



INJURY BULLETIN

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Burns & Scalds

Introduction

Burns injury, particularly in young children and older people, was identified as one of the priority injury issues in *Better Health Outcomes for Australians*, and although there has been some progress in achieving the targets set in this report the incidence of burns is still unacceptably high^{1,2}. The pain and suffering associated with skin and soft-tissue burns and scalds is significant. Burns occur most frequently in infants and toddlers, often require multiple dressing changes and other procedures and despite major advances in their care, may still result in life-long scarring.

In addition to the considerable physical and psychological suffering, injuries from burns have been estimated to cost the Australian community \$330 million annually. A fifth of this cost being incurred by burn injuries in children aged less than five years³.

Results

During 1998 the Queensland Injury Surveillance Unit recorded 982 burn injury attendances to participating hospital Emergency Departments (EDs) in Queensland.* Almost half of these injuries were due to exposure to hot drink, food, water, other fluid, steam, gas or vapour (scalds) followed by exposure to a hot object or solid substance (contact burns) (25%) and fire, flames or smoke (17%) (Figure 1). Other external causes made up the remaining 10%.

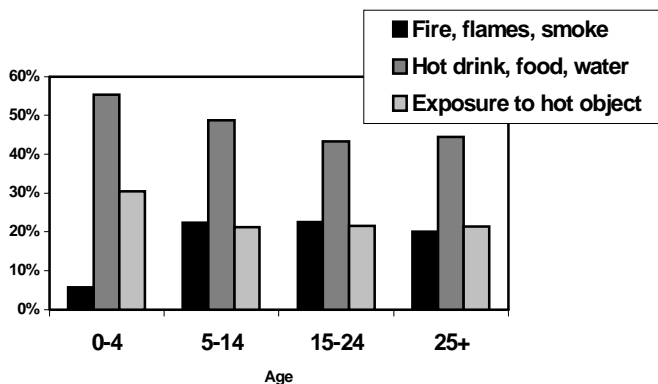


Figure 1 QISU burn injuries, 1998, by age and external cause.

Children under five years of age made up the largest single group of burns victims (27%) followed by males in the four age groups from 10-14 through to 25-29 years

* QISU data is based on emergency department presentations to the following hospitals: Mater Children's Hospital, Mater Adult Hospital, Mater Private Emergency Care Centre, Queen Elizabeth II Jubilee Hospital, Redland Hospital, Logan Hospital, Royal Children's Hospital, Mt Isa Hospital, Mackay Base Hospital, Proserpine Hospital, Sarina Hospital, Clermont Hospital, Dysart Hospital and Moranbah Hospital

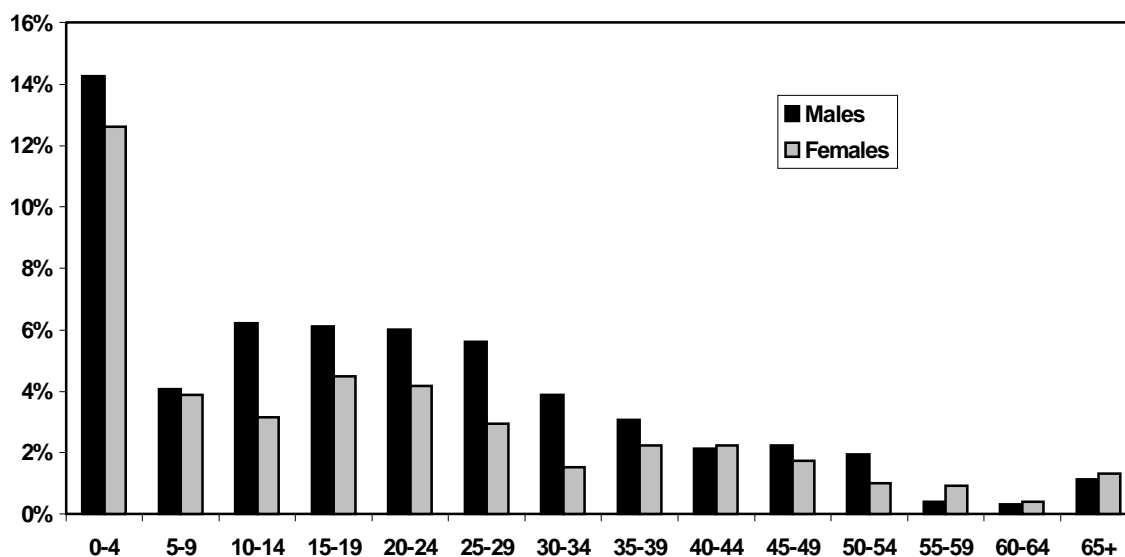


Figure 2 QISU burn injuries, 1998, by age.

(Figure 2). As would be expected the vast majority of burns occurred in the kitchen (40%) with around 15% of these involving workplace injuries. The hand was the part of the body most likely to be burned (31%) although a quarter of all burn injuries had no body location specified suggesting that up to 40% of burn injuries could involve multiple sites.

Because of the differences in incidence and circumstances of burn injuries at different ages the injuries were analysed separately for the following age groups: 0 to 4, 5 to 14, 15 to 24 and 25 years and over.

Regional Analysis

In order to provide information on the incidence of injury in Queensland QISU has defined three regions, a metropolitan, a regional and a remote urban population, based on the coverage of its participating hospital EDs, South Brisbane, Mackay and Mt Isa. Although the definitions of the three regions were formulated to

closely reflect the coverage of the EDs concerned, the injury rates presented must be interpreted with caution. Regional variations in ED attendance rates not only reflect differences in the underlying rate of injury, but the provision of and access to other health services. For example residents of South Brisbane have far greater access to alternative sources of medical care such as 24 hour medical centres than those in Mt Isa.

The absolute numbers and incident rates in this report have not been corrected for partial ascertainment. The ascertainment rate in South Brisbane has been estimated at 75%, in Mackay at 75%, and Mt Isa at 60%. Thus the various rates and incidences are an underestimate of the burns and scalds problems in these centres. Nevertheless the observed rates for ED attendance for injury varies substantially between regions.

The rate of ED attendance for thermal burn injuries in

| Age | South Brisbane | | Mackay | | Mt Isa | |
|--------------|----------------|-----------|------------|------------|------------|------------|
| | Males | Females | Males | Females | Males | Females |
| 0-4 | 263 | 262 | 442 | 383 | 933 | 1132 |
| 5-14 | 96 | 65 | 224 | 165 | 289 | 262 |
| 15-24 | 121 | 89 | 317 | 209 | 728 | 550 |
| 25+ | 52 | 38 | 135 | 69 | 286 | 278 |
| Total | 97 | 79 | 220 | 149 | 439 | 424 |

Table 1: Emergency department attendance rate¹ for thermal burns for South Brisbane, Mackay and Mt Isa regions, 1998.

¹ Per 100,000 person years.

1998 for all ages varied from less than 100 per 100,000 for South Brisbane to more than 400 per 100,000 in Mt Isa (Table 1). As would be expected those aged 0 to 4 years had the highest rate of burn injury (262 to 1132 per 100,000 for South Brisbane and Mt Isa respectively). There were no deaths in any age group resulting from house fires in the three regions.

Preschoolers (0-4 years)

In 1998, 264 children aged 0 to 4 years were identified on the QISU database as having attended an Emergency Department at one of the participating hospitals for treatment of a burn of which 192 were in one of the three study regions (Mackay, Mt Isa, and South Brisbane). The incidence of thermal burns in South Brisbane was 263 per 100,000 for males and 262 for females. This compares with rates of 320 and 210 respectively recorded in South Brisbane 10 years ago. The rate for scalds was 139 for males and 152 for females, compared with 203 and 121 respectively, 10 years ago⁴.

The rates for thermal burns in Mackay were 442 for males and 383 for females. In Mt Isa the rates for thermal burns were 933 for males and 1132 for females. Thus it appears that the rate of thermal burns in Mackay is approximately double that in Brisbane and that the rate in Mt Isa is approximately double that in Mac-

kay. This increasing incidence rate away from Brisbane also held for scalds, with a combined sex rate of 186 in Mackay and a combined rate of 516 in Mt Isa.

The doubling of the Brisbane rate for Mackay and the quadrupling of the Brisbane rate for Mt Isa are cause for concern. Unfortunately, injury surveillance data gathering started in 1998 for both of these regions and there is no base line to establish trends.

The majority of scalds (58%) were associated with hot beverages or food and an additional 25% were associated with hot water not otherwise specified. Only 5% were associated with hot tap water. Thirty-six per cent of scalds were admitted to hospital. The kitchen was the location most often implicated in scalding (55%) with another 10% in the bathroom and 3% in the laundry (Figure 3).

There were a similar number of burns as a result of contact with hot objects or appliances as there were scalds. Again, the kitchen was the area most often implicated (43%). An oven, stove or hotplate was implicated in 28% of these burns. By far the most frequent electrical appliance was an iron (17%) while heaters were involved in 2% of cases. Outside of the house, hot exhausts or mufflers (5% of burns due to hot objects) and mowers (7%) were the chief causes (Figure

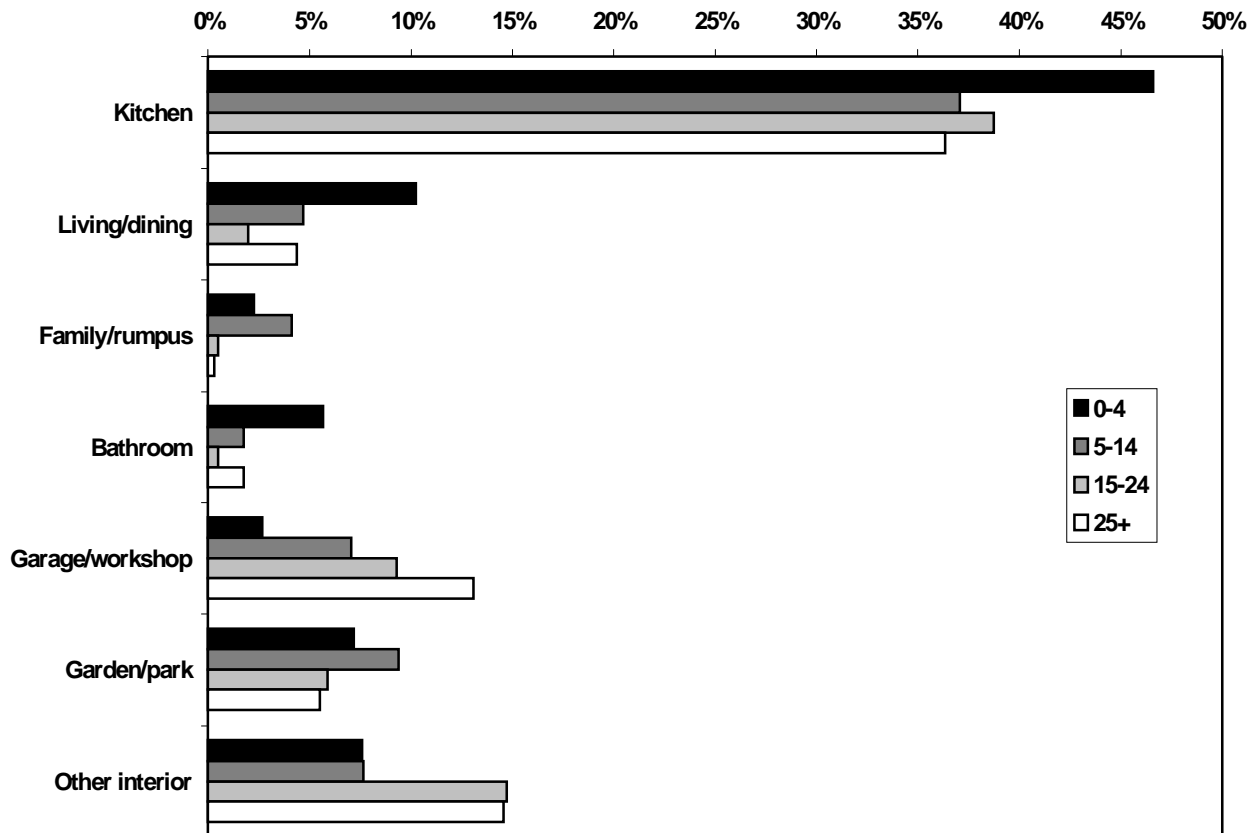


Figure 3 QISU burn injuries, 1998, by age and part of place.

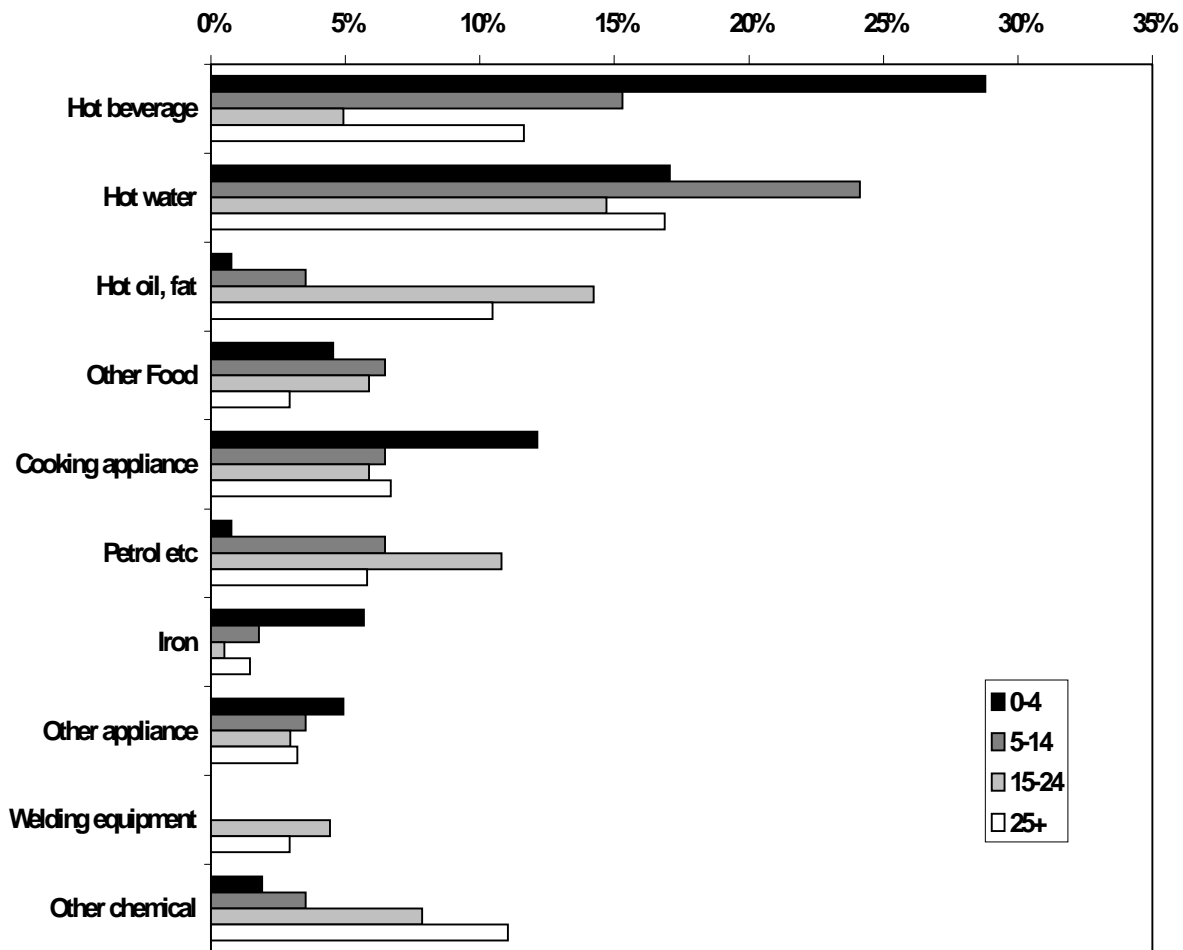


Figure 4 QISU burn injuries 1998, by age and major injury factor.

4). Other causes of burns due to hot objects included slippery slides, soldering irons, and hot road surfaces. There was only one burn due to cigarettes and one burn due to fireworks.

The high number of contact burns observed in these data is consistent with data collected at EDs elsewhere. In a Connecticut ED it was found that the majority of burns to children presenting were due to contact with hot objects particularly irons⁵. On the other hand two-thirds of Queensland's burn hospitalisations among young children are due to scalds indicating these types of injuries are more severe⁶.

Within the 0 to 4 years age group those aged one year old (12-23 months) had the largest number of burn injuries (40%) with four year-olds making up only 6% of the victims within the age group.

The wide variety of burns causes provides a challenge in defining appropriate interventions. The major preventive initiative in Queensland over the past 10 years has been the Hot Water Burns Like Fire campaign aimed primarily at reducing the tempera-

ture of hot tap water. Evidence from South Brisbane indicates a slight reduction in scald rates over a period of 10 years. The greatest reduction has been for males, from 203 per 100,000 to 120 per 100,000. The scald rate for females did not decrease⁴.

These findings may seem disappointing, but possibly relate to the fact that the vast majority of scalds did not involve tap water. In fact, over half of the scalds were related to hot beverage or food, and this and the frequency of kitchens as a locale for burns, suggests that the kitchen should be the next focus of publicity or preventive campaigns for scald reduction. This should include education about the dangers of siting beverages and pans within reach of toddlers and of allowing toddlers access to hot appliances and stoves.

If new parents associated the kitchen with a specific burns risk to their young children, their level of vigilance may be heightened and many non-fatal burns averted. Ideally awareness raising should start in the newborn period and be promoted by health care providers responsible for early health checks on young children. The high rates of injury in regional and remote ar-

eas of Queensland relative to Brisbane suggest that perhaps the current programs are not adequately reaching these parts of the State.

School age children (5-14 years)

By contrast with the 0 to 4 years age group, which accounts for a disproportionate 14% of emergency departments burns presentations, the 5 to 14 age bracket includes two separate subgroups with differing burns injury patterns.

The 5 to 9 age group, developmentally more aware of risks and less impulsive than their younger or older siblings, has the lowest burns injury rate of any 5 year age grouping under 30. This group incurred 78 burns injuries in the sample regions in 1998 with a male female ratio of approximately 1:1. From 10-14 however, the young adult trend of male predominance and occupational or high risk behaviours becomes evident, with a total of 92 burn-related injury presentations and a male: female ratio of 2:1.

Scalds from hot water, beverages and food made up nearly one-half of the burn injuries in the 5-14 age group, with contact burns and fire/smoke/flames accounting for 21% and 23% respectively (Figure 1). The predominant scald mechanism was spilt hot beverage, including hot noodle soup as well as other hot drinks. Hot tap water was responsible for 5% of scald injuries. Several children burned themselves

removing food or beverages from a microwave oven.

Contact burn injuries in this age group included 36% burns from engine exhausts including 15% from lawn mowers and 69% from motorbike exhausts.

There were 11 (6%) petrol burns in this age group, of which all but one occurred in males; the activities described ranged from attempts to light cooking fires and barbecues to "playing with fire" (Figure 4). Such risk-taking behaviour among young males was further evidenced by five examples of children burned while playing with matches and aerosol sprays. These petrol and explosive injuries are particularly important because of their potential for damage and predilection for critical body areas: seven of these 16 burns occurred to face or hand regions.

Approximately 18% of burn injuries in the 5 to 14 age group required admission, compared with just under 30% in the 0 to 4 age group and approximately 12% in the 15 to 24 age group. Admissions may be influenced in the young by factors other than pure burn severity. As the injury data collected related only to ED entry point, it does not include details of treatment, graft requirements etc.

The rate of attendance for burn injuries in this age group varied from 96 for South Brisbane to 289 for Mt Isa per 100,000 for males and 65 to 262 for females.

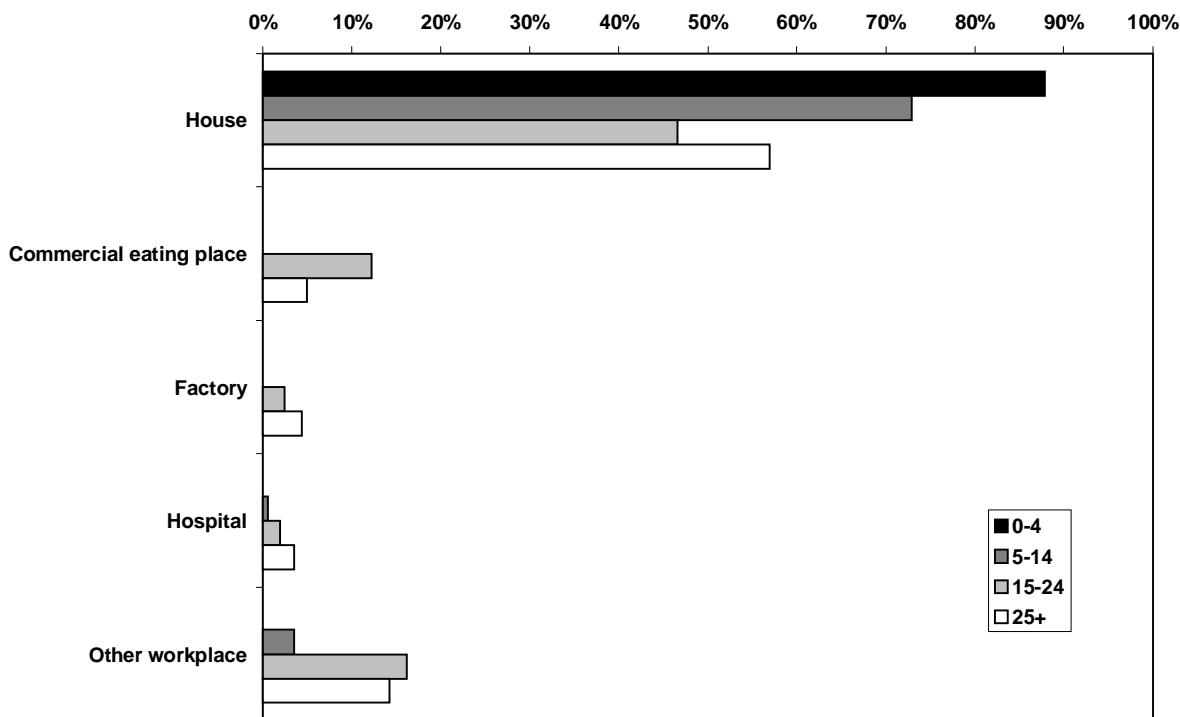


Figure 5 QISU burn injuries, 1998, by age and location.

These results suggest that campaigns to prevent scald injuries, currently aimed at parents of very young children, need also to be extended to target older children directly through school based injury prevention programs. The problem of older children, particularly males, injuring themselves during risk taking behaviour requires creative solutions as any campaign which draws attention to the dangers of such behaviour may in fact make it more attractive.

Young adults (15-24 years)

Two hundred and four young adults (those aged 15 to 24 years) made up one fifth of ED presentations suffering from burns with a male female ratio of 3:2. The majority of burns in this age group were caused by exposure to hot liquids, mainly involving hot fat or oil or hot water (61%). One quarter of the scalds were to workers in the food or hospitality industries which represented 72% of all workers presenting with burns in this age group. Other trade-related occupations also figured in the data with significant numbers of burns involving welding (Figure 4). Eleven per cent of burn injuries at this age involved petrol or similar flammable substances, typically being used to light a fire and almost all involving males.

The rate of ED attendance for this age group for the three regions varied from 120 and 89 per 100,000 for males and females in South Brisbane to 728 and 550 for Mt Isa, a six fold difference (Table 1).

The high prevalence of workplace burn injuries related to the commercial food industry at this age (54%) indicates that not enough attention is being paid to training in safe work practices, although this may be made difficult by the transient nature of the workforce.

Older adults (25 years and over)

For adults aged 25 years and over the proportion of burn injury presentations declined with increasing age with very few elderly burn injury victims presenting (Figure 2). The 344 burns recorded for this age grouping had similar external causes to those for younger adults (Figure 1) although scalds more often resulted from hot beverages (24%). In the over 65 age group 36% of scalds were due to hot beverages. Amongst the older burn victims there were a number related to the use of oxygen, highlighting the need for patients to be warned of the inherent dangers of pure oxygen.

One third of the burns were work-related although fewer occurred in food-related workplaces than was the case for younger workers (Figure 5). There were

more trade-related burns in this age group which as for the younger adults, often involved welding. As with the younger age groups the number of workplace injuries could be reduced by better training and safe work practices.

Chemical burns (11%) were also more prevalent in this age group and often related to cleaning products. Half of these were work-related.

The inter regional variation in the rate of ED attendance for this age group is similar to that observed for the younger age groups. They range from 52 and 38 per 100,000 for males and females in South Brisbane to 286 and 278 for Mt Isa (Table 1).

Recommendations

- Prevention strategies focusing on the kitchen environment and scalds from hot beverages or food targeted at both parents and carers of young children, and school-age children.
- Prevention strategies targeting risk taking behaviour amongst young males.
- Review of current program reach in regional and remote areas of the State.
- Improved workplace health and safety training and practice particularly in the food industry.

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