Drowning Deaths at Public Swimming Pools
Victoria - July 1988 - June 2002

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Introduction

This report was compiled in conjunction with the Royal Life Saving Society Australia (RLSSA), Victoria Branch in response to the drowning death of a 14 year old child at Coburg Memorial Swimming Pool in December 1998. The child was found at the bottom of the outdoor three metre diving pool. It is unknown how the child entered the pool and how long he had been there. At the time of the incident all pools, including the diving pool, were open for use. The pool was operating as low patronage and there was one lifeguard on duty.

Purpose

The purpose of the investigation was to examine the Coroner's findings of all drowning deaths at public swimming pools reported to the State Coroner’s Office between July 1988 and June 2002. This examination was undertaken in order to provide the Coroner investigating the above-mentioned death with contextual information about the nature and extent of preventable drowning deaths at public swimming pools.

The examination aimed to gain an understanding of the circumstances in which the deaths occurred and to identify any systemic factors that could be addressed by the aquatic industry to ensure that drowning deaths at public swimming pools do not continue to occur. Consideration was given to the issues of lifeguard supervision, particularly of diving pools and low patronage requirements.

Definitions

For the purposes of the investigation a public swimming pool was defined, in accordance with the RLSSA Guidelines for Safe Operations, as:

- a facility which members of the public are encouraged to attend for recreational, fitness or educational purposes.

The Role of the Coroner

In Australia the Coroner is responsible for investigating unnatural, sudden and unexpected deaths and major fires. The powers of the Coroner vary between jurisdictions, however in all Australian States and Territories the Coroner is required to make a finding at the conclusion of a death investigation. In Victoria, according the Coroner’s Act 1985, the finding must specify: the identity of the deceased; the medical cause of death; when and where the death occurred; the circumstances surrounding the death; and any contributing factors. Coroners in Victoria also have the power to make recommendations on any public health and safety issue in order to prevent recurrences of similar events. These recommendations are addressed to the Attorney-General, who then forwards the recommendation to the relevant Minister.
Management of Aquatic Locations (Public Swimming Pools) in Victoria

According to VICSWIM, the peak representative body for the Victorian aquatic industry, in the 1980’s there was pressure to introduce principles of competition into the Local Government field. At an international level this was done in order to improve service delivery, efficiency and effectiveness via exposure to the rigours of competition. In 1995 the National Competition Policy (NCP) was accepted, which applied to all forms of government in order to introduce competition to public service operators. In 1994 Victoria introduced the Local Government (Competitive Tendering) Act 1994. The impact of this on the aquatic industry was that public swimming pools were required to be put out to tender. As a result there was a shift in management from local government, or municipalities, to private service providers. It is beyond the scope of this report to discuss the benefits and limitations of Compulsory Competitive Tendering (CCT), however it is important to understand the nature of the management of these facilities in order to determine accountability.

It is also important to understand the nature of the staffing arrangements at aquatic facilities. In a report by Sport and Recreation Victoria (2001) it is stated that the aquatic industry is a large employer of casual staff. Most significantly, it is reported that full time employment represents only 8.6% of the workforce. According to the report, having largely casual and part-time staff places great emphasis of the need for training, good communication systems and initiatives to reduce high turnover of staff as it is an industry where there is a high emphasis on public safety.

Industry Best Practice - Royal Life Saving Society Australia

The RLSSA performs a major role in promoting safe practices in and around aquatic environments. In relation to public swimming pools they offer training for lifeguards, produce the Guidelines for Safe Pool Operations (the Guidelines) and conduct Swimming Pool Safety Assessments (SPSA).

Guidelines for Safe Pool Operations

The Guidelines were developed in the early 1990’s. While they do not function as legislation or regulations, most public swimming pools are operated in accordance with the Guidelines as they are recognised by the industry as best practice.

The Guidelines comprise over seventy guidelines covering items such as:

- General Operations;
- Technical Operations;
- First Aid;
- Facility Design;
- Supervision;
- Aquatic Programs (Learn to Swim); and
- Low Patronage Pools.
Accreditation

SU2 of the Guidelines outline the requirements for lifeguard accreditation. The purpose of SU2 is:

To establish a minimum standard of accreditation for those involved in the supervision of recreational swimming programs at swimming pools whether this be in a paid or voluntary capacity.

4.2(a) of SU2 states that the appropriate minimum qualification for a pool lifeguard/attendant is the RLSSA Pool Lifeguard Award, or equivalent award offered by H2O Pro. 4.2(b) states that this award should be updated annually via an external examiner. Aquatic and Duty Managers are also required to have this award.

4.3 of SU2 outlines the requirement for Facility Specific Qualifications. The Guidelines state:

a. As every facility has its own design, format and emergency procedures, qualifications for lifeguards/pool attendants should include elements which are specific to the facility in which the person in to work, e.g. knowledge of the emergency procedures or oxygen equipment applicable to the pool.

b. Should the lifeguard change his or her place of employment, those aspects of the qualification which are facility specific may be required to be retaken.

If 4.3(a) of SU2 is cross-referenced with 4.5.4 of GO1 of the Guidelines, it is inferred that lifeguards should undergo specific induction training at each facility they are employed. RLSSA recognise that both Guidelines are not specific enough to require induction, and propose to amend the Guidelines to recommend that each lifeguard undergo specific induction procedures for each facility they work at. This will be required to be documented in a log book and submitted to RLSSA prior to the commencement of work (See Conclusions and Recommendations).

RLSSA also recognise that interpretation and application of the Guidelines is hampered when sections are considered in isolation. To overcome this, RLSSA propose to cross-reference sections of the Guidelines to ensure that the document as a whole is comprehensible (See Conclusions and Recommendations).

Low Patronage Pools

LP1 of the Guidelines define a low patronage pool as:

A venue that consistently has fewer than 50 patrons in the water at any one time. Note: Pool Supervisors should be cognisant of the total number of swimming venue users within the ‘grounds’ at any one time and who may decide to enter the pool(s) virtually unannounced. The resultant could be a dramatic increase in the number of people in the water, an increase in risk and a need for increased supervision.
The purpose of LP1 was to establish guidelines for the supervision of swimming pools that consistently have low patronage. It was intended that LP1 would apply only to rural pools in order to encourage rural communities to engage in water recreation in a structured supervised environment, rather than in natural waterways such as dams and river that have inherent and uncontrollable risks and dangers.

Although the Guideline was not intended to be utilised by metropolitan pools, it has been management practice to do so in order to significantly reduce the operational costs of running an aquatic facility.

The other aspect to the Low Patronage Guideline is the issue of lifeguard training. The Guidelines state in Section 5.1(d):

Where access to RLSSA Pool Lifeguard training and assessment is not reasonably available, this person should be trained and qualified to minimum level of a current RLSSA Bronze Medallion.

The Bronze Medallion is a lesser award where the focus is on personal water safety and a reactive approach to rescue, as opposed to the Pool Lifeguard Award where the focus is on supervision, prevention of drowning incidents and risk management.

At the time the Guidelines were developed, 1991, there were barriers to the broader rural and regional community obtaining access to pool lifeguard training. RLSSA now recognise that this is no longer the case and propose to amend the Low Patronage Guideline to require that the person responsible for supervision of the pool must have a minimum of the RLSSA Pool Lifeguard Award or equivalent (See Conclusions and Recommendations).

**Supervision**

The Guidelines not only address the issue of supervision, they also address the manner in which supervision should be conducted where a diving pool is present at the facility. Section 4.2 of SU1-1 defines minimum supervision as:

a. A minimum of one qualified lifeguard should be supervising, facing and watching the people in the water at all times.

b. Sufficient lifeguards should be provided to ensure the body/s of water and people therein can be supervised effectively.

4.3 of SU1-1 outlines the issue of lifeguard’s line of sight which states:

Lifeguards should be in a position to maintain supervision of the water at all times. It is recognised that lifeguards need to be mobile and a clear line of sight is a significant requirement.

In specific relation to supervision of diving towers, 4.5 b of SU1-1 states that:

Diving towers and their water area should be supervised throughout use to reduce the high risk of accidents.

SU12 addresses the issue of supervision of diving towers and springboards in more details. 4.2 states:
a. Diving towers and springboards should be supervised at all time they are open for use.

a. Entry to the diving area from poolside should not be allowed when the diving boards are in use, thus avoiding the risk of collision.

SU1-1 in conjunction with SU12 outline how lifeguard supervision should operate at a facility where a diving pool is open for use, regardless of the number of patrons. Figure 1 illustrates.

**FIGURE 1**
Supervision of Diving Pools

Figure 1 illustrates that when a diving pool is open for use, one lifeguard should be supervising that pool directly, while another lifeguard supervises any other pool/s. Both lifeguards should also occasionally scan the other pool as well as each other (See Conclusions and Recommendations).

Lifeguards should be aware of the existence of the Guidelines, be aware of where a copy of the Guidelines are located at the facility and be familiar with the particular Guidelines that address their day to day responsibilities, such as patron supervision. Furthermore, issues such as supervision of diving pools should be specifically addressed during the Pool Lifeguard accreditation and annual reaccredidation administered by the RLSSA and other registered lifeguard training organisations. This may include a question on the written examination and be addressed in the testing scenarios.

Aquatic managers should also be familiar with the Guidelines relevant to their day to day activities and the activities of those staff member under their management. In order to do this, aquatic managers should be able to provide information to their lifeguards on what information the Guidelines contain and ensure that the Guidelines are available as a reference at all times. To maintain and increase the level of knowledge of aquatic managers, RLSSA should develop additional training material, including assessment, on the more technical aspects of the relevant Guidelines.
Swimming Pool Safety Assessment

Swimming Pool Safety Assessments (SPSA) were introduced to provide an independent assessment on the level of safety at public swimming pools and offer suggestions for improvement. The objectives of conducting the SPSA were to:

- improve swimming pool safety in a systematic manner;
- assess the level of safety of any public aquatic facility against the Guidelines for Safe Pool Operation;
- establish a safety benchmark on which the swimming pool operation can develop a continuous improvement benchmark;
- swimming pool operators and owners will embrace the responsibility for health and safety of all employees and customers, and reduce risk through planned risk control and elimination strategies; and
- a global outcome of which should be accepted by the Insurance industry that aquatics is not a liability but an asset.

The SPSA comprised of three parts:

1) Assessment;
   - Administration;
   - Facility Design;
   - Learn to Swim;
   - Dive Pools;
   - Spa Pools;
   - Water Slides;
   - Technical Operations;
   - Supervision;
   - Wave Pools;
   - First Aid;
   - Rivers; and
   - Water Features.

2) Safety Improvement Plan; and

3) Safety Score.

During 2000 and 2001 the RLSSA, with funding provided by Civic Mutual Plus (CMP), conducted the SPSAs on 271 of the 288 public swimming pools in Victoria. Each of these facilities received a safety improvement plan and a safety score.

The RLSSA have proposed that the data collected from the SPSA be collated into a database in order to inform Sport and Recreation Victoria (SRV), the Victorian Aquatic Industry Council (VAIC), aquatic sporting bodies and Local Government on the current state of the aquatic industry. Not only would this information provide an accurate list and assessment of public swimming pools in Victoria, it would also allow safety measures to be improved and refined in order to prevent further deaths and injuries at these facilities.
In relation to patron supervision, data from these assessments would enable the RLSSA to recommend a minimum number of lifeguards for each facility.

Once this information is collated, the RLSSA could provide stakeholders with a comprehensive report on the current state of compliance to national industry standards for safe pool operations. The cost of collating and distributing this information was estimated at $57,200. This would be a one off expense to set up the process. As the RLSSA is a not-for-profit organisation, they have sought funding for this project, however their proposal was unsuccessful. (See Appendix 1 for project cost breakdown).

The RLSSA also recommend that the SPSA be conducted every two years in order to achieve the objectives stated above. The cost of conducting these audits has been estimated at $1000 per facility. Although there are two hundred and eight-one public swimming pools in Victoria, the RLSSA believe they could undertake the SPSA for all facilities for $250,000. At present no organization has agreed to fund the SPSAs.

RLSSA believes that the SPSA process should be considered as part of the performance criteria or part of management contractual requirements. This would provide facility owners, for example Local Government, with an independent evaluation of the contract manager’s compliance to industry best practice.
**Method**

Unintentional drowning deaths that occurred at public swimming pools between 1989 and 2001 were identified and verified by searching electronic data collected and stored by the Coronial Services Centre (CSC) and the Monash University Accident Research Centre (MUARC).

Multiple data sources were utilised to overcome the possibility of missing cases. These case identification methods are outlined below.

1. **Keyword search conducted on the TOPIC**\(^1\) database, which contains electronically stored police report summaries and Coroner's findings.

2. **Incident code search of the State Coroner's Office (SCO) Local Case Management System (LCMS) where incident code equalled “DRW” (drowning) for period 1989 – 2001 (inclusive).**

3. **Structured Query Language (SQL) search of SCO LCMS. Case selected where manner of death code equalled “drowning” for period 1989 – 2001 (inclusive).**

4. **Search of the Victorian Coronial Facilitation System (VCFS) provided by MUARC, verified using the publications titled *Unnatural Deaths: Collated from the findings of the State Coroner*.**

5. **Search of the National Coroners Information System (NCIS) for all deaths where the mechanism of death = threats to breathing, drowning and immersion and the object involved in the death = building, building component or fitting, swimming pool for deaths from July 2000 onwards.**

These searches involved:

1. **Topic**

   Electronic versions of police report summaries (known as “Form 83 circumstances text”) and Coroner's findings were searched using keywords such as pool; swimming pool; drown; drowned and drowning. These documents are stored on a database called “TOPIC”, which allows for multiple term searching. TOPIC contains data from 1989 onwards. The reports are not available for all cases, particularly deaths that occurred in rural jurisdictions between 1989 and 1999.

2. **State Coroner's Office Local Case Management System**

   When a death is reported to the Coroner, it is entered onto the SCO LCMS, which dates back to 1989. At the time of being entered, a code is assigned to the case that relates to the type of incident that has occurred. One such incident code is “DRW” (drowning). All cases coded as drowning from 1989-2001 were selected and police report summaries obtained for each case. These summaries were reviewed to identify drowning deaths that occurred at public swimming pools.

\(^1\) TOPIC is maintained by the Victorian Institute of Forensic Medicine (VIFM) for use by Coronial Services Centre staff.
3. Structured Query Language

An SQL (structured query language) search was conducted of the SCO LCMS to identify all cases that were coded as “drowning”. This was done using the "manner of death" codes reclassified by a research officer at the Victorian Institute of Forensic Medicine (VIFM) for the period 1989 onwards.

4. Victorian Coronial Facilitation System

The Monash University Accident Research Centre (MUARC) provided the SCO with a copy of the Victorian Coronial Facilitation System (VCFS). The VCFS is a database containing information on all closed cases (cases where the Coroner had made a finding) between July 1989 and June 1995. This database was collated and coded by the Caseflow Analysis Section of the Courts and Tribunals Division of the Department of Justice (Stathakis and Scott, 1999).

This information was also printed as five annual report like publications titled *Unnatural Deaths: Collated from the findings of the State Coroner*. These publications contained tables of data listing text descriptions and other codes by manner of death. Each death in the drowning section was reviewed in order to identify relevant cases.

5. National Coroner's Information System

Drowning deaths that occurred at public swimming pools between July 2000 and December 2001 in Victoria were extracted from the NCIS. The NICS is a national database that stores all deaths reported to the Coroner in Australia. Victorian cases were identified for the purposes of verification.
Results

Drowning in Victoria

The Royal Life Saving Society Australia (RLSSA), Victoria Branch, reported that 804 people have died from unintentional drowning incidents between July 1988 and June 2002 (RLSSV, 2001). Figure 2 illustrates this trend according to gender over time.

FIGURE 2

Between July 1988 and June 2002, 42 deaths occurred at public swimming pools (PSP) in Victoria. In 27 of the 42 incidents, the cause of death was attributed, in whole or in part, to drowning. In the majority of the non-drowning related deaths, the cause of death was attributed to some form of heart disease. As can be seen in Figure 3, all deaths at public swimming pools from July 1996 to June 2001 were found to be a result of drowning as opposed to natural disease.

FIGURE 3
Deaths at Public Swimming Pools in Victoria
**Age and Gender**

The age and gender distribution from the 27 drowning deaths is illustrated in Table 1. Eighty-one percent of the deceased’s were male. The median age was 26 years and the mode was 22 years. It can be seen from Table 1 that the largest number of deaths (n=9 or 33%) occurred in the 21-30 year age group. A further 21% (n=5) occurred in the 11-20 year age group.

**TABLE 1**

*Drowning in Public Swimming Pools by Age Group and Gender*

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Male</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>11-20</td>
<td>Male</td>
<td>4</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>21-30</td>
<td>Male</td>
<td>9</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>31-40</td>
<td>Male</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>41-50</td>
<td>Male</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>51-60</td>
<td>Male</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>61-70</td>
<td>Male</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>71-80</td>
<td>Male</td>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>27</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Location**

A summary of each incident according to financial year is shown in Table 2. It can be seen that 25 of the 27 incidents, (93%), occurred at pools classified as metropolitan. In both of the incidents that occurred at rural pools, the facility was not open for operation when the incident occurred. In one case the pool was entered after hours and in the other case the deceased was a lifeguard who was in the process of opening the pool for operation.
### TABLE 2
Date of Incident, Age, Gender, Facility and Location by Financial Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Date</th>
<th>Age</th>
<th>Gender</th>
<th>Name of Facility</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15/11/1990</td>
<td>11</td>
<td>Male</td>
<td>Moorabbin Swimming Pool</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td>1991</td>
<td>24/02/1991</td>
<td>34</td>
<td>Female</td>
<td>Werribee Pool</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td>1992/1993</td>
<td>02/11/1992</td>
<td>42</td>
<td>Male</td>
<td>Richmond Recreation Centre</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>22/01/1993</td>
<td>27</td>
<td>Male</td>
<td>Southern Aquatic Centre, Moorabbin</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>02/02/1993</td>
<td>10</td>
<td>Male</td>
<td>Brunswick Recreation Centre</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>24/02/1993</td>
<td>31</td>
<td>Female</td>
<td>H.M.A.S. Cerberus</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td>1993/1994</td>
<td>15/01/1994</td>
<td>26</td>
<td>Male</td>
<td>Racquet City Gym, Keysborough</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>02/11/1996</td>
<td>22</td>
<td>Male</td>
<td>Hawthorn Aquatic Centre</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>16/12/1996</td>
<td>65</td>
<td>Male</td>
<td>Fitzroy Swimming Pool</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>26/01/1997</td>
<td>22</td>
<td>Male</td>
<td>Mill Park Y.M.C.A.</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>07/02/1997</td>
<td>21</td>
<td>Male</td>
<td>Taralgon Swimming Pool</td>
<td>Rural Pool</td>
</tr>
<tr>
<td></td>
<td>03/05/1997</td>
<td>35</td>
<td>Male</td>
<td>Steamworks Male Club</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>30/12/1998</td>
<td>14</td>
<td>Male</td>
<td>Coburn Swimming Pool</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>10/02/1999</td>
<td>64</td>
<td>Male</td>
<td>Eltham Leisure Centre</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>16/05/1999</td>
<td>28</td>
<td>Male</td>
<td>Bi Centennial Community Pool, Pakenham</td>
<td>Rural Pool</td>
</tr>
<tr>
<td>1999/2000</td>
<td>29/11/1999</td>
<td>29</td>
<td>Male</td>
<td>Health and Fitness Centre, Richmond</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td></td>
<td>03/12/1999</td>
<td>34</td>
<td>Male</td>
<td>Whitehorse Aquatic Centre, Box Hill</td>
<td>Metropolitan Pool</td>
</tr>
<tr>
<td>2000/2001</td>
<td>10/11/2000</td>
<td>2</td>
<td>Female</td>
<td>Footscray Swim Centre</td>
<td>Metropolitan Pool</td>
</tr>
</tbody>
</table>
Time of Year
The number of incidents that occurred in each month of the year between July 1988 and June 2002 is illustrated in Figure 4. It is not surprising that most of the incidents occurred in the warmer months of the year, when it is more likely that the facility would have had a greater number of patrons. One other explanation for this result may be some of the facilities were seasonal, and were only open for operation between November and March.

![FIGURE 4
Drowning Deaths at Public Swimming Pools by Month of the Year](image)

Contributing Factors
An examination of the findings identified a number of factors that contributed to drowning deaths at public swimming pools. These factors included: supervision; pre-existing illness; and alcohol consumption.

Supervision
With the exception of drowning of children, overall assessment of the adequacy of supervision was not an issue systematically addressed in the Coroner's findings. Incidents from the early 1990's focused on training and emergency responses, which included the issue of patron supervision, however it was not examined as a separate issue.

In relation to the child drownings (n=6) there were four cases where the Coroner made a finding of contribution against individuals with some level of duty of care for the child. In two cases the Coroner concluded that parental supervision was inadequate and contributed to the death of the child.
Incident 1:

Several times MOTHER\(^2\) had to get up and tell DECEASED to get back to the shallow end. MOTHER finally told DECEASED to get out of the pool because she was being disobedient. DECEASED then begged her mother for one more play and MOTHER agreed. MOTHER turned her back and walked through chairs to stand on a rail so she could see DECEASED clearly. On reaching the rail she turned to see DECEASED but was unable to see her anywhere. ... MOTHER was extremely concerned and obtained the assistance of the on duty lifeguard, who noticed a girl lying face down in the water of the wave pool.

... DECEASED was unable to swim, nevertheless she was permitted to play in the deeper pool within the complex, when a toddlers pool was available. In permitting her to do so and by failing to continually keep her under observation, even though this was for a short period of time while the mother moved from one area to another, the deceased's mother contributed to the cause of the death. [2306/1998 - 4 years female]

Incident 2:

The children left the pool and went home and later returned to the pool after it was closed. It is noted that FRIEND'S FATHER was not fully aware of the children's whereabouts and did not appropriately supervise the children. ... And I further find that supervision by a parent of one of the children was unsatisfactory. [5082/1989 - 12 years female]

In one case the Coroner found that both inadequate parental and lifeguard supervision contributed to the child's death.

... MOTHER conceded her lapse and accepted a measure of responsibility ... It is beyond contention that by leaving the children unattended while she went to the toilet, unjustifiably assuming someone else would supervise them, was tragically an omission that represents the principle link in the causal chain.

... I conclude MOTHER'S failure to constantly supervise her child in combination with inadequate supervision by, LIFEGUARD 1 and LIFEGUARD 2, clearly breaches of recognized duties, resulted in the tragic death of DECEASED. [3758/2000 - 2 years female]

In the remaining case, the Coroner found that the child's teacher contributed to their death.

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\(^2\) Capitalisation inserted to replace names of individuals to protect their identity.
It is clear on the evidence, that short of a pupil having an individual lesson, one could not expect a better instructor/pupil ratio than two to five. Yet in perfect daylight conditions, with crystal clear water and in an area of the pool over which the school had exclusive use, neither instructor saw the child disappear. INSTRUCTOR 2 should have been standing in order to observe these children, not seated on the edge of the pool with her feet in the water. Although it was stated that a vigilant observation was being kept, neither could describe the child's movements immediately before disappearing, nor at what point within the 11 metres available to him, he disappeared. Nothing more clearly highlights their state of ignorance, than INSTRUCTOR 1's question, "Where's DECEASED?".

The information Manual [Directorate of School Education School Information Manual] stipulates that "each teacher/instructor must be able to account for all students in their swimming group, at all times". Whilst it is unrealistic to interpret 'account' in this context to mean an obligation to continuously look at each child all the time, nevertheless on an objective assessment of the material before me, I am satisfied there was an unacceptable delay in accounting for the absence of the child. ...

I am satisfied there could be no suggestion of INSTRUCTOR 1 being distracted by instructing a child at the eastern edge, at this point of time. The unacceptable delay in accounting for the absence of the child, amounts to contribution to the cause of death, by both INSTRUCTOR 1 and INSTRUCTOR 2. [0355/1993 - 10 years male]

There were two cases of adult drowning deaths at public swimming pools where lifeguard supervision was a factor. In one case there was no lifeguard supervising the pool and at the time of the incident the deceased was the only person swimming. In the second case the Coroner found that there was a need to improve patron supervision in light of findings from an independent review of the incident.

Pre-Existing Illnesses

Epilepsy

In five cases the deceased suffered from epilepsy. In each case the Coroner found that it was most likely that the deceased experienced a seizure and subsequently drowned. In all cases the deceased attended the facility alone and there were no witnesses to the immersion incident. In two of the five cases, facility staff were aware of the deceased's condition. In these cases, the Coroner commented on the issue of managing patrons with known medical conditions.
Incident 1:

In a final comment the report [prepared by the Critical Incident Review Panel of the YMCA] highlighted that the YMCA should consider the following:

"whilst recognizing that a prior medical condition may or may not have contributed to the patron's death, the State YMCA establish a task force to specifically review and recommend additional procedures for managing patrons with known medical conditions". [0474/1999 - 64 years male]

Incident 2:

Whilst there is a need to balance the requirement that an epileptic partake in as full a life as practicable and that all concerned in this case emphasized this point, there is also a need to address and manage risk.

In this case there appears to have been a lack of consideration of the risk associated with an epileptic fitting in the water environment of a spa. Although exclusion from the "swimming pool" had been considered by the gym the link had not been made to associate the spa with the potential risk of drowning when a person was unconscious. ...

It may be appropriate for the Australian Association of Neurologists and the College of General Practitioners to ensure that appropriate information on the risk is made available to the patient. An example of warnings can be seen in the information provided by Epilepsy Foundation of Victoria. The findings should also be sent to the Victorian Institute of Sport, Department of Arts, Sport and Tourism, the Epilepsy Foundation and the Office of Fair Trading. ...

There may be a need for the fitness industry to assess the issue that arose in this case for the purpose of improved management of epileptics involved in exercise programs where water may be a factor. [0150/1994 - 26 years male]

**Heart Disease**

In five cases, the cause of death was reported as drowning and some form of heart disease. In two of the five cases the deceased had been recently diagnosed with heart disease or had undergone cardiac surgery. In the remaining three cases, heart disease was reported from the post-mortem examination. In these cases the Coroner did not conclude that the drowning resulted directly from heart disease as contribution was not attributed by the Forensic Pathologist. In all cases the deceased was male, ranging in age from 29 to 74 years at the time of their death.
Alcohol

In three cases the deceased "wrongfully" entered a public swimming pool after hours and entered the water while under the influence of alcohol. Toxicological examinations revealed that the blood alcohol concentrations of these individuals were: 0.14 g/100mL; 0.21 g/100mL; and 0.17 g/100mL, at least three times the legal limit for driving a motor vehicle. The Coroners concluded in these cases that the levels detected were consistent with a degree of alcohol related impairment.
**Discussion**

The current study consisted of an examination of Coroner's findings in order to identify factors related to incidents of drowning at public swimming pools over time. Twenty-seven drowning incidents were identified that were reported to the State Coroner's Office between July 1988 and June 2002. These incidents primarily occurred at metropolitan facilities during late spring and summer. In the majority of cases the deceased was male (81%) and a number (n=9, 33%) were aged between 21 and 30 years. Seven of the 27 deaths (26%) were of children (0-14 years), only two of which were under five years of age. A number of factors relating to supervision, pre-existing medical conditions and alcohol contributed to these deaths.

The current study was limited to an examination of Coroner's findings (as opposed to the entire coronial files containing a full brief of evidence, including witness statements). It was also not possible to determine the exact chain of events leading to the incident in every case as the deceased had attended the facility on their own and / or there were no witnesses to the immersion incident. Despite these limitations, it was clear from the investigation that drowning deaths at public swimming pools, like unintentional drowning deaths at other aquatic locations, were preventable. Coroners have formulated a number of recommendations over time to redress some of the issues that have emerged from these incidents. Many of which have been taken up by the aquatic industry. These recommendations are contained in Appendix 2.

The aquatic industry needs to ensure that lifeguards are aware of their primary role as pool supervisors and exactly what constitutes adequate supervision. The industry also needs to take into account the profile of the lifeguards employed. They are often young students working on a casual or at most part-time basis to support themselves while studying. Literature produced by the industry also indicates that turnover of aquatic staff is high. The industry is responsible for ensuring that lifeguards are adequately prepared potentially life-threatening situations. Possible ways this could be improved are:

- amendments to training and re-accreditation of lifeguards to focus on supervision (see Recommendations);
- dissemination of information to lifeguards about the realities of drowning and near drowning incidents to increase awareness;
- increased understanding and promotion of RLSSA Guidelines by aquatic managers;
- increased expectations that aquatic managers and lifeguards have an in-depth knowledge of the RLSSA Guidelines, particularly in relation to supervision;
- introduction of lifeguard licenses; and
- introduction of senior lifeguards who possess a higher qualifications such as oxygen and attract a higher rate of pay.

Assessment of the adequacy of patron supervision by lifeguards has been an issue that has recently come under some scrutiny by the Coronal jurisdiction (See Appendix 2 - Case Number 3758/2000). During the inquest proceedings into the current matter, evidence was given by a number of pool managers, including an area manager. There was
no consensus amongst the witnesses about what "specific supervision" in the context of a diving pool meant. One witness was of the opinion that specific supervision meant keeping the diving pool within the line of sight while supervising other pools. Others, quite correctly, said that specific supervision involved primarily and directly watching the diving pool. This discrepancy has implications for how well the issue of supervision is understood across the aquatic industry, from the operational level lifeguard to the aquatic and area managers.

Some consideration needs to be given to clarifying the supervisory role of the lifeguard. Primarily the role of the lifeguard is to supervise patrons in the aquatic area. However, it needs to be determined to what extent the lifeguard is responsible for public education, particularly of parents in relation to the supervision of children (0-14 years). It is well documented that a drowning incident can occur within minutes and that distractions do occur. Despite this, lifeguards should not be viewed as babysitters. This issue was addressed in a recent coronial finding where it was recommended that:

- It would seem timely that at the commencement of the summer period a public awareness/education campaign be delivered stressing the need for parental/carer supervision at public pools stating that the "first line defence" rests squarely with parents/carers. The nature of the campaign, that is the approach, should be a matter for those with expertise in "selling" these messages.

- As the Guidelines stand, signage stressing the need for parental supervision is merely recommended. I believe this Guideline should be "beefed up". I recommend that appropriate, conspicuous signage be mandatory at strategic locations within the aquatic facility: for example, the entrance, the changerooms and perhaps in the immediate vicinity of the toddlers/teaching pool. [Coroner's Finding - 3758/2000]

While signage measures may increase the general public's awareness that it is primarily a parent's role to supervise their children, instances may arise where a child is left unsupervised. Most facilities have policies and procedures to deal with these circumstances, however what remains a concern is older children who are permitted to attend public swimming pools without the accompaniment of an adult but are unable to swim. The Guidelines state that children under 10 years should not be allowed entry unless under supervision of a person 16 years or older. In the current matter the child was 14 years of age and was unable to swim. Is age therefore an appropriate determinant of whether a child can attend a swimming pool without an adult? Adolescent males are known for engaging in risk taking behaviour and whilst they may have an understanding of water as a potential hazard, unlike young children, this may not transfer to safe behavioural practices in the water. The results of the current study also revealed that 26% (n=7) of the deaths were of children under 15 years of age (only 2 of which were under 5 years). It is acknowledged that age is the simplest means of determining and enforcing the need for adult accompaniment, however swimming ability is also a risk factor that should be considered. Raising the age limit to 15 years should be considered by RLSSA.
Since the completion of data collection for the current study, two other drowning deaths have occurred at public swimming pools that are currently still being investigated by the State Coroner's Office.
Conclusions and Recommendations

Compared to the total number of drownings deaths per year in Victoria, drownings at public swimming pools were found to be relatively rare events. Despite the small number, the analysis revealed that these deaths were preventable - the key to prevention is supervision. A discussion of the nature of the aquatic industry raised a number of issues regarding the operation of these facilities in light of the Guidelines for Safe Pool Operation, developed by the Royal Life Saving Society. It is recommended that the RLSSA consider the following:

1) Low Patronage
   a. Low patronage should not be defined by region, instead it should be determined solely on usage and design of the facility and once determined is a continuing classification.
   b. This assessment needs to be independent and based on the data collected by RLSSA in the SPSA.
   c. Classifications could be reassessed bi-annually if funding were received to conduct SPSA on an ongoing basis.

2) Patron Supervision of Diving Pools
   a. RLSSA Guidelines should be amended in relation to patron supervision of diving pools to refer to direct / primary supervision of such pools when open for operation. Both lifeguards should also occasionally scan the other pool as well as each other. (See Figure 1).
   b. This issue should be specifically addressed during the Pool Lifeguard course and annual reaccredidation administered by the RLSSA and other registered lifeguard training organisations. This may include a question on the written examination and be addressed in the testing scenarios.

3) Training
   a. It is common for lifeguards to work at more than one facility during their lifeguarding career. Some of these facilities may be managed by the same company where policies and procedures are similar. Regardless of this, each facility is unique in terms of its design and patronage. Therefore a thorough induction process should be undertaken by the aquatic manager for each new employee prior to the commencement of the first shift and regardless of their experience.

4) Parental Supervision
   a. RLSSA Guideline 4.1 of SU10 (Parental Supervision) should be amended from children under 10 years to children under 15 years should not be allowed entry unless under supervision of a person 16 years or older.
5) Swimming Pool Safety Assessments

a. Funding should again be sought to conduct SPSAs as a means of ensuring that public swimming pools are operated in accordance with the Guidelines for Safe Pool Operation (See Appendix 1). Alternatively RLSSA consider formulating the Guidelines into legislation, regulations or Australian Standards and subsequently develop an enforcement process of such legislation / regulations / standards similar to the SPSAs.
References

1. Coroner’s Act, Victoria (1985)


5. VICSWIM *The impact of CCT on service delivery in aquatic facilities*. Melbourne: VICSWIM.
Appendix 1

RLSSA Funding Proposal Cost Estimates

**PROJECT FUNDING**

The project costs are estimated to be **$57,200**, inclusive of the following.

- **Meetings**
  - 5 @ 3 hours @ $120
  - $1,800

- **Labour**:
  - Creation of Database
    - Data Input and validation: 40 hours @ $60
    - Data Collation: 160 hours @ $80
    - Data Analysis: 240 hours @ $80
    - $2,400
    - $12,800
    - $19,200
    - $500

- **Graphic Design**
  - $2,500

- **Printing of 500 Reports to be distributed to**
  - SRV (10) 10
  - 78 Municipalities (2 per) 156
  - 283 Pools (1) 283
  - VAIC Members & Standing Committees 41
  - RLSSA-V 10
  - $1,800

- **CD Rom (250), inclusive of cover and packaging**
  - $2,000

- **Industry Workshop**: Designing and promotion
  - Conduct of Workshop
  - Workshop Presenters
  - Workshop Evaluation
  - $3,000
  - $1,500
  - $1,000
  - $500
  - $3,000

**Subtotal**

- **52,000**

**GST**

- **5,200**

**TOTAL**

- **$57,200**
Appendix 2

Coroner's Comments & Recommendations

Case Number 3758/2000

It would seem timely that at the commencement of the summer period a public awareness/education campaign be delivered stressing the need for parental/carer supervision at public pools stating that the "first line defence" rests squarely with parents/carers. The nature of the campaign, that is the approach, should be a matter for those with expertise in "selling" these messages.

As the Guidelines stand, signage stressing the need for parental supervision is merely recommended. I believe this Guideline should be "beefed up". I recommend that appropriate, conspicuous signage be mandatory at strategic locations within the aquatic facility; for example, the entrance, the changerooms and perhaps in the immediate vicinity of the toddlers/teaching pool. [Finding - Coroner Byrne]

Case Number 0679/2000

I recommend the RLSSA consider reviewing guideline SU 4.5 of the Guidelines for Safe Pool Operations with a view to requiring all lifeguards to carry a resuscitation pocket mask that incorporates an "oxygen nipple" and perhaps also a "mask connection port" incorporating a one way barrier. [Finding - Coroner Byrne]

Case Number 1465/1999

The pool was attended in accordance with the Royal Life Saving Society Australia Guidelines for pools with low volume patronage. The Centennial pool, being small in size would consistently have fewer than 50 patrons in the water at any one time. There is however, a possibility that had a second attendant been on duty and commenced work at the same time the outcome may have been different in that the deceased may have been retrieved from the pool in a shorter time and emergency treatment commenced earlier. While I make no finding of contribution due to compliance with the guidelines, it would appear that consideration should be given to having two attendants on duty at all times. [Finding - Coroner Johnstone]

Case Number 0150/1994

Whilst there is a need to balance the requirement that an epileptic partake in as full a life as practicable and that all concerned in this case emphasized this point, there is also a need to address and manage risk.

In this case there appears to have been a lack of consideration of the risk associated with an epileptic fitting in the water environment of a spa. Although exclusion from the "swimming pool" had been considered by the gym the link had not been made to associate the spa with the potential risk of drowning when a person was unconscious.

This appears obvious. From a medical perspective there appears to have been a lack of appreciation that a gym could include a water environment i.e. a spa, pool et cetera, and the most recent warning was linked to the use of "weights".

Generally throughout the inquest the links were not made with the risks using a spa or bath in epilepsy. In a recent finding (3681/90), the Coroner commented on the death of an intellectually disabled patient suffering from grand mal seizures during a bathing routine at a community residential unit:
"Community Services guidelines were in place at the time of the death and were circulated in community residential units. The guidelines included warnings of the risks of swimming and bathing for people with epilepsy, statistics relating to drowning, guidelines as to the taking of baths and showers and appropriate supervision, and circumstances when baths could be permitted for people with epilepsy. In 1990, a further paragraph was added which repeated some of the information already provided, and added that there had been recent cases of people with epilepsy drowning in community residential units. The paragraph closed with the words:

"It cannot be stressed too strongly that epilepsy and water is a potentially lethal combination requiring caution and vigilance at all times."

There appears to be a need for the risk associated with water and epilepsy (spas, baths, pools et cetera) to be reinforced and regularly drawn to the attention of the patient, family and those operating sporting facilities such as gyms.

It may be appropriate for the Australian Association of Neurologists and the College of General Practitioners to ensure that appropriate information on the risk is made available to the patient. An example of warnings can be seen in the information provided by Epilepsy Foundation of Victoria. The findings should also be sent to the Victorian Institute of Sport, Department of Arts, Sport and Tourism, the Epilepsy Foundation and the Office of Fair Trading.

A copy of the warnings and information provided by the foundation is attached to the finding. Also attached is a review of drowning deaths in people with epilepsy, CA Ryan and G Dowling Canadian Medical Association Journal, March 1993, which provides useful information on seizure related drownings and comments. "They represent a small potentially preventable proportion of all drownings". There may be a need for the fitness industry to assess the issue that arose in this case for the purpose of improved management of epileptics involved in exercise programs where water may be a factor. [Finding Coroner Johnstone]

**Case Number 0317/ 1991 & 0615/1991**

1. That a Pool Life Guard Award (or a course offering equivalent training) be a prerequisite to employment as a Pool Manager, Assistant Manager or Pool Attendant.

2. That completion of Level 2 in the use and operation of oxygen equipment be a prerequisite to employment as Pool Manager or Assistant Manager. (Level one being included in the basic Pool Life Guard Award).

3. That persons currently answering the description of Manager, Assistant Manager or Pool Attendant be offered training in these courses prior to 1993-1994 season.

4. That municipalities be concerned to:
   
   i. continually monitor the levels and qualifications of staff engaged at local pools to ensure that qualifications are kept up to date and current, and that refresher courses are offered and taken when appropriate;

   ii. to direct Pool Management:
a. to devise and implement an emergency plan and to conduct regular on-site training and drills to ensure automatic co-ordinated response to all situations that might be reasonably be expected to arise;

b. to implement communication systems either by whistles or hand signals or both for both routine messages and emergency situations;

c. to pay particular attention to staff: patron ratios and to enlist additional staff where appropriate. (It is recognized that no hard and fast rules can be stated to cover all situations however a minimum of two pool attendants should be on duty dedicated to surveillance at any one time, this being the minimum required to achieve the best resuscitation results);

d. to close the pool or at least clear the water when an emergency arises requiring the attention of pool attendants;

e. to expel from the facility children who pretend to be in difficulties and include this conduct as prohibited on display signs. (This practice was mentioned in both inquests and had some bearing);

f. to set up a system of rotation and breaks for pool attendants such as will relieve tedium and therefore assist concentration;

g. to ensure that uniforms are worn at all times by pool attendants;

h. to recognise and anticipate any dangers that might arise in relation to children or young adults performing "bombs" near other swimmers and to either warn them, relegate them to a particular area or remove them from the pool as is deemed appropriate. The same consideration should apply to floating tyres which ideally should be tethered in some fashion to one area;

i. to maintain an Incident Book not only to record injuries and similar incidents but also complaints by patrons that might be communicated to pool attendants during the day.

I propose to forward the foregoing recommendations and comments to the State Attorney-General for dissemination to the Minister for Local government, the Minister for Sport and Recreation and to any other person or organisation that she deems appropriate. [Finding - Coroner Heffey]

Case Number 5082/1989

I propose to forward my recommendations and comments to the Attorney-General for dissemination to the Minister for Local Government, the Minister for Youth, Sport and Recreation, the Royal Life Saving Society, Institute of Swimming and Recreation Centre Management, Vic Swim, the Municipal Employees Union, the Local Government Engineers Association, ALEF Security and the Town Clerk of the City of Springvale.

Evidence has been given that swimming under pool covers leads to loss of bearing and obvious lack of the ability to obtain access to oxygen and thereby is extremely dangerous.

This case highlights the need for the introduction of procedures (by way of a Code of Practice) for all public swimming pools relating to
1. The placing of pool covers on pools and specifically:
   a. avoiding partial covering of pools whilst patrons (especially young children) are present or the pool is open;
   b. the use of public warnings and warning signs in appropriate places;
   c. where the pool is fully covered an appropriate level of supervision or alternatively avoiding covering a pool whilst patrons are in the pool environment.

2. An appropriate level of security fencing, maintenance and security patrols for public swimming pools.

There is a need for all swimming pool management and employees to be aware of the dangers and the need for an adequate level of supervision where pool covers are used.

It may be appropriate for a warning to be included in the Newsletter for the Institute of Centre Recreation Management and the Findings to be forwarded to independent industry groups such as the Swimming Pool and Spa Association.

It is also noted there has been a previous death in January 1989 involving drowning in a public swimming pool under a pool cover. See 0472/1989 (Finding attached).

[Finding - Coroner Johnstone]

**Case Number 0472/1989**

I recommend that the City of Fitzroy take all reasonably necessary steps to secure the pool from wrongful entry particularly by replacing the cyclone fence with a more secure barrier. [Finding - Coroner Hill]