departments but with limited success • acceptance that specific resources are needed for successful data collection to occur in emergency departments
Victoria	<ul style="list-style-type: none"> • expectation that all hospitals collect data to level 1 of NDSIS • 24 hospitals due to collect level 2 NDSIS data • MUARC currently assessing validity of data
Queensland	<ul style="list-style-type: none"> • four hospitals currently or due to collect injury data to level 2 of NDSIS using HAS software • acceptance that resources are needed to counter concern of emergency department directors about increased staff workload
Western Australia	<ul style="list-style-type: none"> • recent discussion about systematic collection of injury data • data currently collected at local level and in a small number of hospitals
South Australia	<ul style="list-style-type: none"> • small sentinel collection of injury data, based on one adults' and one childrens' hospital and the use of trauma registry
Tasmania	<ul style="list-style-type: none"> • sporadic collection in three hospitals based on the ISIS collection
Australian Capital Territory	<ul style="list-style-type: none"> • HAS software used to collect level 1 NDSIS data
Northern Territory	<ul style="list-style-type: none"> • casual paediatric collection

Key: NDSIS, National Data Set for Injury Surveillance
HAS, HAS Solutions Emergency Department Patient Management System
ISIS, Injury Surveillance Information System
MUARC, Monash University Accident Research Centre

The Australasian College of Emergency Medicine and the Association of Emergency Nurses have indicated broad support for the collection of injury surveillance data suitable for prevention, through the emergency department. They have, however, argued strongly that resources must be provided to cover the costs involved.

In view of the difficulties involved in obtaining high quality data in a pressured clinical setting without additional resources, the Commonwealth Department of Health and Family Services has funded NISU to undertake a feasibility study for a nationally representative emergency department surveillance system. The view has been taken that universal data collection of possibly more than two million injury cases is inefficient, due to high costs and difficulties with quality control. A sample-based system, aimed at collecting high quality data from a relatively limited number of cases, is preferred. This system would provide national estimates of injury, but would not necessarily provide State and Territory specific information. The cost of stratifying the sample by State and Territory and increasing the sample size to obtain reliable estimates at State or Territory level, is likely to be high and would involve a considerable commitment by the States and Territories wishing to obtain separate estimates.

The results of the NISU feasibility study are due in 1998. At that time, the feasibility of different sampling approaches, the likely costs, and the possibilities for improving the level of detail obtained, will be better understood. As well as providing quantitative estimates of the incidence of injury, emergency department data also have the potential to provide the detailed information that is needed for planning injury prevention strategies. Such data provide a broader information base than do hospital admissions data. Current developments in computerisation of emergency department patient management systems will provide a window of opportunity to implement a new sample-based system, including new coding systems that better meet the needs of prevention planners.

Should the NISU feasibility study demonstrate that a national system would be practical and effective, long-term funding for the system might be obtained from all those areas within the health sector (Commonwealth and State) and other sectors that seek high quality data for their own research prevention and evaluation activities. These areas include the Public Health Division (as lead agency), and Mental Health Branch (youth suicide/attempted suicide) in the Commonwealth Department of Health and Family Services, the National Occupational Health and Safety Commission, and consumer affairs agencies.

3.2 Trauma care

The *First Report on National Health Priority Areas 1996* (AIHW & DHFS 1997), identified 'access of injured patients to optimal trauma care' as an NHPA injury prevention and control indicator (see Appendix 1). However, data are not yet available for this indicator. The review in this chapter therefore primarily focuses on infrastructure developments previously identified in the *Better Health Outcomes for Australians* report (DHS 1994) and by the National Road Trauma Advisory Council (NRTAC) in the *Report of the Working Party on Trauma Systems* (DHS 1993) as representing a means for improving trauma care.

These include:

- establishing a trauma management advisory committee in each State and Territory;
- developing a trauma management plan which includes a provision for rural areas;
- improving data collection systems at State and Territory levels;
- evaluating trauma systems;
- developing appropriate staffing policies and practices; and
- providing training opportunities in trauma management and retrieval.

Other strategies relevant to trauma care include communication processes, equipment and facilities, and guidelines and resources (manuals and training videos).

The Australian Council on Healthcare Standards (ACHS) published *Guidelines for Trauma Services* in 1997. The guidelines are based on information contained in the NRTAC report on trauma systems (DHS 1993), and were developed with support from AHMAC and the Commonwealth Department of Health and Family Services. The guidelines provide practical guidance in the application of ACHS standards and criteria to trauma services, as well as encouraging best practice. Feedback from health professionals has indicated a high level of support for the guidelines.

State and Territory progress

This section briefly summarises developments in trauma management structures in the States and Territories over the past two to three years. Trauma management systems are typically complex and managed by a number of different disciplines and individuals. No attempt will be made to describe these systems in detail. Rather, discussion is confined to a broad overview of trauma management developments and a selection of recent achievements in each State and Territory.

New South Wales

The New South Wales Trauma System Advisory Committee oversees the monitoring program for acute trauma services in New South Wales. In a report on the review of the State monitoring program the Committee recommended the expansion of the formal trauma triage process to regional and rural areas (NSW Health 1996a).

The monitoring program has shown that there have been no significant changes in workload since implementation of the metropolitan trauma plan. The Committee will continue to monitor workload issues of low volume trauma cases, which still call for a certain level of trauma care services. The major staffing issues concern agreement on the volume of trauma cases for each level of trauma care service. Training opportunities include the Early Management of Severe Trauma (EMST) course conducted by the College of Surgeons, which is taken out to rural areas, and the recently established Emergency Life Support course, conducted by the College for Emergency Medicine, which extends to rural general practitioners.

The New South Wales Health Department has developed management guidelines and transfer guidelines for people with burns injuries (NSW Health 1996b). They have also established health outcome performance indicators (HOPIs) in conjunction with performance agreements and the legal requirement that each Area Health Service be responsible for the health of its population. The indicators are classified in the Health Outcomes Indicator Framework, which was endorsed by the Australian Health Ministers' Advisory Council in 1996.

Victoria

A 32 member multidisciplinary Ministerial Taskforce with a separate working party has been established to examine Victoria's trauma and emergency medical services. The Taskforce is to present a State-wide trauma management plan to the Minister for Health by September 1998, with an interim report planned for early 1998. Current areas of focus include the establishment of an integrated trauma system with pre-hospital triage guidelines and the development of indicators to evaluate the quality of trauma management.

Three critical care committees have been established in rural regions and more are being considered. Training opportunities provided for rural areas include the integration of rural general practitioners with other emergency services.

Data collection and research currently include several isolated studies (on unrelated issues), an ongoing review of road trauma fatalities, and the sentinel Victorian Emergency Minimum Dataset (VEMD) and data on waiting times for care in emergency departments. Although the VEMD data collection system examines the circumstances of injury and waiting times for care, it does not include indicators relating to retrieval and trauma management (although this is being considered by the Ministerial Taskforce). The data are part of the hospital accreditation system and facilitate ongoing improvements to the provision of emergency care services.

Queensland

In planning for trauma management in Queensland, trauma is not singled out, but falls within the whole approach to emergency services. Hospital bypass planning is not considered an issue in this State, because of the vast distances involved and the clear delineation of areas captured by health care services (except in South Brisbane where a bypassing triage system has been developed).

Within the last two to three years, equipment and the aero-retrieval system have been significantly upgraded. For this purpose, \$20 million have been made available. Current planning projects that by the year 2003 all rural and remote communities will be covered by emergency retrieval services, in conjunction with the Queensland Ambulance Services and the Royal Flying Doctor Service (RFDS).

The Queensland Emergency Services Advisory Panel has been established and covers all areas of emergency medicine, not just trauma. The Queensland Emergency Services Advisory Committee (QEMSAC) is a high-level committee established by Queensland Health. The development of data collection systems is underway at both organisational and hospital levels and it is anticipated that it will be fully operational by the year 2003. The system will include linkages between relevant State and Territory agencies, ambulatory care, and intensive care units and rehabilitation services.

Western Australia

Western Australia has established a State Trauma Advisory Committee and seven key areas of development including: education (with a special focus on medical, nursing and ambulance officers in rural areas); research; a burns management course; a disaster planning module; critical incidents debriefing; a hospital services database to assist in identifying deficient resources and, for example, how far the services are from an airport; and a trauma registry currently in four teaching hospitals. The Royal Perth Hospital has 8,000 cases documented to date.

The registry is currently being expanded, encompassing more regional centres, to achieve coverage of the whole State. It includes indicators such as injury severity scores, whether counselling or debriefing was provided and other indicators enabling the ongoing review of bypass and retrieval systems. The State strategic plan for trauma provides for a review each year. Most targets have been met.

It has been determined in Western Australia that the NRTAC recommendations relating to designation of major trauma centres and increasing staffing levels in rural hospitals are not relevant to the State's population size and geographical spread. The relatively small number of patients requiring services limits the development of centres of excellence in trauma management in Western Australia as will the planned introduction of a major road trauma prevention initiative.

South Australia

A review of the trauma services of metropolitan Adelaide hospitals was undertaken in 1995, and in 1996, a review of rural trauma services was undertaken in order to make recommendations with respect to State-wide planning for trauma management. As a result of these reviews, the current South Australian Trauma Clinical Advisory Committee (SATCAC) was formed. It has wide representation from different disciplines and is responsible to the South Australian Minister for Human

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Services. The Committee has overseen the development of an ongoing monitoring system of trauma cases and a better, more effective communication process for the whole State (in terms of suitable retrieval modes, staffing and training).

The trauma registry, administered by the South Australian Health Commission, is coordinated by two senior nursing staff at the central office and four senior clinical nurses based with the three major trauma centres. A list of specific indicators has been developed covering outcomes measures such as confirmed diagnosis, bed days, days in intensive care, complications and comorbidities. Regular reports on overall performance are submitted to SATCAC. At this point there is no further tracking of the patient, for example, to identify the rehabilitation provided or the recovery level. However, the inclusion of these data is seen as a desirable long-term goal.

The State Trauma Plan has recently been revised to improve services in rural and remote areas. New initiatives in this area include a new helipad, in-service training for emergency medicine staff and improved communication systems. The latter provide for more timely communication between rural hospitals and general practitioners, and between rural doctors and metropolitan-based specialists. For example, hands-free telephones permit rural doctors to talk to the specialists while treating the patient. The South Australian ambulance service has accelerated the hiring of paramedics to ensure a higher skill level among those attending and retrieving emergency cases.

Tasmania

A number of initiatives ensure smoother retrieval and treatment of trauma cases throughout the State. These include:

- the provision of the Computer Aided Dispatch Information Service (CADIS) which enables the prompt response of the Tasmanian Ambulance Service to anywhere in the State;
- the use of the National Triage Category by emergency departments in all three major hospitals;
- a 24-hour State-wide Poisons Information Line providing information to doctors and the general public on every known poison and toxin; and
- the development and production of a training video, by the Department of Emergency Medicine in conjunction with rural general practitioners, to assist rural and remote practitioners maintain their knowledge and skills in relation to first-aid injury treatment.

Specialised care is available for specific injuries. For example, there is a Burns Unit at the Royal Hobart Hospital. Where definitive care is not available within Tasmania, agreements have been made with hospitals in other States to ensure the transfer of patients without delay. Such an arrangement is currently in place for the transfer of spinal patients to the Austin Hospital in Melbourne.

Australian Capital Territory

In early 1996, a joint Australian Capital Territory/New South Wales Southern Area Critical Care Committee was established. It is a multidisciplinary team with representation from surgical and non-surgical services, and has developed a transfer protocol for interstate patients. It regularly reviews data on interstate transfers and is developing guidelines for managing critically ill patients. The work of this Committee is complemented by that of the Australian Capital Territory Royal Australian College of Surgeons' Trauma Care Committee which has coordinated trauma care since 1994.

The Canberra Hospital has appointed its first trauma surgeon and will be appointing, in 1998, a NRMA – ACT Safety Trust Professor of Road Trauma and Emergency Medicine. This will be a joint position between The Canberra Hospital and the University of New South Wales.

The development of a trauma registry has commenced under the auspices of the Division of General Surgery at The Canberra Hospital. It will provide an additional source of information on the quality of trauma care as a component of accreditation. The data will be reviewed regularly and used for quality assurance purposes. A telemedicine link is planned and will provide dynamic, interactive regional consultations via teleconferencing, assist with acute trauma care and reduce inappropriate inter-hospital transfers.

Northern Territory

At present, trauma management in the Northern Territory operates on a bi-State level, with major trauma centres at the Royal Darwin Hospital and Alice Springs Hospital being responsible for the top and lower end of the Territory, respectively. Trauma planning and management occurs at a hospital level in these two centres and there is currently no Territory-wide trauma committee or trauma plan. The Royal Darwin Hospital plan follows closely the NRTAC recommendations and the Royal College of Surgeons' Trauma Management Guidelines. The Royal Darwin Hospital has commenced a trauma management database with performance indicators closely aligned with those in place at Liverpool Hospital, New South Wales.

Recent training opportunities in trauma management include the development of an education program for rural and remote health staff. In July 1997, a Rural Health Support Education and Training grant was awarded for this program which runs situation-specific courses for staff in remote area health centres and regional hospitals. To date, three courses for remote area staff have been conducted in each of three regions in the Top End. Courses for Darwin's general practitioners and staff in Katherine and Gove District hospitals will also be undertaken. There is a current proposal that the course be expanded to the Kimberly Region of Western Australia, which refers emergencies to the Royal Darwin Hospital.

Developments in communication to assist in the transfer and management of trauma cases include the installation of satellite telephones. However, further funds are required to enable their installation beyond the Darwin area. Two areas believed to offer the greatest promise for injury control in the Territory are greater use of current communication technologies and an increased focus on injury prevention.

Overview of trauma management

Table 3.3 provides a summary of key features of developments in trauma management in each State and Territory. On the whole, over the last few years, there has been a considerable improvement in systems for trauma retrieval and management. Almost all States and Territories have introduced special initiatives to address trauma in rural and remote areas. Most States and Territories have a State-wide trauma planning committee and a trauma plan, and a growing number have established databases and clinical indicators to allow for monitoring and evaluation of trauma management services. The move toward greater collaboration between the sectors responsible for retrieval, treatment and data management requires a new level of openness between ambulance services, hospitals and health departments. This is occurring in most States, most notably in those with established interdisciplinary injury management committees or taskforces.

The New South Wales trauma database and its performance indicators appear to lead the way in terms of trauma management data collection systems. The system has been in place in the Sydney metropolitan area for over four years and is used in the evaluation of the trauma plan. For example, it is possible to estimate the reduction of 'avoidable deaths' achieved through more efficient transfer of seriously injured patients to major trauma centres. The trauma plan and database now encompass the entire State. Other States and Territories are at various stages of implementing or developing similar systems (generally at major metropolitan areas or select hospitals).

Table 3.3 Current progress in trauma management in the States and Territories

Activity	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Trauma Management Committee	✓	✓	✓	✓	✓	✓	✓	x
State-wide trauma plan	✓	in progress	✓	✓	✓	✓	✓	x
Plan includes rural areas	✓	in progress	✓	✓	✓	in progress	✓	x
Trauma management data collection system	✓	in progress	in progress	✓	✓	in progress	in progress	x
Development/use of performance indicators	✓	in progress	x	✓	✓	✓	x	x

Key: ✓ completed
 x no progress
 in progress not yet completed but underway

While the databases that exist in South Australia, Western Australia and New South Wales have been based on international systems, they generally have adopted different cut-off points for items such as length of time between injury and retrieval, and length of time between retrieval and receiving definitive care. It is therefore not possible to compare and contrast the effectiveness of different trauma management strategies in different States and Territories. Furthermore, although some States or Territories have goals and plans to include rehabilitation data in their databases (to permit comprehensive tracking of patients and their recovery levels)

such a system has not yet been introduced anywhere in Australia. Identification of these indicators would enable evaluation of retrieval and treatment strategies in terms of longer term outcomes such as rehabilitation costs and quality of life measures. Such data systems exist in other countries (eg the United States), and permit greatly enhanced evaluation of post-injury management approaches and greater collaboration between the trauma management and rehabilitation sectors.

Many States have developed state-of-the-art resources and systems which could be transferred to other jurisdictions. Further collaboration between the States and Territories would assist in the dissemination of effective systems. South Australia, for example, has developed a number of products, including software for the trauma registry database, data dictionaries, and a set of agreed clinical indicators. Queensland is working on indicators relating to extended patient tracking (including rehabilitation services). New South Wales has developed guideline documents on the transfer and management of burns patients and Tasmania has developed a video for enhancing first aid skills for rural and remote health workers. It should be noted that the Australian Advisory Committee for Road Trauma (AACRT) and its sponsoring organisation the Federal Office of Road Safety have also developed a video resource for rural medical practitioners (*Trauma Treatment in Rural and Remote Australia*). Such duplication of effort could be avoided through effective collaboration between the States and Territories.

3.3 Rehabilitation

Rehabilitation looks at a person with a disability and asks what is possible. It concentrates on what now exists and what could develop in the future.

(DHS 1994)

Rehabilitation includes a range of treatments, training, counselling and education aimed at optimising the injured person's functioning. It is a complex area where a variety of disciplines and value systems operate and continuous debate will occur about what outcomes are possible and reasonable.

The *First Report on National Health Priority Areas 1996* (AIHW & DHFS 1997) identified increased 'access to comprehensive rehabilitation programs' as an injury control and prevention indicator (see Appendix 1). Data are not available for this indicator at present. The section which follows is therefore an informal analysis of the current status of rehabilitation services including:

- service provision, with particular emphasis on the Commonwealth Rehabilitation Service;
- access to services;
- coordination of services; and
- standards and effectiveness of services.

Overview of services

Currently, rehabilitation in Australia is provided by a mix of public (State and Territory and Commonwealth funded) services and private services. Individual services contributing to rehabilitation are funded by compensation from insurers, Medicare, State and Territory hospital funding and private health insurance. Medicare funding is not available for services provided by allied health professionals.

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Commonwealth Rehabilitation Service

The Commonwealth Rehabilitation Service (CRS), is the major national structure for the delivery of vocational rehabilitation services. CRS is currently within the Commonwealth Department of Health and Family Services however, legislation is currently before Parliament pending corporatisation. Part III of the *Disability Services Act 1986* (Commonwealth) provides the legislative base for the provision of vocational rehabilitation services by the Commonwealth Government. These services are currently provided by the CRS, which assists Australians between the ages of 14 and 65 years, who have a disability attributable to an intellectual, psychiatric, sensory or physical impairment or a combination of these, to gain or keep paid employment and to live independently in the community.

Programs are provided free of charge to people with a disability who receive a pension or benefit, and to other people who cannot afford to pay. The legislation also provides for the Commonwealth to be paid for delivering rehabilitation services. Typically such payments are made under State motor accident and workers' compensation arrangements but costs are also recoverable from clients who receive legal compensation for their injuries.

The CRS has strong links with hospitals, doctors and community health centres to encourage early referral for vocational rehabilitation following injury. Anecdotal information from case studies, and detailed analysis of data from the rehabilitation services offered to Commonwealth employees, shows that early referral to rehabilitation services dramatically reduces the cost of rehabilitation. With Commonwealth employees, the cost of cases referred to rehabilitation services within 14 days of injury was only one-sixth the cost of cases where referral was delayed for one year (Comcare 1996).

In 1996–97, the CRS provided rehabilitation programs to 11,007 people whose disability was attributable to an accident or injury. Of these, 42 per cent had a non-compensable injury and received services free of charge.

Table 3.4 CRS 1996–97 Program commencements — accidents/injuries

Category	Number	Per Cent
Compensable road and work	5,232	54
Non-compensable road and work	2,458	22
Compensable other injuries	427	4
Non-compensable other injuries	2,209	20
<i>Total</i>	<i>11,007</i>	<i>100</i>

The significant proportion of non-compensable road and work-related cases indicates that the CRS plays a central role in the rehabilitation of such cases, whereas a greater proportion of compensable cases are assisted outside the CRS. There were only 2,209 cases where the injury was non-compensable and occurred from a cause not related to road or work. Hospitalisation data indicate that more cases could be expected to require rehabilitation because of these 'other' causes. It is likely that gaps exist in the rehabilitation coverage of injuries occurring outside the road and work-related sectors even for those of workforce age.

In a financial analysis of the costs and returns of the CRS, ANUTECH estimated in 1993 that the ratio of net return to all levels of government compared to total CRS program costs was 9.6:1 (Commonwealth Rehabilitation Service 1997).

Other rehabilitation services

The majority of rehabilitation services are provided by a diverse range of State and Territory and private providers and by different mixes of health and disability. Many of these services are offered through medical referrals and are funded under Medicare. Services by allied health professionals are funded through private health insurance or State managed community and primary health care services. There are a variety of workers' compensation schemes in each State and Territory and a large number of organisations are accredited rehabilitation providers under these schemes.

Rehabilitation of very severe trauma, such as spinal injury, is usually closely linked to specialist trauma services and major hospital facilities at a central point. There is no attempt to provide these services in a distributed manner due to the relatively low volume of cases and the level of expertise required. As the severity of the trauma decreases, services are more likely to be distributed and less closely tied to major hospitals. In addition, coordination of various aspects of rehabilitation is less often managed by rehabilitation specialists.

In the absence of a coordinated and clearly identified rehabilitation program for a particular client, a range of services are generally brought into play to provide some degree of rehabilitation. Domiciliary care services, in particular, play an important role in the rehabilitation of elderly people in some areas. Rehabilitation is carried out as part of the function of neurology, geriatric and orthopaedic services. Essentially, it would seem that local resources are matched to available funding to provide a service. The level, comprehensiveness and outcome of such services is likely to be variable.

Important issues in rehabilitation

Access to services

Access to comprehensive rehabilitation services remains a significant problem in the area of injury. The level and type of service varies markedly according to the compensation and employment status of the client and between different States or Territories.

As noted above, the CRS offers an integrated needs-based rehabilitation service for its clients but is limited by its Act to a vocational rehabilitation role. Clients outside the target group for the CRS experience a much more variable access to rehabilitation services. They are faced with poor links between treatment and rehabilitation services and are likely not to receive timely or adequate rehabilitation if their injuries are due

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to a non-compensable cause. There has been some progress at State and Territory level in providing rehabilitation services for certain groups, such as those with less severe brain injury. However, this progress is far from uniform and has not resulted from an agreed policy framework for rehabilitation services.

Currently, gaps in rehabilitation services are most evident for:

- children;
- the elderly, especially those injured at home or at leisure from causes such as falls;
- non-compensable injuries to those not in the workforce; and
- conditions such as less serious brain injury, where the disability is less obvious and rehabilitation is often best carried out by those specialising in this type of problem regardless of the cause.

Some States and Territories do not provide extensive outpatient rehabilitation services whereas others have developed extensive outpatient programs. Also, the types of rehabilitation available vary markedly from city to country. In the country, staffing positions are often either not available, or remain unfilled due to the shortage of professionals prepared to live in rural areas. In addition, some specialist agencies such as sports medicine clinics tend to be concentrated in high-density population areas, providing a far greater range of services than is available to injured persons in other areas. In an attempt to address some of these gaps, Farmsafe Australia, with funding from the Commonwealth Department of Health and Family Services, is currently undertaking a project aimed at providing improved rehabilitation services to disabled farmers.

Coordination of services

The need for improved coordination of rehabilitation and related services was raised in 1974 by the Woodhouse Committee which stated:

The key to rehabilitation is the coordination of planning and effort, but at present coordination simply does not exist. . . Nor is there a definition of the areas of responsibilities between hospitals, rehabilitation centres and voluntary services. In addition . . . substantial numbers of the medical profession are unaware of the rehabilitation facilities that exist.

(National Rehabilitation and Compensation Scheme Committee of Inquiry 1974)

In 1993, the interim *Review of Professional Indemnity Arrangements in Health Care* (DHS 1993) argued that little had changed. The *Better Health Outcomes for Australians* report (DHS 1994) also cited lack of planning as a major issue. The final report of the Professional Indemnity Review (DHS 1996) also identified these issues.

Lack of coordination of rehabilitation services remains an important problem to be addressed. To ensure cost-effective rehabilitation for people with injuries, rehabilitation services require strong links with primary and secondary health care services. There must also be clearer lines of responsibility for various segments of the rehabilitation continuum, particularly with respect to the provision of appropriate aids and equipment where there are potential 'grey' areas of overlap between State and Territory and Commonwealth responsibilities.

Standards and the effectiveness of services

The *Better Health Outcomes for Australians* (DHS 1994) report recommended that the issue of national standards in rehabilitation be investigated.

Some work on standards has been commenced by the Faculty of Rehabilitation Medicine in conjunction with private insurers. Individual services may also have paid attention to standards and quality assurance. However, there is currently no over-arching benchmark that can be used to define standards of care and levels of outcome across the spectrum of rehabilitation services.

There exists an opportunity for the NHMRC or the Australian Council on Healthcare Standards to investigate the development of guidelines for protocols and quality assurance across the rehabilitation services. In addition to their role in improving care and health outcomes, such national standards, especially outcome standards, would provide a device for assessing the effectiveness of rehabilitation services and the equity of access to quality care, and for identifying realistic target outcomes.

Summary

It is unclear how effective the existing system is in providing for the rehabilitation needs of injured persons. There is currently no means of accurately determining the equity of services across injury types or geographical areas. However, it does appear that access to rehabilitation remains a problem for some groups and that the availability of services and the outcomes achieved vary widely from area to area.

One of the key issues to be addressed is the provision of adequate rehabilitation for those not covered by compensation provisions and for those who are not part of the workforce. Once standards have been developed, the rehabilitation processes can be audited to accurately identify gaps. Given the mix of Commonwealth, State and Territory and private interests, this review process will require significant planning.

3.4 Research funding

National Health and Medical Research Council (NHMRC)

The NHMRC is the principal Government research planning and funding body in the health sector. In line with the NHPAs, the NHMRC has indicated that injury research is a significant area for research by designating it as a Strategic Initiative Area.

The NHMRC definition of injury includes cellular and other biological mechanisms of injury, which may be relevant to the development of medical treatments for injury.

As shown in Table 3.5, NHMRC funding of injury research (based on NHMRC and Research and Development Grants Advisory Committee (RADGAC) funding and also including pro-rata expenditure estimates of relevant research done in NHMRC funded research institutes where appropriate) was \$2.35 million in 1997 (1.6 per cent of NHMRC research expenditure that year).

Other areas of NHMRC funding are also relevant to injury; for example, in 1997 the NHMRC provided \$1.59 million for alcohol research, \$1.86 million for research on depression and suicide, and \$1.28 million for research into osteoporosis.

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Table 3.5 NHMRC funding for research in NHPAs — actual expenditure and percentage of total expenditure

Year	Total	Injury		Mental health		Cardiovascular		Cancer		Diabetes		Indigenous health	
	\$m	\$m	%	\$m	%	\$m	%	\$m	%	\$m	%	\$m	%
1994	121.24	2.10	1.7	15.19	12.5	23.34	19.3	15.50	12.8	2.97	2.4	N/A	
1995	131.15	2.00	1.5	17.89	13.6	24.86	19.0	13.74	10.5	3.06	2.3	N/A	
1996	145.20	2.37	1.5	20.69	14.3	26.73	18.4	16.13	11.1	3.07	2.1	2.51	1.7
1997	150.75	2.35	1.6	22.95	15.2	29.70	19.7	17.57	11.7	3.61	2.4	2.52	1.7

Notes: 1 These figures are based on NHMRC and RADGAC funding and also include pro-rata expenditure estimates of relevant research done in NHMRC funded research institutes where appropriate.

2 Indigenous people are a designated priority population within the National Health Priority Areas process.

3. Data not available for Indigenous health research funding in 1994 and 1995.

Source: NHMRC

The Strategic Research Development Committee (SRDC) of NHMRC is currently examining the level and appropriateness of funding for injury research, and the relative proportions of research funding that need to be targeted at prevention and treatment. SRDC will work closely with the National Injury Prevention Advisory Council (NIPAC) in this examination.

Other sources of funding

Two other areas, transport and occupational safety, possess substantial injury research infrastructure. The most developed is road safety, where the Federal Office of Road Safety (annual research budget \$2 million) and most State and Territory transport authorities have active research programs. Funding is provided from Commonwealth and State Government resources, with a major role being played by the third party insurers (eg Transport Accident Commission in Victoria). Researchers from this sector meet regularly in the Road Safety Researchers' Forum. In 1993, this forum estimated that the total State and Commonwealth road safety research and development budget in Australia was \$14.4 million (Road Safety Researchers' Forum 1993).

The National Occupational Health and Safety Commission (NOHSC) maintained a comprehensive research program until it was restructured in 1996 with a concomitant reduction in its research budget. Since that time, the Workers' Compensation Insurance bodies in each State and Territory have become the major source of research funding in occupational health and safety. Workers' compensation authorities conduct internal research as well as providing external research funds. The latter were estimated to total approximately \$5 million in 1996–97.

Table 3.6 Expenditure on research by workers' compensation authorities

State/Territory	\$ million
New South Wales	2.00
Victoria	0.80
South Australia Workcover	0.53
South Australia Mining and Quarrying Fund	0.34
Western Australia	0.80
Tasmania	0.00
Northern Territory	0.02
Australian Capital Territory	0.00
Queensland	-
Total	4.49

Note: Queensland funds in-house research through the Division of Workplace Health and Safety. The budget for 1996–97 was \$1.8 million but this includes training and standards development not included in the figures above.

Source: Heads of Workers' Compensation Authorities 1996

It is clear that most research expenditure occurs in the well-organised and administratively distinct areas of road and occupational safety. Suicide research has recently received a boost as part of the National Youth Suicide Prevention Strategy, with \$1 million being provided in this area. Although other areas of injury account for approximately 40 per cent of death and disability due to injury, research funding for those areas is small.

The recent report of the WHO entitled *Investing in Health Research and Development* has noted that injury research remains poorly developed compared with that into other major epidemics in developing countries (WHO 1996). In particular, the report notes the lack of:

- cooperative research between sectors;
- policy research dealing with the development of efficient infrastructures and the impact of policy decisions on the equity and efficiency of the health system;
- appropriate indicators of the burden of disease that include the disability impact of injury;
- practical research aimed at developing specific preventive strategies; and
- appropriate paradigms for evaluating non-clinical interventions.

This report provides a useful analysis of difficulties associated with injury research in developed countries such as Australia and valuable lessons may be learnt from this WHO review.

