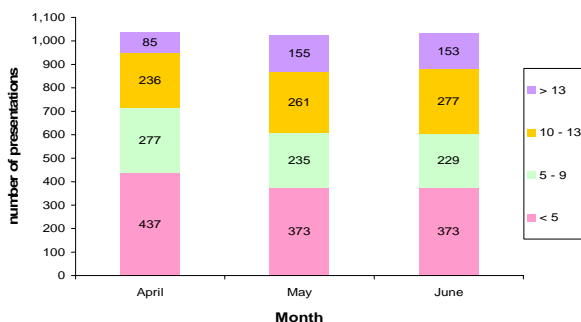


Injuries to Children Under 5 Years

Childhood Injury Presentations: April to June 2007

- There were 12,491 presentations to the Princess Margaret Hospital Emergency Department (PMH ED) from April to June 2007.
- Injury presentations accounted for 25% (n=3,091) of the total number of presentations to PMH ED during this time period.
- These figures represent a 13.3% increase in injury presentations compared with the first quarter of 2007, and a 6% increase for the same period of 2006.
- Falls were the leading cause of injury (n=1,238; 40.0%).
- The pre-school age group, (under 5 years of age), remained the group with the highest number of injuries, accounting for 38% (n=1,183) of total injury presentations to PMH for April to June 2007 (See Graph below).

Age Distribution of Injury Presentations, April to June 2007

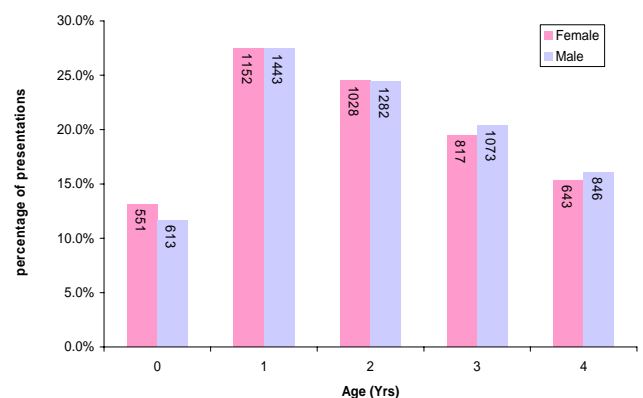


- The home remained the most common location of injury, accounting for 55% of presentations.
- Children of Indigenous decent represented 4.1% of children attending the PMH ED during these three months.
- 95.4% of the injured children seen by the emergency department were from metropolitan regions, with the rural patients presenting for more serious injuries.

Introduction - Injuries to Children Under 5 years

- Between July 2005 and June 2007, there were a total of 9,448 presentations to Princess Margaret Hospital Emergency Department (PMH ED) by children less than five years of age.
- This equates to an annual average of 4,724 presentations by children under five.
- The majority of injuries in children less than five years were the result of falls (46.5%).
- A pulled elbow, perhaps from a sudden direction change whilst being held, was the most common injury sustained (68%).
- Injuries in this age group represented 38% of the PMH ED injury presentations within the two year period.
- The highest number of injuries occurred in children between 1-2 years of age (52%).
- 55% of presentations were by male children.
- Presentations were highest after midday for each day of the week, with the peak period being between 6pm and 8pm (20%).
- Over one third of presentations occurred over the weekend.

Number of Injury Presentations for children under 5 years of Age; July 2005-June 2007; by age and gender

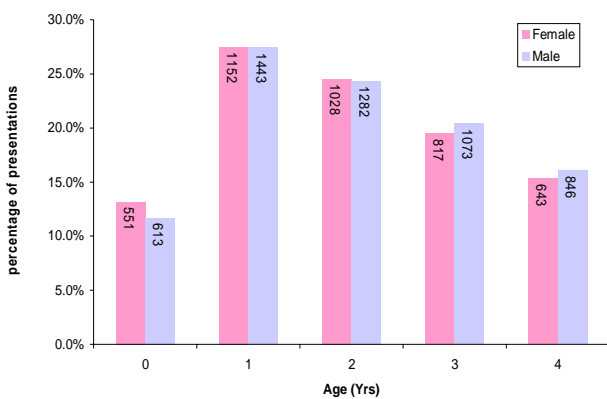


Results

This edition of the quarterly Injury Surveillance Bulletin features injuries to children less than 5 years of age. It looks at the characteristics associated with injuries that occur in the youngest children presenting at the Princess Margaret Hospital Emergency Department (PMH ED). The data used is from a two year period, spanning from July 2005 - June 2007 inclusive.

During the two year study period, 9,448 children presented to the PMH ED who were under the age of 5. This represents 38% of all injury presentations during this time period. The highest presentation rate occurred for children aged between 1 and two years, which correlates strongly with the peak age of mobility development and the beginning of environmental exploration by the child. There was no significant difference between genders, although male children experienced a slightly higher injury rate for all causes of injury (See Figure 1).

Figure 1: Number of Injury Presentations by Age & Sex; Children under 5 years July 05 to June 07



The injury patterns seen within this age group mirrors that for injury presentations for children of all age groups. However, the vast majority of the injuries within this age group would be deemed minor or non-life threatening.

The significant difference between injuries to this age group and to all children is seen in the type of injury sustained. A pulled elbow is the most common injury, with a foreign body being the next most common injury.

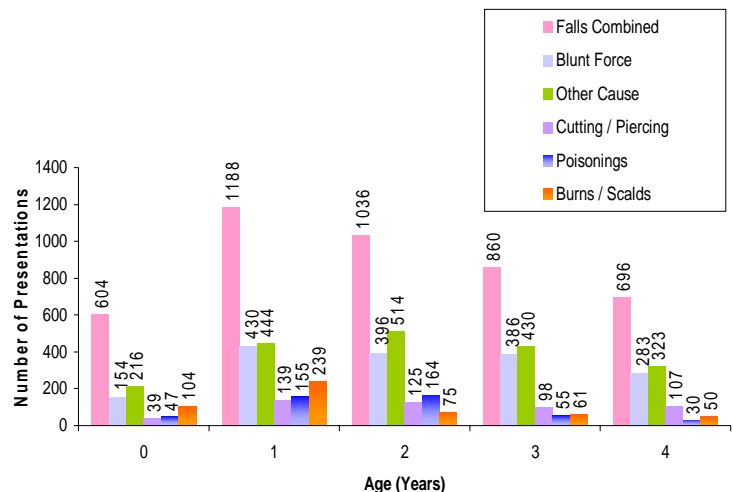
A fall whilst attempting to climb household furniture or striking a door or window accounts for nearly a quarter of injury presentations in this age group.

The statistics used within this report and the conclusions drawn from them are limited to presentations to the PMH ED. However, this accounts for the majority of children's hospital presentations in WA, and for the more serious types of injuries. Although there was many more child injuries sustained than this, these figures provide insight into a multitude of injury characteristics and trends.

The statistics used in this report are broken down by cause of injury, rather than by age. This is due to the lack of discernable difference between ages in respect to aspects such as gender, ethnicity, type of injury, time of presentation, or mode of disposal.

There are six categories of injury cause that are examined. Falls, Other blunt force, burns/scalds, cutting/piercing and poisoning represent the main causes of injury to children less than 5 (See Figure 2). The final category; "other causes of injury" is comprised of all remaining causes of injury that do not justify separate examination due to a low number of presentations. Therefore, they have been combined and reviewed together.

Figure 2: Distribution of Injury Causes by Age; Children under 5 years July 05 to June 07



Falls Combined

Falls were the leading cause of injury to children under 5 years between July 2005 and June 2007, based on number of presentations to PMH ED. In this time period 4,384 children sustained fall related injuries, representing 46.5% of all injury presentations for this age group.



The category "Falls Combined" includes three categories of falls: falls from a height greater than 1 metre, those from a height less than 1 metre, and Falls from the same level. A total of 90% (n= 3,962) of falls occurred from a height either on the same level or from less than 1 metre.

The statistics for falls mirror that for the total injuries for the age group. This may be due to the high proportion of injuries that falls comprise.

Approximately 50% of all falls in this age group occurred in children aged between one and two years (n= 4,905), with males representing 56% of all fall presentations (n=2,452). The 174 presentations by Aboriginal children equates to 3% of fall presentations, which is lower than the 5% contribution that Aboriginal children less than 5 years of age represent in all injury presentations.

Over 80% of falls occurred in the home (n=3,602), the majority of these on the weekend. An item of furniture was involved in 27% of fall injury presentations, with a further 27% involving a building component.

Only 15% of fall presentations required admission (n = 671), indicating that the severity of the fall injuries sustained may have been less than that for total injuries, which had an admission rate of 18%. Most of the children admitted for a fall injury were sustained from a height more than one metre, indicating that injury severity increases with increased fall height.

Other Blunt Force

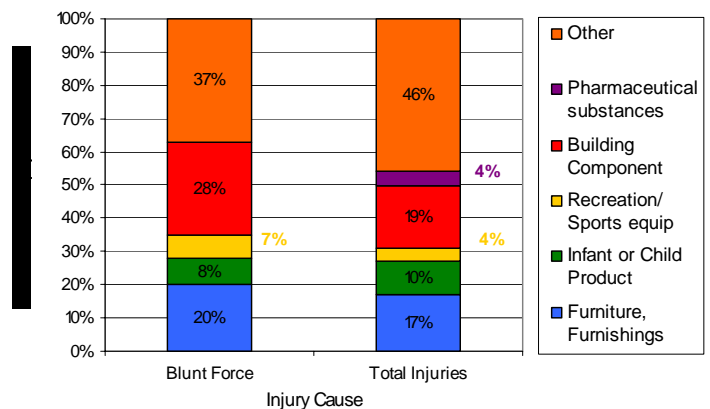
A total of 17% (n= 1,649) of injury presentations by children under five were sustained from a blunt force other than a fall. Again, the statistics were similar to the general injury trend for children under five years.

The highest rate of blunt force injuries occurred in children aged one year. However, the number of presentations by children less than one year was substantially lower than overall figures for injury presentation by children less than one year (9% compared to 12%).

The type of equipment involved in blunt force injuries deviated from what was seen in overall injuries to children less than five years.

A total of 477 blunt force injuries were sustained from equipment classified as a building component. This equates to 28% of blunt force injuries within the age group, a figure 9% greater than the contribution that building components had to total injuries to children less than five years of age (See Figure 3).

Figure 3: Contribution of Equipment to Injury Cause; Children under 5 years July 05 to June 07



86% of blunt force injuries occurred in the home environment (n= 1,416), with the highest proportion (29%, n= 364) in the winter months.

As for all injuries, the majority of blunt force injuries occurred over the weekend. Approximately one third of all blunt force injuries were sustained over these two days.

Burns and Scalds

The majority of child hospitalisations and deaths due to fires and burns occur in children less than five years of age. Burns are the result of contact with flames and hot objects, with PMH ED presentations by children due to contact with a wide variety of flame and heat sources. Home heaters and fires, BBQ's and irons feature highly.

A scald is a burn injury caused by hot liquid, hot vapour or steam. For young children, scalds are commonly associated with hot drinks, water being boiled for drinks, hot liquidised foods and hot tap water. The most serious scalds are caused by hot tap water, with the majority of hot tap water scalds occurring in the bathroom. Severe scalds can scar a child for life. At 60°C, hot water can cause a full thickness (third degree) burn in less than one second.

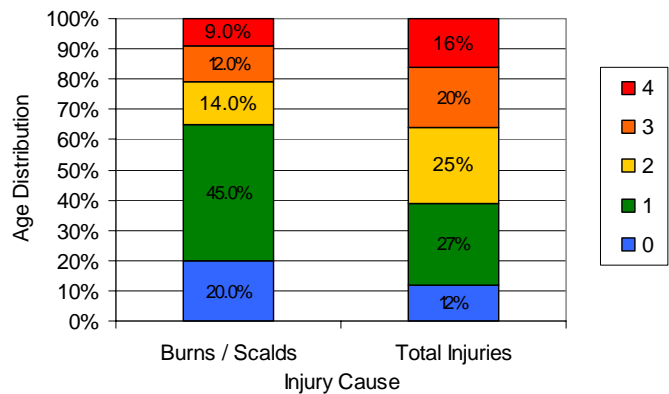


Hot drink scalds usually involve a young child pulling a cup down on themselves, pulling down on an item (e.g. a tablecloth) that causes a drink to fall, or running into/being held by someone with a hot drink who spills it. Hot drink scalds can happen quickly, often with adults nearby who do not realise a child is reaching for the hot drink until it is too late to stop them.

6% of injury presentations (n= 529) occurring in children less than five years were the result of a burn or scald. The statistics for burns and scalds showed several variations from figures for total injuries, due to both the nature and severity of injuries sustained.

45% of burn and scald victims less than five years of age who presented to the PMH Emergency Department were one year of age (n= 239). This figure is substantially higher than the contribution that one year olds make to total injury presentations, which is 27% (See Figure 4).

Figure 4: Age Distribution of Burns/Scalds; Children under 5 years July 05 to June 07



The gender distribution is weighted towards male children, who accounted for 62% of burn/scald presentations.

The proportion of Aboriginal children presenting for burn injuries was greater than that for total injuries, with the 42 presentations accounting for 8%.

The majority of burns occurred over the weekend, with an average of 90 presentations occurring on Saturdays and Sundays compared to 70 on weekdays.

Burns were the leading cause of injury for the month of July, with 10.5% of burns and scalds occurring during this month (n= 55). Interestingly, the following month of August saw figures fall substantially to 6.5% (n= 34). The lowest number of burn and scald presentations occurred in November (5%, n= 28). There is no apparent relationship between the number of burn injuries sustained and season.

As with all injuries to children under five, the majority of burns occurred in the child's own home. Building equipment contributed to 10% of burns (n= 51), which consisted predominantly of household taps.

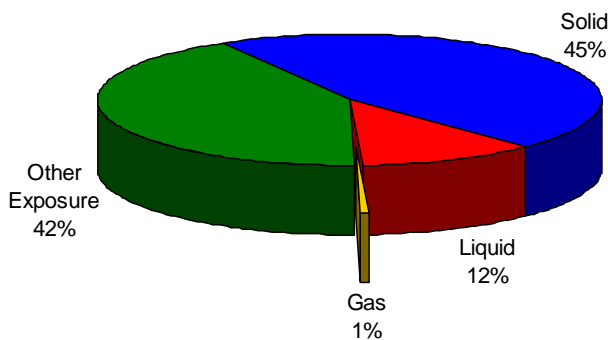
Due to the severe nature of burns, the number of children admitted was greater than for total injuries, with 31% admitted compared to the average 18%. This is also reflected in the reduced proportion that chose not to wait for treatment after presenting, which was 1% compared to the average of 3% for total injuries.

Poisoning

Every year hundreds of children need medical care for poisoning from products commonly found around the home. Most accidental poisonings occur to children less than five years of age, with children aged one to three most at risk.

Injuries classified under poisoning fall into one of four categories; exposure to chemical as a solid, exposure to chemical as a liquid, exposure to chemical as a gas and other chemical exposure (See Figure 5).

Figure 5: Poisoning Presentations by type; Children under 5 years July 05 to June 07



The majority of poisonings fell under the category of "exposure to chemical as a solid", which included ingestion of prescription and over the counter medication, cleaning products and pesticides in solid form. The most common product involved in poisoning cases was paracetamol (a common painkiller found in almost every household).

During the study period, 451 children aged less than five years presented to the PMH Emergency Department following suspected poisoning. 83% of these were by children aged between 1 and 3 years (n= 274). Between 1 to 3 years of age children begin to get skills that make them more mobile.

This means potentially toxic products are more easily reached. Young children are exploring their world and will put anything they can get into their hands into their mouths. At this age they are curious, but lack judgement and are unable to read. They also like to imitate what others do, including taking medications.

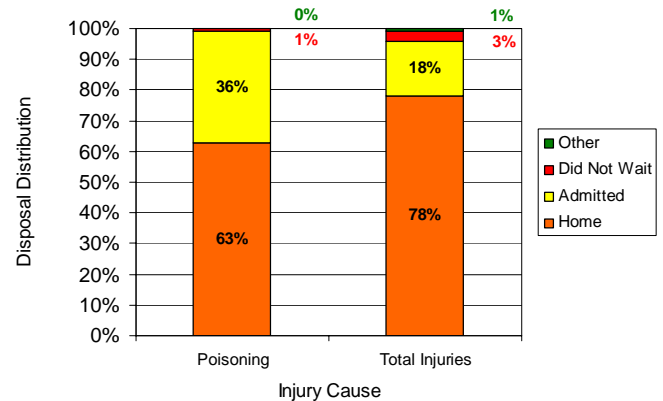
The gender distribution of poisoning reflects that of total injuries for children less than five years, with males accounting for 54% of presentations (n= 242).

The proportion of poisonings occurring in children of Aboriginal background was greater than that for total injuries (7% compared to 5%).

While most poisonings occurred over the weekend, there was also a midweek spike with 142 presentations over Tuesday and Wednesday (n= 31%). November was the peak month for poisoning presentations, accounting for 11% of presentations (n= 50). This was double the lowest presentation figures which occurred in August. An overwhelming 96% of all poisonings occurred in the home environment (n= 434).

The 36% admission rate was twice that of the admission rate for total injuries, reflecting the severe nature of poisonings (See Figure 6).

Figure 6: Distribution of Disposal for Poisonings; Children under 5 years July 05 to June 07



Cutting and Piercing

Between July 05 and June 07, 508 presentations by children less than 5 years were the result of cutting and piercing injuries. These included all injuries due to being cut, pierced or stabbed, and those from any other piercing force (3%). All of these were unintentional injuries.

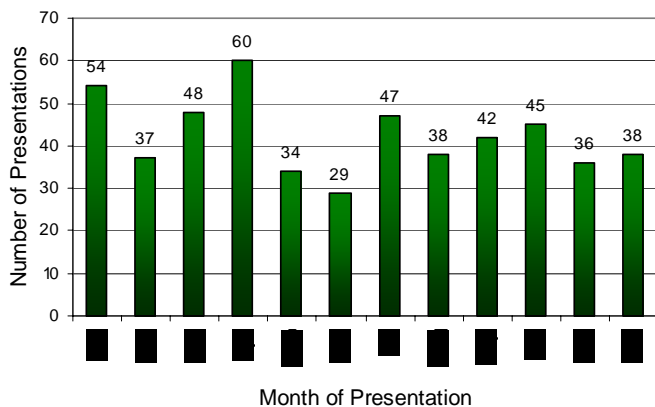
The age distribution of cutting and piercing injuries deviated from that of total injuries at the extremes of the age range. Children aged less than one year accounted for 8% of presentations (n= 39) compared to the 12% contribution this age made to total injuries.

Four-year olds contributed 21% (n= 107) to cutting and piercing presentations, compared to 16% for total injuries. This is likely due to limited mobility of the younger ages, which limits the opportunities for them to sustain cutting and piercing injuries.

The gender and ethnicity distributions were similar to than of total injury presentations for children less than five years. Again, most injuries occurred in the home, and building components were involved in 45% of cases (n= 72).

There appears to be no correlation between season and the incidence of cutting and piercing injuries. Presentation figures fluctuate between the months (Figure 7), with the highest numbers presenting in April (12%, n= 60), and the lowest presentations being in June with 6% (n= 29).

Figure 7: Distribution of Cutting/Piercing Presentations by Month; Children under 5 years July 05 to June 07



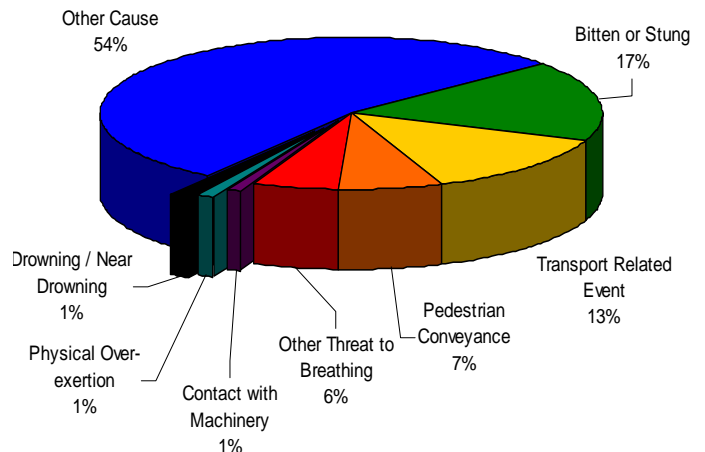
Other Causes of Injury

"Other Causes of Injury" include all remaining injuries sustained by children less than 5 years who presented to the PMH ED. 1,927 presentations (20%) of injuries fell into this category between July 05 and June 07.

Bites and stings constituted 17% of other causes of injury. This includes children bitten by both venomous and non-venomous animals, invertebrates and other persons. 13% of other injury causes were the result of transport related events, including being an occupant of a motor vehicle, being a motorcycle passenger, or a pedal cyclist.

Other notable causes include injuries sustained as a pedestrian, threats to breathing, contact with machinery, physical over-exertion and drowning / near drowning (See Figure 8).

Figure 8: Other Causes of Injury Presentation; Children under 5 years July 05 to June 07



The majority of the "other causes of injury" occurred in children two years of age (27%, n= 514), with no discernable difference between genders.

It is in this category that infant and child products featured as a common form of equipment involved in injury. Of the "other causes of injury", one quarter involved infant and child products (n= 109). These products included child toys, child sporting equipment, bicycles, and nursery products.

The number of injuries occurring in the home for "other causes of injury" (n= 1,492 77%) is substantially lower than that of total injuries (83%). This is due to the inclusion of transport and pedestrian related injuries in this category.

Due to the inclusion of these forms of injury, the road/footpath/cycleway was the location of 202 injuries (10%). This is 7% greater than the average contribution roads/footpaths/cycleway makes to injuries to children less than 5 years.

One third of presentations occurred over the weekend days (644 presentations). The highest number of injuries in this category occurred in January (205), with the least occurring in August (123). There was minimal monthly variation other than this, with an average rate of 160 presentations per month.

A total of 80% of presentations resulted in the child being released to home following consultation and treatment (n= 1,547).

Discussion

The injury presentations by children less than five years to the PMH Emergency Department between July 05 and June 07 are consistent with previous data collected on this age group.

More than any other group, children aged less than five years of age depend on others for their safety. Children are at an increased risk of injury due to a lack of knowledge, skills and experience that is required to recognise danger and to protect themselves in potentially dangerous situations. The normal continuum of development means that children are learning to control their own bodies at the same time they are learning through exploration of their environment. It is this very process of development that contributes to the risk of injury in children.

Children's vulnerability to unintentional injury is also due to their reliance on adult knowledge, attitude and action to provide a safe but stimulating environment. It is therefore up to adults to understand the risks for child injury and take preventative measures.

The nature of the injuries sustained at each age year within this group reflects the stage of development that the child is in at the time. Injury rates peak during toddler-hood; at one and two years of age. It is at this stage of development that children are becoming mobile, and are developing emotionally and intellectually. Increased mobility combined with increased curiosity, lack of co-ordination, knowledge and experience to recognise risks, means that toddlers often place themselves in potentially dangerous situations.

One year old children suffer 45% of burns and scalds that occur in children aged less than 5 years. This is due to their newfound ability to turn on taps, and to reach hot drinks and liquids. However, burns and scalds occur predominantly in the home (89%), and many measures can be taken to prevent their occurrence. Safety covers on taps, water temperature regulators on hot water systems, and keeping items out of children's reach can minimise the occurrence of burns and scalds.

The gender distribution of injuries to children less than five years indicates that males are a slightly increased risk of injury across all categories. This may be due to differences in socialisation even at this young age, leading to a higher propensity for risk-taking behaviours.

Indigenous children are at greater risk of injury, accounting for 5% of injury presentations. Taking into account that Indigenous persons comprise only 3% of the Western Australian population, Indigenous children are at twice the risk of a cutting/piercing injury (6%), and more than twice as likely to be injured through poisoning (7%) and burns/scalds (8%).

The type of equipment involved in child injury reflects the nature of the injury sustained. Poisonings accounted for 99% of all injuries involving pharmaceuticals. 27% of falls involved furniture and a further 27% involved building components. One area of concern is the number of injuries involving infant and child products. There is a need to ensure that these products meet approved safety standards, and are used in the correct manner.



Children aged less than five would be expected to spend a significant proportion of their day within the confines of their home. The data from July 05 to June 07 reflects this, with 83% of injuries occurring within the home. There is also an increasing amount of time being spent by infants, toddlers and young children at a day care or child care centre, with 255 injuries occurring in this location.

The location of injuries appears to correspond with the cause of injury. 75% of injuries occurring on roads, footpaths or cycleways were from "other causes of injury". This is explained by the fact that this category contains all transport and pedestrian injuries.

Over one third of injury to children less than five years occurred over the weekend. This is largely due to the types of activities engaged in during these days. The weekend is a time for children to visit new environments, to explore, play and engage in new experiences. This, often combined with relaxed supervision, results in increased injury rates.

The variation in injury between weekdays and the weekend increases with child's age. Over the weekend, children less than one year of age sustained 34% of their injuries, compared to 37% for four-year-olds. As age increases, the likelihood of being in a childcare setting during the week increases, as does the likelihood of engaging in sporting activities over the weekend. Therefore, infants experience the least variation in routine and injury occurrence throughout the week.

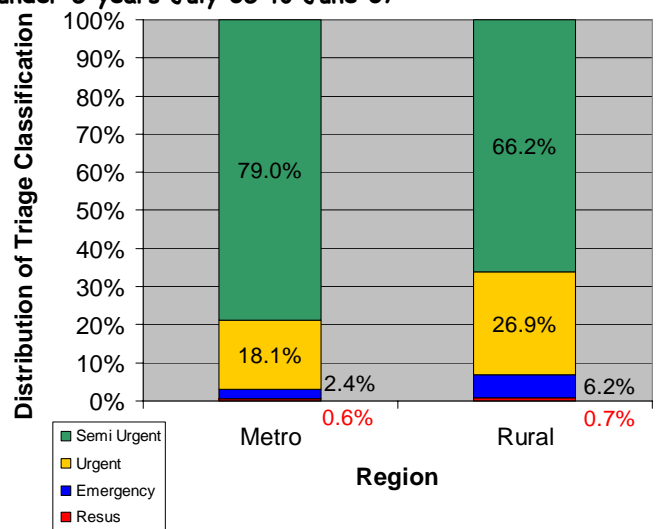
Distribution of injury remains fairly uniform throughout the year. The highest number of presentations occurred during the summer months with 27%, while winter saw 23% of presentations. This slight increase may be due to increased outdoor activity during the summer months, or may be limited to this data set.

The method of disposal for injury presentations reflects the nature and severity of the injury sustained. On average, 18% of presentations resulted in admission to PMH, while 3% chose not to wait to be seen to by medical staff. However, poisonings resulted in 36% of admissions, and only 1% of persons did not wait. The number of admissions was also increased for burns/scalds and cutting/piercing. These are injuries that require treatment and monitoring that do not enable patients to return home after emergency treatment, thus raising admission rates.

The distribution of triage categories differs substantially between patients from the metro and rural areas. Of the 438 presentations by

patients from a rural area, 6.2% were classified as emergencies and 26.9% as urgent. Presentations by children from the metropolitan region were consisted of a larger proportion of semi-urgent presentations. Many rural communities neither have the medical facilities nor the staff to treat emergency and urgent cases, although able to cater for semi and non-urgent injuries. As a result, rural children who sustain serious injury are brought to Princess Margaret Hospital's Emergency Department, often by the Royal Flying Doctors, while less serious injuries are treated at local facilities.

Distribution of Triage Classifications; Children under 5 years July 05 to June 07



Child injuries are largely preventable. Due to the reliance of children less than five years adult knowledge, attitude and action, it is up to adults to take measures to ensure child safety.

To find out more about child injury prevention and the services offered by Kidsafe WA, visit the Kidsafe WA website: www.kidsafewa.com.au or phone (08) 9340 8509

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The WA Childhood Injury Surveillance Bulletins are developed by Kidsafe WA in consultation with the Princess Margaret Hospital Emergency Department Injury Surveillance Officer and Department of Health (Clinical Network Development Team - Injury).

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