



# INJURY BULLETIN

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## Toddler Drowning in Queensland

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### Summary

- Drowning is the leading cause of death due to injury in children less than five years old
- More than 50% of drowning deaths in this age group occur in domestic swimming pools
- In Queensland 54 children (0-4 years) drowned in domestic swimming pools during the period 1993-1999
- Swimming pool fence legislation has contributed to a significant decrease in toddler pool drownings
- The toddler pool drowning rate is still unacceptably high and further reduction is achievable
- The current coronial system has failed to address the problem of toddler pool drowning and missed the opportunity to save many lives

### Introduction

Amongst children under the age of five drowning is the leading cause of death due to injury in Queensland. During the years 1994-98 drowning comprised almost 40% of all injury deaths at this age with over half of these deaths occurring in domestic swimming pools.

It has been estimated for every child drowning death there are 10 children presenting at hospital emergency departments<sup>1</sup>. It has also been estimated that for every ED presentation there are 10 "near misses" that is children suffering immersion who are rapidly rescued<sup>2</sup>. Given that there are approximately 16 drowning deaths per year in Queensland involving children under five there is estimated to be around 1,500 near drowning incidents or at least four per day.

Studies both in Australia and overseas have shown that isolation fencing of domestic pools is highly effective in reducing child drownings, with the most important element being a secure self-closing and self-latching gate<sup>1</sup>.



In Queensland, since 1992, it is mandatory for all pools to comply with the Australian Standard for Pool fencing (AS 1926) with new pools requiring four-sided fencing between the house and the pool and existing pools having less stringent requirements. In the eight year period 1983-90 leading up to introduction of these requirements an average of 12 children under five drowned annually in domestic pools in Queensland whereas seven per year have drowned in the period since (Figure 1).

However, these figures need to be viewed in the context of an ever increasing exposure of children to domestic pools. The 1996 Labour Force Survey conducted by the Australian Bureau of Statistics suggests that the number of pools in Queensland has at least doubled over the last 10 years. In early 1991 when fencing regulations were first introduced, the number of domestic swimming pools in Queensland was about 140,000 with this figure increasing by around 10% per year although the population of children aged under five in Queensland has increased by less than 2% per year<sup>3,4</sup>

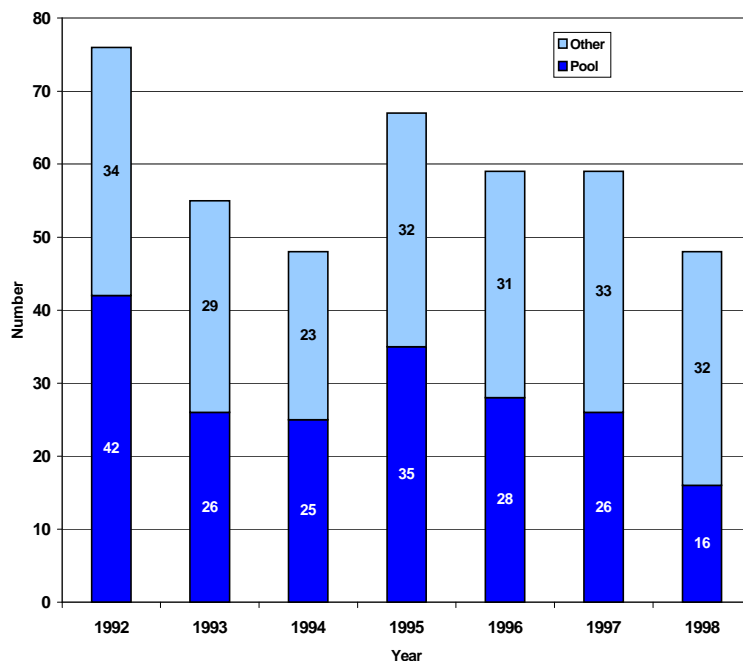


Figure 2 Australian drowning deaths age 0-4 years, 1992-1998

This bulletin examines the circumstances surrounding all domestic pool drownings of children aged under five years in Queensland for the period 1993-99 the period since the introduction of uniform pool fencing requirements.

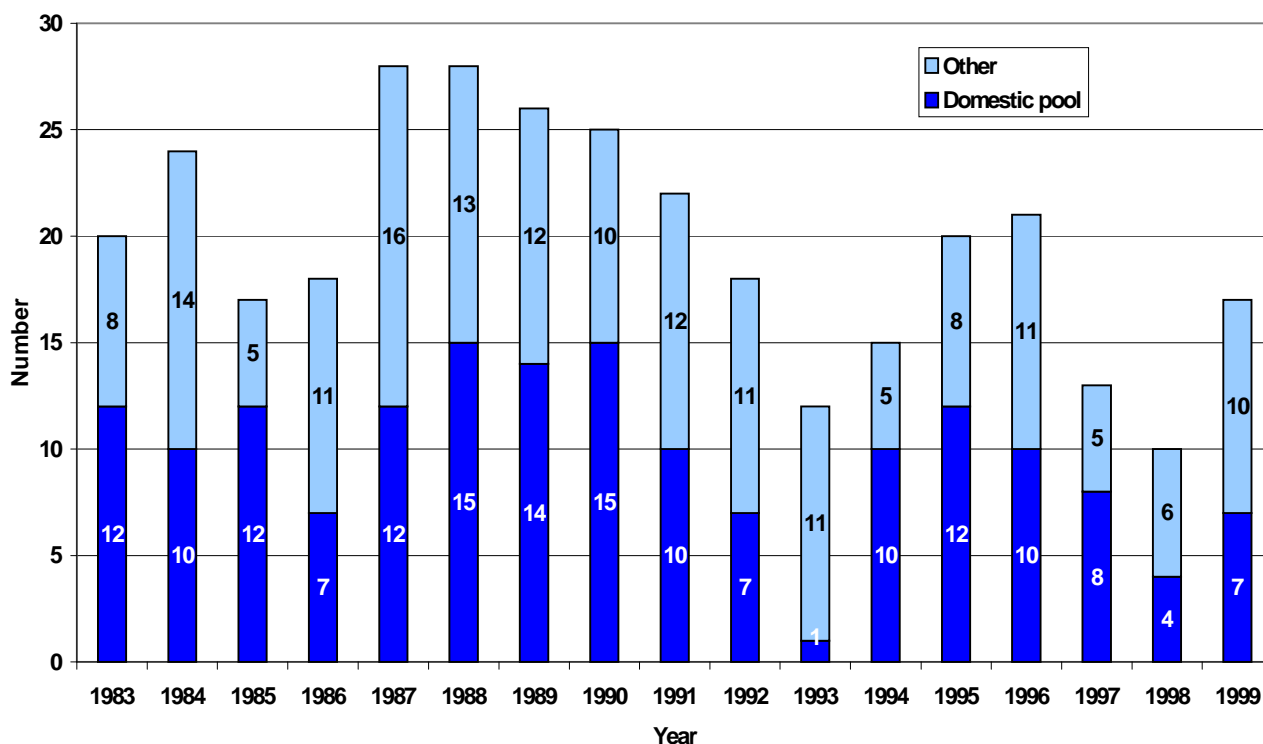


Figure 1 Queensland drowning deaths age 0-4 years, 1983-1999. Note: Pool fencing legislation was introduced in 1991 and fully implemented in 1992

## Results

During the period 1993-99 fifty-four children aged less than five years drowned in domestic swimming pools in Queensland. Seventy per cent of these deaths involved males and 62% were aged between one and two years (Figure 4). Three quarters of the deaths involved in-ground pools with ten above ground pools and three drownings occurring in a spa. Almost two thirds of drownings occurred in pools at the child's usual residence. Most of the remainder occurred while visiting the pool owner's property. Only two wandered from their own home and drowned.

Seven (16%) of the in-ground pools involved were found to comply with pool fencing but only one child climbed a pool fence. The other six pools had problems - three had gates open at the time of the drowning and three children were in a backyard with no fence between the house and the pool (pools installed prior to 1991). Of the 37 non-compliant in-ground pools 12 (32%) were unfenced, 14 (38%) had a non-compliant gate, nine (24%) had 3-sided fencing and access was gained from the residence and two (5%) had non-compliant fencing (Figure 3). Of the 10 above ground pools three had sides less than 1.2 metres high and were unfenced, in six cases access was gained via a non-compliant gate and one child was thought to have climbed the side of the pool.

For the majority of drownings the responsible adult had no idea the child was near the pool. In this circumstance non-compliant gates were the most common means where by a toddler accessed a pool and most were left or propped open while four had a defective latch. In two of the four deaths where an adult was aware that the child was near or in the pool, the bottom of the pool was described as not being visible due to discolouration.

A more detailed examination was made of the Police and Coroner's investigation for 18 of the 25 deaths since 1997 where QISU was able to obtain access to the documentation. The roles of the parties involved in these investigations into pool drownings are outlined below.

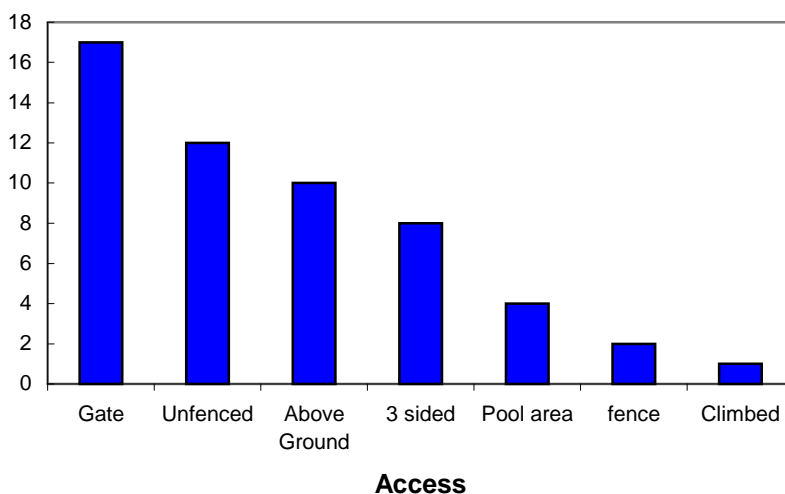


Figure 3 Queensland drowning deaths age 0-4 years, 1993-1999, by access.

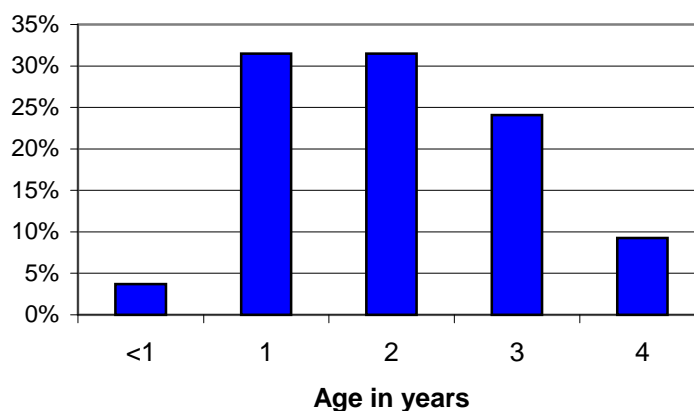


Figure 4 Queensland drowning deaths age 0-4 years, 1993-1999 by age.

## The role of the Police

It is the responsibility of the Police to fully investigate every unexpected death. In the case of domestic pool drownings the Queensland Commissioner for Police has issued a circular outlining the requirements for their investigation which includes amongst other things whether the pool conformed with the fencing requirements. For this requirement the investigating Officer is directed to seek the assistance of the appropriate officer of the local Council.

## The role of the Council/ Builder/ Owner

The pool fencing legislation in Queensland is administered by local Councils. It is the responsibility of the Council to ensure that all building applications for new pools comply with the pool fencing by-laws. During construction by a pool builder it is the builder's responsibility to obtain final Council inspection of the pool and the fence. Once the pool is handed over it is the property owner's responsibility to ensure that their pool complies with the fencing requirements and to maintain compliance thereafter.

## The role of the Coroner

The Police are required by the Coroners Act to refer all drowning deaths in Queensland to the coroner. The function of the coroner is to hold inquiries and inquests into reportable deaths to determine the cause and circumstances of a particular death. The coroner's inquiry usually involves a police investigation and a post-mortem examination. This information is used by the coroner to determine whether to hold an inquest.

Under current Queensland legislation the findings of an inquest, if there is one, are limited to the identity of the deceased and when, where and how the death occurred and the persons to be charged in relation to the death. The coroner can express an opinion on a matter outside this by way of a rider which is designed to prevent the recurrence of similar deaths. This rider does not form part of the coroner's formal findings. If there is no inquest the coroner can make no findings or recommendations. An inquest can be requested by the police or the immediate family of the deceased or directed by the Minister for Justice.

In Queensland the coroner's jurisdiction is exercised by magistrates or clerks of the court with each coroner acting independently. There are currently approximately 80 coroners in this State. This means that there is no coordinated or consistent approach to investigations and inquests and that individual coronial findings are sometimes ignored. It is difficult to have accurate statistical information about deaths in Queensland without a State coronial database.

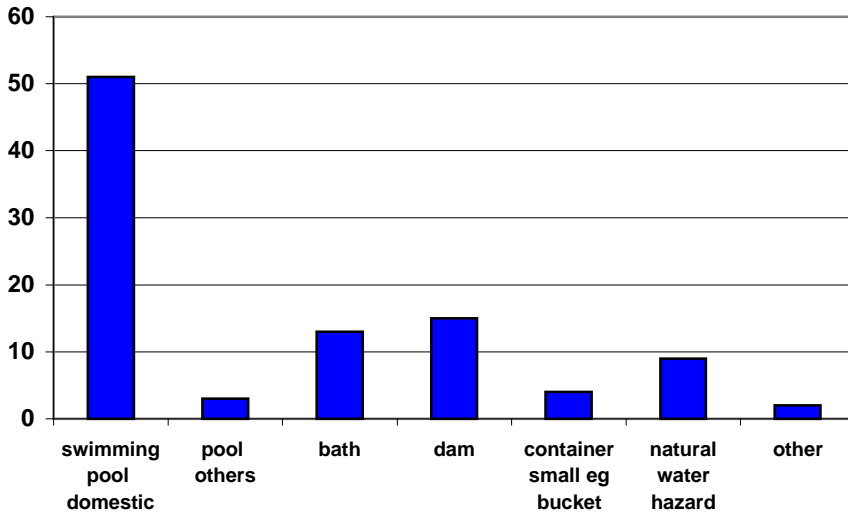


Figure 5 Queensland drowning deaths age 0-4 years, 1993-1999, by location

Deaths due to drowning of children by location, Queensland 1994-99

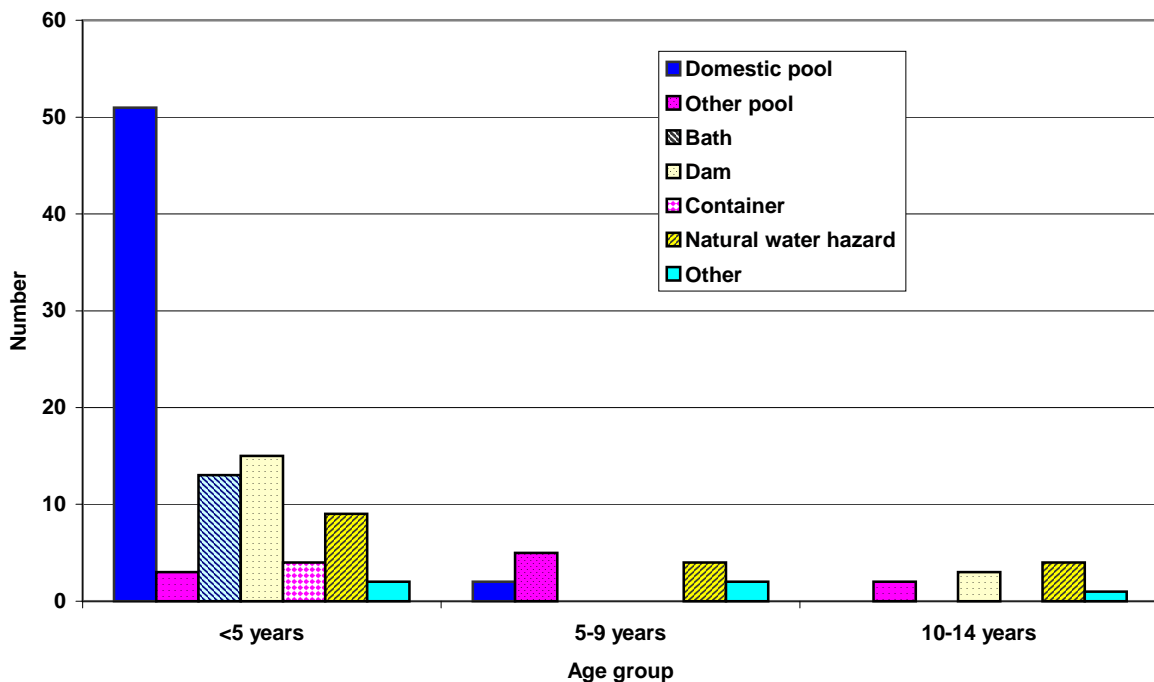


Figure 6 Queensland drowning deaths age 0-4 years, 1993-1999, by location and age group

## Investigation outcomes

Of the 18 deaths investigated only nine (50%) were investigated by the Police in accordance with the Commissioner's circular and only six of these were satisfactory. In the nine cases where a local government inspection was requested one council refused and two stated that the pool was compliant when there was evidence to the contrary. In one additional case, when the police failed to obtain an inspection the police report claimed the pool was compliant when it was not.

The Coroner held only one inquest and in this case he failed to make any recommendations even though the pool was clearly not compliant. In one case the Director-General made a recommendation in the absence of an inquest, with regard to CPR and maintenance of pool gates and fences. In one case where the coroner chose not to hold an inquest, the Police report raised concerns over the lack of manufacturer's recommendations for safety requirements for above ground pools sold through department stores.

## Pool fencing requirements in Australian States

An examination of pool fencing requirements for new pools in each Australian State shows that all except for Queensland allow direct access to the pool area from the residence (ie 3-sided fence)<sup>5</sup>. Even though all doors and windows of the residence allowing access to the pool must comply with the Australian Standard in reality this is difficult to achieve and maintain. In Queensland, where only pools built before 1991 may allow access via the residence, 22% of drownings occurred where a 3-sided fence was in place.

## Discussion

Less than 5% of drownings take place in pools that have 4 sided fencing in good working order. The vast majority of toddlers who gain access to a fenced pool do so through a gate that doesn't shut and latch automatically or via a house door in sub-optimal 3 sided configurations that are permitted for pools approved prior to 1991.

The most effective way to reduce toddler drownings is to ensure there is a child-resistant fence surrounding the pool on all four sides and to improve compliance of gates and doors that provide access to the pool.

In a survey of pool owners in Brisbane, Gold Coast and coastal towns during 1996 it was found that 50% of pools did not fully comply with fencing requirements<sup>6</sup>. It was also found that for 3-sided pools in Brisbane, which made up 26% of pools, 62% had no self closing and latching door on the house access to the pool. One of the key recommendations of this

report was that strategies to improve compliance with existing fencing requirements offer the greatest potential to reduce drownings in young children and that they should focus on inspection and re-inspection of new and existing pools. Government at all levels has largely ignored these findings.

However, there is broad acceptance of pool fencing requirements amongst both local government and pool owners. Education campaigns and ready access to better information could improve compliance levels. Queensland Health has been supporting a project examining strategies to increase pool fencing compliance by working closely with local councils trialing a range of options in relation to pool inspections.

The quality and frequency of police, council and coronial investigations into pool drownings is major concern. Without good quality information on the circumstances surrounding these deaths it is difficult to know which strategies to implement and whether they are effective. Less than 5% of pool drownings go to inquest so there is little or no opportunity for coroners to identify preventable factors in these deaths. If 54 toddlers died in a bus crash or kindergarten fire there would be a major investigation and serious recommendations. The same number of deaths occurring one at a time produces little response from our coronial system.

Above ground pools continue to be a problem because they are easier to buy and install without reference to the local authority. Proportionally more children climb the side of an above ground pool than climb a fence to access an in-ground pool. There is a strong argument to strengthen current pool fencing legislation to require a fence and gate to protect the access point to all above ground pools. Retailers should be obliged to notify authorities when ever an above ground pool is sold and the manufacturer should provide an adequate warning regarding the need for fencing.

It is interesting to note that no child has drowned inside a fully fenced pool when they have been allowed into the pool area by a responsible adult. Drownings have occurred in similar situations when the pool was partially fenced or unfenced but often

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the water was dirty or green. It appears that indirect supervision is protective against toddler drowning and explains why so few drownings occur at the beach when water conditions are often hazardous. Unfortunately, in the majority of toddler drownings the parent has no idea the child is in proximity to the pool. Many times the parent thinks the child is playing in the house or even in bed asleep. In these situations parental supervision is irrelevant as a protective factor and a child resistant physical barrier is the only way to prevent a drowning.

### References

1. Pitt, W R and Balanda, K P. *Childhood drowning and near-drowning in Brisbane: the contribution of domestic pools*. Med J Aust 1991 May 20; 154(10):661-5.
2. Geddis DC. *The exposure of pre-school children to water hazards and the incidence of potential drowning accidents*. NZ Med J. 1984;97:223-226.
3. Australian Bureau of Statistics. Supplement to the October 1996 monthly Population Survey. 1996, Canberra: ABS.
4. Australian Bureau of Statistics. Population by age and sex, Australian States and Territories. Cat No. 3201.0, 1998, Canberra: ABS
5. Scott I, Kidsafe Australia, personal communication
6. Balanda KP, Pitt RW, Nixon J, Fisher KJ, Willis M, Freeman E. *Preventing Toddlers Drownings in Domestic Pools In Queensland: Future Directions*. Report to the Queensland Health Promotion Council by: Centre for Health Promotion and Cancer Prevention Research, UQ; Department of Child Health, UQ; and Queensland Injury Surveillance Unit. 1997. Brisbane: UQ.

### Recommendations / Prevention

- Establish a state coroner to promote uniform standards for investigating drownings and collating recommendations to advise government regarding preventive strategies
- Establish a State coronial database to identify risk factors, enable detailed investigation and guide prevention policy
- Raise awareness of the responsibility of police to fully investigate deaths in swimming pools.
- Raise awareness of local councils of the need to cooperate with police to examine pool fences and make a determination on compliance.
- Implementation of pool fencing legislation with emphasis on increasing compliance for gates and doors.
- Review legislation to improve standards for above ground pools
- Acknowledge and assist local government's critical role as first point of contact regarding pool fencing enquiries and requirements
- Education
  - Government funding and coordination of education programs
  - Education regarding the need to maintain pool fences and gates
  - Education regarding the need to maintain direct supervision of toddlers near or in water
  - Increase community education of resuscitation techniques
  - Education of young children in water safety techniques
  - Education of pool builders regarding their responsibility to organise final fence inspection before handing the pool to the owners
  - Education regarding the particular risk for children less than three years left unattended in the bath

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### QISU Injury Bulletin

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### QISU Data

QISU collects and analyses data from emergency department injury presentations on behalf of Queensland Health. Participating hospitals represent three distinct regions of Queensland and include: Mater Children's Hospital, Mater Adult Hospital, Mater Private Emergency Care Centre, Queen Elizabeth II Jubilee Hospital, Redland Hospital, Logan Hospital, Princess Alexandra Hospital, Royal Children's Hospital, Mt Isa Hospital, Mackay Base Hospital, Proserpine Hospital, Sarina Hospital, Clermont Hospital, Dysart Hospital and Moranbah Hospital

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

### QISU Web site

[www.qisu.qld.gov.au](http://www.qisu.qld.gov.au)

