



Safety In Public Swimming Pools Incident Evaluation Report 2010 – 2011

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ACKNOWLEDGEMENTS

For the last ten (10) years Royal Life Saving has taken a leadership role in the collection of injury reports and the establishment of safety benchmarks for public aquatic centres.

This long term project would not have been possible without the support of individual aquatic centres that have participated in the reporting process. Royal Life Saving acknowledges the integral part played by the following organisations in the preparation of this report.

- Altone Park Leisure Centre
- Bayswater Waves
- Beatty Park Aquatic Centre
- Belmont Oasis Leisure Centre
- Challenge Stadium
- Claremont Aquatic Centre
- Fremantle Leisure Centre
- Geraldton Aquarena
- Gosnells Leisure World
- Leschenault Leisure Centre
- Mandurah Aquatic Centre
- Riverton Leisureplex
- South Lakes Leisure Centre



1. INTRODUCTION

In Western Australia there are 122 public aquatic centres that provide significant benefit in terms of community development, sport, recreation, health and fitness. In 2010 the Leisure Institute of Western Australia estimated;

- There are 9,815,096 individual entries into public aquatic centres annually. Given Western Australia has a population of in excess of 2 million this represents nearly 5 visits for every man-woman-child in the State.
- Total annual expenditure in aquatic centres is estimated to be \$57,989,307.
- The 120 swimming pools contain 148,832 kL of water that is constantly filtered and disinfected.
- Total annual water consumption is 1,196,543 kL which includes consumption for showers and toilets etc
- The Aquatic Recreation Industry has over 2,500 full, part-time and casual employees that are critical to the success of aquatic facilities.

Report Purpose

“What is the likelihood someone will need to be rescued in a public swimming pool?

How many people will slip over on the concourse?

Who will be there to help?”

This report uses aquatic centre data to quantify the likelihood of an incident occurring and to identify the circumstance of these incidents.

The report covers the period July 2010 – June 2011

2. METHODOLOGY

Sample Selection

To add to the body of knowledge that has been built over the last ten years, incident reports were collected from 13 swimming pools. This represented a statistically significant sample (>10%) of the total number of public pools in Western Australia (122).

Participating centres were selected from both metropolitan and regional locations and also from small through to large venues.

Survey Development and Distribution

Approval was gained from the Leisure Institute of Western Australia to conduct the research project.

For 'industry wide' collection and comparison, data was collected from two sources;

1. Individual incident reports completed by the responding staff member.

(See Appendix 1)

2. Monthly centre participation/exposure statistics

The number of incident reports and total centre patronage is listed in Table 1.

Table 1. Report Data Sample

Year	Number of Participating Centres	Number of Incident Reports	Total Number of Patrons
2001 – 2002	14	550	2,290,000
2002 – 2003	12	594	1,614,423
2003 – 2004	17	939	2,762,000
2004 - 2005	12	913	2,752,000
2005 – 2006	9	230	693,347
2006 – 2007		No data	
2007 - 2008	4	196	705,050
2008 - 2009	7	342	1,383, 391
2009 – 2010	14	723	2,000,899
2010 – 2011	13	673	2,304,074

The data collection tool was distributed to swimming pools in hard copy through the post with responses also sent back via the mail.



Data Analysis

The data was entered into an Excel spreadsheet and basic descriptive analysis was performed. Frequencies and percentages are presented in this report. Data was analysed at a state-wide level to identify key areas for targeting future programs and services.

Some of the incident reports did not complete all the data fields. As a result some of the graphs in this report do not add up to 100%.

Meeting the goals of the Australian Water Safety Strategy

This report contributes to the recommendations of the Australian Water Safety Strategy 2008 – 11 developed by the Australian Water Safety Council.

Key Objective 10.1. Implement programs that minimise risk in aquatic recreation environments.

Key Objective 10.2. Research the role and contribution that safe venues make to drowning prevention and safe healthy communities in Australia.

3. HOW MANY INCIDENTS OCCUR IN SWIMMING POOLS?

Drowning

For the eighth consecutive year there have been no drowning deaths in public aquatic centres.

Major Incidents


30 (4.5%) of the reported incidents were identified as Major Incidents. A major incident is generally defined as a situation which provides an immediate threat to life and requires an urgent response (often involving emergency services).


Below is a brief summary of the major incidents experienced in aquatic centres:

1. Female, 55 – 59 years of age, pre-existing health issue.
Identified by patron.
Received first aid and oxygen therapy.
2. Male, 65+ years of age, pre-existing health issue.
Identified by patron in deep end of outdoor pool.
Required a pool rescue then received CPR, AED and emergency services called.
3. Female, 10 – 14 years of age. Inappropriate behaviour.
Identified by patron in deep end of indoor pool.
Received first aid.
4. Female, 5 – 9 years of age, poor swimming ability.
Identified by Swim Instructor in shallow end of outdoor pool.
Received first aid.
5. Female, 40 – 44 years of age, pre-existing health issue.
Identified by lifeguard in deep end on play-equipment.
Required a pool rescue then received first aid, oxygen therapy and emergency services called.



6. Male, 0 – 4 years of age, poor swimming ability and lack of parental supervision.
Identified by lifeguard in shallow end of pool.
Required a pool rescue then received oxygen therapy and emergency services called.
7. Male, 35 – 39 years of age, pre-existing health issue.
Required oxygen therapy and emergency services called.
8. Male, 15 – 19 years of age, inappropriate behaviour.
Identified by patron in deep end of pool.
Required a pool rescue then received CPR, oxygen therapy and emergency services called.
9. Male, 0 – 4 years of age, poor swimming ability and lack of parental supervision.
Identified by lifeguard in shallow end of pool.
Required a pool rescue then received CPR.
10. Male, 35 – 39 years of age, pre-existing health issue.
Identified by lifeguard.
Required first aid, oxygen therapy and emergency services called.
11. Male, 40 – 44 years of age, inappropriate behaviour.
Identified by patron in deep end of dive pool. Facility design was a factor.
Required a pool rescue, application of spinal board/collar then received first aid, oxygen therapy and emergency services called.
12. Female, 0 – 4 years of age, pre-existing health issue.
Identified by patron.
Required oxygen therapy and emergency services called.
13. Female, 5 – 9 years of age, poor swimming ability and lack of parental supervision.
Identified by lifeguard in deep end of wave pool.
Required a pool rescue.

- 
14. Male, 50 – 54 years of age, pre-existing health issue.
Identified at pool entry/exit.
Required oxygen therapy and emergency services called.
 15. Male, 15 – 19 years of age, poor swimming ability.
Identified by lifeguard in deep end of pool.
Required a pool rescue then received first aid and emergency services called.
 16. Male, 10 – 14 years of age, poor swimming ability.
Occurred in deep end of wave pool.
Required a pool rescue.
 17. Female, 5 – 9 years of age, inappropriate behaviour.
Identified by swim instructor in shallow water.
Required first aid.
 18. Male, 0 – 4 years of age, poor swimming ability and lack of parental supervision.
Identified in shallow water on rapid river.
Required a pool rescue.
 19. Female, 5 – 9 years of age, poor swimming ability and lack of parental supervision.
Identified by lifeguard in deep end of wave pool.
Required a pool rescue.
 20. Male, pre-existing health issue.
Identified by lifeguard on concourse.
Required first aid, oxygen therapy and emergency services called.
 21. Male, 10 – 14 years of age, inappropriate behaviour.
Identified by lifeguard in shallow end of wave pool.
Required spinal board/collar, received first aid and emergency services called.
 22. Male, pre-existing health issue.
Identified by lifeguard in deep end of pool.
Required first aid, oxygen therapy and emergency services called.

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23. Male, 10 – 14 years of age, poor swimming ability and lack of parental supervision.
Occurred in deep end of wave pool.
Required a pool rescue.
24. Female, 30 – 34 years of age, pre-existing health issue.
Identified by patron in shallow end of pool.
Required a pool rescue then received first aid, oxygen therapy and emergency services called.
25. Male, 10 – 14 years of age, pre-existing health issue.
Identified by patron in shallow end of pool.
Received first aid, oxygen therapy and emergency services called.
26. Male, 10 – 14 years of age, inappropriate behaviour.
Identified by lifeguard in shallow end of pool. Facility design was a factor.
Required a pool rescue and emergency services called.
27. Male, 5 – 9 years of age.
Identified in change room.
Received first aid.
28. Male, 50 – 54 years of age.
Identified by patron in deep end of spa.
Required a pool rescue then received oxygen therapy and emergency services called.
29. Female, 15 – 19 years of age.
Identified by lifeguard in pool.
Received first aid and oxygen therapy.
30. Male, 0 – 4 years of age, poor swimming ability and lack of parental supervision.
Identified by lifeguard in deep end of pool.
Required a pool rescue.

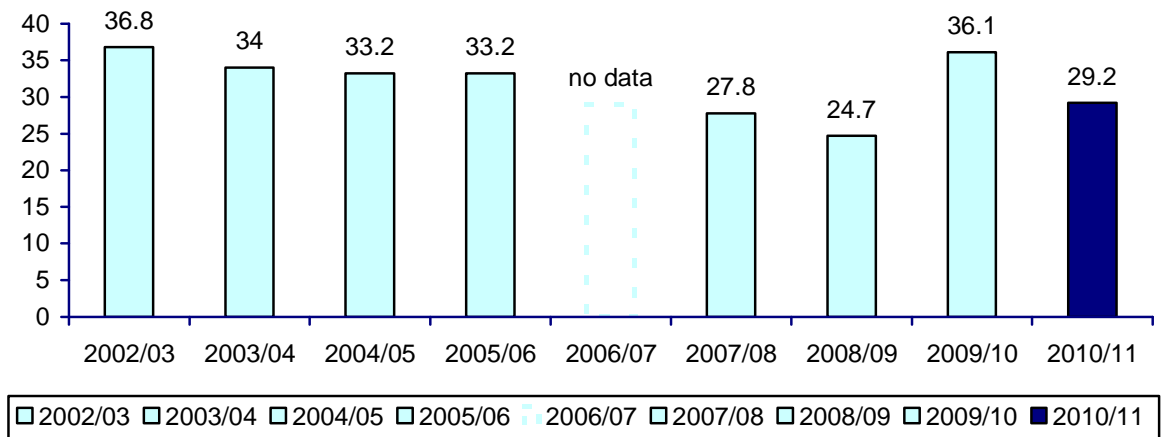
Minor Incidents

Drowning and serious accidents do not just happen. Much can be learnt from monitoring injuries of lesser severity. These minor incidents give an insight into the unsafe actions, conditions and behaviours being experienced in public aquatic centres.

A minor incident is generally managed via the centres internal resources and capabilities.

Over the 2010 – 2011 year an average of 29.2 incidents per 100,000 patrons was reported.

Figure 1: Incident Rate/100,000 patrons



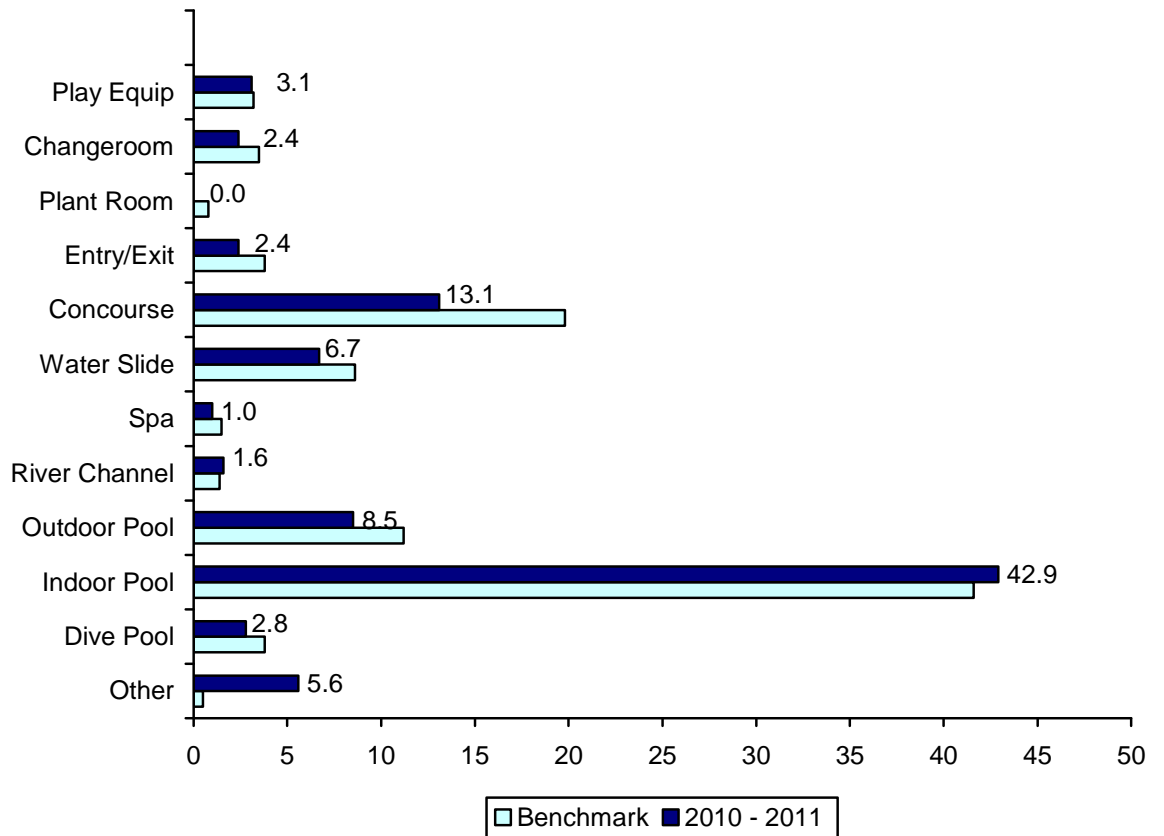
This year's incident rate is lower than the long-term average of 32.25 incidents per 100,000 patrons.

3. WHERE DO INCIDENTS/ INJURIES OCCUR IN SWIMMING POOLS?

Incident Locations

100% of the incident reports identified an incident location. Figure 2 shows where these incidents occurred within public aquatic centres;

Figure 2: Location of Incidents (%)



This year the frequency of incidents was lower on the concourse, water slides, dive pools and concourse. There was a significant increase in the number of incident reports that identified 'other' locations.

The facility design was identified as a factor in 8.3% of the reported incidents.

Impact of pool depth

Lifeguards identified the pool depth in 74.1% of the reported incidents.

- 35.1% (236) of incidents occurred in shallow water (<1m).
- 39.1% (263) of incidents occurred in deep water (>1m).

4. WHEN DO INCIDENTS / INJURIES OCCUR IN SWIMMING POOLS?

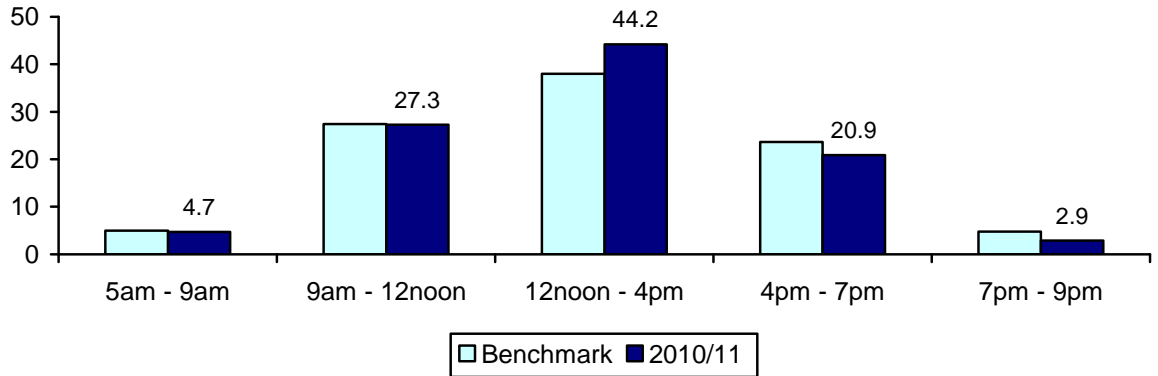
Daily Trends

Figure 3 illustrates the time of day when the recorded incidents occurred.

The higher frequency of incidents during the middle of the day maybe due to patrons being involved in un-structured aquatic activities.

Conversely few incidents occur in the morning during coaching/training sessions. This is also the time when the pool is used by 'regulars'.

Figure 3: Time of Incident (%)

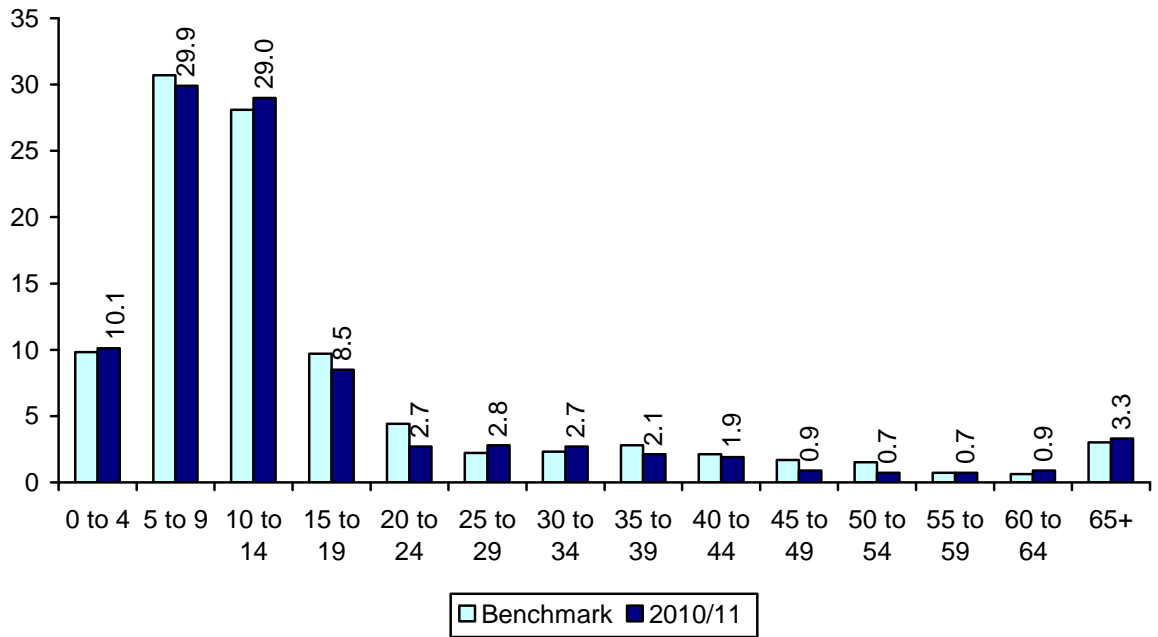


5. TO WHOM DO INCIDENTS / INJURIES OCCUR IN SWIMMING POOLS?

Age trends

96.1% of the incident reports identified the age of the victim. Figure 4 illustrates the age of incident victims.

Figure 4: Age of Victim (%)



Children under 14 years of age continue to contribute most significantly to the total number of aquatic centre incidents.

This year there was an increase in the proportion of incidents involving children aged 10 – 14 increased and older adults over 60 years of age.

Gender

86.9% of the incident reports identified the gender of the victim

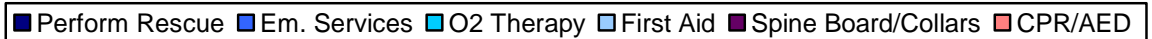
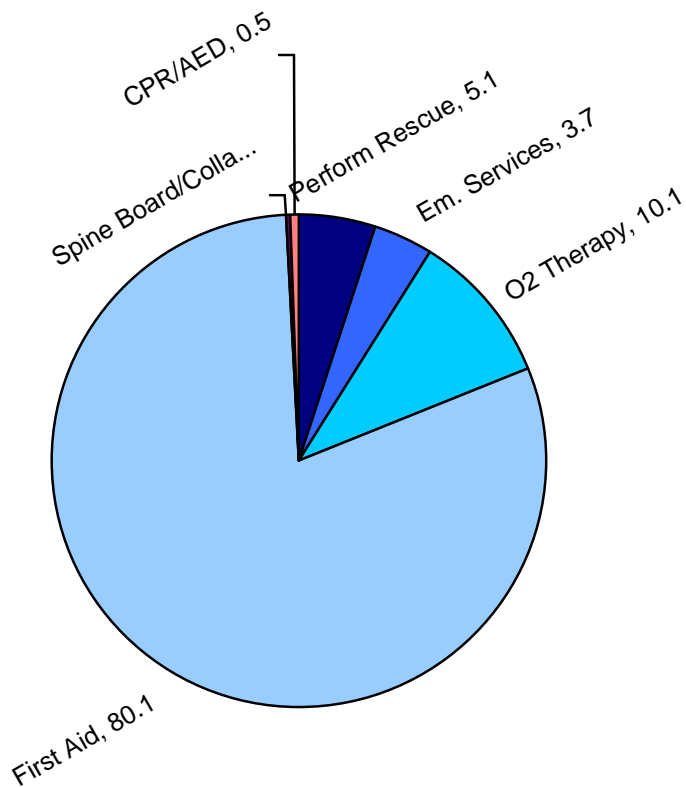
- 45.5% were male
- 41.% were female

6. WHAT INCIDENTS / INJURIES OCCUR IN SWIMMING POOLS?

Type of lifeguard response

100% of the incident reports identified the type of response. The frequency of lifeguard actions is illustrated in Figure 5.

Figure 5: Incident Response (%)



The vast majority (80.15%) of the incidents required the lifeguard to provide basic first aid. Administration of oxygen therapy was also relatively common.

It was not common for lifeguards to perform emergency care skills such as CPR, SAED or the use of spine boards and collars. These are fundamental skills of a lifeguard and therefore should be practiced during training sessions to ensure retention of skills/competence.

7. WHY DO INCIDENTS / INJURIES OCCUR IN SWIMMING POOLS?

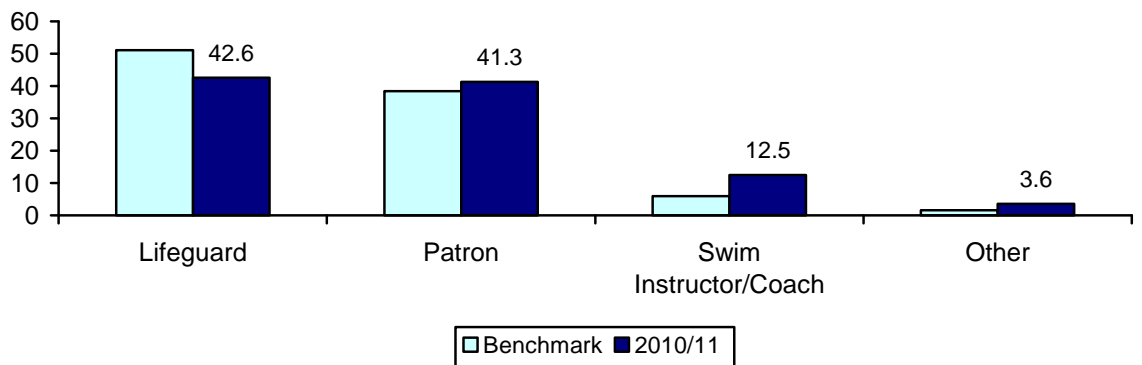
Supervision

The first person to recognise the incidents or respond to the person in difficulty was;

- The Lifeguard 42.6% of the time.
- Another patron 41.3% of the time.
- A Swim Instructor, Coach 12.5% of the time.

The victim looked after them self, or 'other' was recorded in the remaining incidents.

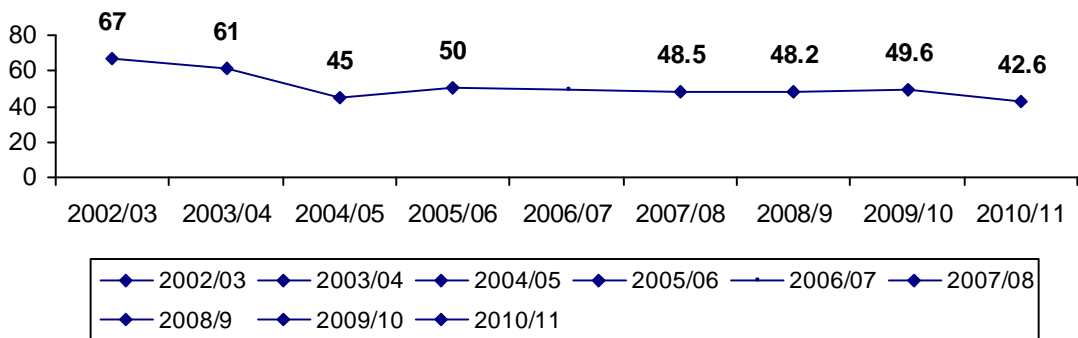
Figure 6: First Responder (%)



The high frequency that a fellow patron is the first to recognise an incident is often a function of proximity rather than a reflection of lifeguard vigilance. Lifeguards may have provided a timely response to these incidents. While facility managers cannot rely on patrons as supervisors they are clearly a valuable secondary level of surveillance.

In terms of lifeguard proximity to and timely identification of incidents, the graph below shows the percentage they were the first responder over the long term. This years result was the lowest since the Incident Evaluation Project began in 2002.

Figure 6: First Responder (%)



Contributing Factors

92.9% of the incident reports identified contributing factors. Table 2 lists the proportion and frequency of these factors (sometime multiple).

Table 2:

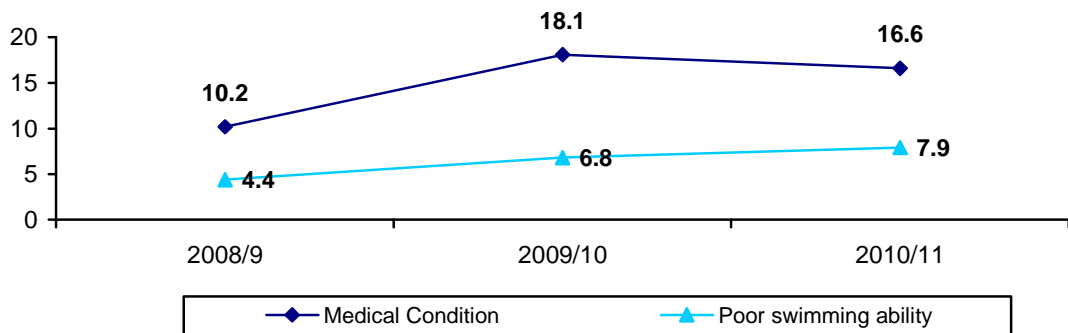
Contributing Factors	Frequency	Percentage of total incidents
Inappropriate behaviour by victim	324	48.1%
Victim was unaware of behaviour/safety standards	46	6.8%
Victim was from non-English speaking background	2	0.3%
Victim has medical condition/health issue	112	16.6%
Victim was poor swimmer	53	7.9%
Lack of parental/carer supervision	88	13.1%

Historically inappropriate behaviour and lack of parental supervision have been the two most common contributing factors reported by lifeguards.

This year the second most common contributing factor was a pre-existing medical condition which has increased to a significant 16.6% of incidents.

The swimming ability of patrons, or lack of, is an emerging issue. The frequency of incidents where this is a report factor has grown to 7.9% this year.

Figure 7: Contributing Factors (%)





RECOMMENDATIONS

1. Public aquatic centres strive to reduce the incident rate currently experienced by committing to an improvement program that will increase the level of compliance with established safety standards.
2. Lifeguards review their scanning strategies to ensure sufficient focus is placed on the control of children and teenagers.
3. Facility managers consider measures to reduce incidents occurring within the actual pool water space.
4. Public aquatic centres continue their commitment to the implementation of the Watch-Around-Water parental supervision program to assist in reducing the frequency of incidents involving young patrons (under 10).
5. Facility managers take steps to ensure emergency procedures in CPR, AED and spinal management are practiced on a regular basis.
6. Facility managers are conscious of the frequency that a lifeguard is the first person to recognise/respond to an incident and efforts continue to improve lifeguard scanning strategies so that they are frequent enough to ensure incidents are identified and a timely response is initiated by the lifeguards.
7. Strategies are considered to address the rise in incidents where pre-existing medical conditions and poor swimming ability were reported as factors.

Appendix 1.



AQUATIC INDUSTRY INCIDENT RESEARCH PROJECT

Aquatic Centre: _____ Month: _____ Year: _____
 Incident Date: _____ Time: _____ am/pm

Incident Description: Major Minor

Type of assistance provided?

Perform a rescue Call Emergency Services CPR SAED (defibrillation)

First Aid (basic) Spine Board/Collars Oxygen Therapy

Victim Age: _____ Gender: M / F

0-4 yrs 5-9yrs 10-14yrs 15-19yrs 20-24yrs 25-29yrs 30-34yrs

35-39yrs 40-44yrs 45-49yrs 50-54yrs 55-59yrs 60-64yrs 65+yrs

Where did it occur?

Indoor Pool Outdoor Pool Spa Wave Pool Rapid River

Dive Pool Concourse Plant Room Facility Entry Exit Change rooms

Water Slide Play Equipment Other: _____

How deep was the water? Less than 1m Greater than 1m

Did the design/construction of the facility play a role in the incident? Yes No

Who first recognised the incident? Lifeguard Patron LTS Teachers Other: _____

Probable Incident Cause:

Inappropriate victim behaviour Victim of non-English speaking background

Victim unaware of behaviour standards Pre-existing health/medical issue

Poor swimming ability Lack of parental/carer supervision

Please return all incident reports with monthly patronage figures.



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