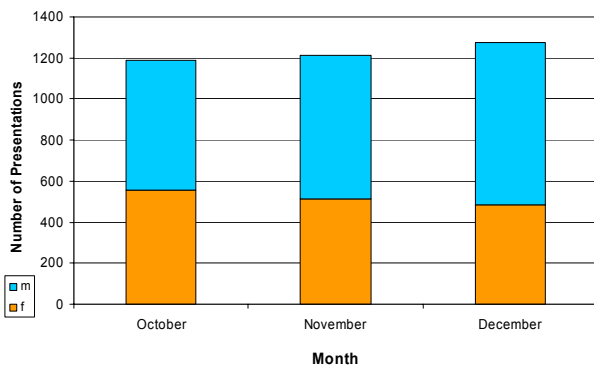


Animal-Related Injuries to Children

Childhood Injury Presentations: October to December 2008

- There were 13,498 presentations to the Princess Margaret Hospital Emergency Department (PMH ED) from October to December 2008.
- Injury presentations accounted for 27.66% (n=3,733) of the total number of presentations to PMH ED during this time period.
- This is considerably higher than the long term average of 25%.
- These figures represent a 25% increase in injury presentations and a 5.5% increase in injuries as a percentage of total presentations compared to the same quarter in 2007.

Number of Injury Presentations by gender, October to December 2008.



- Falls were the leading cause of injury (n=1,367; 36.62%). A total of 2.5% of Injury presentations were for either alleged assault or intentional self harm with the remainder being unintentional (96%) or undetermined (1.5%).
- Of the presentations, 18.99% (n=709) occurred during sporting activities; 145 (20.45%) of these were cycling related and a further 92 (12.97%) were trampolines.
- Aboriginal children represented 4.79% of children attending the PMH ED during these three months.
- Only 18.91% of injury presentations resulted in admission for further treatment.

Introduction – Animal Related Injuries to Children

- Between July 2005 and June 2008, there were a total of 35,281 injury presentations to Princess Margaret Hospital Emergency Department (PMH ED).
- Of these presentations, 1,367 were animal related (3.87%)
- The highest proportion of injuries were caused by insects and arachnids (45%)
- A further 40% of injuries were related to dogs (n=542).
- These included 482 bite injuries, 5 scratch injuries and 55 children injured due to being knocked over.



- 29 children presented for snake bites.
- Horse related injuries (n=144) included falls from horses, being kicked and being trodden on.
- The injury presentations also featured more unusual animals such as a turkey, goanna, sheep and a sea lion.
- Boys accounted for 53.55% of presentations, which is considerably less than the 60% usually seen in PMH ED.
- Children under 5 years of age represented 37.89% of presentations.
- Over 2/3 of animal related injury presentations were on the weekend (68.94%). This is twice the proportion of weekend presentations for total injury causes
- 30.14% of presentations were subsequently admitted.

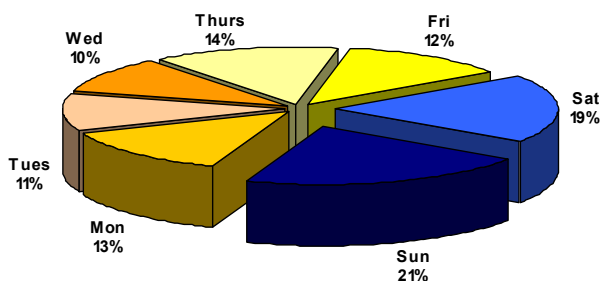
Results

This edition of the quarterly Injury Surveillance Bulletin features animal related injuries to children. It looks at all children presenting to Princess Margaret Hospital (PMH) Emergency Department (ED) who sustained an injury as a result from interaction with animals. The analysed injury surveillance data spans a three year period July 2005 to June 2008.

During the study period, 1,367 children presented to PMH ED with an injury that was recorded as being animal related. This represents 3.87% of all presentations during this time. The majority of injuries occurred over the summer months (60.65%) and the least during winter (15.73%). This may be due to increased animal activity during the warmer months, increased time spent by children outside during the warmer months, or a combination of the two.

Injuries peaked over the weekend, with 19.39% of presentations occurring on Saturdays and 20.1% on Sundays. There was a lull in presentations in the middle of the week, with Wednesdays only recording 10.1% of injury presentations. It is possible that children have more interaction with animals over the weekend, as they are often in school or childcare arrangements during the week.

Figure 2: Number of Animal-Related Injury Presentations to PMH ED by Day of Injury: July 2005 to June 2008



The male:female gender ratio for animal related injuries was much closer than the normal 3:2 ratio observed for total injury presentation. Males represented only a marginally greater proportion of presentations with 53.55%. This may be due to young girls possibly having a greater interest than boys in animals.

The age distribution of animal related injuries showed that children under the age of five years are most at risk (n=518, 37.89%). This was closely followed by children aged 5-9 years (33.07%). The stand out age when the most children sustained animal related injuries was 2 years, with 10.24% of all injuries occurring at this age (n=140). This may be due to a combination of increasing mobility and curiosity without a fully developed sense of danger or awareness about how to safely behave around

animals. The small physical size of toddlers also makes them vulnerable, as they are closer to animals at ground level and are at greater risk of being knocked over by animals such as dogs and horses.

Of the presentations, 81 identified as being Aboriginal or Torres Strait Islander (5.92%). This is marginally higher than the proportion of total injury presentations (5.0%).

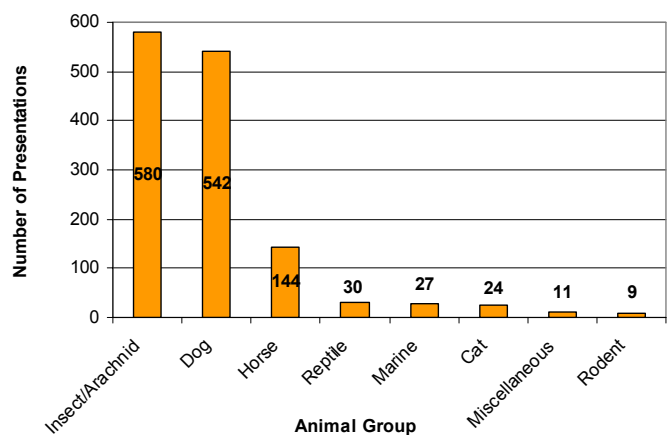
The number of hospital admissions resulting from animal related injuries is approximately 11% greater than that for total causes of injury presentations. During the study period, 30.14% of all animal related injury presentations were subsequently admitted, while only 66.42% departed after treatment received in the ED.

There was a mix of animal-related injuries that presented to the PMH ED. These included both domesticated and non-domesticated animals. The greatest number of injuries were those from insects and arachnids (n=590), including mosquito bites, bee stings and spider bites. Dogs were the next most featured animal, with the 542 presentations including bite injuries and being knocked over by family pets and dogs belonging to others.

Horse injuries included falls from horseback and being trodden on, kicked and bitten. There were 30 reptile bite injuries and 27 injuries from marine animals such as fish, jellyfish and sealions. Cats accounted for 24 bite and scratch injuries, while a further 9 bite injuries were caused by rodents including rats, rabbits and mice.

The more unusual 11 miscellaneous injuries included bites from monkeys in the zoo or while travelling overseas (n=7), being knocked over by sheep, pecked by a turkey and bitten by a dingo.

Figure 1: Number of Animal-Related Injury Presentations to PMH ED: July 2005 to June 2008



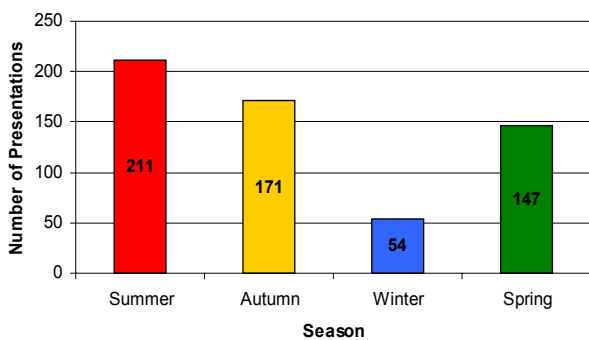
Insects and Arachnids

Although insects and arachnids may be one of the smallest members of the animal kingdom, they accounted for the largest number of animal related injuries to the PMH ED between July 2005 and June 2008.

There were 583 injuries related to insects and arachnids during this time. Bee stings accounted for 207 (35.5%) of these and a further 19 presentations were due to wasp stings. These high numbers may be related to the increase in allergy fears and concerns among caregivers. There were also 116 spider bites, 94 of which were identified as being poisonous. A further 24 children presented to the ED with mosquito bite injuries.

The largest proportion of presentations occurred during the summer months (36.19%) and the fewest during winter (9.26%). This may reflect the higher insect activity during the warmer months, or a higher amount of time that children spend outside with exposed limbs during the warmer weather.

Figure 2: Insect/Arachnid-Related Injury Presentations by Season: July 05 to June 08



Injury numbers increased over the weekend, with 60.55% of insect related injuries occurring on Saturday and Sunday. The most at risk group were children under five years of age and the gender distribution mirrored that of overall presentations at 3:2 male:female.



Of the 583 presentations, 10.12% were admitted. This included 19.32% of all bee sting presentations and 9.48% of spider bites.

Dogs

Dog ownership in Australia is high, with 38% of all households owning a dog¹. Many of these households also have children, some of whom were born after the dogs were purchased and some who brought a new puppy into a family that already had children.

Dogs can be wonderful companions for children, teaching them responsibility, patience and valuable life lessons of love and loss². However, as is evident in the statistics from PMH, many children are injured by dogs that are either family pets, pets of friends or unknown dogs encountered in public locations.

In the three year study period, there were 542 presentations to PMH ED due to dog related injuries. This averages to 180 per year. Of these, 482 (88.93%) were bite injuries, 5 lacerations from scratches and 55 (10.15%) relating to the child either being knocked over by, or falling over the dog. This indicates that children are at risk of injuries from canines as a result of vicious intent, as well as from circumstantial incidents.

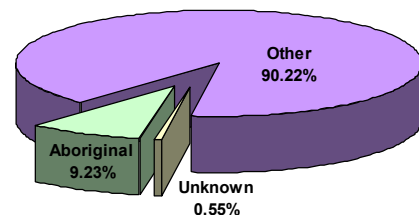


The distribution of injuries across the seasons showed a slight increase in both spring and summer (each 28%) compared to autumn and winter (each 22%). There was a peak in injuries over the weekend with Saturday and Sunday combining to give 41.52% (n=225) of all presentations.

The male:female injury ratio was slightly narrower than the average 3:2 for all injury causes, with males accounting for 55.17% of presentations (n=299). Children under five years were most at risk for all types of dog related injuries (42.44%). A peak occurred in children aged 2 years (n=64) and 3 years (n=58). This corresponds to the time when children are becoming increasingly mobile, do not have a fully developed balance and co-ordination skills and do not always understand the relationship between risk and consequence.

There was a disproportionate number of dog related injury presentations by children recorded as Aboriginal or Torres Strait Islander. For total injury presentations for all causes, children of Aboriginal and Torres Strait Islander descent account for an average of 5% of presentations. For dog related injury presentations however, they comprised 9.23% (n=50).

Figure 3: Dog-Related Injury Presentations by Ethnicity: July 05 to June 08



The majority of dog related injuries occurred in the home (n=482, 88.93%). This is considerably higher than the percentage of total injury presentations to PMH ED of 59%.

The proportion of children admitted for dog related injuries (44.1%, n=239) was also greater than that for combined animal related injuries (30.14%) and for total injury presentations (18.9%).

Horses

Not all children in Western Australia have regular contact with horses and even less regularly participate in equestrian activities¹. This is usually limited to the children who live on semi-rural or rural properties, have family or friends who own horses, or are fortunate enough to have riding lessons. After insect and dog related injuries however, horse related injuries were the next most frequent cause of animal related injuries presenting to PMH ED. In the three year study period, 144 children presented with a variety of injuries sustained from falls (n=114, 79.17%), being kicked (n=23, 15.97%) or trodden on (n=7, 4.86%).

There is therefore a relatively high risk of child injury from horses, given the number of horse related injuries that result from relatively low child:horse contact. Even the smallest of ponies is large and powerful relative to a child. Falls from horseback are generally from a height in excess of 1m and are often at a fast pace and onto hard ground³. Riding involves balance and control by the child, but calmness and obedience of the animal are also factors³.

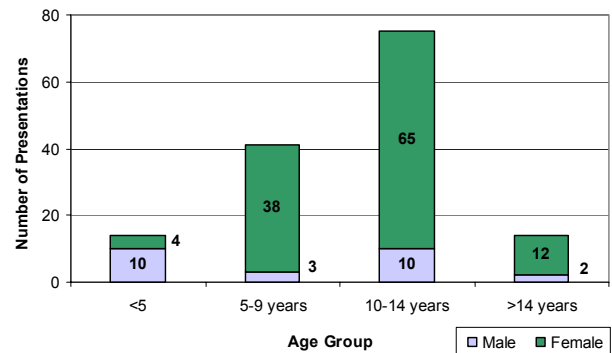


The seasonal distribution of horse related injuries reflect the seasonal nature of equestrian sporting activities. In Western Australia, equestrian activities are most commonly held over the autumn and winter months, largely due to the excessive heat experienced over summer. There were 48 presentations over autumn (33.33%) compared to 31 (21.53%) in summer. There was a peak in injuries over the weekend (55.56%), which is consistent with the pattern of equestrian competitions, training and many leisure activities.

The male:female gender ratio of nearly 1:5 was greatly different than that seen for combined animal injuries and total injuries (3:2). Horse riding is female dominated activity, even during childhood³. It is also an activity that is usually undertaken in later childhood / early adolescence³. This is evident in the statistics,

with 52.09% (n=75) of presentations being by children in the 10-14 age group.

Figure 4: Horse-Related Injury Presentations by Age group and gender: July 05 to June 08



The distribution of location of injuries varied greatly for horse related injuries. Only 14.58% were categorised as having occurred at home. The majority were categorised as "Other" 43.75%, with "Open Nature Area" contributing a further 13.48% and "Farms" 12.5%.

Over half of the horse related injuries sustained were serious enough to warrant hospital admission (51.39%).

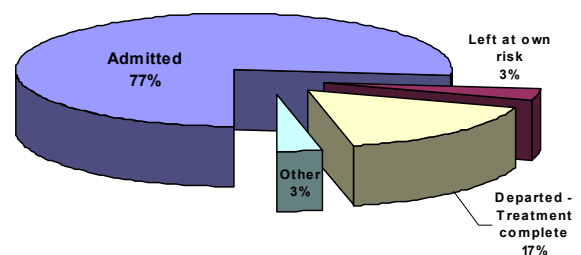
Reptiles

During the study period there were 30 reptile bites, 29 of which were by snakes and 1 by a goanna. Of these, 93% were identified as being poisonous and 76.7% of all reptile bites were admitted.



Reptile bites were most common during summer (n=11, 36.67%), followed by the spring (n=9, 30%), which is consistent with the months of reptilian activity. Two thirds of children who presented had been bitten over the weekend (n=19).

Figure 5: Reptile-Related Injury Presentations by Disposition: July 05 to June 08

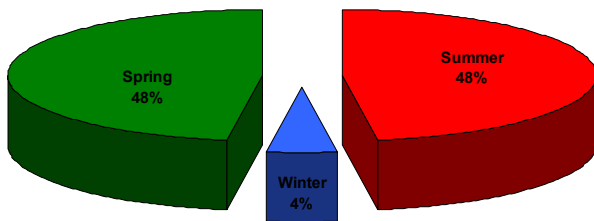


The male:female gender ratio was consistent with that for total injury presentations of 3:2, while children less than five years of age were most at risk (n=13, 43.33%). One third of injuries (33.33%) were sustained at the children's homes, while 13.3% occurred in Open Nature Areas.

Marine Animals

Of the 24 injuries relating to marine animals, the majority were sting injuries from jelly-fish (n=19). A further 3 were fish related, such as stepping on poisonous fish. One child was stung by a stingray, and the last was a 13 year old female bitten by a sea-lion whilst surfing in Lancelin.

Figure 6: Marine Animal-Related Injury Presentations by Season: July 05 to June 08



The majority of injuries occurred in the warmer months of summer and spring (45.83% each). Sunday was the most common day for injury to occur (n=7), followed by Saturday (n=4), to give a combined weekend proportion of 45.83%.



The male:gender ratio of 3:2 was consistent with that for total presentations to PMH ED. Children 10-14years represented the majority (45.83%) of presentations. All presentations with jellyfish sting injuries were treated and released from the ED, while the remaining 5 were admitted.

Cats

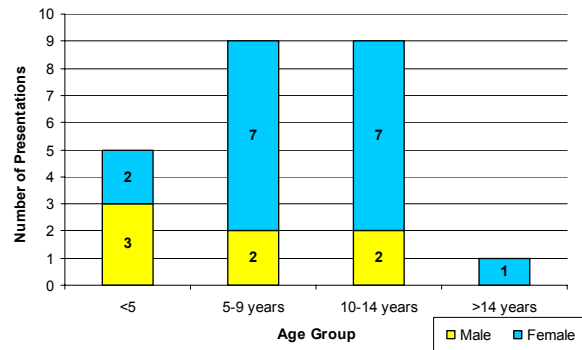
The second most common animal kept as household pets in Australia is the cat. More than 27% of households own at least one¹. The number of child injuries from cats is relatively low. In the three year study period, there were only 24 presentations to the PMH ED that were reportedly cat related. Scratches were the most common cause of injury (n=13), while there were a further 6 bites and 5 presentations that had a combination of bite/scratch injuries.

A peak in injuries was seen in the autumn months (45.83%), with the least injuries occurring in winter (12.5%). There was no discernable difference between weekend and weekday occurrences. All cat related injuries occurred within the home.



The male:female ratio of 3:7 showed there were a higher proportion of girls injured by cats, which differs from the gender ratio for combined animal related injuries and total presentations (3:2).

Figure 6: Cat-Related Injury Presentations by Age Group and Gender: July 05 to June 08



The majority of children (83.33%) were treated in the ED and released, however 3 were admitted for further treatment.

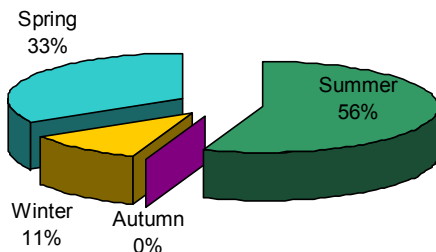
Rodents

There were 9 presentations during the study period to the PMH ED with bite injuries from rodents. This consisted of one bite by a wild mouse, 5 by pet rats and 3 by rabbits. All bites were to the fingers or thumbs, the most serious of which was a rabbit bite which completely severed the tip of a finger.



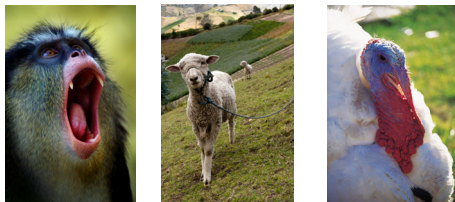
The majority of rodent related injuries occurred over summer (55.56%), with no injuries occurring over winter. The male:female gender ratio was consistent at 3:2, and children under 5 years of age constituted 66.67% of presentations. Only one of the children required hospital admission.

Figure 7: Rodent-Related Injury Presentations by Season : July 05 to June 08



Miscellaneous

There are a further 11 animal related injuries that are unable to be placed into any of the before mentioned categories. This consisted of 1 bite from a dingo, 1 "peck" to the eye from a turkey, 2 children who were knocked over by sheep and 7 who were bitten by monkeys. Of the monkey bites, 3 were sustained while holidaying in Bali, 1 while in Thailand and 3 during visits to Perth Zoo.



All presentations were by children under 13 years of age, with children under five years accounting for the dingo, turkey and sheep related injuries. The monkey related injuries were dominated by the slightly older children, with 4 aged 5-9 and 2 aged 10-14 years.

Spring was the most common time for these injuries to occur (45.45%) and the majority of children were admitted (n=8).

Discussion

The animal-related injury presentations to Princess Margaret Hospital Emergency Department between July 2005 and June 2008 indicate that children in Western Australia sustain injuries from a wide range of animals.

Normal child development involves rapid cognitive, social and sensorimotor development⁴. As children become increasingly mobile, their world broadens and their opportunity for learning grows exponentially⁴. Part of this learning involves interaction with the objects, people and

animals around them. Many children are highly curious about animals and seek to interact with them as part of this learning process.

However, this interaction can be dangerous if not supervised by adults. Children lack the knowledge, skills and experience necessary to recognise danger and to protect themselves in potentially dangerous situations. Thus, they may not realise when an animal is dangerous or when they should walk away.

A further contribution to young children's injury risk is a lack of understanding that animals do not have the same cognitive abilities and emotions as humans⁴. According to Piaget's theory of cognitive development, children between 2 and 7 years old are in the Preoperational stage of development, which is characterised by a number of features including "animism"⁴. This is when children assign human feelings, thoughts and emotions to non-human objects such as animals and plants due to the fact that they're living. Children may therefore treat animals in a way that is not appropriate⁴.

Young children are also at risk of animal-related injury due to their small size and active nature. Being close to the ground means they can be easily reached by animals and as a result are more at risk of facial injuries than older children and adults. Young children learning to walk are lightweight and unsteady on their feet, which means they are easily knocked over by boisterous animals such as dogs.

Children in Western Australia often spend a large proportion of time playing outdoors and at the beach. This puts them at risk of injuries from animals that live in these environments such as insects and marine life. Children may also be more susceptible and have greater reactions to bites from these animals than adults.

Child-animal interactions also have many positive effects. Pet ownership has been shown to have many health benefits, such as decreasing the risk of asthma and heart disease, reducing anxiety and increasing recovery time from illnesses⁵. Pets have even more health benefits when a broader definition of health is considered. As defined by the World Health Organisation, "health is a complete state of physical, mental and social well-being and not merely the absence of disease and infirmity"⁶. Pets encourage physical activity and can have enormous social and emotional benefits⁵.

For children, pets can facilitate the learning of responsibility, especially for older children who can be given the roles of feeding, walking and cleaning up after pets². Guidance and supervision is still necessary however, to ensure the safety and well-being of both child and animal. Important life lessons of friendship and loss are also gained through pet ownership⁵. Studies have

also shown that pet ownership can benefit family communication and harmony⁵.

Injuries from pets can be prevented through careful pet selection, training, management, supervision and educating children how to behave around animals.

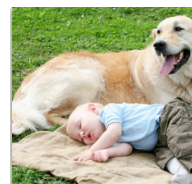
For families that already have a dog or a cat and are expecting a new baby, preparations need to be made well in advance of the baby's arrival⁷. Household pets can be jealous of a new baby which often replaces them in the household's hierarchy⁷. Pets should learn to be confined or separated from the family when required, sleep apart from their owners, not be demanding for attention, be in no way aggressive and learn to have most parts of their body handled⁷. Obedience training is essential to ensure that dogs can obey simple commands⁷.

Introductions should be made gradually and in a calm and controlled manner⁷. Physical barriers can also be useful to separate pets from infants⁷. Gates and playpens are sufficient to restrict dog access, while screen and solid doors are necessary to separate cats⁷. When children are older, they should be taught how to handle pets correctly. They should know never to approach an unfamiliar dog without permission from the owner, to move slowly and calmly around animals, handle animals gently and to leave animals alone if they display behaviours such as growling, hissing or agitation². Supervision of young children around pets is crucial².

Injuries from horses can be minimised by ensuring the horse is quiet and well trained, that children are taught how to correctly behave around and handle horses and supervision³. For riding, children should be matched to a horse of a suitable size and temperament, equipment should be in good condition and helmets and boots always worn³. Children should receive lessons and supervision to ensure they can competently handle the animal in a range of situations³.

Pet choice should reflect the family lifestyle, space and time available, level of activity as well as the age of children⁵. No one breed is necessarily safe, although certain breeds are known for being better suited to families with children. Discuss pet choice with veterinarians, breeders and trainers before deciding on and purchasing any animal.

Many injuries from this report are from animals that are not pets. Insects, arachnids, reptiles and marine creatures are part of the Western Australian environment and will be encountered when spending time outdoors. This does not mean that outdoor play should be limited or avoided. Outdoor play is vital for child learning, development and health⁴. Instead, be aware that reptiles and insects are more active in the warmer months, keep gardens well maintained to eliminate hiding places, use long sleeved clothing, mosquito nets and repellents. Supervision of young children is crucial to child safety and the prevention of injury from all causes.



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