

## Chapter 4 — Drowning

This chapter provides details of child deaths from drowning.

### *Key findings*

- Eleven children and young people drowned in Queensland in 2017–18 (rate of 1.0 per 100 000 children aged 0–17 years) compared to 19 in 2016–17 and 9 in 2015–16.
- Six children drowned in swimming pools in 2017–18, two in bathtubs, two in rural dams, and one in a creek.
- Children aged 1–4 years made up the largest group of drowning deaths (7 deaths), a pattern which has been found in all previous reporting periods, and an indication of the particular vulnerability of this age group.
- Drowning was the leading cause of death for 1–4 year olds. Six 1–4 year olds drowned in private swimming pools in 2017–18 and for all of these pool fencing was non-compliant or the gate left open.
- Five of the 11 children who drowned were known to the child protection system in the year prior to their death. The drowning mortality rate for children known to the child protection system was six times the Queensland average.
- In the five years up to the 1991 introduction of pool fencing laws, between seven and 15 children aged under 5 drowned in private pools each year, whereas in the last eight years private pool drowning deaths have been between two and six each year.
- Given that drowning is the leading preventable cause of death in the early childhood years, it is important that greater efforts are directed at preventing these deaths. Drowning prevention should take a life stages approach, allowing for targeted strategies that recognise risk priorities for each age group.
- For young children this includes active adult supervision, not leaving young children in the care of other children; restricting access to water; establishing rules around water; having a correctly installed pool fence that is compliant with legislation, well maintained, and never leaving a pool gate propped open or unlatched; providing water familiarisation/awareness classes for young children; and parents and carers knowing CPR.

## Drowning 2015–18

An expanded version of Table 4.1 containing data since 2004 is available online at [www.qfcc.qld.gov.au](http://www.qfcc.qld.gov.au).

Table 4.1: Summary of drowning deaths of children and young people in Queensland 2015–18

	2015–16		2016–17		2017–18		Yearly average
	Total <i>n</i>	Rate per 100 000	Total <i>n</i>	Rate per 100 000	Total <i>n</i>	Rate per 100 000	Rate per 100 000
Drowning	9	0.8	19	1.7	11	1.0	1.1
<b>Pool drowning</b>							
Pool drowning deaths	4	0.4	7	0.6	6	0.5	0.5
<i>Private pools</i>	3	*	7	0.6	6	0.5	0.5
<i>Public pools</i>	1	*	0	0.0	0	0.0	*
<b>Non-pool drowning</b>							
Non-pool drowning deaths	5	0.4	12	1.1	5	0.4	0.6
<i>Bathtubs</i>	1	*	5	0.4	2	*	0.2
<i>Beach or ocean</i>	0	0.0	1	*	0	0.0	*
<i>Dynamic waterway</i>	2	*	1	*	1	*	0.1
<i>Object containing water</i>	0	0.0	2	*	0	0.0	*
<i>Rural water hazard</i>	0	0.0	1	*	2	*	*
<i>Static inland waterway</i>	2	*	2	*	0	0.0	0.1
<b>Sex</b>							
Female	4	0.7	11	2.0	3	*	1.1
Male	5	0.9	8	1.4	8	1.4	1.2
<b>Age category</b>							
Under 1 year	0	0.0	3	*	1	*	2.1
1–4 years	5	2.0	11	4.3	7	2.7	3.0
5–9 years	0	0.0	4	1.2	2	*	0.6
10–14 years	2	*	0	0.0	0	0.0	*
15–17 years	2	*	1	*	1	*	0.7
<b>Aboriginal and Torres Strait Islander status</b>							
Indigenous	2	*	3	*	2	*	2.6
Non-Indigenous	7	0.7	16	1.5	9	0.9	1.0
<b>Geographical area of usual residence (ARIA+)</b>							
Remote	0	0.0	2	*	1	*	*
Regional	5	1.2	9	2.2	5	1.2	1.6
Metropolitan	4	0.6	7	1.1	5	0.7	0.8
<b>Socio-economic status of usual residence (SEIFA)</b>							
Low to very low	4	0.9	11	2.4	6	1.3	1.5
Moderate	3	*	5	2.1	2	*	1.4
High to very high	2	*	2	*	3	*	0.5
<b>Known to the child protection system</b>							
Known to the child protection system	2	*	10	12.4	5	5.9	6.8

Data source: Queensland Child Death Register (2015–18)

\* Rates have not been calculated for numbers less than four.

1. Data presented here is current in the Queensland Child Death Register as at August 2018 and thus may differ from those presented in previously published reports.
2. Rates are based on the most up-to-date denominator data available and are calculated per 100 000 children (in the sex/age/Indigenous status/ARIA+ region/SEIFA region categories) in Queensland each year. Rates for the 2015–16 period use the ERP data as at June 2015 and rates for the 2016–17 and 2017–18 periods use the ERP data as at June 2016.
3. The number of children known to the child protection system represents the number of children whose deaths were registered in the reporting period, who were known to the DCSYW within the one-year period prior to their death. The denominator for calculating rates is the number of children aged 0–17 who were known to the DCSYW, through either being subject to a child concern report, notification, investigation and assessment, ongoing intervention, orders or placement, in the one-year period prior to the reporting period.
4. ARIA+ and SEIFA exclude the deaths of children whose usual place of residence was outside Queensland.
5. Yearly average rates have been calculated using the ERP data as at June 2016.

## ***Drowning: Findings 2017–18***

During 2017–18, the drowning deaths of 11 children and young people were registered in Queensland, at a rate of 1.0 deaths per 100 000 children aged 0–17 years. The number of drowning deaths since reporting commenced in 2004 ranges from 7 to 19 per year, with an average of 14.5 per year.<sup>33</sup>

### **Types of drowning-related deaths**

During 2017–18, six pool drownings were recorded for the period, all in private pools. Two of the six pool drownings occurred away from the child's usual place of residence. No child drowned in a pool that had a compliant fence with the gate latched.

Five drowning deaths occurred in non-pool water hazards (two children drowned in a bath tub, two in rural dams, and one in a creek).

### **Sex**

During 2017–18, there were eight drowning deaths of male children, compared to three female children.

### **Age**

During 2017–18, children aged 1–4 years made up the largest group of drowning deaths (7 deaths)—a pattern which has been found in all previous reporting periods, and an indication of the particular vulnerability of this age group. Drowning was the leading cause of death for 1–4 year olds over the last 3 years (See Table 1.1).

### **Aboriginal and Torres Strait Islander status**

Over the last 3 years, the average annual rate of mortality from drowning for Indigenous children was more than twice the rate for non-Indigenous children (2.6 deaths per 100 000 Indigenous children aged 0–17 years, compared to 1.0 death per 100 000 non-Indigenous children).

### **Geographical area of usual residence (ARIA+)**

Over the last 3 years, the average annual rate of mortality from drowning for children residing in metropolitan areas was lower than for children residing in both regional and remote areas. The mortality rate for children residing in remote areas was 2.0 deaths per 100 000 children, 1.6 deaths per 100 000 children residing in regional areas and 0.8 per 100 000 children residing in metropolitan areas.

### **Socio-economic status of usual residence (SEIFA)**

Over the last 3 years, the average annual rate of mortality from drowning for children from areas of low to very low SES and moderate SES was higher than for children from high to very high SES areas (3.0 times and 2.8 times respectively). Over the last 3 years there were 1.5 deaths per 100 000 children aged 0–17 years for children from areas of low to very low SES, 1.4 deaths per 100 000 children aged 0–17 years for children from moderate SES areas, compared to 0.5 deaths per 100 000 children from areas of high to very high SES.

### **Children known to the child protection system**

Over the last 3 years, the average annual rate of mortality from drowning for children known to the Queensland child protection system within the year before their death was 6.8 deaths per 100 000 children, which was six times the Queensland average.

## ***Risk factors***

### **Private swimming pools**

Backyard swimming pools, which have become increasingly common, pose a considerable risk of drowning to young children. Appropriate supervision and water safety education are important elements in reducing risk. Compliant, well maintained fencing has been highly effective in reducing the risk of drowning in private pools.

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<sup>33</sup> Tables with data for 2004–18 are available online at [www.qfcc.qld.gov.au](http://www.qfcc.qld.gov.au)

Graduated changes to pool fencing laws implemented by December 2015 increased the obligation on pool owners to enhance the safety of pool areas. In accordance with the changes:

- compliant fencing is required of all pools and spas—including portable pools and spas capable of being filled with 300 millimetres or more of water
- the latest CPR sign must be displayed and be easily visible to people in or near the pool
- all pools must be registered on the Pools Safety Register, and
- a local government inspection is mandatory following any immersion incidents involving a child under the age of 5.

The effectiveness of swimming pool fencing is dependent upon fencing and gates being compliant with the regulation, in good working order and used correctly (such as not propping open a pool gate).

Thirteen children aged under 5 drowned in backyard swimming pools (including wading pools which met the threshold for regulated fencing) in the last 3 years. In seven deaths the child was thought to not be in, or around water at the time of the incident. Of these seven deaths, four were thought to be either playing or sleeping inside the house. In two deaths the child had either been playing in, or near the pool, but was thought to no longer be around the pool and in one case the child was thought to be playing in the backyard but not in the pool.

The circumstances surrounding young children's deaths point to a range of particular factors which place young children at increased risk of drowning in swimming pools. Over the past 3 years common issues identified for the 13 private pool drowning deaths in children aged under 5 (more than one issue may be present in each case) included:

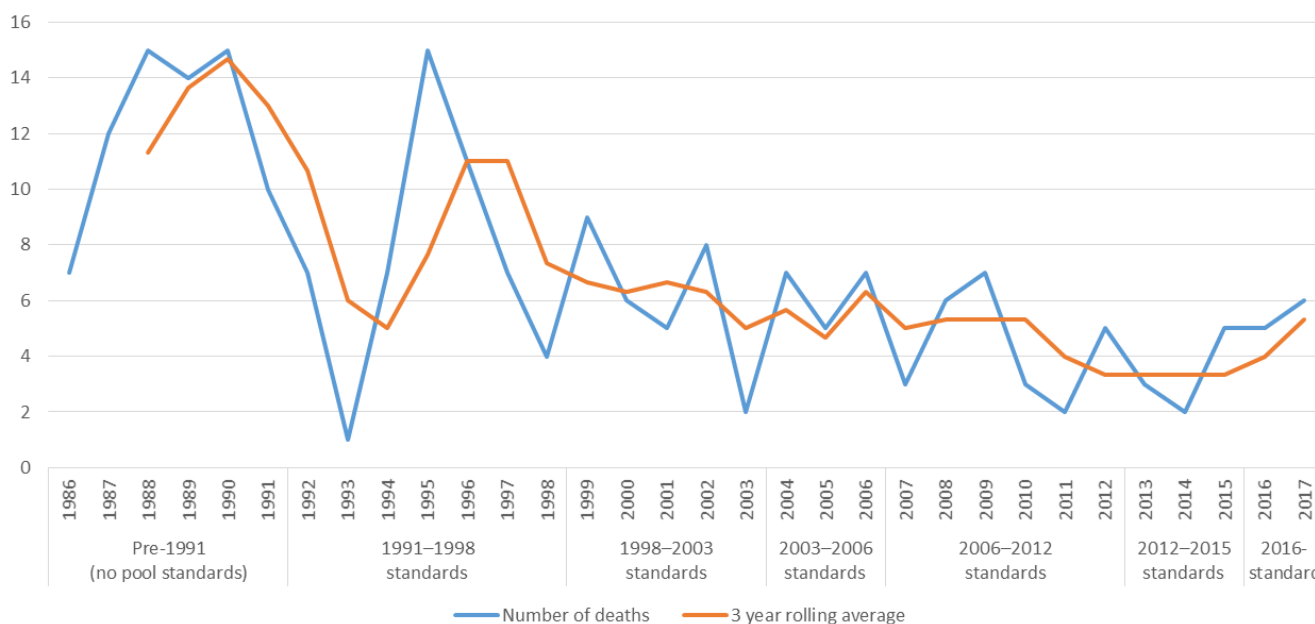
- non-compliant fencing (e.g. gate not self-closing, not regulation height, gaps or defects) (8 deaths)
- the child or family was visiting another residence (6 deaths)
- the pool gate was left or propped open (5 deaths), and
- the pool was not fenced (2 deaths).

In some cases fences and/or gates were not attended to as the pool was in disrepair or maintenance work was underway.

Figure 4.1 tracks the number of drowning deaths of children aged under 5 in Queensland private pools over time against changes to fencing requirements. A number of changes in pool fencing standards have occurred—from no standards in place prior to 1991, to requirements for new pools to have fencing, later extended to existing pools; changes in requirements such as fence height; and more recently compliance requirements for registration and inspections.

The number of private pool drowning deaths in children aged under 5 have fluctuated from year to year; however regulation is seen to have possibly impacted on the number of the number of drownings, especially in the last 2 decades.

**Figure 4.1: Drowning deaths of children 0–4 years in Queensland private pools by applicable pool standard 1986–2017**



Data sources: Queensland Injury Surveillance Unit 2008, *Injury Bulletin: Domestic pool immersion in Queensland children under five years of age*. No.104; Queensland Child Death Register (2004–18)

1. The above data represents the number of deaths which occurred in each calendar year. These figures will therefore not align with the summary of drowning deaths presented in Table 4.1 of this report, which are based on date of death registration by financial year.

## Supervision

Lapses in supervision of young children in or around water hazards has been found to be a factor in drowning deaths of young children. The key elements of effective supervision are the:

- capacity of the supervisor
- proximity of the supervisor to the child, and
- continuity of supervision.

In 2017–18, of the eight drowning deaths of children aged under five, two were of children known to be in, or on water, one to be around water and the remaining five were not known to be in, or around water.<sup>34</sup> A combination of factors, including ineffective barriers to water hazards, the capacity and proximity of the supervisor and continuity of supervision were identified as being relevant to drowning deaths of children aged under 5.

When a child is not known to be in, or around water, it is still important to provide a level of supervision to ensure the child is protected from all hazards. Young children are unable to appropriately identify and negotiate risks, yet can be highly mobile. Reliance only on pool fences and gates to prevent drowning is not recommended, as breakdowns in protections can occur, such as pool gates being propped open or becoming non-compliant due to wear and tear. Accordingly, it is essential children aged under 5 years are regularly checked on by an active supervisor.

It is important to acknowledge that not all drowning deaths are reasonably foreseeable or the result of a breakdown in supervision. A resourceful and inquisitive child may manage to bypass protections, unbeknown to a supervisor. These child deaths highlight the importance of having many and varied protections in place for the child, including adequate supervision.

<sup>34</sup> A child is known to be in or on water when the child is known to be actively swimming, paddling, wading, playing, or bathing in water, or on a watercraft. A child is not known to be in or around water when the carer does not know the child is exposed to a water hazard (i.e. carer thinks the water hazard is appropriately restricted and is not aware the child has gained access to it) or the presence of the water hazard was not known. Examples include where a child is thought to be sleeping or playing safely in a restricted area but has gained access to a water hazard by climbing the fence to the pool or filling up the bathtub.

## The role of safe play areas in reducing rural drownings

Rural water hazards, such as dams and troughs, may not be considered risks as they are not seen as attractive to adults and are often at a distance from the family home. However, children love water play and can travel significant distances to access water. Any body of water should therefore be considered a potential risk regardless of its location.

Two of the drownings in 2017–18 were associated with a rural water hazard. There have been 30 deaths of children aged 0–17 in rural water hazards since 2004.

Drowning prevention is most effective when strategies are multi-faceted. Active supervision is the most effective strategy; but to maintain this continuously is not realistic. Establishing a safe play area around the family home can act as a critical means of preventing access to water hazards. Children can also be taught from a young age about nearby dangers and ‘no go’ areas. Making sure young children are visible to supervisors and have barriers separating the child from the water hazard can also help reduce the risk of drowning.

## The risk of drowning for children with pre-existing medical conditions

Research papers have often suggested the possible increased risks that pre-existing medical conditions, particularly epilepsy, may pose for drowning. Yet it has been unclear whether pre-existing medical conditions are primarily causal, leading to the drowning death; or contributory factors which place children at increased risk of drowning; or instead, are simply associated with drowning fatalities.

Recent Australian research has investigated the prevalence and role of pre-existing medical conditions in all unintentional fatal drownings occurring in Australia amongst 0–14 year olds over a 10-year period from 2002 to 2012.<sup>35</sup> To examine the role of pre-existing medical conditions, a forensic review of all details surrounding each individual childhood drowning fatality in the National Coronial Information System was completed as well as an analysis of each child’s medical history.

Fifty-three (11.3%) of the 468 unintentional drowning fatalities in children 0–14 years involved a child with a pre-existing medical condition. Nineteen children were suffering from epilepsy, 13 from autism, five had intellectual disabilities, four had asthma, two had neuromuscular disease/paralysis and 10 had other medical syndromes. On average, children with a pre-existing medical condition were older (7.0 years) than children without these conditions (3.7 years). Similarly, children with a pre-existing diagnosis of epilepsy were older, with a median age of 8 years (range 2–14 years).

Overall, with the exception of epilepsy, the risks of drowning were not increased for children with pre-existing medical conditions. Epilepsy was the only pre-existing medical condition that led to an increased risk of fatal drowning. In 16 of the 19 (84.2%) epilepsy cases, the child’s epilepsy was deemed as a direct cause of their drowning, with a prevalence of 4.1%, compared with 0.7%–1.7% amongst the general 0–14 year-old population. Of the 16 children where epilepsy was a direct cause of drowning, five (31%) were in a bathtub (aged 3–14 years), five (31%) were in swimming pools, two (12.5%) at the beach, two (12.5%) in rivers, one (6.3%) in a lake and one in a dam (6.3%). None of these 16 children were being appropriately supervised at the time of their drowning.

While the importance of adequate supervision in preventing the drowning of children under 5 is particularly recognised, clearly children with epilepsy, regardless of their age, require appropriate supervision to mitigate their increased risk of drowning. Importantly, as these children are often older, increasing age should not be viewed as lessening their increased risk of drowning. In the current study only one of the 16 drowning fatalities directly caused by the child’s pre-existing epilepsy involved a child under 5, while 43.8% involved children aged 10–14 years.

<sup>35</sup> Franklin R, Pearn J, & Peden A. (2017). “Drowning fatalities in childhood: The role of pre-existing medical conditions.” *Archives of Disease in Childhood*, 102: 888–893.

## **Drowning prevention**

Given that drowning is the leading preventable cause of death in the early childhood years it is important that greater efforts are directed at preventing these deaths. Drowning prevention should take a life stages approach, allowing for targeted strategies that recognise risk priorities for each age group. Royal Life Saving promotes the following prevention messages:<sup>36</sup>

### **Infant**

- actively supervise, be prepared for bath-time, maintain physical contact, all of your attention all of the time, do not leave infant in the care of older children
- ensure pool fence is correctly installed and compliant with legislation, regularly maintained and gate is never left open
- empty buckets and containers that hold water
- restrict children's access to water
- learn CPR.

### **Early childhood**

- actively supervise, restrict access to water
- ensure pool fence is correctly installed and compliant with legislation, regularly maintained and gate is never left open
- establish rules around water, water familiarisation/ awareness classes
- learn CPR.

### **Primary school age**

- actively supervise, continue learn to swim
- model safe behaviours around water
- learn CPR.

### **Secondary school age**

- establish rules around water
- strengthen survival and rescue skills
- discourage risk taking, model and reinforce safe behaviours around water
- parents and teenagers learn CPR
- discuss dangers of alcohol and drug use with water activities.

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<sup>36</sup> Royal Life Saving Society of Australia. <https://www.royallifesaving.com.au/families/at-home/toddler-drowning-prevention/keep-watch-lifestages>