INJURY BULLETIN

Queensland Injury Surveillance Unit

No 98 October 2007

Injuries under 12 months

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Summary

- It is estimated that about 3000 children under the age of 12 months present annually to Queensland emergency departments with injuries
- 80% of injuries happen at home
- Nearly three quarters of all injury presentations are for a head injury
- The most common cause of injury was a fall from furniture
- The main causes of injury related deaths in this age group are MVC (Motor Vehicle Crash) , drowning in baths, asphyxiation and assault.

Introduction

Infants under 12 months of age frequently attend Queensland Emergency Departments because of injury. The majority of these injuries are minor and almost all occur in the home, but some injuries in this group are life threatening or result in serious long term impairment.
The pattern of injury in infants less than 12 months of age is often developmentally determined.
A child's developmental progress is rapid and may be in advance of parental knowledge/expectations.
Awareness of injury patterns relative to developmental progress can inform injury prevention strategies.

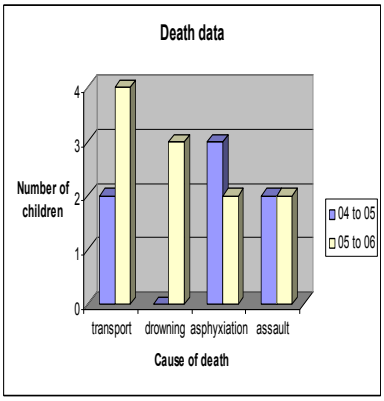
This bulletin describes injury patterns in infants under 12 months of age, who presented to Queensland Emergency Departments over a 9 year period.

Methods

Death data were obtained by accessing the Commission for Children and Young People and the Child Guardian [(1)] websites and publications.

QISU data were collected from participating Emergency Departments servicing approximately one quarter of the Queensland population. QISU collection sites include two children's Emergency Departments attached to tertiary children's hospitals. Relevant QISU data were identified by searching the QISU database for all infants born within 365 days prior to the injury date, for the nine year period from 1998-2006.

Results



Graph 1: Distributions of injury deaths in children younger than 1 year old, Qld 2004-2006

QISU collects and analyses data from emergency department injury presentations on behalf of Queensland Health. Participating hospitals represent three distinct areas of Queensland.

QISU publications and data are available on request for research, prevention and education activities.

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Death data

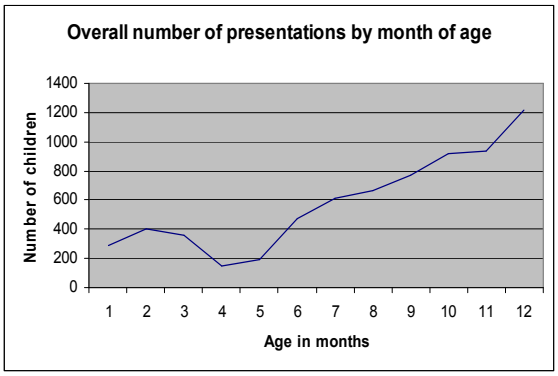
Death data was available from the Commission for Children and Young People for the 2 year period, June 2004 to June 2006. There were a total of 25 deaths of infants aged less than 12 months in Queensland for that period.
Deaths were attributed to 4 main causes: transport related deaths (Motor Vehicle Crash - MVC and one drive way run over), drowning (bath drowning), asphyxiation and non accidental deaths. In 2005-2006 there were 7 infant deaths that to date have not been fully investigated and further details are pending. Graph 1 shows cause of death for the remaining 16 infants.

QISU data

Between 1998 and 2006, 6990 infants were brought to a QISU participating Emergency Department following an injury .

Gender

Overall there was a slight male dominance with a male / female ratio of 1.15:1 (3733 (53%) were male, 3257 were female (47%)). The male / female ratio was approximately 1:1 from 0 to 5 months of age, then diverged to a ratio of 1.3: 1 for infants aged between 6 and 11 months.



Graph 2: Age distribution of children presenting to QISU participating emergency departments, 1998-2006.

Age:

There was significant variation in the number of injury presentations at different ages, with relatively few presentations for infants aged between 3 and 5 months. The number of presentations increased with increasing age over 6 months.

Less than 3 months

Infants in this age group are vulnerable because of their size and are only just starting to become mobile. Injuries in this age group were frequently sustained when the infant was being carried about the house or after being left in an unsafe position.

In some instances, infants were presented because of concern relating to an injury, where the injury was only minor.

There were 999 infants aged less than 3 months who presented with an injury. More than half of the injury presentations in this age group were due to head injuries (585 or 56%). Head injuries included all Infants with concussion and intracranial injury but excluded simple cuts.

The majority of these injuries were related to a fall. Roughly one third of infants who sustained a head injury in this age group were injured whilst being carried. Nineteen percent of infants (194) were injured when the person carrying the infant either fell with the infant or dropped the infant. This often happened on stairs. In most instances the infant was being carried in the carers arms but 16 of these incidents happened when a person was carrying the infant in a bouncer, cradle, pram or sling.

Overall 36% of head injuries in this age group were stair related. The second commonest cause of head injury in this age group was a fall from furniture; 24% of infants in this age group fell off furniture, mainly beds. Most other head injuries were associated with infants falling from nursery equipment; 13% or 133 infants fell out of/ off nursery equipment (bouncers, cots, bassinets, prams, change tables).

3 to 5 months

Infants in this age group are starting to become more mobile and are able to roll. Despite this, there are relatively few presentations in this age group. There were 916 infants in this age group. Fifty one percent (465) attended with head injuries. Of those, 24% (220) fell off furniture, most commonly beds. Ten percent (136) fell off nursery equipment including change tables. Seven percent (69) were carried and dropped or fell with the carer.

6 to 8 months

Infants in this age group are beginning to crawl, pull up on objects and interact with their environment. The majority of infants injured in this age group sustained their injuries falling off or out of furniture or nursery products. A significant number were injured whilst using a baby walker. There were 2044 infants who presented with injuries in this age group. About half of these infants presented with head injuries (972 or 48%). The commonest reason for infants in this age group to sustain head injuries were falls off furniture, mainly beds.

Sixteen per cent (331) of infants fell off furniture (217 beds). Ten percent of infants (214) sustained head injuries after falling out of/ off nursery equipment including change tables (78), prams (54), high chairs (41), and cots / bouncers (20). Stairs accounted for a further 138 head injuries (7%). Half of the stair related injuries (64) were associated with the use of baby walkers.

9 to 11 months

Infants in this age group are beginning to walk and climb. A larger proportion of infants sustained head injuries after falling from standing height. Overall 3118 infants presented in this age group. Thirty one percent (978) of infants sustained head injuries.

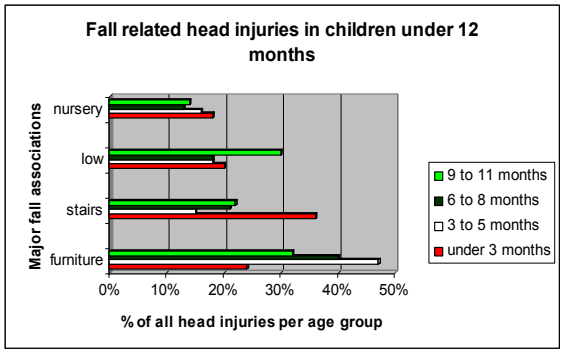
About one quarter of these head injuries (241or 26%) happened after infants fell off furniture, mainly beds (125). Six percent (190) fell of nursery equipment; six percent (176) fell off stairs, and 47 of these stair injuries involved walkers.

Head injuries:

Overall around 2996 infants presented with head injuries accounting for 43% of all injury presentations under 12 months of age.

Out of those, 72% or 2145 infants had either skull fractures or intracranial head injuries (concussion, intracranial bleed), 20% sustained superficial injuries only and 8% sustained unspecified injuries.

The pattern of head injury varied according to age as described above; however, falls were the leading cause of head injury in all age groups.



Graph 3: Comparison of 4 major fall associations per age group.

The majority of all head injuries occurred after a fall from furniture. This was the leading cause for head injuries in infants aged 3 to 11 months and the second most common cause in infants under 3 months of age. The leading factor for head injury in children less than 3 months of age was stairs with either a carer or a mobile nursery item (pram, stroller) falling / rolling down the stairs.

"Low" falls accounted the majority of head injuries in infants aged 9 to 11 months. This group includes infants that slipped or tripped on the same level. Some infants in this group fell whilst pulling objects down onto themselves.

Limb fractures

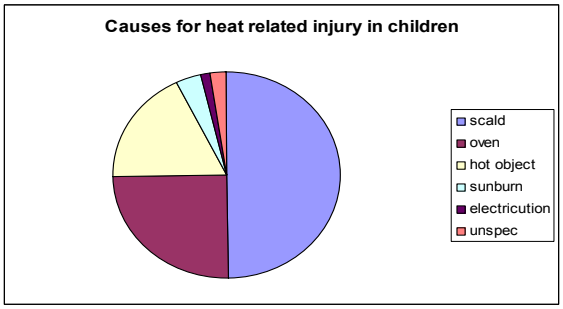
The majority of limb injuries were minor.
Only a small proportion of all infants sustained limb fractures (on average 3% or 216 infants varying from 2.1 % of children under 3 months to 3.5% infants over 9 months).

Upper limb fractures (101) were most common (50 forearm, 20 humerus, 17 clavicle, 15 crush injuries to hands), followed by lower limb fractures (54 femur, 31 lower leg,3 foot). The majority of these fractures were the result of a fall (130). Of those 92 fell off furniture, 23 were nursery and toy related falls and 15 were stair related. 22 infants were accidentally sat, stood or trodden on.
17 infants were carried and dropped or fell with the caregiver. For 67 infants there was no clear explanation of how the fracture occurred.

Lacerations

Ten percent of all infants (706) sustained lacerations. One third (197) sustained a laceration after slipping or tripping and falling against something. A further 142 infants cut themselves with a sharp object; most commonly glass (45) or tin cans (32), 112 fell off furniture or nursery equipment and 100 infants sustained a laceration when their finger was jammed in a door. Fifty three infants sustained a laceration having been struck by an object often after the infant had pulled the object (shelf, chair, TV) onto itself.
Ten of these infants obtained lacerations after they were lifted or thrown in the air and struck by a rotating ceiling fan. One of these infants also sustained a skull fracture. Thirty five infants sustained bites by animals or other children.

Burns and scalds



Graph 4: Causes for presentations of children with heat related injuries to QISU participating emergency departments 1998-2006

Around 8% of all infants (585) presented following a burn or scald. Nearly half of those infants (291) presented with scalds, mostly due to hot water or tea. Thirty eight percent (228) sustained burns while touching hot objects, (146) of those on hot ovens. Forty five percent of all burns happened in the kitchen (265), followed by the living and dining area (90) and the bathroom (50). Eight infants were brought to the Emergency Department after they had been exposed to live wires and an electrocution was suspected. Five infants had been left in a hot car during the summer months and had sustained injuries due to heat exposure. Twenty two infants (11 less than 3 months old) were brought to the Emergency Department after they had sustained significant sunburn due to lack of protective clothing or sun block.

Ingestions

Ingestions are mainly a problem in inquisitive and mobile toddlers but some ingestions represent misdosing or administration of incorrect medication. Overall, 6% (420) of infants presented after ingestions. The majority (87%) of infants were older than 6 months of age. Of all ingestions, 165 were due to a medicinal substance, and 255 had ingested non medicinal substances, especially cleaning products. The single most commonly ingested substance was eucalyptus oil (53) followed by paracetamol (36).

In the medicinal group, 77 infants had been given medication initially intended for the infant but in a higher than intended dose. The remaining 88 infants ingested a variety of medications including blood pressure drugs, anticonvulsants or an opioid. Twenty two percent of all medicinal ingestions occurred in infants under 3 months of age. All ingestions in this group occurred when a caregiver inadvertently gave the wrong dose or wrong medication to the infant. Commonly ingested medications included a variety of colic or cough mixtures, paracetamol or eucalyptus oil (*not* intended for oral administration).

In the group of non-medicinal ingestions, cleaning products dominated: 71 infants ingested cleaning products including 30 infants who ingested dishwasher powder or alkaline cleaning agents, 48 ingested alcohol or cigarette stubs and 43 ingested potentially poisonous plant material.

Choking/ strangulation and foreign bodies

Five percent or 343 infants presented after a choking episode. Of those, one third of infants (124) choked on food, 16 on small metal objects, coins or jewellery, 54 on small plastic objects and toys, and 31 on plant material. One quarter of choking episodes (89) happened in the dining room, 22% (75) in bedrooms, 15% (50) in the kitchen and 9% (31) in the family room. Four infants presented after near strangulation with an electric cord, curtain cord or a safety harness.

Three percent of infants (234) were brought to an Emergency Department after they had ingested a foreign body: 85 infants ingested small metal objects like coins, jewellery or nails, 43 ingested plastic/toy, 21 ingested non poisonous plant materials. Twenty one ingested batteries and 3 ingested magnets. Ingestions most commonly occurred in the dining room (64) followed by the family room (40).

Immersions

Thirty eight infants were brought in after a near drowning episode, most of those infants had been immersed in the bath, and 7 had been immersed in buckets, ponds or pools.

Transport related injuries

Two percent of infants (167) presented following a transport related injury. Most of the infants were very young (66 infants were less than 3 months old). Twenty six presentations were of high acuity (Triage Category 1 and 2). The majority of infants were of low acuity (TC 3 to 5). Overall, 7 infants sustained serious head injuries and skull fractures, 5 sustained leg fractures and 126 sustained no or only superficial injuries. Eight infants sustained injuries due to a low speed run over, the remainder were involved in an MVC (motor vehicle crash). One infant was run over by a car while in a pram.

Nursery product related injury

There were 1194 injuries related to nursery products: 243 infants fell off change tables, 236 out of prams. There were 190 walker associated falls, 127 infants fell from high chairs, 101 out of bouncers including 37 infants who sustained a high fall by falling off bouncers placed on high place and 7 infants who fell out of bouncers that were carried by a person. Eighty seven infants fell out of other nursery items (Moses baskets, car seats, bassinets, slings and others) and 77 fell out of a cot. Play equipment accounted for158 injury presentations (6 slides, 32 swings, 3 trampolines, 7 tricycles, 98 others.) The majority of nursery related injuries (88% or1045) led to significant injury: 49 fractures (16 skull fractures, 18 upper limb fractures and 15 lower limb fractures), 911 head injuries and 85 lacerations.

Very high falls

QISU data collection distinguishes between low falls (falls from less than 1 metre) and high falls (falls from more than 1 metre). Most falls from [(2)] furniture or from person's arms will fulfil the criterion of a 'high 'fall. This distinction originates from paediatric data that suggests that falls from more than one metre carry a higher risk of significant intracranial injury. In our series, there were a small number of falls from balconies, windows and other high surfaces.

One infant less than 3 months old fell from a balcony and sustained a head injury. Three Infants aged 6 to 8 months old fell from balconies; one sustained a skull fracture and two sustained intracranial injuries. One fell out of a window and sustained a head injury. Eleven infants aged 9 months or older fell from high places. Eight infants fell off balconies: three sustained skull fractures, four sustained head injuries and one had superficial injuries only. Three fell out of windows with two sustaining intracranial injuries and one superficial injury only. All of these presentations were of high acuity, and most presentations have limited information as to the exact mechanism that led to the injury.

There were no high falls in infants aged 3 to 5 months.

Non accidental Injury

There are 2 levels of certainty in identifying non accidental injury in infants less than 12 months. A definite non accidental injury is identified where the triage history indicates a witnessed assault. Just over 1% (86/6992) was coded by the triage nurse as intentional injury or "undetermined intent" or "intent not specified" including one infant who died as a result of a serious head injury.

Just under 5% (305/6992) of "walk in" presentations to Emergency Departments had possible intentional injury inferred on clinical grounds. We suspected intentional injury if:

1. Any fracture or significant head injury regardless of history
2. Any other serious injury (e.g. burn, abdominal injury) without a satisfactory explanation or consistent history.
3. Delayed presentation e.g. old burns.
4. Mechanism not in keeping with the infant's developmental abilities

Our numbers are likely to under represent intentional injury.

Discussion:

Death Data

For infants under the age of 12 months, injury related death accounts for only 1% of all deaths in Queensland. The majority of deaths in this age [(3)] group are due to natural causes (perinatal deaths, and deaths due to cardiorespiratory causes). Many deaths in this age group are associated with prematurity, birth defects, and chromosomal abnormalities.

Despite the relatively low number, injury related deaths in this age group are distressing and largely preventable.

The number of injury deaths in Queensland in infants under 12 months fluctuates from year to year but has not decreased significantly over the last 8 years: 11 infants in Queensland died due to an injury in 2005-2006, 7 infants in 2004-2005 and 29 infants between 1999 and 2003 (averaging 6 infants per year). [(4)]

QISU data

Based on data from our QISU collecting sites, we estimate that every year approximately 3000 infants under the age of 12 months present to Queensland Emergency Departments with an injury. The injury burden of those attendances is high. In our series, 520 infants aged less than 12 months annually or 10 infants per week sustained fractures, intracranial injuries, burns or lacerations and required hospital treatment, often involving sedation or anaesthesia. Infants under the age of 12 months spend the majority of time being cared for at home.

Consequently, for 80% of presentations in this age group, the injury occurred in the home. Many injuries are specific to certain rooms of the house and may be prevented by restricting access to those areas. In particular the kitchen is a common site for injury: burns (contact with hot objects and scalds), ingestions (dishwasher powder from the dishwasher tray), fingers jammed in drawers. With access restriction to the kitchen alone, an estimated 1000 infants under 12 months of age could have been protected from injury during the study period.

Whilst many injuries are averted or minimised by close parental/ carer supervision, supervision cannot be relied upon to prevent all injuries. It is not possible for a single carer to provide constant supervision and there will always be lapses and distractions.
In addition, for many parents of newborns, sleep deprivation further clouds their decision making. Therefore, it is important to create safe spaces and situations appropriate to the child's developmental ability. This requires forethought and anticipation. For example, an infant under the age of 12 months requires hands on supervision whilst in the bath.

When a carer needs to leave the room (to attend to another child or answer the door) then the infant should be removed from the bath.

Disturbances can be minimised by taking the phone off the hook or using a portable phone.

Head injuries

Head injury remains the most common reason for presentation in our series. This is in part because it is a common injury in this age group (young infants have a proportionally large head size and weight compared to their body mass and will impact with the heaviest part when dropped) , but also because it is one of most concerns to parents.

Many infants aged less than 3 months presented with minor head injuries with little or no injury found. We assume that parents attended in order to 'get the children checked up' because of the high anxiety surrounding very young infants. The majority of young infants were injured when they fell / dropped from the carer's arms or with the carer. A smaller number toppled out of nursery equipment of off furniture. Whilst infants this age do not roll, they are mobile and can wriggle off the edge of furniture. A small but significant number of head injuries in older infants were associated with baby walkers (111). Whilst walkers have not been considered dangerous in some settings, they have been banned in Europe and America and they are a particular concern in Queensland because of the high set houses.

Walkers increase an infant's reach and mobility, often beyond their unaided capacity and therefore effectively beyond their control, they are *not* recommended.

Whilst falls account for the majority of head injuries overall, some head injuries in the older infants are due to the infant pulling objects onto themselves (TV's , shelves) . With toddlers around the house it is advisable to secure shelves and other furniture in a way that they do not topple over when pulled.

Transport related injury

Relatively few infants in our series presented following a transport related injury. However, transport related deaths accounted for 2 deaths of infants under the age of 12 months in 2004-2005 and 4 deaths in 2005-2006 in Queensland. Death or significant injury related to transport is either due to a motor vehicle crash or a pedestrian injury. (1)

Five of the deaths above were due to a MVC.

The Australian Road Rules currently require infants under the age of 12 months to be "restrained in a suitable approved child restraint that is properly fastened" and this has undoubtedly reduced the number of serious injuries and fatalities. Infants are often carried or in prams when outside of the home.

"Pedestrian" injuries in this age group usually include low speed run-overs when the infant crawls or walks behind the family car as it is backing out of the driveway. One infant, age 10 months, died in 2004-2005 as the result of a low speed run-over. Low speed run over was recently the subject of a Queensland Parliamentary Travelsafe Committee inquiry.
Prevention recommendations included raising public awareness, improving car design to increase rearward visibility and encouraging safer housing design and separating child play areas from driveway access points.

Immersion

Drowning is the leading cause of all deaths in children aged 1 to 4 years in Queensland. In this age group, pool drowning accounts for approximately 50% of drowning deaths. In infants under the age of 12 months, drowning accounts for a small but significant number of deaths: 23 deaths in Queensland over the 13 year period 1992 to 2004. The majority of drowning deaths in this age group (5) were bath related (17), with 2 occurring in buckets of water, and 4 occurring in pools. Bath related drowning deaths occur after the infant has been placed in the bath and left unattended for a period of time. Some drowning and near drowning events are related to the misconception that bath seats are an adequate support for young infants .

Other incidents follow a young infant being left in the bath with an older toddler "supervising".

Deaths have occurred in as little as 5cm of water and in less than 3 minutes. Infants require direct hands on supervision in the bath. Carers need to minimise distractions at bath time and if necessary, remove the infant to a place of safety if they need to leave the bathroom.

Lacerations

Ten percent of all infants presented with open wounds that required some form of cleaning and closure, often under sedation or general anaesthetic. Some of these injuries led to permanent scarring and disfiguration (facial injuries) or to loss of parts of digits (crush injuries).

Many infants cut themselves on knives, glass or tin cans .The majority of these injuries happened in the kitchen and access restriction including access to waste bins could have prevented these injuries. Crush injuries resulting in lacerations, amputations and fractures of fingers made up 2% of all injuries (105). The majority of crush injuries were related to infants getting their fingers caught in either the hinge side or closing edge side of a door. Frequently, the bathroom or toilet door is responsible, closed by a parent or sibling. Latches and magnetic catches prevent doors from banging closed in the wind or being shut by a young sibling.

Fans (both ceiling and floor or desk fans) are part of Queensland day to day life. Considering this, the number of infants who presented with fan related injuries was small (27), but at least one infant sustained an open skull fracture after contact with a ceiling fan. Ceiling fans should only be placed in rooms where head clearance allows safe passage underneath the fan.

Dog bites were an infrequent cause for presentation in this age group (24) , but are particularly devastating , especially if a pet dog suddenly 'turns' on a relatively new household member.
The injuries, particularly facial injuries, inflicted by a large dog upon a small child can be disfiguring and often require plastic surgical attention under general anaesthetic. Previous data has shown that 86% of dog bites occur at home (Dog Bites bulletin (6)) and 47% of dog bites involve children less than 4 years old. Infants and dogs should always be supervised and when a dog has a toy or food, the infant needs to be away from the dog.

Burns and scalds

Over half (54%) of the burns in this age group occurred in the kitchen or bathroom. Kitchen related burns can be prevented by restricting access to the kitchen using a child gate. Some burns occurred when the infant had been placed on the kitchen bench and subsequently crawled on a hot stove plate. Bathroom burns tend to occur when a infant is inadvertently placed in a bath that is too hot, or the parent or sibling turns on the hot water tap.

Queensland legislation requires that for new and renovated homes, the water temperature is regulated to a maximum of 50 degrees in the bathroom. Reducing the water temperature from a standard 60 degrees to 50 degrees significantly prolongs the time it takes to develop a severe burn. A number of infants sustained scalds after having hot drinks or food spilt on them whilst on a carer's lap or having pulled the food/drink onto themselves. When you have youngsters in the house, replace any table cloths with table mats.

Burns or scalds in infants always raise the question of non accidental injuries.
The internationally available data suggests that the incidence of burns/scalds as a result of deliberate harm in infants varies from less than 1 to 16%. [7]

Ingestions

Ingestions are a frequent cause for presentation to Emergency Departments, and a more frequent reason to access poisons information services. Few ingestions are fatal: 3 infants aged less than 12 months died between 1999 and 2003 from unintended ingestions or overdoses. [8]

Infants under 6 months lack dexterity to target an object and put it in their mouth. The majority of overdoses in this age group occur when an adult gives the infant the wrong medication or the wrong dose of medication. The number of unintended applications of Eucalyptus oil instead of paracetamol in our series is of concern and may be explained by the fact that infant paracetamol drops are commercially available in a similar bottle to Eucalyptus oil. Not all essential oil bottles have flow limiters which should preclude misadministration. Overdoses with essential oils can be potentially lethal either due to general neurological suppression or by respiratory failure due to aspiration.

Over the age of 6 months, infants are mobile and able to ingest substances that are openly accessible. Infants under the age of 12 months rarely have the dexterity to remove child resistant caps (or normal screw caps) on bottles. Most ingestions in infants aged 6 to 11 months occur when an infant accesses an open bottle of medication or cleaning agent, finds a loose tablet or ingests plant material.

Choking /Foreign Bodies/Strangulations

Most asphyxiations due to strangulation occur in the infant's bedroom. [9] In our series there were 2 infants with a cord or string around their neck , 1 infant who had the safety harness caught around it's neck after falling out of a high chair (the safety harness had been inappropriately done up) and 1 infant who slipped between furniture. Blind cords or mosquito nets need to be kept out of reach of infants or secured to the wall. The majority of choking episodes occurred in main living areas (living room, dining room, family room). As found in previous series, around two thirds of all choking episodes involved food or small objects.

The only way to prevent choking is to keep choke-sized objects (smaller than the diameter of a film container) well out of the infants' reach and to limit choke-sized, hard food (nuts, grapes, small carrot and apple sticks) to children who can chew reliably. Infants will be more likely to choke if they are distracted or crying at the time and should [10] therefore be seated and supervised whenever eating.

The majority of foreign bodies are easily passed when ingested. Removal is more problematic when inserted in the ear or nose. Coin/ disc batteries and magnetic balls are most likely to cause injury. Magnetic balls have been reported to cause gut perforation when 2 magnets have joined trapping the gut wall in between.

Nursery

A number of infants were placed in bouncers on high places (tables, benches, change tables. The bouncing action provides the infants with unintended mobility and allows them to "bounce" off the edge. [11]

Baby walkers provide the infant with an inappropriate speed, range of access and mobility for their developmental age and are hazardous. [15,17,12,13,14] Moreover, there have been previous suggestions that baby walkers impair the motor development of infants compared to infants not using walkers. [16]

They are *not* recommended.

Falls from change tables, prams or whilst in baby walker are entirely preventable by appropriate supervision , appropriate securing in a harness or by simply not using walkers.

Very high falls

Previous QISU data demonstrates a background rate of 2-3 infants under the age of 12 months falling from windows and balconies per year: 12 balcony-related falls and 3 falls out of windows in infants aged less than 12 months, 1998-2004. [18] Balcony and window falls are particularly significant in Queensland, as the high set style of housing means that the fall is likely to exceed 3 metres. Balcony falls can be prevented by better housing design specifying no climbable members in balustrades.

Carers need to avoid placing furniture adjacent to windows and balustrades to prevent infants from climbing out of windows or over balustrades. The remainder of high falls are due to stairs or benches/ change tables. Well fitted stair gates will help prevent unintended access from the top of the staircase.

Non accidental injury

The number of infants identified at triage as potentially having sustained a non accidental injury is likely to represent only a small proportion of all non accidental injury in Queensland. Many cases do not present through the Emergency Department. Case data is often confidentially collected and different databases exist that are not linked to each other.

Previous child protection notifications are not available to emergency staff and access to this information requires specific child safety concerns.

In our series, only 48 infants presented with a clear history of assault. A further 343 presentations were assessed as potentially due to non-accidental injury on the basis of the nature of the injury (skull or limb fractures). It is standard practice to discuss these cases with a child protection consultant, however, in the majority of cases, the history is consisent with the injury and no further action is taken. (19)

Preventative Strategies

Exploring the environment and learning boundaries is part of growing up. Whilst it is not possible to prevent all injury, many injuries can be minimised through simple prevention strategies.

Top 10 Recommendations:

1. Secure infants in the car with an appropriately fitted child restraint
2. Provide a secure play area and prevent unintended access to the driveway.
3. Never leave infants unattended in the bath.
4. Regulate water temperature in the home to less than 50 degrees.
5. Restrict access to kitchens and stairs using appropriately secured child gates.
6. Prevent unintended access to pools by using non-climbable pool fencing with self closing gates , no direct access from the house and ensuring the gate is in proper working order.
7. Keep one hand on your infant at all times when placing him/her on a high surface.
8. Reduce the number of potential poisons in the infants environment (alcohol, cigarette butts, cleaning agents)
9. Keep medication and chemicals in child resistant containers inaccessible to children at all times.
10. Secure blinds and cords out of reach of Infants.

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