

Chapter 7

Drowning

“More than one child drowns every week in Australia. This horrific figure has been described as a ‘national disgrace’ and toddler deaths represent the largest percentage of drownings in Australia”
(Royal Life Saving Society Australia 2006:1)

Key issues

- Drowning was the leading cause of death for 1–4 year olds (15 deaths).
- Compared with the 12-month 2004–05 data,¹³⁵ drowning has increased by 33.3% in the current reporting period.
- The majority of drownings occurred in swimming pools (8 deaths), followed by bathtubs (4 deaths).
- Seven of the 18 drowning deaths occurred on a Queensland public or school vacation holiday (38.9%).
- Prevention of drowning deaths is ideally achieved through constant adult supervision in combination with appropriate environmental modification (such as compliant pool fencing) and resuscitation qualifications. In all 8 pool drownings, the child was not actively supervised.
- Of the 7 domestic swimming pool drownings, only 1 pool was known to have been compliant with the swimming pool fencing Australian Standard (AS 1926-1995).¹³⁶ Three had significant fence or gate defects and the fencing was unknown in 1 case. One child stood on a chair to open the pool gate and another child was mistakenly left in the pool area when there was a party at the house.
- Of the 18 children and young people who drowned between 1 July 2005 and 30 June 2006, 4 children were known to the Department of Child Safety (DChS) in the 3 years before their death (22.2%). Children known to the Department were over-represented, with 19.9 children aged 0–4 years drowning per 100,000 children in the child protection population, compared with 7.1 drownings for children 0–4 years per 100,000 in the whole population.

Between 1 July 2005 and 30 June 2006, 18 children and young people drowned in Queensland.¹³⁷ Drowning was responsible for 19.4% of all external causes of death for children aged 0–17 years. Drowning accounted for by far the highest number of deaths from all causes for children aged 1–4 years. Overall, the number of drownings increased in 2005–06 by 33.3% (6 deaths).

Drowning trends and patterns, 2005–06

Table 7.1 illustrates the age categories and gender breakdown for all drowning fatalities over the 12-month period examined.

Table 7.1: Drowning deaths by gender and age categories

Age at death	Females <i>n</i>	Males <i>n</i>	Total <i>n</i>	Rates per 100,000
Under 1 year	1	2	3	
Subtotal under 1 year	1	2	3	*
1 year	3	4	7	
2 years	2	2	4	
3 years	1	3	4	
Subtotal 1–4 years	6	9	15	7.4
Total 0–4 years	7	11	18	
Rate per 100,000	5.7	8.4	7.1	

Data source: Queensland Child Death Register (2005–06)

* Rates are unable to be calculated for numbers less than 4.

Notes: 1. Age categories were excluded where no children of that age died in the reporting period.

2. Rates are calculated based on population data for children and young people aged birth to 4 years only.

135 Refer to Chapter 3.

136 One of the pools was a wading pool that did not require fencing in accordance with legislation as it was less than 45cm deep.

137 An additional 3 drowning deaths (2 boat incidents and 1 bathing) occurred in this period but have not been accounted for in this chapter as these deaths have not been registered with the Registry of Births, Deaths and Marriages.

Gender

In the 12 months examined, 11 male children (61.1%) drowned in Queensland, compared with 7 females (38.9%). This finding was consistent with the findings of the 2004–05 period, which also identified male children to be more likely to drown compared with female children (9 males, 3 females). In line with this finding, the rate of children aged under 5 years drowning in the current reporting period was 7.1 per 100,000 0–4 year olds in the population. Male children had a higher rate of drowning, with 8.4 children aged 0–4 per 100,000 in the population, compared with 5.7 females.

This finding is consistent with the literature, which has generally found that males drown at 3 times the frequency of females (Australian Water Safety Council 2004; Royal Life Saving Society Australia 2005:4; Williamson, Irvine & Sadural 2002:5). The greater involvement of males in injury is often attributed to their supposed high propensity for risk taking in comparison with females (NSW Water Safety Taskforce 2002:29). Acts such as wandering outside and crawling under or climbing over fences reflect more risky, adventurous and inquisitive behaviour, which results in the child being more likely to come into contact with water hazards.

Age

Between 1 July 2005 and 30 June 2006, drowning represented the leading cause of death for children 1–4 years of age (83.3%, 15 deaths). This finding is consistent with the findings from the 2004–05 reporting period, with drownings occurring most frequently in the 1–4 year age category. Children aged under 1 year were the only other age category which experienced drownings in the current reporting period, with 3 deaths (16.7%). This differed from the 2004–05 12-month data, which reported drownings occurring for children in all age categories except those under 1 year (refer to Chapter 3).

It is frequently documented that drowning is the most common cause of non-intentional injury-related death for children under 5 years of age in Queensland (Cunningham et al. 2002; Department

of Local Government and Planning 2005f:2). During these early years, toddlers experience increased mobility, rapid physical growth and motor development changes, and are curious to explore their environment (Child Development Institute 2005). Toddlers are, however, still learning to control their body movements and are physically top heavy, resulting in general balancing and coordination problems (Lawrence & Irvine 2004:16). Further, toddlers do not perceive water as a threat; they actually see bodies of water such as the in-ground home swimming pool as an attractant (Pearn 2002:2). During this developmental stage, toddlers have a particular fascination with bright colours, moving objects, noise and water. Prevention strategies for this more vulnerable group are therefore perhaps best to focus on the circumstances in which the child becomes vulnerable, rather than on modifying the child's behaviour (NSW Water Safety Task Force 2002:30).

Types of drowning-related deaths

Over the 12-month period examined, fatalities involved drowning of differing types. One death was primarily the result of other causes – a transport incident, which has been analysed in the transport chapter – and this death is therefore excluded from the drowning numbers. However, all incidents that involved drowning have been included in Table 7.2 to illustrate the different types of drowning-related fatalities by gender.

Table 7.2: Types of drowning-related deaths by gender

Type of drowning	Females <i>n</i>	Males <i>n</i>	Total <i>n</i>
Swimming pool drownings	5	3	8
Non-pool drownings			
<i>Bathtubs</i>	2	2	4
<i>Static inland waterways (dams/lakes)</i>	0	3	3
<i>Tanks (water/septic)</i>	0	2	2
<i>Container</i>	0	1	1
Fell out of a boat ¹³⁸	1	0	1
Total	8	11	19

Data source: Queensland Child Death Register (2005–06)

138 Drowning-related deaths in this category are included in Chapter 6, 'Transport', as the death was secondary to a motor vehicle incident. Details relating to this drowning will also be discussed in the 'Circumstances of non-pool drownings' section of this chapter.

Aboriginal and Torres Strait Islander status

During the reporting period, 3 of the 18 children (16.7%) who drowned were of Aboriginal origin. One death occurred in a swimming pool and the other 2 were bathtub drownings. There were no drowning deaths registered for Torres Strait Islander children during the reporting period, although it should be noted that 2 Torres Strait Islander children drowned in separate boating incidents during this reporting period. As these deaths have not been registered by the Registry of Births, Deaths and Marriages, these deaths have not been counted in this report (see Chapter 2 for further details). The Commission is working with the Registry to investigate processes to ensure these deaths are registered. It is also of note that the bodies of these two children have not been recovered, nor have the coronial findings been finalised for these deaths. One Indigenous child drowned in the 2004–05 period (see Chapter 3).

A high incidence of drowning is apparent among Indigenous children under the age of 5 across Australia. Overall, Indigenous Australians are 3 times more likely to drown than non-Indigenous Australians (Mackie 1999; Australian Bureau of Statistics & Australian Institute of Health and Welfare 1999).

Geographical distribution (ARIA+)

Ten of the 18 drownings occurred in metropolitan areas (7 children aged 0–5 years per 100,000 in the population), compared with 6 in regional (6.4 drownings per 100,000) and 2 in remote areas.¹³⁹ Swimming pool drownings and non-pool drownings were both more likely to occur in metropolitan areas (5 drownings each). Conversely, drownings in regional areas were higher in the 12-month 2004–05 reporting period (refer to Chapter 3). The findings for the current reporting period are inconsistent with last year's findings.

Research in this area has found that drowning in metropolitan areas and rural areas differs in terms of the locations in which children drowned (NSW Water Safety Taskforce 2002:12). The literature shows that drowning in metropolitan areas tended to occur most frequently in pools, followed by baths. In contrast, drowning in rural regions tended to occur most frequently in dams, followed by lakes and rivers.

Socio-economic status (SEIFA)

Seven of the children and young people who drowned in the reporting period were living in a low or very low socio-economic area. Conversely, 5 children lived in high to very high socio-economic regions. Six of the children who drowned lived in moderate regions. Rates were highest in moderate socio-economic regions (11.1 children aged 0–5 years drowned per 100,000 0–5 year olds in the population), followed by low and very low areas (6.8 children per 100,000) and high and very high socio-economic areas (5.2 children per 100,000). In comparison, the greatest number of drowning deaths occurred in low and very low socio-economic regions during the 12-month 2004–05 period (refer to Chapter 3).¹⁴⁰

Child protection population

Of the 18 children and young people who drowned between 1 July 2005 and 30 June 2006, 4 children were known to the DChS in the 3 years before their death (22.2%). Children known to the Department were over-represented, with 19.9 children aged 0–4 years drowning per 100,000 children in the child protection population, compared with 7.1 drownings for children 0–4 years per 100,000 in the whole population. The Department's involvement with those children will be reviewed by the Child Death Case Review Committee (CDCRC).¹⁴¹

In a further case, the Police Report of Death to a Coroner (Form 1) indicated that the family had a history of departmental involvement with the deceased child's siblings only.¹⁴²

139 Rates are unable to be calculated for numbers less than 4.

140 Rates were unable to be calculated for socio-economic status because numbers were too small in more than one category.

141 Since 1 August 2004, the DChS has been required to conduct a review of its involvement with a child if the child was known to the Department within 3 years before their death. The CDCRC is an independent committee responsible for considering the Department's review. The committee is multi-disciplinary and is chaired by the Commissioner.

142 These cases have not been considered by the CDCRC to date (refer to Chapter 4 for more details).

Demographics of pool drownings

The Commission has identified that drowning is the most common cause of death for children 1–4 years of age. Forty-five percent of drowning deaths occurred in swimming pools. During the 2005–06 reporting period, 8 children drowned in Queensland swimming pools. This finding is consistent with estimates that 8 children drown in swimming pools every year in Queensland (Department of Local Government and Planning 2005a). The rate of children aged 0–4 years who drowned in Queensland for the current period was 3.2 children per 100,000 children aged 0–4 years in the population.

Table 7.3 illustrates the age and gender breakdown for all pool drownings over the 2005–06 12-month period.

Table 7.3: Pool drownings by gender and age category

Age at death	Females	Males	Total
1 year	2	1	3
2 years	2	1	3
3 years	1	1	2
Total	5	3	8

Data source: Queensland Child Death Register (2005–06)

Note: 1. Age categories were excluded where no children of that age died in the reporting period.

Gender

More females than males drowned in swimming pools (5 females, 3 males). This finding is inconsistent with the findings of the *Annual Report: Deaths of children and young people, Queensland, 2004–05* (Child Death Annual Report, 2004–05) and the drowning literature, which has found that male children are more likely to drown in swimming pools than female children (Cunningham et al. 2002:2; NSW Water Safety Taskforce 2002:15).

Age

In line with the findings from the Child Death Annual Report, 2004–05, all swimming pool drownings occurred among children aged 1–4 years (8 deaths). These findings are consistent with the literature, which has found that children under 5 years of age are most vulnerable to drowning (Australian Water Safety Council 2004:11; Cunningham et al. 2002:2; Mackie 1999; Royal Life Saving Society Australia 2005:6). Further, the Commission’s 13-year review found that 85.7% of children who drowned in swimming pools were toddlers (Child Death Annual Report, 2004–05). According to the Queensland Injury Surveillance Unit (QISU), almost half of all drownings of children aged 0–4 years occur in swimming pools (Baylis et al. 2001:1; Cunningham et al. 2002:1). In addition, the QISU has observed that for every child drowning death there are up to 14 children taken to hospital emergency departments and 4 admissions to hospital (see the ‘Near-drownings’ section below for QISU data for 2004–05).

Toddler drowning in swimming pools is a relatively recent epidemic in Queensland. Before the 1970s, few residences had pools and consequently there were few toddler drownings (Department of Local Government and Planning 2005d:7). It is currently estimated that one in four Queensland houses has a pool. This means swimming pools have become more accessible to young children – currently making pools the most dangerous water hazard to young children (Department of Local Government and Planning 2005d:7).

Aboriginal and Torres Strait Islander status

One of the 8 children who drowned in swimming pools was of Aboriginal origin.

Geographical distribution (ARIA+)

Five of the 8 pool drownings occurred in metropolitan regions (62.5%). Three of the children who drowned in pools resided in regional areas and none lived in remote regions. These findings are consistent with the drowning literature, which shows that swimming pool drownings occur most frequently in metropolitan areas (NSW Water Safety Taskforce 2002:12).

Socio-economic status (SEIFA)

The vast majority of children who drowned in swimming pools between 1 July 2005 and 30 June 2006 resided in moderate socio-economic regions (4 drownings). Three resided in low and very low socio-economic regions and 1 lived in a very high socio-economic area.

Table 7.4: Summary of pool drownings

Type of pool	Was the pool fenced?	Type of fencing	Compliant ¹⁴³ with AS?	Problems with fence/gate?
Private/in-ground	Yes	3-sided fence	No	Fence inadequate – numerous climbing points and non-compliant Gate defective – latches did not work and gate could not be closed. Gate left open
Private/in-ground	Yes	3-sided fence	No	Fence defective – palings missing and numerous points for child to gain access Gate left open
Public/in-ground	Yes	Boundary fencing	Yes ¹⁴⁴	No
Private/portable wading pool ¹⁴⁵	No	N/A	N/A	Fencing not required
Private/in-ground	Yes	4-sided fence	Unknown	No
Private/in-ground ¹⁴⁶	Unknown	Unknown	Unknown	Unknown
Private/in-ground	Yes	3-sided fence	No	Fence defective – gaps in fence where child could gain access Gate defective – did not close or lock properly. Gate propped open at time of incident
Private/in-ground	Yes	4-sided	Yes	No

Data source: Queensland Child Death Register (2005–06)

143 With the Australian Standard (AS 1926-1995: Swimming pool safety – Location of fencing for private swimming pools).

144 This pool was compliant with the public swimming pool standards.

145 A 'portable wading pool' is defined in the Act as capable of being filled with water to a depth of no more than 450mm; has a volume of no more than 2000 litres; and has no filtration system. For a pool to be considered a portable wading pool, it must meet all three criteria.

146 This death occurred a significant amount of time after the initial near-drowning incident. Consequently, police would have not completed the Form 1 at the incident address.

Circumstances of pool drownings

A number of factors have been identified as increasing the likelihood of childhood drowning in swimming pools. The main factors are:

- inadequate or no fencing
- lack of gate security
- inadequate supervision
- lack of effective water skills, and
- lack of resuscitation skills.

Table 7.4 provides a summary of the circumstances surrounding swimming pool drownings registered in the reporting period.

Location of incident

Of the 8 pool drownings, 7 occurred in private swimming pools; 6 of these drownings were in a pool located at the child's residence; 1 child drowned in a pool at a friend's house and 1 death occurred in a public swimming pool. These findings are consistent with the literature, which shows that the most common location where children drown is the home, with almost two-thirds of drownings occurring in pools at the child's residence (Cunningham et al. 2002:2; Royal Life Saving Society Australia 2005:5).

The last few decades have seen a significant increase in the number of pools on residential properties. In 1991, there were an estimated 132,000 swimming pools and spas in Queensland. In 2002, the Office of Economic and Statistical Research established that approximately 310,000 residential houses had outdoor swimming pools or spas, representing an increase of 135% in 11 years (Department of Local Government and Planning 2005d). As at 2002, 22% of Queensland homes had a swimming pool. Further, Brisbane City Council has reported that more than 2700 new pools are built each year in that municipality alone (Department of Local Government and Planning 2005d). With the increasing number of pools in Queensland, there has also been a rise in toddler drownings in domestic swimming pools since the 1970s.

Pool fencing

Fencing sides

As shown in Table 7.4 above, 7 children drowned in private pools. One private pool did not require any fencing and it is unknown what type of fencing another of these pools had. In the remaining 5 cases where the type of fencing was known, 3 children died in pools with 3-sided fencing, compared with 2 deaths in pools with 4-sided fencing.

The public pool noted in the table had appropriate and compliant fencing around the outside of the premises.

Fencing and gate compliance

Of the 7 private swimming pool drownings identified in the current reporting period, only 1 pool was known to have been compliant with the Australian Standard (AS1926-1995 Swimming pool safety – Fencing for swimming pools). One of the pools did not require fencing, as it was a portable wading pool which was less than 45cm deep, and it is unknown what type of fencing one pool had. Three of the pools where drownings occurred were noted to have significant fence and gate deficiencies. These included:

- climbing points on the fences
- gate latches that did not lock or close properly
- gaps in the fence large enough for a small child to climb through, and/or
- the gate had been propped or left open.

Two of the swimming pool drownings took place in pools which were not observed to have any fencing or gate problems. One of these drownings occurred when the child dragged an item to the fence and let themselves into the pool area. The other child was at a party where a number of people were swimming in the pool. The child was mistakenly left in the pool area when everyone else went inside the house. It was thought that the child was already inside.

The public swimming pool where one drowning occurred was not found to have any fencing or gate compliance problems.

Pool fencing is an important prevention strategy to decrease the risk of drowning in swimming pools. In particular, installation of 4-sided fencing that isolates the pool from the house and the yard has been shown to decrease the number of pool immersion injuries and deaths among young children (Brenner et al. 2003:442). However, for pool fencing to save lives, the barrier must be kept intact and maintained, with a gate that self-latches and closes automatically. It is clear from the data that many of the current pool drownings resulted from inadequacies in the fencing.

History of pool fencing

As identified last year, the catalysts for improvement of pool fencing legislation in Queensland were two coroner's reports in 2002 investigating the drowning of two young children in residential swimming pools (Department of Local Government and Planning 2005b). In response the Department of Local Government and Planning conducted a review of pool fencing requirements under the *Building Act 1975* which found that a number of amendments to this Act were necessary to improve the level of safety of children around residential swimming pools.

Between 1983 and 1991, QISU found that, on average, 12 children drowned in Queensland every year. In contrast, from 1992 to 2001, after the introduction of the new pool fencing legislation, the number of children drowning decreased to approximately 8 per year. This indicates that the legislation has been instrumental in reducing toddler deaths, despite pool numbers more than doubling since the legislation was introduced in 1991.

Impact of pool fencing

The installation and maintenance of a swimming pool fence can significantly reduce the incidence of toddler drowning. Since the introduction of the pool fencing legislation, it has been estimated that at least 70 toddler drowning deaths may have been prevented (Cunningham et al. 2002:1; refer to the 'Prevention and intervention' section later in this chapter for more specific information relating to the pool fencing legislation). Nevertheless, a significant number of children continue to drown in swimming pools, with many deaths occurring in unfenced pools or pools with defective fencing and gates. This is consistent with the Commission's findings in 2004–05. The responsibility for pool fencing compliance rests with individual owners to maintain and keep their pool fencing at a compliant standard.

Supervision

In all 8 pool drownings, the child was not being actively supervised at the time of the incident. In 4 cases the child was reportedly left alone for up to 10 minutes while the carer undertook household tasks (including checking on another child, answering the telephone or making a phone call). In 1 case, the carer was performing home duties in the general vicinity of where the child was playing. In another case, the child was unintentionally left in the pool area after carers thought the child had left the area. In 2 cases, no supervision was being provided to the child at the time of the drowning.

In 2 cases, the child who drowned was in the care of an older sibling/s (16 years or younger). In a further 4 cases, multiple individuals were caring for the child at the time the drowning occurred.

Young children are naturally curious and are attracted to water, and this is why supervision is so vital to preventing toddler drownings. The literature documents that many drownings occur in the few seconds that parents are distracted, as submersion is usually quick and quiet, especially among younger children (Cunningham et al. 2002:2; Washington State Department of Health 2004:8). In the majority of toddler drownings, the responsible adult had no idea the child was near the pool and often assumed that the child was safe in the house (Cunningham et al. 2002:2). Consequently, an understanding of how toddlers can gain unintended access to swimming pools is crucial to preventing their drowning (Cunningham et al. 2002:2).

The Royal Life Saving Society Australia (n.d.b) and the Department of Local Government and Planning (n.d.) define supervision as continuous visual contact of the child by a responsible carer. Cunningham et al. (2002:6) define adequate toddler supervision as keeping the child in a direct line of sight whenever the toddler is in close proximity to a water hazard. These definitions presume that the carer is aware of the proximity of the toddler to the water hazard, which is not the case for most toddler drownings. Indirect supervision has resulted in

the loss of many lives, proving that, when a carer’s attention is focused on something else, tragedies can occur (Royal Life Saving Society Australia n.d.b). Therefore, to prevent toddler drownings it is essential that close supervision is combined with other methods of reducing hazards, including erecting appropriate barriers such as 4-sided pool fencing (Cunningham et al. 2002:6).

Sibling supervision

Parents leaving young children in the care of siblings has been identified by Royal Life Saving Society Australia to be a factor in a number of toddler drowning deaths. Older children do not have the abilities needed to prevent child drownings, such as constant attention, swimming and rescue skills and strength, and are often not skilled in perceiving and responding to emergencies (Royal Life Saving Society Australia n.d.b; Washington State Department of Health 2004:8). Further, children supervising other children can be traumatised by guilt about a drowning death that occurs under their care (Washington State Department of Health 2004:8). In two pool drownings examined by the Commission in the reporting period, siblings were responsible for supervising the child at the time of the incident.

Supervision at parties

Parties or other times when there are groups of adults and children together pose a hazard when the adults are not specifically watching the children. In the reporting period there was 1 case where a child drowned at a party where numerous children and adults were present.

At parties where numerous children are present, the risk of drowning may be reduced by ensuring that specified adults are designated to watch children near or in the water at all times during the event (Washington State Department of Health 2004:8). The number of children supervised by 1 adult should be limited to allow for constant supervision, with continuous visual contact maintained at all times, for each child.

Length of time

The length of time which elapsed between when the child was last seen alive and when the child was found unresponsive is detailed in Table 7.5.

Table 7.5: Time elapsed between child last seen alive and found unresponsive

Length of time	Cases <i>n</i>
Up to 10 minutes	5
Up to 30 minutes	2
Over an hour	1

Data source: Queensland Child Death Register (2005–06)

As shown in Table 7.5, the majority of cases occurred when a child had been left alone or was not seen for up to 10 minutes. This demonstrates that drownings can occur in minutes when parents are not actively supervising their child, or when they become distracted.

Swimming ability

Seven of the 8 children who drowned in pools were reported to have been non-swimmers. The swimming ability for 1 child was not known.

It has been estimated that for every toddler drowning there are approximately 10 ‘near misses’ (children who experience immersion but are rapidly rescued).

This highlights the need for all Australians to be able to swim and be familiar with the water and the danger it poses – particularly those children and residents with swimming pools (Department of Local Government and Planning 2005a; refer to the ‘Prevention and intervention’ section for information relating to infant aquatic lessons).

A number of studies have shown that swimming lessons improve swimming ability and that this effect can be seen in children as young as 2 years of age (Brenner et al. 2003:443). However, there is currently very limited data to show that swimming lessons actually decrease the risk of drowning. The American Academy of Pediatrics states: “children

are generally not developmentally ready for formal swimming lessons until after their fourth birthday” (2000:868). Consequently it is essential that other safety precautions, such as ensuring that pool fencing is compliant, are adhered to, in combination with other preventative strategies such as baby swimming and water familiarisation classes (Brenner et al. 2003:43). Swimming lessons should not be seen as the only means of drowning prevention.

Season and time of year

A significant proportion of the drowning literature reports that children are more likely to drown in swimming pools during the summer months. In the reporting period, an equal number of children drowned in swimming pools during the summer and spring seasons (3 drownings each).

Research has also shown that drownings occur disproportionately on Saturdays and Sundays (Brenner et al. 2003:440). An equal number of swimming pool drownings occurred on weekends compared with on a weekday (4 deaths each). A number of the drowning incidents also occurred on a Queensland public or school holiday. Specifically, 3 children drowned in swimming pools over the spring and summer school vacation breaks (37.5%).

Resuscitation

Resuscitation was attempted in all 8 pool drownings by a parent or by arriving ambulance officers. In 3 cases, the person who commenced resuscitation was trained in cardiopulmonary resuscitation (CPR). The parents of the child attempted to resuscitate their children in 4 cases. It is unknown whether any of these parents were trained in CPR. In 1 case the ambulance officers were the first people to attempt CPR on the child.

Immediate resuscitation at the site of a submersion incident, before the arrival of paramedics, is an important means of secondary prevention and has been associated with a significantly better neurological outcome in children with submersion injuries (Brenner et al. 2003:443). It has been

previously documented that, in most cases of child drownings, there was no person with CPR or first aid skills present when the child was initially found (Burford et al. 2005:614; Department of Local Government and Planning n.d.). This also seems to be the case with the Commission’s findings for the current reporting period; only 3 people known to have been qualified attempted CPR after the child was found (this included one ambulance officer).

As health outcomes after immersions depend on the early initiation of resuscitation, CPR training is recommended for all pool owners (Burford et al. 2005:614). Unfortunately, only 8.5% of Queenslanders over the age of 40 years have current CPR training (Department of Local Government and Planning n.d.). Parents and caregivers should give due consideration to gaining current resuscitation qualifications (see the ‘Prevention and intervention’ section in relation to services available for training in first aid and CPR).

Signage

Legislation stipulates that owners of residential swimming pools who lodged an application for approval to build a pool on or after 1 October 2003 must display a sign that details the procedures for CPR near the pool.

In the 8 cases under consideration, only the public swimming pool was known to have a resuscitation sign displayed in the general vicinity. In 4 cases it was noted that there were no signs displayed, and it is unknown whether signs were displayed in the other 3 cases.

It is important that resuscitation signs displayed near the pool are easily seen and read, are made of durable materials and include clear statements of how to act in an emergency, including, for example, telephoning for an ambulance, staying with the injured person, calling for help and providing first aid.

The following case study illustrates a number of factors which are common in many drownings among Queensland children.

Case study

David,¹⁴⁷ 2 years of age, was playing in the back yard a short distance away from his parents, who were tending to duties in a shed. The child had not been heard from for about 5–10 minutes before the parents realised he was missing and began to search for him. David was found dead in the family swimming pool a short time later. Police reported that the fencing surrounding the pool was defective and non-compliant with the current fencing requirements. A number of gaps in the fence made it accessible to a small child and the pool gate had also been left open.

Demographics of non-pool drownings

Table 7.6 illustrates the type, age and gender breakdowns for all non-pool drownings over the 12 months examined.

Table 7.6: Non-pool drownings by type, gender and age

Age at death	Females <i>n</i>	Males <i>n</i>	Total <i>n</i>
Bathtubs			
Under 1 year ¹⁴⁸	1	1	2
1–4 years	1	1	2
Subtotal	2	2	4
Static inland waterways (dam/lake)			
1–4 years	0	3	3
Subtotal	0	3	3
Water/septic tanks			
1–4 years	0	2	2
Subtotal	0	2	2
Container			
Under 1 year	0	1	1
Subtotal	0	1	1
Total	2	8	10

Data source: Queensland Child Death Register (2005–06)

Note: 1. Age categories were excluded where no children of that age group died in the reporting period.

Gender

During the reporting period, more males than females drowned in non-pool locations (8 males, 2 females). This is consistent with the findings of the Child Death Annual Report, 2004–05, which also found that males drowned at more than twice the frequency of females.

Age

The findings for the age of children who died in non-pool drownings were similar to those discussed above for pool drownings, with 70.0% of children being between 1 and 4 years of age (7 cases). In the 3 other cases, the children were aged under 1 year; these drownings occurred in bathtubs (2 deaths) and a bucket of water (1 death).

The age of drowning for children in the current reporting period differed from that reported last year, with all deaths occurring in children under 5 years of age this year. In contrast, last year children in all age categories (other than children under 1 year) drowned in non-pool incidents.

In addition, between 1998 and 2000 the QISU undertook a study of all non-pool drownings and found that 73% of deaths were of children aged less than 5 years. This finding is in line with those of the current reporting period, indicating that children at the most significant risk are again those aged 0–4 years.

Aboriginal and Torres Strait Islander status

Two of the 10 children who drowned in locations other than pools were of Aboriginal origin. Both of these drownings occurred while bathing. No Torres Strait Islander children drowned in non-pool incidents during this reporting period.

Geographical distribution (ARIA+)

The majority of non-pool drownings occurred in metropolitan areas (5 deaths). Three drownings occurred in regional areas and 2 in remote and very remote regions. This finding differs from the findings of the Child Death Annual Report, 2004–05, which

147 David is a pseudonym.

148 One additional bathtub drowning occurred in this reporting period that has not been accounted for in this chapter as the death has not been registered with the Registry of Births, Deaths and Marriages. Refer to Chapter 2, 'Methodology', for further details.

found that the majority of non-pool drownings occurred in regional areas (5 deaths) and remote areas (4 deaths), compared with metropolitan regions (2 deaths).

Socio-economic status (SEIFA)

Children and young people who drowned in non-pool incidents were equally as likely to reside in low and very low and high and very high socio-economic regions (4 deaths each). Two children resided in moderate socio-economic regions.

Circumstances of non-pool drownings

Children drowned in a number of different locations over the 12-month reporting period. These included bathtubs, static inland waterways (dams/lakes), tanks (water/septic) and in a bucket. In addition, the circumstances surrounding the drowning of a child who had fallen out of a boat have also been detailed in this chapter. However, this death is not included in the non-pool drowning count. Details of these drownings are reported below.

Bathtubs

In the 12-month reporting period, 4 children drowned in a bathtub or an area being used as a bathtub (such as a sink or laundry tub), representing 22.2% of all drowning deaths. In contrast, no children drowned in bathtubs in the 2004–05 12-month reporting period.¹⁴⁹ These children were all aged under 2 years.

Consistent with the literature, males and females were equally likely to drown in a bathtub (Baylis et al. 2001:2; NSW Water Safety Taskforce 2002:21; Office of Fair Trading 2004). This differs from almost every other type of drowning, where, in most cases, males are significantly more likely to drown. Two children who drowned in bathtubs were Aboriginal. In addition, 2 of the children were known to the DChS.

Activity at time of incident

Three of the 4 children who drowned in bathtubs were placed in the bath by their parents/carers. The

other child entered the bathroom from elsewhere within the house and climbed or fell into the bath, which was being filled in preparation for the child to be bathed. This finding is consistent with the literature, which has found that most bathtub drownings occur when parents/caregivers leave the infant alone in the bath, even for a very short period of time (Baylis et al. 2001:2; NSW Water Safety Taskforce 2002:22; Snider-Riczker et al. 2005:166).

Supervision

The majority of bathtub drownings occur when there is a lapse in caregiver supervision or when this supervision is interrupted. In all cases of bathtub drownings identified in the reporting period, lack of adult supervision played a role in the drowning, with most of the children being left in the bath without adult supervision. Activities that carers engaged in when leaving a child unsupervised included getting clothes, disposing of dirty nappies, getting bottles, answering the phone and going to the toilet.

One of the drownings occurred when the child was left with a slightly older sibling. The literature states that leaving a child in the care of young siblings is common in bathtub drownings (Baylis et al. 2001:2; Byard et al. 2001:542; NSW Water Safety Taskforce 2002:22; Snider-Riczker et al. 2005:166). A study conducted by Snider-Riczker et al. (2005:169) examining proxy supervision by an older sibling or other young caregivers found that parents often reported that they felt more comfortable leaving their child in the bath if an older child was present. Shared bathing leads to a false sense of security (Somers, Chiasson & Smith 2006:115). It is not appropriate to leave a young child to look after an infant or toddler in the bath. The risk of leaving an infant in a bath containing water may be exacerbated if an older child is present (Byard et al. 2001:544). Supervision by a competent adult actually touching the child is required for safe bathing (Baylis et al. 2001:3).

Another common misconception by parents is to believe that by listening out for their child they will

¹⁴⁹ In the Child Death Annual Report, 2004–05, 1 child was reported to have drowned in a bathtub. However, on receipt of this child's coronial findings and autopsy, the cause of death was found to be due to natural causes, not drowning.

hear the child if they are in trouble (Royal Life Saving Society Australia 2006). Drowning is swift and silent and is often not accompanied by splashing or crying out. It is essential that parents and caregivers never leave a child or infant alone in the bath for any amount of time.

The following case study illustrates circumstances and factors common in many bathtub drownings.

Case study

A child 1 year of age was placed in a bath with her slightly older sibling. The child's parent started running the bath, but did not put the plug in. The parent left both children unattended in the bath for about 5 minutes to dispose of dirty nappies and get the children's bottles. The child was found floating face down in the bath, which was filled with about 10 centimetres of water. Clothing and toys were found plugging the hole, which allowed the bath to fill with water.

Static inland waterways (dams/lakes)

Three of the 10 non-pool drownings occurred in static inland waters, accounting for 16.7% of all drownings. All of the toddlers who drowned were male and aged 1–4 years. This finding is consistent with the literature, which has found males to be twice as likely as females to drown in dams, ponds and lakes (Baylis et al. 2001:2; NSW Water Safety Taskforce 2002:24). Children aged between 1 and 5 years were also cited as drowning in static inland waterways most frequently, consistent with the Commission's findings.

Location and distance

Two of these deaths occurred in a dam and 1 child drowned in a lake. One of the deaths occurred on a large regional property, while the other 2 children drowned in public waterways while picnicking with their families. The distance from where the child was last seen to the water in which 2 children drowned was estimated to be between 200 and 350 metres. In the remaining case the distance was identified as unknown in the Form 1, but is thought to have been less than 200 metres.

Supervision

In these 3 cases none of the children were in direct line of sight. In 2 cases the child was assumed to be playing with other children when the parents realised the child was missing. In 1 case the child was with the family dog. In all cases, the child had reportedly 'wandered off'.

Research has shown that the two most common contributing factors to drowning in static inland waterways are a lack of direct adult supervision and the behaviour of the children themselves (such as wandering off) (Baylis et al. 2001:2; Royal Life Saving Society Australia n.d.a). In the majority of cases the responsible parent is unaware the child has wandered off near a water hazard (Cunningham et al. 2002:5).

Fencing and barriers

In the 2 drownings that occurred in public areas, there were no fences and barriers around the lake/dam. The large regional property was surrounded by boundary fencing. The house and yard of the house also had inner fencing (refer to the 'Prevention and intervention' section for more information on safer fences for children on farms).

Water/septic tanks

Two children drowned in water/septic tanks in the 12-month reporting period, representing 11.1% of all drownings. Both children were male and aged 1–4 years. One of the children drowned after he fell into a public septic tank. The other child fell into an inground water tank.

Activity at time of incident

At the time of drowning, both children were at a gathering with numerous adults and children in attendance. One child was at a party and the other child was at a football field. Both children were reported to have wandered off. In addition, both children were reportedly playing with a ball at the time of the incident.

Supervision

In one case it is noted that the child was not being actively supervised. In the other, the mother had been distracted by another person.

Tank safety

Septic tank

Under section 101 of the *Plumbing and Drainage Act 2002*, septic tanks must comply with the Australian/New Zealand Standard (AS/NZS 1546). This standard specifies the typical measurements of access openings to septic tanks and states that these are not intended to allow people to enter the tank. According to this standard, “access covers shall be secure and shall be designed to prevent removal by children” (AS/NZS 1546.1:1998:12).

Responsibility for the safe operation of on-site sewerage facilities such as septic tanks has been placed on the property owner in some local council by-laws. Some local laws contain provisions stating that owners must ensure that the facility does not result in threats to health and safety or in personal injury. After a scan of local laws in Queensland, it appears that the majority of these laws do not contain express statements of responsibility.

Water tank

The Australian Standard HB230-2006 for rainwater tank design and installation includes a section on rainwater tank openings stating that these should have a sealed access cover to stop small animals and rubbish entering the tank but to allow access to the tank for cleaning and inspection purposes. This document does not directly deal with safety aspects of the tank and access to the opening by children.

Container

One child drowned in a bucket during the 12-month reporting period. The child was male and under 1 year of age. He was found head-first in a bucket of dirty water used to wash the floor days earlier.

Supervision

The child was not actively supervised at the time of the incident.

Research indicates that drowning in containers involves easy access to the containers and lapses in supervision (Baylis et al. 2001:2). This is consistent with the death in the current period.

Water transport-related drownings¹⁵⁰

In the 12-month reporting period, 1 child drowned as a result of a water transport-related incident.¹⁵¹ The child was female and aged 5–9 years. She was travelling in an aluminium ‘tinny’ at the time of incident and it is thought that she stood up while the boat was moving, lost her balance and fell overboard. This incident also involved the death of the child’s parent, who attempted to rescue the child but also drowned. Weather was not believed to be a factor in this child’s death.

In Queensland, boat ownership grew at the rate of 5% last year, more than double the rate of the state’s population growth (Maritime Safety Queensland 2006:3). It is estimated that more than 1 in every 22 people now own a boat in Queensland. Increasingly children are involved in water activities with all types of craft and their continued protection and safety are of prime importance. It is essential that responsible boating be undertaken, particularly when children are on board the vessel.

Lifejacket use

It was reported that the child was not wearing a lifejacket while travelling in the boat. At the time of the incident, it was recommended that children should wear lifejackets in boats, but this was not

150 This death has not been included in the actual drowning count as it has been classified as a transport death. However, given that the circumstances surrounding water transport deaths relate to water safety, this drowning has been detailed in this chapter as well as in Chapter 6, ‘Transport’.

151 The deaths of 2 Torres Strait Islander children who drowned in a boating incidents have not been accounted for here as the deaths have not been registered. Refer to Chapter 2, ‘Methodology’.

compulsory. Since then, regulation changes have made it compulsory for all Queensland children under 12 years of age to wear lifejackets in dinghies and other small boats (Odgers 2006). Penalties for the boat owner/driver apply where a child is not wearing a lifejacket and include a Marine Infringement Notice and a minimum fine of \$150 (Lucas 2006).

Maritime Safety Queensland (2006:5) suggests that parents must ensure that lifejackets fit children properly, particularly as small children may be able to slip easily out of a larger lifejacket. When selecting a lifejacket for a child, it is recommended that their weight be considered, and that they try it on for comfort and fit, and to check that the straps are easy to do up and remain securely fastened if pressure is applied (Maritime Safety Queensland 2006:5).

Season and time of year

In the reporting period, the majority of non-pool drownings occurred in the summer months (5 deaths), followed by autumn (3 deaths). Four drownings occurred on a weekend. It is also of note that 4 drownings occurred on a Queensland public or school holiday, representing 40.0% of non-pool drownings. Specifically, 2 children drowned over Easter and 2 children drowned over the summer school vacation break.

Resuscitation

Resuscitation was attempted for 9 of the 10 children who drowned in non-pool locations shortly after the child was found. Six of the people who attempted resuscitation were noted to have been trained in CPR (66.7%). Two of the 3 parents who attempted CPR were known to have been qualified.

Near-drownings

During the 2004–05 financial year, 34 non-fatal immersions for children aged 0–17 years were recorded by the Queensland Injury Surveillance Unit (QISU). As these data do not represent all emergency departments, the actual figure for Queensland is likely to be higher.¹⁵² The details are as follows.

Demographics

The majority of presentations were of males, representing 70.6%. These data also indicated that over two-thirds of immersion injuries occurred among children aged 1–4 years (23 injuries, 67.6%), followed by children under 1 year (5 injuries, 14.7%).

Place of injury

Most immersions occurred in a swimming pool (19 cases, 55.9%), compared with non-pool locations (15 cases, 44.1%). Four immersions were noted to have occurred in the bathroom, followed by 3 at a water park or other exterior location. Immersion injuries most frequently occurred at a residential property, representing 61.7% (21 injuries).

Time of injury

Immersion injuries occurred most frequently on Saturdays (11 injuries, 32.4%) and Sundays (7 injuries, 20.6%). Injuries were also most likely to occur in summer months, representing 38.2% of injuries (13 cases), followed by spring (11 injuries, 32.3%). The reported time of day when most injuries occurred was between 3 and 4pm in the afternoon (10 injuries, 29.4%).

Triage and mode of separation

In 18 cases children were admitted to hospital (52.9%), while in 16 cases children were discharged home (47.1%). The majority of children and young people attending hospital were assigned a triage status of 'urgent' (18 injuries, 52.9%); 20% were allocated an 'emergency' status (7 injuries) and 17.7% required resuscitation (6 injuries).

152 The QISU currently collects data from 14 hospitals in Queensland, which take in three sample regions: metropolitan (South Brisbane), regional (Mackay and Moranbah Health Districts) and remote (Mt Isa).

Prevention and intervention

Pool fencing legislation

Since 1992 it has been mandatory for all pools in Queensland to comply with the Australian Standard for pool fencing. All new pools are now required to have 4-sided fencing separating the pool from the house, while 3-sided fencing with direct access from the house is permitted for pools built before 1992 (Cunningham et al. 2002:4). The legislation applies to outdoor swimming pools on residential land and generally requires that fencing enclose pools to inhibit unsupervised access of young children in swimming pool areas (Department of Local Government and Planning 2005c:3).

The State Government has strengthened pool fencing laws¹⁵³ to help prevent tragedies in residential swimming pools. Under the new laws, the following requirements must be met:

- pool owners must ensure that a compliant fence is in place and maintained
- pool owners must display a warning sign that a new pool is under construction
- owners of pools who have lodged applications for approval to build a pool on or after 1 October 2003 must display a sign that details the procedures for CPR near residential swimming pools
- councils can only grant exemptions in circumstances where an occupant of the building has a disability that would not allow them to gain access to the pool area if a complying pool fence was constructed, and
- new pools that are constructed on a building, such as on a deck or roof, need to be fenced.

Non-compliance with these laws carries significant penalties of up to \$12,375 and on-the-spot fines of up to \$525 can be imposed on pool owners by local government authorities if their fence is non-compliant (Department of Local Government and Planning 2005e).

On 10 August 2006 the *Building and Other Legislation Act 2006* amended the following acts:

Building Act 1975 to include the following revisions:

- that swimming pool builders as well as swimming pool owners are responsible for ensuring that swimming pools are not filled with water above 300mm without installing a compliant pool fence, and
- that a swimming pool on a deck or roof of a building which is only accessible from within the building is an indoor swimming pool. A swimming pool that can be accessed directly from outside the building remains an outdoor swimming pool.

Local Government Act 1993:

- section 1070 provides a power of entry to land for an employee or agent of local government, if no occupier is present, to inspect a swimming pool fence in circumstances where the local government has received information that a swimming pool fence may be dangerous to children because it does not comply with the *Building Act 1975*.

Department of Local Government and Planning

The Department of Local Government and Planning developed a program for legislative reform and promotional activities for the summer pool safety campaign in mid-2005. One million pool safety fliers were sent out with rates notices throughout Queensland. In addition, a discussion paper and community questionnaire for public consultation and feedback were released in November 2005. The discussion paper set out a number of key issues and opened debate on a range of proposals to make pool fencing laws in Queensland more effective, such as:

- mandating council pool inspection programs
- allowing councils to charge pool owners a small levy to fund a pool inspection program

153 Legislative requirements relevant to swimming pools constructed on or after 1 October 2003 include:

- *Building Amendment Act 2003* amending Part 3 of the *Building Act 1975*
- State Penalties Enforcement Regulation 2000
- Standard Building Regulation 1993 (amendments on 30 April 1998 and 1 July 2002)
- Standard Building Amendment Regulation (No. 1) 2003 commenced on 1 October 2003
- AS 2818-1993: Guide to swimming pool safety, and
- AS 1926-1995: Swimming pool safety – Location of fencing for private swimming pools.

- requiring pool owners to have a pool fence safety certificate before they could sell their house, and
- allowing pool builders (as well as pool owners) to be fined if pools were filled before they were fenced.

In total, there were 599 responses to the discussion paper. These responses and consultation with local governments, the pool industry and the community influenced a number of the above legislation amendments made in August 2006 (Warren Bolton 2006, pers. comm., 21 August).

Brisbane City Council, SPLASH

The Saving Precious Lives, Assuring Safer Homes (SPLASH) program has been operating since February 2003 and is Brisbane City Council's answer to encouraging residents to comply with the pool fencing laws. Ten full-time staff located throughout the Brisbane area work to conduct inspections and to raise awareness of the pool fencing standards, targeting the 60,000 pools in the Brisbane area. The program takes a proactive approach by inspecting pools that have not been issued with a final certificate of compliance for inspection, rather than merely responding to complaints. The SPLASH team also inspects pools that did not qualify for certification when the initial pool fencing legislation was introduced in 1991. In total, the SPLASH team visits over 400 homes each month (Department of Local Government and Planning 2005e:7).

Royal Life Saving Society Australia, Infant Aquatic program

The RLSSA Infant Aquatic program is targeted at children aged 0–4 years. The program is designed to encourage individual progression in developing aquatic skills suited to a child's developmental stage and water familiarisation (Australian Water Safety Council 2005:20). The Infant Aquatic program is conducted through RLSSA Endorsed Swim Schools and other RLSSA branches.

Queensland Ambulance Service, first aid and CPR training

The Queensland Ambulance Service (QAS) is a leading registered training organisation, teaching patient care skills from basic introductory first aid right through to tertiary-level intensive care paramedics. The QAS has been providing first aid training to Queenslanders for over 100 years. A number of first aid and CPR training courses are offered by the QAS.

The QAS also reinforces the importance of learning by promoting a number of slogans including:

- *In an emergency, seconds count.* Performing first aid at the scene of an emergency can increase the chance of a patient's recovery and in some instances save a life
- *Young or old, you can learn first aid.* The QAS schedules classes at various locations throughout Queensland. Everyone is encouraged to have a basic knowledge of first aid to be able to help loved ones and friends if the need arose, and
- *It's a small price to pay.* First aid can save a life. QAS first aid courses are competitively priced and many do not require a lot of time.¹⁵⁴

Royal Life Saving Society Australia, Keep Watch

Keep Watch is a public awareness program aimed at parents of children aged 0–5 years to encourage them to supervise their children around water, ensure that they have appropriate fencing around home swimming pools, learn resuscitation and have the child take water familiarisation classes. Keep Watch delivers this information in a range of formats, including information sessions for community health workers, community service announcements and talks for mothers' groups.

154 More information in relation to the courses provided by QAS can be accessed at: <http://www.ambulance.qld.gov.au/communityservices/courses.asp>

Specifically in relation to bath time, Keep Watch promotes a number of safety tips for parents, including:

- have all equipment ready for the bath (including towels and clothing) before running a bath
- if you have a cordless phone, take the phone into the bathroom. If you do not have a cordless phone, let the phone ring and ignore the doorbell when children are in the bath
- do not leave the bathroom for any reason at all
- never leave an older child with the responsibility of looking after a younger child
- after bath time, ensure that the bath tub is drained immediately and keep the bathroom door closed when the bathroom is not in use
- bath seats or bath aids are not substitutes for constant adult supervision
- knowing resuscitation is crucial – enrol in a resuscitation class, and
- introduce your child to the water through familiarisation classes.

Australian Water Safety Council, National Water Safety Plan

In 1998, the Australian Water Safety Council (AWSC) was established for government, water safety organisations and sport and recreation service providers to discuss key water safety issues. The AWSC developed a National Water Safety Plan to reduce drowning deaths and aquatic injuries in Australia. The strategies included analysing data to determine who was drowning and where, and identifying legislative decisions, programs and resources that could help reduce the drowning rate. While the AWSC have stated that their ultimate goal is to have a zero drowning rate, the key objective for the 2004–07 National Water Safety Plan is a 20% decrease from 300 drowning deaths in 2003 to 200 in 2007.

Farmsafe, safe play areas

Child drowning is recognised as one of the key risks to children living on farms. In general, Queensland farms are not only a place of work but also incorporate the family home (Stiller & Baker 2005:1). The potential for injury is heightened as a result of this blurring of home and work domains. In response to this, Farmsafe are advocating the creation of safe play areas on farms. Based on the guidelines used in the pool fence legislation restricting access to outdoor private swimming pools, Farmsafe recommend that a child-resistant fence be used to create a safe place to play. Although it is noted that most farms and rural properties already have a fence around their house yard which could form the basis for an effective safe play area, in many cases the purpose of the fence is to keep stock and native animals from getting into the home and garden (Stiller & Baker 2005:iii). However, with the increasing recognition of the risks to children on farms and rural properties, it is important that fences are also built to keep young children in.

The Commission supports and commends the Queensland and national water safety initiatives and will continue to monitor programs and campaigns aimed at reducing the morbidity and mortality of children and young people as a result of drowning.