2003 Water Safety Conference

Monday 22 to Tuesday 23 September 2003
Swiss Grand Hotel Bondi Beach, Sydney, Australia

Conference Program
Dear Delegate

WELCOME TO THE NATIONAL WATER SAFETY CONFERENCE 2003

On behalf of the Australian Water Safety Council (AWSC) I would like to welcome you to the National Water Safety Conference 2003. You will see from the Conference Papers that we have an excellent program planned for you – one we believe you will thoroughly enjoy.

Over the past five years there has been a huge increase in the public awareness of water safety issues and a giant leap forward in terms of government and corporate support at national, state and local levels. These success stories have been largely due to the tremendous efforts of all those involved in water safety right across Australia.

Our major task this week will be to identify, analyse and prioritise the major issues for inclusion in the revised National Water Safety Plan 2004-07 to be released in December this year.


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We hope you enjoy the conference.

Rob Bradley
AWSC Convenor
CEO – Royal Life Saving Society Australia
Message From Minister For The Arts And Sport

On behalf of the Australian Government colleagues I welcome all delegates to the 2003 National Water Safety Conference.

The Australian Water Safety Council has been instrumental in developing a proactive and coordinated approach to water safety since its inception in 1998. Since that time the development and implementation of the National Water Safety Plan 1998-2003 has led to many advancements in water safety and a much greater cohesion between those working at national and state/territory levels.

In many ways the 1998-2003 National Water Safety Plan laid the foundation for a consistent and effective water safety structure as it helped focus national, state and local attention on the major issues.

The evaluation of the Plan is very important. It will allow key stakeholders to build on the progress made over the past five years and to develop a new Plan for the future that will further enhance the safety of all members of the Australian community along with the many thousands of international visitors to our shores.

The Australian Government is a strong supporter of water safety initiatives and has demonstrated this support by providing additional funding for national water safety organisations in the last budget.

I wish you all well as you consider the way forward and I look forward to seeing the results of your deliberations on the future priorities for water safety in this country.

SENATOR ROD KEMP
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<td>Investigation into the coronal files of rock fishing fatalities that have occurred in NSW between 1992 and 2000 – Matthew Jones</td>
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© AWSC
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### Tuesday 23 September 2003

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fostering cooperation and commitment in the fight against drowning

Published July 1998
The Australian Water Safety Council (AWSC) was officially formed in February 1998 as a result of strong industry consultation and with the support of the Federal Minister for Sport & Tourism, The Honourable Andrew Thomson MP. The Council acts as a consultative forum comprising the major water safety organisations and related government agencies and focuses on the presentation of key water safety issues to governments, industry and the community.

The Australian Water Safety Council does not represent an additional layer of organisational bureaucracy and it will not receive funding directly. The Council will however, provide a collective voice for its member organisations. It will also liaise closely with kindred bodies at State, National & International levels.

The AWSC is committed to enhancing Water Safety in Australia - to producing a strong directional document, to generating bipartisan support and to overseeing the successful implementation of the National Water Safety Plan. The AWSC member bodies have demonstrated their commitment by throwing the resources of their respective organisations behind the Council.

On 5 May 1998 the AWSC conducted the National Water Safety Conference at the Melbourne Sports & Aquatic Centre involving a broad cross-section of the Australian Water Safety community and including representatives of government departments, agencies and statutory authorities from throughout Australia. The recommendations and spirit of cooperation engendered on 5 May have been incorporated into the objectives and priorities presented in this Plan.

The Australian Water Safety Council has pleasure in presenting this National Water Safety Plan to the Australian public with the great expectation that by following the recommendations contained herein there will be a significant reduction in the number of lives lost to drowning and aquatic related incidents.

Australian Water Safety Council

Robert Bradley (Convenor)
The Royal Life Saving Society Australia (RLSSA)

Greg Nance
Surf Life Saving Australia (SLSA)

John Kilpatrick
AUSTSWIM

Ross Gage
Australian Swimming Coaches & Teachers Association (ASCTA)

Stephen Francia
Australian Swimming Incorporated

Alan Murphy
Kidsafe Australia

Richard Franklin
Farmsafe Australia

Tony Middleton
Australia & New Zealand Safe Boating Education Group (ANZSBEG)

David Clark
Australian Local Government Association (ALGA)

Max Wells
Surfing Australia

Secretary: Stephen Leahy
Surf Life Saving Australia
FOREWORD

Australia has a reputation as a nation of water-loving people. Living, holidaying or simply just playing in and around water is very much a part of our lives. We often enjoy a day at the beach, river, pool or in a boat, and have an enviable record as a nation of champion swimmers. Our beautiful coastline is also a major drawcard for international visitors.

Unfortunately our love of the water also brings a number of problems, some with tragic outcomes. Each summer we are confronted with the tragedies of drowning at our beaches and in backyard pools. But its not just the beaches and pools that pose a risk, people also drown in rivers, dams, lakes and even baths and buckets.

Fortunately over the last 50 years, the number of drownings in Australia each year has gradually reduced. This has been due, in no small part to the efforts of the various national organisations concerned with water safety. In February 1998, in an effort to coordinate the efforts of these organisations, the Australian Water Safety Council was formed. Despite this about 300 people die from drowning each year, and that is 300 too many.

The National Water Safety Plan has identified and prioritised four key areas, which need to be addressed. Implementation of the Plan will establish national water safety standards and ensure the effective utilisation of the programs, resources and facilities, which currently exist. It will also aim to identify and maximise the links across all organisations involved in water safety.

Since its release in July 1998 over 1,000 copies of this Plan have been distributed throughout Australia and internationally. The Australian Water Safety Council has made significant progress on the objectives identified in the Plan, and has taken great strides in improving the communication and coordination between Federal, state, territory and local governments, water safety organisations, and sport and recreation service providers.

I am pleased to say that the Federal Government already makes a significant contribution to water safety through grants to the three major safety organisations – Royal Life Saving Society Australia, Surf Life Saving Australia and AUSTSWIM.

The Plan is not just for those with a professional interest in water safety, it is for everyone. I urge all those interested in reducing drownings and aquatic accidents in Australia to support the implementation of this plan in whatever way they can.

Jackie Kelly
Federal Minister for Sport and Tourism

ACKNOWLEDGMENTS

The National Water Safety Plan has been developed by the Australian Water Safety Council, Sydney, July, 1998.

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EXECUTIVE SUMMARY

In February 1998 the Australian Water Safety Council was formed with the goal of providing a coordinated and cooperative approach to Water Safety in Australia. It was formed because despite the massive efforts of water safety organisations, governments, statutory authorities and individuals drownings continue to occur in unacceptably high numbers.

Drowning is the third highest cause of accidental death in Australia with over 300 deaths every year.

The major objective of the National Water Safety Plan is to more adequately resource and effectively utilise the significant programs, resources, facilities and world's best practice that currently exist. Through increasing resources, improving communication and encouraging the sharing of ideas within the Water Safety structure the nation's drowning toll will be significantly reduced.

The National Water Safety Plan presents a broad framework for all stakeholders to utilise in improving Water Safety Standards and Action Programs. The framework has been generated from the experience, research and consultation with AWSC Member bodies, the three tiers of Government and the wider Water Safety community.

The National Water Safety Plan will:

- Identify and prioritise the major Water Safety issues
- Establish the Water Safety Standards to be applied nationally
- Commit to support, bolster and improve the expertise, programs and resources that are already operating effectively within the system
- Identify and maximise organisational linkages to ensure that duplication of effort and resources are avoided so that positive ideas and best practice are shared throughout Australia.

The Key Result Areas proposed within the Plan are:

1. Water Safety Research
2. Management of Aquatic Locations
3. Water Safety Education
4. Targeting of Key Drowning Demographics

National Water Safety Priorities

Water Safety Education provides the base from which all other water safety issues flow and is arguably the single most critical factor in the Drowning Prevention mix. Quality Water Safety Education must be made available to every Australian - the enhancement, strengthening and support of the current system must be assured.

Research must be undertaken to ensure that existing programs, services and strategies remain effective and also to identify future initiatives and direction.

“If you can’t measure it - you can’t manage it!”

The three highest At Risk Priority Groups identified for immediate action are:

1. Children in the 0-5 Age Group
2. Males 16-35 years - the traditional risk-taking group
3. The Rural Community

The greatest challenge to the success of the National Water Safety Plan will be to gain the cooperation and commitment from across government, from across the States and Territories and from the water safety community to together make the Plan work. Ultimate success will depend on the extent of this cooperation. The Australian Water Safety Council is committed to implementing the recommendations contained in this Plan and will be working tirelessly to ensure that responsibilities are discharged and that results are achieved.

The Prize for successfully implementing this National Water Safety Plan is immense - indeed the Prize is.... Life itself!! ... the saving of up to 300 Australian lives every year.
Summary of Recommendations

Key result area 1:  water safety research

- **Recommendation 1:** That a Research Coordinating Body be established as part of the AWSC to identify water safety research needs and to facilitate research opportunities and projects. This Australian Water Safety Research Committee would facilitate research through organisations like National Health & Medical Research Council (NHMRC), Australian Bureau of Statistics (ABS), National Injury Surveillance Unit (NISU), National Coronial Information System (NCIS) and Research Departments of Universities.

- **Recommendation 2:** That a National Water Safety Audit be conducted to determine all currently available services, programs and resources.

- **Recommendation 3:** That Drowning Statistics be collated from ABS and State Coroners with subsequent dissemination and access to relevant Water Safety organisations.

- **Recommendation 4:** That Coronor’s Reports on aquatic incidents be provided directly to a central collection agency.

Key result area 2:  management of aquatic locations

- **Recommendation 5:** That Safety Audits must be conducted on all Aquatic Locations in particular on all areas used as regular swimming locations - beaches, pools and inland swimming holes.

- **Recommendation 6:** That State Legislation be enacted to ensure that if an aquatic facility is part of a development, or a development is proposed adjacent to an aquatic environment, the Building Application and Development Application must include an appropriate Safety Plan.

- **Recommendation 7:** Appropriate Safety Services must be provided at all locations of aquatic recreation.

Key result area 3:  water safety education

- **Recommendation 8:** That Water Safety Education in schools comply with the competencies contained in the National Curriculum Framework.

- **Recommendation 9:** That Water Safety Competency Targets be set for all Australian children - established at appropriate Age/Developmental levels.

- **Recommendation 10:** That specific attention be provided to ensure access to Water Safety education by people in rural and particularly remote country locations.

- **Recommendation 11:** That national safety standards be established for Learn to Swim & Water Safety programs be conducted by Swimming School operators.

- **Recommendation 12:** That all Swimming Teachers and Coaches hold an appropriate level of accreditation equivalent to the AUSTSWIM Teacher of Swimming and Water Safety.

Competencies in Related Aquatic Fields

Specific Safety Standards must be met in relation to all Aquatic Recreational pursuits:

- **Recommendation 13:** (Boating) That PFD’s (Personal Flotation Devices) be worn as a mandatory piece of Safety Equipment by all persons on board boats crossing off-shore sand bars. Liability for the wearing of PFD’s in this circumstance to be directed at the boat’s skipper/driver.

- **Recommendation 14:** (Diving) That all trainees comply with the requirements of the Standards Australia AS4005.1 - Training and Certification of Recreational Divers.

- **Recommendation 15:** (Fishing) That improved access to educational programs and safety systems be provided for recreational fishers.
Key result area 4: targeting key drowning demographics

- **Recommendation 16: (The 0-5 Age Group)** That the Drowning Prevention Program outlined in Appendix 1.(KRA 4) be implemented nationally as the **No. 1 Priority** of this National Water Safety Plan.
  - Zero Tolerance of drownings in the Home Environment.

- **Recommendation 17: (Traditional Risk Takers: Male 16-35)** That research be conducted through NHMRC as to the best way to approach educating this demographic against “risk taking” behaviour. The research should investigate *Alcohol and Recreational Activity* in this age group generally with the water being one of the environments studied.

- **Recommendation 18: (Traditional Risk Takers: Male 16-35)** That the Drowning Prevention Program outlined in Appendix 1.(KRA 4) be implemented nationally.

- **Recommendation 19: (Rural Communities)** That the Drowning Prevention Plan outlined in Appendix 1.(KRA 4) be implemented nationally. Rural communities have been identified as one of the three High Risk groups of drowning victims.

- **Recommendation 20: (Tourists)** That all In-bound Tourists and Migrants receive important Water Safety Information through strategies outlined in Appendix 1. (KRA 4).

- **Recommendation 21: (Culturally Diverse Communities)** That key water safety messages be publicised in a variety of different languages and promoted directly to ethnic groups through Local Councils and through cultural specific publications.
INTRODUCTION - AUSTRALIANS AND THE WATER

Put quite simply - most Australians love the water. Whether it is splashing playfully in amongst the waves, riding the river rapids or being caressed by the crystal blue waters of the local swimming pool, Australians and millions of visitors each year enjoy our many and varied aquatic experiences.

Indeed the aquatic environment plays a huge role in moulding the Australian culture, in preparing our children for life ahead and in promoting our beautiful country and lifestyle to the rest of the world.

But it was the startling news of Summer 98 that really grabbed the public’s attention. Four young children were carried out to sea at Victoria’s Gunnamatta Beach, a Vietnamese family drowned on the Murray River, yet another toddler killed in a backyard pool and ... still it continued when on the June long weekend four fishermen drowned in two incidents off the NSW South Coast (none of them were wearing a life jacket) - these are the tragic realities when the water safety issue is not adequately addressed.

We know that over 300 Australians will drown this year. We know this because over 300 Australians drown every year. Drownings occur in rivers, lakes and dams, they happen at unpatrolled beaches, in the bathtub, in the swimming pool, in nappy buckets - in fact where ever there is water, drownings can occur.

Drowning is the third largest cause of accidental death in Australia overall and in the 0-5 age group it is the number one killer.

The real tragedy of drowning is that almost every drowning is preventable.

It is therefore essential that Water Safety organisations and Government at all levels take responsibility to ensure that people are adequately prepared to use our aquatic environment. Our community must be properly educated, skilled and well aware of the hidden dangers of water. Likewise owners, operators, managers and Government instrumentalities responsible for aquatic locations must assure public safety.

This National Water Safety Plan is built on the solid foundation of over 100 years of lifesaving in Australia, of generations of volunteer and professional lifeguards and on groundbreaking research including the benchmark report by Paul Giles² (1995) Towards a National Water Safety Strategy. This Plan will identify and highlight the requirements - the standards, programs, resources and legislation - necessary to ensure that Australians are prepared for and protected from drowning, near-drowning and injury in our vast aquatic environment.
THE NATIONAL WATER SAFETY PLAN
- fostering cooperation & commitment in the fight against drowning

DROWNING IN AUSTRALIA 2003
• Over 250 Australians drown every year
• Drowning is the fourth highest cause of accidental death
• In the 0-5 age group it is the No.1 killer
• Almost every drowning is preventable

FORMATION OF THE AUSTRALIAN WATER SAFETY COUNCIL
• AWSC is an industry driven Lobby Group representing the key Water Safety organisations.
• Officially formed in February 1998
• Striving to work more closely with State Governments and stakeholder groups

PURPOSE OF THE NATIONAL WATER SAFETY PLAN
In the diverse & complex Aquatic Industry we aim to:
• Provide an apolitical Framework document that will...
  – Reduce Duplication of Effort & Resources
  – Share ideas and strategies
  – Identify the responsibilities of stakeholders
  – Help us Save Lives

STAKEHOLDERS IN THE PLAN
• A complex issue with many layers of stakeholders
• Water Safety sits across Governmental portfolios:
  - Sport & Recreation
  - Education
  - Emergency Services
  - Primary Industry
  - Transport
  - Health & Ageing
  - Tourism
  - Local Government & Local Councils
• State Water Safety Councils
• National Water Safety organisations – states & territory branches
• National/State organisations with a water safety interest
• Commercial operators and private providers

KEY WATER SAFETY ISSUES WITHIN THE PLAN
• Water Safety Research
• Management of Aquatic Locations
• Water Safety Education
• Targeting Key Drowning Demographics
WATER SAFETY HIGHLIGHTS
1998-2003

GENERAL MANAGEMENT AND COORDINATION OF WATER SAFETY
• State Water Safety Councils formed in all States and Territories
• Water Safety Plans developed and State Water Safety initiatives
• Meeting of Key State Govt WS Reps & the AWSC
  • Convened by Minister for Sport & Tourism J. Kelly in February 1999
• Water Safety Conferences
  • State Water Safety Conferences and Planning Workshops – Victorian Aquacon
• SRMC – Establishes SCORS Working Party 2001-02
  • Report made to SRMC Meeting – August 2002
  • Results to be released September 2003

RECOMMENDATIONS FROM SCORS WORKING PARTY REPORT TO SRMC – August 2003
Recommendations:
• Review the Model of how Water Safety is coordinated and delivered to Australia
• Increase scope of AWSC membership to include: SCORS and Aquatic Industry representatives
  • Incorporate State/Territory objectives into the new plan & review the structure and operation of AWSC
  • States/Territories asked to review their State Water Safety Plans
• Review the communication strategy of AWSC and ensure better two-way flow of information
• National/State Water Safety Weeks
  • States to investigate the viability of these initiatives

1. RESEARCH
National Water Safety Research Committee (established 1999)
• Identified areas of need for water safety research and evaluation
• National Coronial Information System
  • Established through MUNCCI – on-line 2000
• Drowning specific Data Set Feasibility study and Report Form developed
• Major Research Studies – including:
  • “Analysis of Drowning in Australia” – A. Williamson (2000)
  • “Analysis of drowning of children aged 5 years in NSW” (2002)
• Statistical Collation and Reporting
  • National Drowning Reports – produced annually by RLSSA – based on ABS
  • Coastal Incident Database – collated by SLSA (2001-)
  • Boating Incident Database – collated by AMSA (1999-)
  • State Drowning Reports – produced annually in most States
• International Links – International Lifesaving Federation (ILS)
  • ILS Medical Commission – Medical Statements and Policies

2. MANAGEMENT OF AQUATIC LOCATIONS
• Guidelines for Safe Pool Operations (GSPO)
  • Safety Audits on Aquatic Facilities
  • Safety Audits on “Small Pools” – Tasmania
• Home Pool Safety
  • Fencing legislation now in place in each State
  • Home Pool Inspections by Local Councils or designates in some areas
• SLSA Beach Management System
• Guidelines for Safe Open Water Locations – extension of GSPO
• ANTA – Development of VET Training Packages – Community Recreation TP and Community Safety TP

3. WATER SAFETY EDUCATION
• “Swim and Survive” (RLSSA 1982 - 2003)
• “Beach to Bush” (SLSA 2000-03)
• “Infant Aquatics” (RLSSA 1999 – 2003)
• “Safe Boating” Schools Kit (ANZSSEG 2001-03)
• “Wet’n’Wise” – teacher resource kits to 12,000 Primary Schools and 2,500 Secondary Schools (RLSSA 2000-02)
• “Go Swim” (ASI – 2003-04)
• AUSTSWIM – development of “Towards Competitive Strokes” course and resources 2003
• ARI – reports that “water safety weeks” are now incorporated into the programs of many aquatic facilities

4. TARGETING KEY DROWNING DEMOGRAPHICS
Included Public Awareness Campaigns
• Pfizer “Keep Watch” - Toddler Drowning Prevention (RLSSA 1999-03)
• “Kids Alive – Do the Five” – L. Lawrence
• Kellloggs “Surf Safe Summer” (SLSA - 1998-2003)
• “Safe Waters” – media campaign and project support from NSW State Dept of Sport and Recreation (1998-2003)
- fostering cooperation and commitment in the fight against drowning -
The Queensland Water Safety Council (QWSC) was founded on 29th April 1997, (an initiative of Surf Life Saving Queensland), as a first step towards encouraging co-operative co-ordination between all agencies and organisations involved with water safety in Queensland. The Queensland Water Safety Council was formed to bring together all agencies involved in water safety in this State and membership includes lifesaving organisations, government departments, community based organisations and other relevant agencies.

The draft *Queensland Water Safety Plan* is a direct result of the formation of that Council. It was prepared as a basis for discussion at the ‘2001 Water Safety Symposium’ held on 24th August 2001. Further discussion and amendment following that Symposium has led to the present draft.

**Government Departments include:**

- Queensland Health (including reps from Royal Children’s Hospital, Health Outcomes Unit, Statewide Health Promotion Unit)
- Department of Emergency Services (including Search & Rescue and Ambulance)
- Department of Transport
- Department of Local Government & Planning
- Department of Tourism, Racing and Fair Trading
- Queensland Police Service (including Brisbane Water Police and Drug & Alcohol Co-ordination Unit))
- Department of Primary Industries (including the Queensland Boating & Fisheries Patrol)
- Education Queensland
- Workplace Health & Safety
- Queensland Sport & Recreation
- Local Governments including Gold Coast, Maroochy and Caloundra City Councils

**Non-government organisations include:**

- Surf Life Saving Australia
- Royal Life Saving Society
- Surfing Queensland Inc.
- Local Government Association of Queensland
- Queensland Outdoor Recreation Federation
- Boating Industry Association of Queensland
- Queensland Injury Surveillance Unit
- National Association of Underwater Instructors
Objectives

The State Water Safety Plan has a number of objectives as follows:

1. **Co-operative Co-ordination** - To facilitate collaborative action by all the various organisations involved with water safety in Queensland.

2. **Research, Analysis and Programme Development** - To have ready access to accurate, comprehensive and timely data on drowning, near drowning, and other water related incidents.

3. **Increased Public Awareness and Education** – To encourage responsible and informed water safety behaviour of people when in and around water.

4. **Surveillance and Compliance** - To ensure safe locations in and around water through various environmental, regulatory and industry wide approaches.

5. **Efficient Rescue Services** - To minimise, if not eliminate, death by drowning or other misadventure through the provision of efficient and responsive rescue services

The Queensland Water Safety Plan has been developed over the past 2 years on a voluntary basis and now awaits official endorsement and implementation. Clear areas of priority action have been identified and a range of collaborative strategies outlined. The Queensland Water Safety Council will need to be placed on a more formal footing, various Implementation Groups will need to be established, (both supported by a small Secretariat) and immediate projects (such as a safe tourists campaign and the establishment of a website), data collection and information sharing will be able to get underway.

In compiling the Plan the Council committee was confronted with a lack of sufficient data accurate enough to identify where the *real* problem areas are. It was considered that the fragmented nature of available data may cause some major areas of concern to be inadvertently concealed.

Examples of existing key findings from Queensland data include:
• Drowning is the leading cause of death due to injury in Queensland children less than five years old. Drowning therefore accounts for a quarter of the paediatric injury deaths in Queensland.

• In Queensland 157 children under five have drowned since 1992. Almost half of these deaths occurred in domestic pools.

• 25 children in Queensland died in the bath during the last 10 years.

• Queensland has the second highest fatality rate for coastal drownings in Australia next to New South Wales. There were 17 coastal drownings in the Queensland summer of 2001/2002 and all these drownings took place outside the red and yellow flagged areas patrolled by lifesavers, (Minister for Emergency Services, Ministerial Statement 04/12/02)

• Overseas visitors and tourists admitted to Queensland hospitals due to aquatic related incidents between 1995 and 2000 included 81 cases of drowning or near-drowning, 30 diving accidents and 79 water-transport related incidents. (Surf Lifesaving Queensland)

• In 21% of toddler drowning deaths in Queensland, the pool was unfenced. Toddlers who gained access to a fenced pool usually did so through a gate that was propped open.

• One survey of toddler drowning in Queensland also found that:
  • 70% of toddler drowning deaths were males.
  • 62% of the victims were aged between one and two years old.
  • 66% of the drownings occurred in pools at the child’s usual residence.

• For every Emergency Department presentation it is estimated that there are 10 “near misses” that is, children suffering immersion who are rapidly rescued. Between 5% and 10% of those admitted will suffer some permanent neurological damage.

• It has been estimated that pool fencing has saved the lives of over 70 toddlers in Queensland in the last 10 years.

• There are on average 14 drownings on Queensland beaches each year recorded by Surf Lifesaving Queensland in 2001/2002. (Surf Lifesaving Queensland)

• According to the Queensland Department of Local Government & Planning, it is estimated that approximately 320,000 households in Queensland have an outdoor swimming pool or spa. In Noosa for example, more pools are approved for building each month than houses. Approximately 23 new pools a month are being built in Noosa Shire.

• A survey by the Australian Bureau of Statistics also revealed that the number of pools appeared to have more than doubled in the past 10 years.

• State-wide, 15% of all households have an in-ground pool and around 2% have an above ground pool.

The Queensland State legislation regarding domestic pool fencing (based on Australian Standards) was introduced in February 1991 and required pool owners to ensure their pool fence complied with minimum pool fencing requirements by 1 April 1992. New amendments were proposed in mid 2003 to limit the capacity of Local Councils to provide exemptions, to provide Local Councils with the power to issue on the spot fines and provisions making it compulsory to erect warning signs during construction and CPR signs after the pool is completed.

Other local water based issues include marine stingers, education of interstate and intrastate tourists and visitors about rips etc, and injuries caused by diving into shallow waters.
Victoria
Andrew Whittaker
Victorian Aquatic Industry Council

**Background**

Water Safety in Victoria is in a relatively strong position as there has been good government support and industry cooperation over the last five years. The catalyst for this has been the ‘Play it Safe by the Water’ campaign which was launched in 1998.

This was based on a plan (the Victorian Water Safety Strategy) that the aquatic industry had developed in 1997 following the first Victorian Water Safety Symposium.

As a result of some tragic drownings in January 1998 the State Government was keen to take action about drowning and water based incidents, and the aquatic industry was able to demonstrate it had a strategy in place with a series of recommendations for action.

This was the start of successful cooperative relationship between Government and the aquatic agencies, which became known as the ‘Play it Safe by the Water’ campaign.

From the beginning it was recognised that creating awareness through the media would only bring limited and short term results. In trying to create a water safety culture it was essential that:

1. The public have an understanding of the issue of water safety and associated risks
2. They gain sufficient knowledge and skills to deal with the potential risks
3. They have the ability to take action or show appropriate behaviour.

In order to establish a water safety culture the use of media would only be one of the strategies to be used. It was vitally important that information and activity was delivered at a local or grass roots level. This meant that local organisations, schools and pools were important delivery points.

The programs and services of the existing water safety and lifesaving organisations were also crucial in providing the delivery framework for these programs.

**Key Focus Areas**

After extensive research and analysis of drowning statistics, Coroner’s reports, rescue and incident reports it was recognised that there were key groups that needed to be targeted. These were identified as:

1. Risk Takers
2. Parents of young children (under 5 years)
3. Beach goers
4. Holiday makers
5. Users of watercraft
It was also determined that there were three key environments to focus upon as they each had their own danger levels and different circumstances. In respect to each environment a different key water safety message or slogan was developed. These were:

1. BEACH  ‘Always swim between the Flags’
2. INLAND WATERWAYS  ‘Check it’s OK to swim’
3. HOME POOLS  ‘Never take your eyes off’

An extra boating message was added later:

‘Life jackets save lives’

**Key Strategies**

1. **UNIFIED AND COORDINATED APPROACH BY GOVERNMENT, AQUATIC INDUSTRY, COMMUNITY GROUPS AND MEDIA**

A crucial component of the success of the campaign has been the coordinated planning and cooperation between the major players. It was recognised that Government was necessary to provide the basic funding as drowning was a social and community issue and that the main organisations involved in delivering programs and providing services were non profit and community bodies.

The aquatic industry provided the ability to deliver at the school, pool and community level and give realistic advice to Government.

Instead of each organisation developing their own messages it was important that everybody operate under and support the slogan ‘Play it Safe by the Water’. This meant that one simple and easily recognisable message was being given to the public.

2. **COMMUNITY PARTICIPATION**

2.1 Water Safety Week

This was a major event which provided many opportunities to promote water safety.

The key activities were:

- Launch of campaign each year at the beginning of summer (November)
- Distribution of promotional material eg stickers, T-shirts, posters, Activities Guides, caps, Sink or Swim booklets, water bottles, and postcards.
- A particularly popular item has been the ‘Sink or Swim’ booklet that has been produced each year as it summarised the breadth of the campaign and has been widely used by schools, pools and water safety organisations throughout the campaign.
- Launch of media advertising
Launch of special 4 page supplements in a major newspaper
Conduct activities that involve the public.

The number of organisations and range of activities has steadily increased over the five years. In 2002 there were 277 different activities involving 244,700 people. These covered activities in schools, pools, and at beach and inland water locations and provided the crucial community and grass roots involvement that is essential if people’s behaviour is to be changed.

3. PUBLIC AWARENESS

A comprehensive media and public relations plan was developed to increase awareness and understanding of the water safety messages and topics. It was also very important in supporting the strategies for Community Participation, Education and Risk Management.

The plan used a range of outlets covering:

3.1 Television advertising.
3.2 Print media and supplements.
3.3 Cinema advertising.
3.4 Public relations activity. This was used to coordinate and integrate the various forms of media activity add depth and variety to the public awareness campaign. They were able to arrange and coordinate such activities as:
  - Tram panel advertising
  - Radio interviews and talkback spots
  - Liaison with all forms of media
  - Coordinate press releases
  - Mobile billboards
  - Involvement in related shows
  - Monitor media articles and exposure
  - Water safety messages on weather and surf reports

3.5 Water Safety Web site.

4. EDUCATION AND TRAINING

This area was identified as crucial to changing behaviour over the long term and considerable resources were put into developing appropriate resources and providing the relevant professional training. The water safety agencies had considerable expertise in developing educational resources and a number of good resources were already available and in use in schools.

4.1 Development of educational resources for both primary and secondary schools for use in the classroom as well as open water locations.
4.2. Professional development for teachers.
4.3. Tertiary institutions providing students to the education system.
4.5. Open Water Learning.
5. RISK MANAGEMENT

The campaign was a complex mix of different strategies and it was important that the area of risk management be addressed as a key strategy. Infrastructure and signage can have a significant effect on the public’s understanding of water safety issues and risks so a major effort was directed towards raising awareness amongst local government and State Government Departments.

5.1. Aquatic Risk Management Seminars. A series of seminars were held across the state to raise the profile of aquatic risk management.

5.2. Aquatic Risk Management Kit –CD ROM. A special kit was developed for use by key agencies which covered all aspects of risk management in the different environments including standard checklists.

5.3. Signage Manual. The issue of inconsistent and inappropriate signage has been addressed through the production of a Signage Manual that provides guidance on the construction, location and wording of signs, and fits in with the International Standards on Signage.


Results

1. Reduction in drowning.  
   There has been a 39% drop (from 64 to 39) in the drowning rate since the campaign started in 1998.

2. Production of educational resources that are now widely used.  
   There are now good educational resources in all schools throughout the state with a range of teachers who have been trained in the use of these resources.

3. Production of specific educational kits eg Aquatic Risk Management Kit, has also raised awareness and knowledge about water safety issues amongst key professional groups.

4. Well established network for cooperation and coordination between water safety and lifesaving agencies, and government.

5. Increase in learn to swim classes.

6. Increased awareness of water safety.

7. Water Safety Week established as a community event.

Water safety is an issue that covers many different environments and organisations and can easily be sidelined due to the fragmented nature of all the agencies trying to tackle the issue. The recognition of the need to have common direction and support has been essential in helping address the varying causes for drowning and the strengthening of this cooperation is a long term objective for the industry in Victoria.
Tasmania Water Safety Plan: Furthering the Fight Against Drowning

LEADERSHIP
PREVENTION & RESCUE
EDUCATION

Introduction

The Tasmania Water Safety Council was officially formed in January 2001. Strong industry consultation led to the meeting of the following organisations:

- Surf Life Saving Tasmania
- Royal Lifesaving Society – Tasmania Branch
- Swimming Tasmania
- AUSTSWIM Tasmania
- KidSafe Tasmania

A series of meetings with the Office of Sport and Recreation gave the Tasmania Water Safety Council the impetus to develop this first Tasmanian Water Safety Plan and the Tasmanian Water Safety Charter 2001—2003. These documents provide the framework for the new development of water safety standards, practices and initiatives among all organisations with an interest in fighting drowning in Tasmania.

The Tasmanian Water Safety Charter seals the commitment of the state’s key water safety organisations to the ongoing leadership, prevention & rescue, and education required to reduce preventable drowning deaths. The Tasmanian Water Safety Plan is the statement of action from the Tasmania Water Safety Council. The endorsement of the Tasmanian Government secures the Tasmania Water Safety Council the necessary mandate to lobby, advise and consult to Government at all levels in Tasmania about the need to consider water safety as a priority social and political issue.

The Tasmanian Water Safety Plan is a dynamic living document declaring measurable and achievable goals according to the allocated resources of the time. As the plan gains momentum so the Tasmania Water Safety Council will review, monitor and adapt the plan to meet the needs of the Tasmanian community and water safety’s key stakeholders.

Robert Barnes

Chairman, Tasmania Water Safety Council
## Leadership

**OBJECTIVE:** To work with community, Government and industry to promote water safety standards and practices.

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<th>OUTCOMES</th>
<th>PERFORMANCE INDICATORS</th>
<th>RESPONSIBILITY</th>
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</table>
| 1. Community Service | 1.1 Establish the Tasmania Water Safety Council as the industry watchdog for non-boating related water safety issues. | • Enquiries made to members of the TWSC.  
• Community reference to TWSC for advice or comment.  
• To seek an independent high profile Chairman by 2002 | Member Organisations      |
|                    | 1.2 Develop a generic community awareness campaign for non-boating related water safety. | • Implementation of a shared comprehensive campaign in public domain in preparation for summer 2001-2002.  
• Media coverage gained by TWSC. | Member Organisations      |
|                    | 2.2 Achievement of formal government recognition for Tasmanian Water Safety Charter. | • Premier Jim Bacon MHA receives Charter at a public forum. | Chairman, TWSC            |
|                    | 2.3 Communicate directly with relevant government departments and agencies. | • Regular written and face-to-face communication and meetings with Government representatives on key water safety issues and initiatives. | Chairman, TWSC            |
| 3. Risk Management | 3.1 Monitor the provision of aquatic risk management advice and assessment against recognised standards. | • Promotion of water safety standards and practices to industry and private sector and other water safety organisations.  
• Access to TWSC’s risk management expertise and advice. | Member Organisations      |
| 4. Research        | 4.1 Facilitate research into drowning, near drowning and injury and other aquatic related incidents. | • Identification of trends in aquatic issues related to usage, hazard identification, safety implementation etc.  
• Produce research reports to deliver to key stakeholders.  
• Modify TWSC and member organisation’s programs to meet research outcomes and recommendations. | Member Organisations      |
Prevention & Rescue

Objective: To highlight and reduce risks of injury and drowning in Tasmanian aquatic environments.

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>OUTCOMES</th>
<th>PERFORMANCE INDICATORS</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Safety &amp; Signage Audits</td>
<td>1.1 Promote aquatic safety and signage audits as an effective tool for Government, community and private sector risk management strategies.</td>
<td>• Production of a Government supported promotional package on RLSST and SLST services in aquatic safety and signage audits.</td>
<td>Royal Life Saving Society Surf Life Saving Tasmania</td>
</tr>
<tr>
<td></td>
<td>1.2 Monitor the implementation of aquatic safety and signage audits in Tasmania.</td>
<td>• Quarterly and Annual report on RLSST and SLST audits completed.</td>
<td>Royal Life Saving Society Surf Life Saving Tasmania</td>
</tr>
<tr>
<td>2. Emergency Services</td>
<td>2.1 Develop and promote the cooperative network of aquatic emergency services available in Tasmania.</td>
<td>• Formation of strategic partnerships with emergency service and other aquatic rescue organisations to develop inter-service capabilities.</td>
<td>Surf Life Saving Tasmania</td>
</tr>
<tr>
<td></td>
<td>2.2 Encourage the increasing provision of prevention and rescue services in Tasmania.</td>
<td>• Identification of regularly used and accessible aquatic locations without services, and the relevant TWSC organisation responsible. • Development of a plan to implement safety and rescue services at those locations.</td>
<td>Royal Life Saving Society Surf Life Saving Tasmania KidSafe Tasmania</td>
</tr>
</tbody>
</table>

Education

Objective: To provide every Tasmanian with the opportunity to acquire a minimum standard of swimming and water safety competency.
<table>
<thead>
<tr>
<th>PROJECT</th>
<th>OUTCOMES</th>
<th>PERFORMANCE INDICATORS</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
</table>
| 1. Swimming and Water Safety Education           | 1.1 Establish and promote state competency standards for swimming and water safety education programs in for 7-12 year old Tasmanians | • Endorsement of Tasmanian Competency Standards for Swimming and Water Safety.  
• Modification of Swimming & Water Safety programs to meet recommended competency standards.  
• Promotion of Swimming & Water Safety Competency Standards in Tasmanian primary schools, clubs and community. | Royal Life Saving Society  
Surf Life Saving Tasmania  
Tasmanian Swimming  
AUSTSWIM Tasmania |
|                                                  | 1.2 Establish and promote state competency standards for swimming and water safety education programs for 13-17 year old Tasmanians. | • Endorsement of Tasmanian Competency Standards for Swimming and Water Safety.  
• Modification of Swimming & Water Safety programs to meet recommended competency standards.  
• Promotion of Swimming & Water Safety Competency Standards in Tasmanian secondary schools, clubs and community. | Royal Life Saving Society  
Surf Life Saving Tasmania  
Tasmanian Swimming  
AUSTSWIM Tasmania |
| 2. Swimming and Water Safety Teachers, Trainers and Instructors Accreditation/Qualification. | 2.1 Monitor the swimming & water safety teachers/trainers/instructors qualifications according to nationally endorsed training package qualifications. | • Access to ANTA endorsed training package qualifications for swimming & water safety instruction; and, workplace training and assessment.  
• Promotion of a Tasmania Water Safety Council standard for teacher/trainer/instructor qualifications. | Royal Life Saving Society  
Surf Life Saving Tasmania  
Tasmanian Swimming  
AUSTSWIM Tasmania |
<table>
<thead>
<tr>
<th>PROJECT</th>
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<th>RESPONSIBILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Public Education</td>
<td>3.1</td>
<td>Create a public education strategy to deliver swimming and water safety information and training to target publics and ‘at risk’ demographics.</td>
<td>Royal Life Saving Society Surf Life Saving Tasmania KidSafe Tasmania</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prioritisation of 0-5 years; Tasmanian farming families and 17-35 year old males as target demographics.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Endorsement of a prioritised plan to deliver targeted education programs to at risk groups.</td>
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</table>
New South Wales

Water Safety Report for NSW

The Hon. S Nori, MP  
Minister for Tourism and Sport and Recreation  
Minister for Women

In response to a spate of drownings at Australian beaches and waterways over the 1997-98 summer, the Premier convened the Premier’s Water Safety Taskforce to investigate options to prevent drowning and near-drownings in NSW. The Premier’s Taskforce developed a 10 point plan that primarily addressed signage issues and the development of a water safety campaign. In 2000, the Premier handed the lead government role responsibility to the then NSW Department of Sport and Recreation.

NSW Water Safety Framework 2001-2003

Flowing on from the Premier’s Taskforce, the NSW Water Safety Taskforce established the NSW Water Safety Framework 2001-2003 setting out key strategic areas: Evidence, Standards and Education, with sub-committees comprising key agencies.

Success in terms of water safety has centred on the NSW Water Safety Taskforce and the work of the individual organisations. The three ingredients that have contributed to this success over the last three years have included:

- The lead agency approach;
- A collaborative partnership of key government and peak water safety organisations; and
- A comprehensive and funded research program.

Lead agency approach

The NSW Water Safety Taskforce is a cooperative partnership of government and peak water safety organisations with a role in and around our waterways. The lead agency approach has involved different government agencies taking on the responsibility for each of the three broad strategic areas identified in the NSW Water Safety Framework 2001-2003.

The NSW Department of Tourism, Sport and Recreation has the overall government responsibility for the Taskforce in NSW. NSW Health, the Waterways Authority and the Department of Tourism, Sport and Recreation are the respective lead agencies for the Evidence, Standards and Education strategic areas. This approach has been one of the critical success elements to move water safety issues forward, with a sharing of effort and resources between key NSW government agencies.
A collaborative partnership of key government and peak water safety organisations

The collaborative partnership between government and peak water safety agencies has been successful with the NSW Government providing funding and support to progress initiatives and peak water safety organisations assisting with the delivery of various water safety initiatives.

There are 20 government agencies and peak water safety agencies represented on the NSW Water Safety Taskforce: Australian Professional Ocean Lifeguard Association, Austswim NSW, Community Relations Commission, FarmSafe NSW, Municipal Employees Union, Department of Education and Training, NSW Health, Department of Local Government, Department of Tourism and Sport and Recreation, NSW Fisheries, Local Government and Shires Association, Premier’s Department, Surf Life Saving NSW, Royal Life Saving Society Australia (NSW Branch), Waterways Authority. Sub-committee agencies include Spinesafe, Kidsafe and an Environmental Risk Consultant. Observers to the Taskforce include the Office for Emergency Services and the ACT Bureau of Sport and Recreation.

Comprehensive and funded research program

An amount of $500,000 was provided in 2001-02 for the implementation of the NSW Water Safety Framework. This funding was used to conduct the SafeWaters televised campaign and was invested in research initiatives to provide specific information about the demographics of current at risk drowning groups and evaluation of some common interventions. The main areas of investigation in 2001 – 2003 have included:

- 0-5 drowning deaths;
- Rock fishing deaths;
- Backyard swimming pools;
- Rural and regional areas;
- Culturally and linguistically diverse communities;
- Models for distribution of drowning prevention information; and
- Data collection.

This body of evidence will be used to further inform specific water safety education and awareness initiatives and direct future water safety policy in NSW.

The three areas of water safety that NSW will continue to focus on are Education, Standards and Evidence. This focus will include an emphasis on education and awareness strategies specifically focussed around key at risk groups such as people from rural/remote communities and culturally and linguistically diverse communities. In the standards arena, the NSW Water Safety Taskforce will focus on the review of water safety policy and legislation including an in depth analysis of
some standards related to domestic swimming pools. The evidence area will include a focus on continued research and improved data collection mechanisms.

An independent evaluation of the NSW Water Safety Taskforce and the NSW Water Safety Framework will shortly commence to assist with future planning.

For further information on the NSW Water Safety Taskforce and water safety initiatives being conducted go to www.safewaters.nsw.gov.au
South Australia

1998

- Following the 1998 formation of the National Water Safety Committee, and the subsequent development of the National Water Safety Plan, South Australia responded by conducting a Water Safety Symposium that brought together government and non-government organisations involved in water safety related activities.

1999

- In March 1999 the Office for Recreation and Sport, in partnership with the Department for Education, Training and Employment, completed a review of the Government's role in water safety, swimming and aquatics. One of the recommendations of this review was to better coordinate the efforts of government around water safety.
- Held in September 1999, the above-mentioned Symposium produced priority recommendations regarding the following.
  - Rural Areas
  - Diving
  - Toddlers and children
  - Boating
  - Rock Fishing
  - Swimming

- Both the Review and the Symposium recommended the establishment of an Interim South Australian Water Safety Council (SAWSC). Their primary task being to explore the possibility of formalising this group as the peak body for water safety in South Australia. Consequently, this group was formed and Draft Terms of Reference were developed.
- The Interim SA Water Safety Council met for the first time in October 1999, and included representation from both government and private sectors\(^1\). This group was provided with secretariat support via a Project Officer from the Office for Recreation and Sport, with the ORS proving a lead agency role on behalf of government.

2000

- The Interim SAWSC agreed that a State Water Safety Plan was required to ensure a coordinated and cooperative approach to water safety in South Australia. A consultant was commissioned in July 2000 with funding from the Office for Recreation and Sport to assist the industry in the production of the State Water Safety Strategy.

\(^1\) Office for Recreation and Sport, Surf Life Saving, Kidsafe, Royal Life Saving Society of SA, Swim SA, Australian Volunteer Coastguard Association, Renmark Swimming and Leisure Centre, Austswim Teachers Association, SA Police (Water Response Section), Surfing SA, Emergency Services Administration Unit and Austswim
As part of the consultation process, a second Symposium was conducted in August 2000. At this event, the following issues were identified as priority areas that required specific attention in the plan.

- Public Education
- Coordinated Approach
- Teaching and Accreditation
- Funding and Resources
- Legislation

Following ongoing consultation with the industry and government representatives, the Draft State Water Safety Plan was completed and submitted to the Office for Recreation and Sport in December 2000.

The then Minister for Recreation, Sport and Racing did not provide a formal response to requests for endorsement for the Plan, or ‘formalising’ the Interim SA Water Safety Council.²

2001

In November 2001, the State Government re-shuffled the Ministry, resulting in a change of Minister for the Recreation and Sport portfolio. No formal response from the previous Minister was obtained regarding progression of the Plan or the future of the Council, prior to the appointment of the new Minister.

2002

The Water Safety Strategy was not submitted to the new Minister, prior to the State Government Election held in February 2002, which ultimately resulted in a change of government.

In August 2002, the new-government (and still current) Minister for Recreation and Sport attended the annual meeting of the Sport and Recreation Minister’s Council (SRMC). Regarding the agenda topic of water safety, SRMC agreed “that each State/Territory would develop a State Water Safety Plan.” It was further agreed that State plans would be finalised for consideration at the first meeting of 2004 of the Standing Committee on Recreation and Sport (SCORS).

In December 2002, the Commonwealth government agreed to review the National Water Safety Plan, and provided funding accordingly to the National Water Safety Council to manage the process.

2003

In January 2003 the SA Office for Recreation and Sport underwent a restructure and the responsibility for progressing the water safety agenda moved from the Special Projects Branch to the Strategic Development Branch, with a new Project Officer appointed accordingly. The Office for Recreation and Sport continued to provide secretariat support to the Interim group, and act as facilitator during its ‘interim’ capacity.

² It was proposed that the SAWSC would become the recognised peak body for all issues pertaining to water safety across the state. The proposal suggested that the Council would operate in an advisory capacity and would not have decision-making authority within government, but that it would be funded by government to undertake and coordinate a wide range of water safety initiatives.
• In March 2003 representatives from the SA Office for Recreation and Sport met with the Officer undertaking the review of the National Water Safety Plan. Recent developments were summarised (as above), with specific mention of the Draft Plan and the intended formalisation of the Water Safety Council to manage its implementation, awaiting government endorsement. No dedicated funds had been afforded to the Plans’ implementation, though funding continued to be provided for water safety services, similar to previous arrangements across government. 3

• The Interim SA Water Safety Council was reconvened in a meeting in May 2003, to discuss the recent progress of the Draft State Water Safety Plan and the future of the Council. The Interim Council agreed that the State Water Safety Plan should be progressed through the State Government in a similar manner to that proposed with the former government, and that the Council should be formally recognised as the peak body.

• Through June and July 2003 the Interim SA Water Safety Council reviewed the existing Draft Water Safety Plan for current relevance, and made amendments accordingly in preparation for submission to the new government, via the Minister for Recreation and Sport.

• As part of the re-structure of the Office for Recreation and Sport and the development of its new Strategic Plan, discussions were held to ascertain the future role of ORS in regard to Water Safety in SA, and the potential role of other Offices and Departments within the government. As a result, the Office for Recreation and Sport have placed the ‘water safety issue’ on the Executive Management Group (EMG) meeting agenda (scheduled September 2003) to decide the role that the Office for Recreation and Sport should play in the progression of the Plan, the formalisation of the Council and the allocation of resources. This in the context of reduced finding and a realigning of the Offices priorities and directions. This discussion and decision of the EMG will be forwarded to the Minister for consideration.

• The Interim Council has also recommended that it coordinates a combined, cross-sectoral Water Safety Awareness Week, to be held in October 2003 to coincide with the start of the water safety season. It was proposed that amongst the cross-sectoral water safety awareness messages and events, a Ministerial ‘launch’ of the Plan and formal endorsement of the Water Safety Council would occur. The Interim Council is currently working towards delivery of the Water Safety Awareness Week, whilst waiting the decision of the Executive Management Group of the Office for Recreation and Sport.

3 The Office for Recreation and Sport provides funding to Surf Life Saving SA, Swim SA, Royal Life Saving SA, AustSwim and the Boating Industry Of SA for a range of initiatives that assist in the area of water safety in South Australia. It also extended the contract for a further 2 years with LeisureCo for the delivery of the Vacswim program from 2002-2006. The Government also contributes to the area of water safety through other Government agencies such as Transport SA (Marine Group), Primary Industries and Resources (Fisheries), Department of Justice (Police and Emergency Services) and the Department of Education Training and Employment.
Summary of activity for Injury Prevention Unit

(Department of Health Western Australia)

This document presents a summary of the drowning prevention activities that the Injury Prevention Unit has been involved in over the past 2-3 years. This document does not include drowning prevention/water safety activities being undertaken by other Divisions of the Department of Health WA (ie. Environmental Health).

Non Government Organisation drowning prevention/water safety projects have been mentioned only where the Injury Prevention Unit has specifically been involved in partnership with the organisation to deliver the project.


- The Department of Health (Injury Prevention Unit), Department of Sport and Recreation and Department of Education formed a Management Committee to develop the WA Water Safety Framework.
- Following consultation with water safety/drowning prevention stakeholders the Framework was completed in June 2003.
- Department of Health (Injury Prevention Unit) is currently progressing towards the implementation of the Framework which will include nomination of supervisory agencies for each strategic direction (Research and Evaluation, Water Safety Education and Awareness, and Standards, Legislation and Enforcement.

KEEP WATCH Toddler Drowning Prevention Program

- The KEEP WATCH program is delivered by the Royal Life Saving Society (RLSS) WA and funded by the Injury Prevention Unit, Department of Health WA.
- This funding arrangement between RLSS and Department of Health to deliver KEEP WATCH has been ongoing for a number of years.
- In 2002/2003 RLSS implemented an education and awareness program and developed, promoted and implemented professional development opportunities for health professional, community and childcare workers and industrial personnel.

Spinal Injuries Prevention Program – Aquatic Safety

- This program is implemented by the Paraplegic Benefit Fund (PBF) and funded by Injury Prevention Unit, Department of Health WA.
- The Spinal Injuries Prevention Program (Aquatic Safety) program aims to contribute to the reduction of youth aquatic injury, including spinal cord injury, in Western Australia. It is the intent that the integration with other aquatic safety education programs will provide the greatest opportunity for education and policy development.
In 2002/2003 PBF implemented the Spinal Injuries Prevention Program (Aquatic Safety) and formative development of a Public Awareness Campaign for the prevention of spinal cord injuries. The education component of the Aquatic Safety program included a series of presentations to Centre Supervisors and Instructor inservice for the summer Vacswim series. The policy component included strengthening of alliances with the government and non-government aquatic safety programs. The formative development of a public awareness campaign included a review of the NSW campaign Don’t Dive into a Wheelchair, collection of additional information on the most appropriate public awareness message and strategies for the prevention of spinal cord injury in aquatic environments.

**Research Project on the Adequacy of Inspections of Barriers to Private Swimming Pools**

- Research project completed by the Injury Research Centre of the University of Western Australia and funded by Injury Prevention Unit.
- The Department of Health WA in collaboration with the Department of Local Government and Regional Development initiated this research project in May 2001 in order to elucidate further, the causes of child drowning in private swimming pools. In particular, the government departments wanted to identify opportunities to improve the inspection and enforcement of current legislation related to the enclosures surrounding private swimming pools.
- The research was undertaken in three stages. The first stage involved an extensive review of coroner’s reports in order to determine the impact of the legislation prior to, and following, the implementation of the legislation. The second stage involved in depth interviews of swimming pools inspectors and an audit of inspection practices. The final stage included a random survey of owners or tenants of households with a swimming pool.

**CS-034 Pool Safety Standards Committee**

- The Committee looks at Swimming Pool Safety particularly fencing for swimming pools and the location of fencing for private swimming pools.
- The purpose of the Committee is to provide regulatory authorities, pool manufacturers and pool owners with requirements for pool fencing in order to minimise deaths by drowning of 0-5 years olds in Australia.
- Department of Health WA has not attended these meetings in recent years but in 2003 the Injury Prevention Unit nominated itself to represent Department of Health WA.

**Private Swimming Pools Technical Advisory Committee**

- The committee was convened by the Department of Housing and Works following a Cabinet Decision, on 10 February 2003, in response to the tabling of a Report of the Standing Committee on Environment and Public Affairs in relation to Swimming Pool Fencing.
- The Cabinet has directed that the Department of Housing and Works reconvene the Swimming Pools Barrier Inspections Guidelines Committee with a broader membership base and renamed as the Private Swimming Pools Technical Advisory Committee.
- The Injury Prevention Unit will represent the Health Promotions Directorate of the Department of Health WA on this Committee.
- The committee aims to:
  - Develop a user friendly guide to the regulations (Building Regulations 1989) and associated Australia Standard – AS1926.1
• Develop inspection guidelines for private swimming pool inspectors
• Develop inspector training for private swimming pool inspectors
• Develop enforcement protocols
• Recommend legislative changes to the West Australian Government
• Raise public awareness in relation to barrier requirements for new and existing pools
• To make recommendations to the Western Australian Government in relation to the installation of spas and ornamental ponds
• Review requirements for swimming pools in regional areas
• Address other issues regarding current legislative requirements.
Good news stories from the NT

1. Establishment of the NTWSAC
2. Swimming Pool Fencing Legislation
4. NT Water Safety Week 2003

Future Action in the NT

1. reviewing current NT legislation, standards
2. swimming and water safety for Primary aged children
3. subsidised Water Awareness for children under 5.

Good news from the Northern Territory

In June 2002, the Chief Minister the Hon Clare Martin, announced a Five Point Water Safety Plan to help prevent drowning. This followed pressure from local aquatic providers and recommendations made by the Australia Water Safety Council.

The five point plan covered:

- The introduction of swimming pool fencing legislation to Australian Standards
- An early registration incentive scheme with a cash bonus
- Interest free 5 year loans to help fund upgrades
- A Government subsidised water awareness program for children under five
- The establishment of a Water Safety Advisory Council

1 Establishment of the NTWSAC

The Northern Territory Water Safety Advisory Council began functioning in November 2002 and was directed to develop a ‘NT Water Safety Plan’ to assist in the prevention of drowning and near drowning incidences in the Northern Territory.

The role of the NT Water Safety Advisory Council is:

- to provide advice to the Minister for Sport And Recreation on water safety related matters;
- identify gaps in existing provisions of water safety initiatives in relation to the services necessary for the prevention of drowning and near drowning in the Northern Territory; and
- develop and implement a Northern Territory Water Safety Plan that focuses on Water Safety Education, Research and Data Collection and Standards.

2 Swimming Pool Fencing Legislation

The Swimming Pool Fencing Act 2002 commenced on 1 January 2003 replaced existing Council by-laws and covers the whole of the Northern Territory. Under this Act all swimming pools and spas on residential properties less than 1.8 hectares are now required to be registered.
The main objective of the legislation is to ensure that the requirements for swimming pool fencing in the Northern Territory are brought up to Australian Standards as soon as possible.

Existing swimming pool owners will not have to upgrade to Australian Standards until their property is sold or tenanted, however all existing swimming pool owners are required to register their swimming pools by 30 June 2004 (within 18 months).

All swimming pools installed after 1 January 2003 must comply with the Australian Standards.

Investment properties will have to upgrade their pool fencing prior to the change of tenant. Changes were made to the *Residential Tenancies Act*, to ensure that the responsibility for swimming pool fencing compliance rests with the landlord.

To encourage Territorians to upgrade their pool fencing to the Australian Standards as quickly as possible, the government has introduced an Early Registration Incentive Scheme (ERIS) which consists of a cash rebate and an interest free loan. The maximum amount available under the ERIS is $5,000. There are no fees or charges associated with the provision of the rebate or the loan. ERIS will be available from 1/1/03 until 30/6/04.

No registration fees will apply to existing swimming pools registered within the first 18 months. Similarly, pool owners who upgrade their pool to comply with the new standards within the required time period will not pay a fee for a compliance certificate.

New pool owners will pay a one off fee of $100 to register their pools and receive a registration and compliance certificate. The pool will be registered against the land, not the owner. New owners will not be required to reregister the pool.

An audit program is included within the legislation. Commencing from 30/6/03, a 15% compliance check will be undertaken by the inspectors each year.

### 3 Northern Territory Water Safety Plan 2003-2006

As part of NT Water Safety Week the NT Water Safety Plan was launched on Wednesday 3 September 2003 at the Darwin Wharf Precinct.

It is envisaged that the plan will provide a more structured coordination of water safety programs, and identify and develop partnerships on projects to address identified high risk needs.

**Vision** To reduce the rate of drowning, near drowning and water related injuries in the Northern Territory.

**The NT Water Safety Plan focuses on four key priority areas:**

1. Public Awareness;
2. Education;
3. Standards, Legislation and Compliance; and
4. Information and Monitoring.

**4 NT Water Safety Week 2003**

To coordinate an annual Northern Territory Water Safety Week, in conjunction with relevant stakeholders is an action within the NT Water Safety Plan. The inaugural NT Water Safety Week for 2003 was held in September and was aimed at increasing public awareness of water safety issues in and around water. The date for water safety week in 2004 will be reviewed and the NT supports the concept of a national date and campaign.

The NTWSAC invited organisations throughout the Territory to join the NT Water Safety Week Sub Committee. A number of events and activities were organised in conjunction with aquatic organisations.

**Message:** The message for the week was ‘**take care be aware**’. Given the introduction of recent pool fencing legislation, the NTWSAC felt strongly that supervision should also be a key message. The mascot selected was from the Royal Life Saving Society NT Branch, Pete Platypus.

**Launch:** The week was officially launched at a local swimming pool on Sunday 31 August 2003. Life be in it had activities for children and organisations such as Royal Life Saving Society (Aust) NT Branch and Surf Life Saving NT conducted demonstrations showing people responsible but fun behaviour in the water. A corporate challenge was organised by the Royal Life Saving Society NT. The Swim Australia mascot, Swim-a-Roo, was present.

**Events:** A number of aquatic organisations had activities on offer for groups and arranged events especially for the week.

**Website:** Events for the week and contact details were regularly updated at [www.sportandrecreation.nt.gov.au](http://www.sportandrecreation.nt.gov.au)

**Competitions:** A poster and colouring competition were run in conjunction with the Week. The colouring competition had the caption ‘**always supervise and never swim alone**’. The poster competition required designing an A3 or A4 poster, considering what being safe in and around water involves. The winning entry will be used for Water Safety Week in 2004.

Over 1,300 entries were received from at least 60 schools which equates to 32% of NT schools. Some schools incorporated water safety into a unit of work.

**Prizes:** The individual entrants from both the poster and colouring competition won a prize of aquatic gear worth $300. The school or group, which the students attended, won $1,000 to be spent on aquatic lessons or aquatic resources of their choice, ie sailing, swimming, dragon boat paddling etc.
Publicity: A static display was held at a major shopping centre, Casuarina Shopping Square. A water safety feature was placed in the and the Darwin City Council hosted displays in local libraries. Two banners were placed in different locations for the week prior and during the week.

Poster & tattoos: The Office of Sport and Recreation (OSR) produced a poster and tattoos which were made available participating organisations. These were a great hit and South Australia has expressed an interest to use our poster.

Future Action in the Northern Territory

Implementing actions in the NT Water Safety Plan

The next few years will be spent on implementing actions within the NT Water Safety Plan 2003-2006. The greatest challenge to the success of the Plan will be to gain sustained support from the broader community and the wide range of water safety stakeholders to achieve the Plan’s vision.

Reviewing current NT legislation

Investigating options for policy and legislative change to maximise ‘water safety’ will be a priority for the next few years. Current Northern Territory legislation will be reviewed in accordance with national standards and best practice. The aim is to compare legislation, regulations, policy and standards with other jurisdictions, to identify gaps and then to make appropriate recommendations regarding changes to legislation and regulations. Support from other states in providing details legislation within each state would benefit the process immensely.

Swimming and Water Safety for Primary aged children

Swimming and water safety instruction in NT schools has been an ongoing issue for several years with no real resolutions being put forward.

It is the aim of the NTWSAC to provide advice to the minister on how best to cater for swimming and water safety lessons for primary aged children either within school or in out of school programs. Providing school based children with the opportunity to acquire a minimum standard of swimming and water safety competencies is a priority for the council.

The NTWSC, in conjunction with key stakeholders will be working on:

- determining the minimum standard of water safety and swimming competencies.
- developing strategies to improve schools ability to access water safety programs.
- developing comprehensive wet and dry swimming and water safety packages to achieve educational framework outcomes.
**Government Subsidised Water Safety Awareness for children under 5.**

The Government has committed to providing water awareness for our under fives. The NTWSAC see that this fits into the following actions;

- to increase participation in swimming and water safety awareness programs to develop survival skills, resuscitation and safe participation in and around water.
- to develop swimming and water safety programs to target relevant audiences.

**Northern Territory Water Safety Advisory Council**

Executive Officer Judith Green  
Ph (08) 8982 2325  
Email judith.green@nt.gov.au  
Website [www.sportandrecreation.nt.gov.au](http://www.sportandrecreation.nt.gov.au)


These documents provide a comprehensive and coordinated water safety strategy, involving public education, prevention programs, surveillance and research mechanisms to minimise the risks wherever there is water. This approach enabled the development of partnerships, consistent messages, and the most effective promotion aimed at creating a safer environment in and around water. Specific target groups including 0-5 year olds, and males 16-35 years, were identified for priority actions in the ACT.

The Safe Waters ACT Framework addresses the creation of a safer environment in and around water through a coordinated multi-faceted approach with the key focus areas: Public Education and Awareness, Prevention, Surveillance and Research.

The Action Plan 2000-2002 was developed and agreed upon by the members of the ACT Water Safety Working Party, which includes several government agencies and community organisations with a strong interest in water safety, such as Royal Life Saving Association (ACT), Kidsafe, ACT Swimming, ACT Ambulance, ACT Department of Education, ACT Water Police, ACT Health, ACT Planning Authority and Department of Urban Services.

2. Identified ACT Water Safety Needs

Experience from other states and territories highlighted the need for the ACT to consider:

- a strong public awareness campaign with a consistent message directed at behavioural change.
- prevention strategies emphasising quality learn to swim and water safety education programs, which are easily accessible and appropriate to the local risk factors (eg. murky rivers, lakes and dams), and delivered by accredited instructors.
- the creation of a safer environment in and around water by minimising safety risks.
- surveillance strategies to enforce legislation and controls in public and private swimming pools.
- patrols and rescue services in high priority popular swimming/boating areas.
- timely research and available statistics on drowning, near drowning and other water related incidents.
The Framework examined how the ACT currently addressed these needs in context of the National Water Safety Plan.

It then identified Strategies and Key Actions, which plotted the future directions for action in the key focus areas to meet the Framework goals. It identified some specific programs and tasks, including potential partnerships and suggested initiatives. The emphasis is on a whole-of-government approach working in partnership with relevant community organisations, assisted by corporate sponsors.

3. Framework and Action Plan Implementation

The Action Plan 2000-2002 has been implemented successfully over the last three years. The Water Safety Working Party recently reviewed and reported on the plan’s implementation. Of the some 40 actions nearly all were achieved. As with most plans some of the directions changed, but all actions were discussed and priority actions monitored and reported at each Water Safety Working Party quarterly meeting.

The ACT is also an observer at the NSW Water Safety Taskforce meetings and liaises closely with the NSW Department of Sport & Recreation on common water safety issues. This has been a valuable partnership for our small jurisdiction, which is surrounded by NSW regional areas.

Some highlights of achievements in each of the four focus areas are as follows:

Public Education and Awareness

- The slogan “Safe Waters ACT” was adopted under an agreement with the NSW Department of Sport & Recreation for use of their SafeWaters campaign materials. This enables consistent messages across both jurisdictions.
- Water safety was promoted at various community events, feature articles were included in local newspapers and news items, and distribution networks for RLSSA publications were established with Kidsafe etc at hospitals and community health centres.
- Agreement obtained from relevant land managers to use the new Australian Water Safety Signs Standards in river and lake areas.

Prevention

- Water safety was included in the Health and PE Curriculum Frameworks in ACT Education Department.
- Sport & Recreation ACT established an Indigenous Swim School.
- RLSS incorporated open water skills and resources into programs, and worked together with Surf Life Saving Club in Canberra on open water educational programs.

Surveillance

- ACT Planning Authority has been involved in discussions on the national standardisation of swimming pool legislation and standards for pool fencing. Retrospective legislation
was considered but not agreed to. Other improvements to legislation are currently being considered.

- Swimming pool audit systems were investigated and RLSS commenced a voluntary home pool check program.
- Possible amendments to the Lakes Act related to safe boating (to be more in line with NSW) are being considered.

Research

- ACT Ambulance has established a new clinical database and reports to the ACT Working Party on drowning or near-drowning incidents.
- RLSS drowning statistics were published each year in local media articles and websites.
- ACT Ambulance accesses the national coronial database on any ACT data.
- ACT liaises with NSW and RLSS on their research projects of relevance to the ACT.

4. Future Directions

The ACT Water Safety Working Party has discussed the priority areas for the next action plan, which will be developed in line with the new National Water Safety Plan. The identified future priorities include:

- Research into how well water safety programs are being incorporated into ACT schools and the number of children receiving water safety/swimming education to the national competencies. The issues relate to any effects from the introduction of schools-based management and the ‘outsourcing’ of management of government pools and related swim schools.
- Improving the process to monitor and evaluate swim school programs to ensure they align with the new national standards.
- Establishing a system for safety audits of lakes and river areas.
- Continuing review of lakes and swimming pool legislation in line with national standards.
- Continuing to develop partnerships to develop appropriate resources and effectively promote water safety awareness under the Safe Waters ACT ‘umbrella’.
Recent innovations in regional water safety promotion: A New Zealand perspective - Teresa Stanley

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Background

Death by drowning in New Zealand has been consistently among the highest per head of population recorded in developed nations with an average of over 130 fatalities per annum over the past decade (Water Safety New Zealand, 2002). A recent report on drowning-related incidents identified 2,606 deaths between 1980-1994, making it the third leading cause of unintentional injury death in New Zealand (Langley, Warner, Smith, & Wright, 2000). In spite of a decline in death by drowning in recent years, New Zealand compares poorly internationally with drowning rates more than double those of Australia (Mackie, 1999; Langley et al., 2000), nearly three times that of Canada (Canadian Red Cross society, 1998) and more than four times that of the UK (Royal Society for the Prevention of Accidents, 2001). Analysis of New Zealand statistics indicates that the majority of drowning incidents involved males (76%) and that the 15-25 year age group (6.3 per 100,000) had the highest rate (Langley et al., 2000). In addition, drowning continues to be a leading cause of accidental death for children aged less than five years and, in spite of well established swimming pool legislation, hospitalisation data shows that 72% of children admitted to hospital following a submersion incident were aged less than five years (Safekids, 2002).

The Auckland region contains a greater diversity of cultures compared to the rest of New Zealand. Only 68.5 percent of people in Auckland Region said they of European ethnicity compared with 80.1 percent for all of New Zealand. One-half of the New Zealand total of Pacific Island drownings occur in Auckland, as well as over one-third of all Asian drownings. Both of these ethnic groups, together with Maori, are over-represented in the drowning statistics. The population
of the Auckland region contains a greater proportion of Asians (13%) compared with the rest of New Zealand (6.6%). The number of Asian residents almost doubled between 1996 and 2001 (Statistics New Zealand, 2001). Population predictions indicate this trend is likely to continue.

WaterSafe Auckland Incorporated (WAI) is a regional organisation based in Auckland working extensively in injury prevention and water safety. Educational strategies extend from early childhood to tertiary providers. Community initiatives take a collaborative intersectorial approach and involve local bodies, community organisations together with the educational sector in promoting water safety to those groups at greatest risk including pre-school children and their families, the primary and secondary school community, and new immigrants.

**School Initiatives**

In response to a number of drowning and near-drowning incidents in schools, WAI has developed the *WaterSafe Policy for Schools* that includes:

- **Water Safe Policy for Schools**, a policy guide to assist principals and boards of trustees to make their schools water safe through a commitment to the teaching of quality aquatic programmes; staff development in aquatic skills and water safety and improved supervision systems for teachers and adult volunteers assisting with Outdoor Education.

- **WaterSafe Guidelines for Schools**, a manual of professional advice to teachers that includes specific practical information for conducting aquatic activities, planning for safety and a unique supervision system–The Rainbow System–to improve safety during aquatic activities.

- **The Rainbow System**, a video with written instructions designed for teachers and adult volunteers involved in aquatic supervision. The system is based on a simple colour coding system for identification of students and also highlights the key skills required by the teacher in charge and others in a supervisory. These include the training of adult volunteers in water supervision techniques, recognition of distress signs in water, thorough pre-activity planning procedures and the management of emergencies.

In addition to establishing a water safety culture through policy development within the school system, WAI has also developed sequential educational programmes. They include:

**Early childhood initiatives**

- **Early Childhood Water Safety Kit**, designed specifically for early childhood education centres by the Child Safety Foundation of New Zealand in partnership with WAI. This colourful teaching kit delivers five key child-centred water safety messages. It is available with the messages in English or 5 new immigrant languages:
  - Turning on the taps is a grown up’s job – bath
  - I need a grown up before I get in – pool
  - Hold hands near the creek – environment
  - Hold hands between the flags - beach
  - I always wear a lifejacket out on the water-boating

- **Water Hazard Mapping Project**, has been developed to enhance community awareness of water hazards in their locality. The latest GIS (Geographical Information System) mapping system is used to transfer water hazards such as storm water drains and ponds, drain inlets and
outlets, home swimming pools, streams, creeks and tidal waterways on to A1 colour, laminated maps. Early childhood centres receive a kit that includes these maps as well as parent and teacher information and maps for each child.

**Primary school initiatives**

Two programmes have recently been developed to meet primary school-age student needs and have been linked to the achievement objectives of the New Zealand Health and Physical Education Curriculum statements (Ministry of Education, 1999). They include:

- **WaterSense**, a general water safety video and teacher guidelines designed for new entrants (Years 1 and 2). WaterSense is a theory programme which promotes five key water safety messages through a range of interactive and cross-curricula activities.

- **In at the Deep End**, a practically-based programme aimed at providing opportunity to explore deep-water experiences for older primary-age pupils (Years 7 and 8) who may have limited opportunity of deep-water pools. Skills promoted include the use of lifejackets, familiarisation skills in deep water in students, group survival skills, coping with cold and tiredness and the development of survival strategies in a range of small craft boating scenarios.

**Injury Prevention**

In addition to school-based initiatives, WAI has actively networked with other regional and national injury prevention organisations to create a series of initiatives aimed at other at-risk sectors of the community. These include:

- **New Migrant Project**, a community-based venture in which WAI has established a New Migrant Reference Group to address the over-representation of new migrants in drowning statistics in the Auckland region. Representatives from various New Migrant groups as well as aquatic organisations form this group. Strategies are being developed to avoid duplication of resources and to ensure appropriate resources are distributed to all sectors of the new migrant communities. WaterSafe Auckland and the Accident Compensation Corporation (ACC) have worked together with other aquatic safety organisations to develop water safety resources in the Chinese Mandarin and Korean languages. They are based on the following five settings including:
  - Water safety around the home
  - Water Safety around the community
  - Beach safety
  - Rock-fishing safety
  - Boating Safety

  Water safety community workshops are held and will be conducted by specially trained instructors from each language/ethnic group.

- **Pool Compliance Project**, a community-based venture that seeks to address the fact that Auckland has a higher rate of drowning in home pools than the rest of New Zealand. Nationwide, 40% of pre-school drownings are due to home pools (Safekids, 2002). In the Auckland region it is over 50% (WSNZ, 2002). In addition to this, the spa pool industry sells approximately 5,000 spa pools in the Auckland region every year. In the last year there have been less than 20 applications for building consents for spa pools for all of the seven local authorities combined. As a consequence, every year in the Auckland region...
there are some additional 4,880 unregistered and, most probably, unfenced spa pools adding potential dangers to our young children.

The project will include:

- Media awareness campaign through radio, local media and council publications e.g. rate payer’s newsletters promoting “a well fenced pool is your responsibility”

- An Auckland regional pool fencing resource handout and checklist will be developed. This will include diagrams of fencing requirements and information on other drowning prevention strategies including supervision of children and learning resuscitation.

- A coalition working group of council pool compliance staff, WaterSafe Auckland and Injury Prevention co-ordinators has been formed to address issues with enforcement to the pool fencing act and work toward a consistent enforcement approach in the Auckland region.

- A pool safety symposium will be held during Water Safety Week (November, 2003) to look at wider issues with pool safety and issues and involve retailers and manufacturers, the Building Industry Association and private pool owners.

References


Author:
Mary Potter Forbes, *NSW Injury Risk Management Research Centre, UNSW*

In the cost-of-injury study just completed at the NSW *Injury Risk Management Research Centre* it was estimated that the total lifetime cost of all drowning incidents that occurred in 1998-1999 in NSW was $72 million. This represented an average cost of $300,000 per injured person. The study valued not only the direct health system costs but also the costs associated with mortality and morbidity. Mortality costs were by far the most significant costs for this particular mechanism, given that near drownings were rarely reported and produced very little morbidity. Recorded drownings were invariably fatal and so the costs associated with this mechanism were those costs associated with lost future work and lost life generally. This paper presents the methodology developed in the study to value these costs – a methodology which provides a practical alternative to the shortcomings of the *human capital approach* and which involves monetarily valuing the *disability adjusted life years* lost to the injury mechanism by the production of a cost multiplier derived from an injury specific *value of a statistical life*.

*Note: Co-Author of the Report into the Cost of Injury in NSW 1998-1999 was Mr Chris Aisbett, LAETA Pty Ltd, Consultant Statistician to NSW Injury Risk Management Research Centre*
**Introduction**

Irukandji syndrome is the name of a group of systemic symptoms that occur after the sting of a jellyfish. Only one species, *Carukia barnesi*, has been demonstrated to cause the syndrome but unpublished studies implicate at least six different species, most of which are yet undescribed by scientists.

The distribution of Irukandji in Australia seems to be largely restricted to northern Australia between the Tropics of Cancer and Capricorn. On the east coast (Qld), it occasionally occurs as far south as Bundaberg.

Irukandji syndrome occurs most frequently in the Cairns - Port Douglas and Whitsunday regions. In the Cairns - Port Douglas region, about 50% of stings are recorded from inside the stinger resistant enclosures ("stinger" nets) at Palm cove and the other 50% are recorded from offshore and reef areas.

(Current Status and Knowledge and Action on Irukandji, CRC Reef, 24 June 2002)

**Other Problem Jellyfish**

The Box Jellyfish or Stinger *Chironex fleckeri*, has caused, on average, one death per year since records have been kept. In recent years this rate has declined as people have been better educated about the risks of swimming in unprotected waters.

(Qld Health website)

Other jellyfish including *Physalia* (bluebottle), *Catostylus* (blubber), *Tamoya* (Morbakka), *Carybdea rastoni* (jimble) are common in Australian and Queensland waters, however, are not a health risk.

**Purpose**

The purpose of developing a coordinated education program was to enhance visitor and community education by:
1. Raising the overall awareness of existing and potential health and safety issues associated with sharing an environment with marine stingers that may present a hazard.

2. Assisting in the risk management process.

3. Standardising safety messages to reduce the potential for confusion within the community.

4. Providing educational material and resources that are relevant and appropriate to different target groups.

**Risk Management Principles**

The principles of risk management were applied to eliminate, avoid, prevent or control risk. A risk assessment was undertaken to determine the management procedures to be implemented.

Risk Management involves:

1. Identifying the hazard
2. Assessing the risk
3. Determining the appropriate control measures
4. Implementing the control measures
5. Reviewing the control measures

**Application of Control Measures**

The application of control measures for aquatic emergencies has a model in the "drowning chain"; this model identifies counter measures based on a strategic approach that combines several opportunities to interrupt the sequence preceding the incident.

![Model: The Drowning Chain](image)

A similar model was developed for matching the sequence of events and appropriate control measure for marine stinger incidents. As with the drowning chain education is a significant factor in reducing incidents, as few potential casualties would knowingly increase the risk of a potentially lethal situation.
Model: Sequence of Events - Marine Stingers

<table>
<thead>
<tr>
<th>Risk Management / Control Measures</th>
<th>Pre-incident</th>
<th>Contact or Incident</th>
<th>Post Incident</th>
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<tbody>
<tr>
<td><strong>Education / Awareness</strong></td>
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<td>▪ Brochures</td>
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<td>▪ Posters</td>
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<td>▪ Electronic Media (Websites, TV, Radio)</td>
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<td>▪ Presentations &amp; Workshops (Schools, Special Interest Groups, Medical)</td>
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<td>▪ Signage</td>
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<td>▪ Videos</td>
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<td><strong>Supervision</strong></td>
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<td>▪ Lifeguard / Lifesaving Service</td>
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<td>▪ Trained observers / rescuers</td>
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<td><strong>Risk Evaluation / Monitoring</strong></td>
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<td>▪ Net drags</td>
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<tr>
<td>▪ Static Nets / Traps</td>
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<td>▪ Research / Field studies</td>
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<td><strong>Risk Avoidance</strong></td>
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<td>▪ Beach Closure</td>
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<td><strong>Barriers</strong></td>
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<td>▪ Stinger Resistant Enclosures</td>
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<td><strong>PPE</strong></td>
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<td>▪ Protective clothing - Stinger Suits, Wet Suits</td>
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<td><strong>Emergency Care</strong></td>
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<td>▪ Rescue / Recovery</td>
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<td>▪ Access to emergency services</td>
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<td>▪ Resuscitation</td>
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<td>▪ Availability of vinegar</td>
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<td>▪ First Aid</td>
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<td>▪ Anti-venom</td>
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<td>▪ Transport</td>
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<td>▪ Hospital / Medical</td>
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<tr>
<td><strong>Monitoring</strong></td>
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<td>▪ SLSQ Stinger Reports</td>
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<td>▪ Ambulance Records</td>
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<td>▪ Hospital &amp; Medical Records</td>
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<td>▪ Coroners Reports</td>
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<td><strong>Review</strong></td>
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<td>▪ Research / Statistical Analysis</td>
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Community Education

Consistency throughout Tropical Queensland (and all Australia) is essential for an overall education strategy to be fully effective.

Visitors to our beaches and ocean environments need to be confronted with consistent systems wherever they go for maximum effectiveness. This will eventually lead to a better informed and more responsive community.

Target Group(s)

Primary:

▪ Swimmers
▪ Snorkelers and Divers
Secondary:

- Ocean users - Sailors, Fishermen
- Activity / Location Managers
- Others whose occupation or hobby requires them to go into the water

Sub-Groups

Sub-Groups include, but are not limited to:

<table>
<thead>
<tr>
<th>Beach Users</th>
<th>Emergency Services</th>
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<tbody>
<tr>
<td>Tourists (Australian and Overseas)</td>
<td>Medical Care Providers</td>
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<tr>
<td>Tourism Operators</td>
<td>Local Authorities</td>
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<tr>
<td>Divers and Dive Operators</td>
<td>Indigenous Communities</td>
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<tr>
<td>Lifeguards and Lifesavers</td>
<td>Media</td>
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<tr>
<td>Schools / Educational Institutions / Students / Teachers</td>
<td>Local Community Groups and Businesses</td>
</tr>
</tbody>
</table>

Determining Information to be Presented

The information to be delivered needs to be prioritized, this may vary for different target groups, potential information includes, but may not be limited to:

- Background Information on Marine Stingers
- Identification of Marine Stingers (including pictures of Marine Stingers)
- High Risk Periods and Geographical Locations
- Safety Tips (Risk Reduction Strategies)
- First Aid Treatment
- Medical Treatment
- Stinger Resistant Enclosures (Locations & Use)
- Current Research
- Accessing further Information

Delivery of Educational Material

A number of alternatives exist for the delivery of information and educational material.

- Brochures
- Fact Sheets
- TV
- Radio
- Newspapers
- Magazines
- Texts
- Presentations & Workshops
- Website
- Video

Information Packages

Available information / resources could be packaged for specific interest groups, including:

- Schools
- Tourism Operators
- Lifesaving / Lifeguard Services
- Local Authorities
- Business groups with associated interests
Outcomes

Desirable outcome from discussions relating to community education included:

1. Identification of available resources (including financial).
2. Prioritization of information to be delivered as part of education programs (this may vary with different target groups).
3. Determination of the most appropriate information delivery strategies, in line with available resources.
4. Allocation of resources appropriately to achieve outcomes.

Information Packages Provided

As a direct result of the work of the Queensland Government Irukandji Prevention and Response Working Group a range of educational resources were produced and a number of information forums were conducted.

Printed Education Materials

- Education Brochures (DL)
- Operator fact Sheet (A4)
- Multilingual Brochure
- Posters

Website

- Inclusive Downloads (ie Fact Sheets and Brochures)

Information Seminars

- Marine Stinger Symposium
- Regional Workshops
- Operator Presentations
- Presentations to Tourism & Community Groups
The Waterways Authority’s New Hire and Drive System – Fran Rein

By Fran Rein, Senior Policy Officer, Waterways Authority
Ph: 95638511 Fax: 95638600 Email: Enquiries@waterways.nsw.gov.au

Introduction

The Waterways Authority is a self funding government agency which is responsible, *inter alia*, for marine safety on the navigable waters of NSW.

Vessels which are available for hire to the public, be they powered vessels, kayaks or sailing vessels, are commercial vessels. In NSW, commercial vessels are regulated by the *Commercial Vessels Act, 1979*. Under the provisions of the Act, commercial vessels must be surveyed, by a marine surveyor before they are commissioned into service and then annually, to ensure that they meet certain safety standards and requirements.

The marine surveying process is well suited to promoting the safety of passengers and crew on charter vessels, large bareboat sail craft, and the like, but it is an expensive process and not necessarily the most cost effective means of ensuring the safe operation of smaller vessels which are hired and controlled by members of the public, usually for a few hours or a day.

The Waterways Authority recognised this many years ago and formally exempted small hire and drive vessels (in those days the vast majority of small hire vessels were ‘tinnies’) from the full survey requirements of the Commercial Vessels Act. Over the years a hire and drive system developed in a relatively *ad hoc* fashion and, in the late 1990s, the Authority recognised that a review and rationalisation of the system was necessary.

The new hire and drive system in brief

The new system, which was developed over a number of years and was implemented in February 2002, relates to all powered hire vessels which are under 6m in length and to unpowered hire vessels of any length – the latter group includes sailboards, ‘off the beach’ sailing dinghies, kayaks, canoes, rowboats and the like.

Under the system all hire operators who conduct business on NSW navigable waters must choose either to be licensed by the Waterways Authority or to undergo the full survey requirements of the Commercial Vessels Act. To cover the costs, to the Authority, of administering the system a modest annual licence fee of $20 per unpowered vessel and $60 per powered vessel, is applicable.
The licensees are subject to a number of licence conditions, most of which are standard and tailored to the specific types of vessel(s) within the individual hire fleet. At the same time, however, there is the flexibility to delete any irrelevant standard conditions, and to attach other conditions, depending on the circumstance and the locality in which the operation is based.

Certain conditions are administrative in nature and relate, for instance, to record keeping requirements, licence suspension and cancellation and procedures to be followed if the business is transferred.

Most of the conditions relate to minimum safety standards and procedures. These conditions relate to the following types of safety aspects of the operation:

- Minimum operator qualifications;
- Incident reporting;
- Providing instructions/familiarisation to hirers;
- Hours and area of operation;
- Carriage of appropriate safety equipment;
- Maintenance of the vessels and equipment.

**Relationship with other agencies**

Consultation with the hire and drive industry and peak industry bodies was conducted prior to the finalisation and implementation of the new system.

Firstly a pilot consultation was held with a selected group of operators from around the state and who represented the various arms of the industry. Following this the proposed system was refined prior to consultation with the entire industry in March 2001.

During the consultation process the Outdoor Recreation Industry Council and Australian Canoeing took a great interest in the system and a close working relationship between the 3 organisations has developed. Given that the Outdoor Recreation Industry Council and Australian Canoeing focus on paddling activities, and that the Authority’s traditional focus had been on powered vessels, this relationship is valued very highly by the Authority.

During the consultation phase the Authority carefully examined the Outdoor Recreation Industry Council’s accreditation processes and agreed that it would deem accredited operators as being suitable to hold a hire and drive licence and it thus waived the hire and drive licence application fees for such operators.

Australian Canoeing assists the Authority by providing advice on the relevance and appropriateness of operators’ qualifications and experience. The Authority requires that all operators have minimum qualifications from Australian Canoeing but also allows those existing
operators without formal qualifications to demonstrate, through Australian Canoeing processes, that they are competent to conduct hire and drive activities.

**Ensuring compliance with licence conditions**

To ensure that operators are complying with the conditions of their licence, and therefore that they are maintaining minimum safety standards, the Authority has implemented a system of independent auditing.

Auditing occurs every 2 years unless an operator has been the subject of a justified complaint in the intervening period or the operation has changed hands during that period. The auditing system operates in similar manner to the RTA’s ‘pink slip’ system.

Auditors have been appointed on the basis of their maritime knowledge and experience and have been trained to undertake the duties required of them.

Failure on the part of the operators to comply with all of their licence conditions is reported to the Authority but the operators have the opportunity correct any problems and to be re-audited. Any operator who does not receive a favourable audit report prior to the end of the annual audit period has their licence suspended until such a report has been provided and, in the event that this does not occur, licence cancellation follows.

The first ever audit of operators has just been completed and, in the coming weeks, the Authority will conduct a survey to determine whether any improvements need to be made.

**Lessons learned**

The Waterways Authority has been keen to ensure that it achieves its marine safety goals without over regulating. It has been careful not to ‘double dip’ by licensing operations which are already licensed by, say, the National Parks and Wildlife Service.

Therefore, at the outset, the Authority agreed with the Outdoor Recreation Industry Council that it would not enter into licences with operators who offer purely educational experiences. However, now that the hire and drive system has been operating for 18 months, and following complaints received about the safety aspects of a number of these educational operators, the Outdoor Recreation Industry Council has approached the Authority with a view to reassessing this decision. The Authority is currently in the process of refining the system to ensure a more level playing field between the recreational and educational sectors of the industry.

Given that the Authority’s field officers use 5m patrol vessels it is difficult for them to know of operators who use mountain streams where a patrol vessels cannot venture. Despite a wide publicity campaign during the consultation phase, the Authority must now rely on the public, and
its licensed operators, to inform it of unlicensed operations. Other initiatives developed by the Authority to solve this problem include the posting on the website of a list of licensed operators and the preparation of a brochure which aims to inform the public and the tourism promotion industry of the legal requirement for all hire and drive operators to be licensed. It is hoped that by educating people as to the questions to ask of operators about their licence, that unlicensed operators will soon be a thing of the past.
Investigation into the coronial files of rock fishing fatalities that have occurred in NSW between 1992 and 2000 – Matthew Jones

Matthew Jones, Waterways Authority, NSW Water Safety Taskforce.

Background

Rock fishing is considered one of the most dangerous pastimes in NSW accounting for more than 80 fatalities in the period between 1992 and 2002. In 1993 the NSW Coroner stated that “Rock fishing has the highest fatality rate of any sport in NSW” and this has not changed with 11 lives having been lost to rock fishing in 2001/02.

In addition to the high risks associated with this activity, each major rock fishing incident represents a significant cost burden to the community, with each major search and rescue operation estimated by the Interdepartmental Committee on Water Safety (IDCWS) to cost between $60,000 and $100,000 depending on the scale and duration.

In recognition of the dangers associated with this activity and the prevalence of rock fishing fatalities in NSW the NSW Water Safety Taskforce agreed that rock fishing should be considered as a priority water safety issue.

In light of the limited information that is available on the circumstances surrounding rock fishing fatalities and the demographics of rock fishing fatality victims, the Taskforce agreed that research should be conducted using Coronal files of all rock fishing fatalities that have occurred in NSW since 1992. The outcomes of this research were used to assist the WSTF in developing appropriate recommendations and preventive strategies to address the safety of the activity in NSW.

Methodology

All Coronal files for incidents between 1992 and 2001 were located and 52 variables of information were recorded from each file. Analysis of these variables was conducted to determine the trends and patterns of the circumstances surrounding rock fishing fatalities and the demographics of rock fishing fatality victims.

Results

There were 74 rock fishing fatalities in NSW in the nine year period between 1992 and 2000.

A summary of the results from the analysis of rock fishing fatality data is provided below:
The age of rock fishing fatality victims ranged from 15 to 82 years with an average age of 43. Three quarters (74%) of rock fishing fatality victims fell into the 25-54 age group.

The majority of rock fishing fatality victims were male (95%).

Both experienced and novice rock fishers are at risk of drowning when rock fishing, with 41% of fatalities involving rock fishers who fished often (weekly to monthly).

By country of origin, Australia had the greatest number of rock fishing fatalities (31%). People from China, Korea and Vietnam were also highly represented and combined to represent 41% of all fatalities.

People from Asian countries combined to represent 51% of rock fishing fatalities and the majority of rock fishing fatality victims were born outside of Australia (69%).

The majority of the deceased (77%) did not use any personal protection or safety equipment.

Flotation aids were not used by any of the deceased.

Cleats/appropriate footwear were worn by only 19% of the deceased.

The majority of the deceased (75%) lived in the greater Sydney metropolitan area.

All rock fishing fatality victims from China, Korea and Vietnam resided in Sydney and the majority resided in the western suburbs of Sydney.

In the period 1992 – 2000 there was an average of eight rock fishing fatalities per year. This is one fatality greater than the 1969-1991 average of seven rock fishing fatalities per year.

The research identified eight problem rock fishing areas in NSW located at Jervis Bay, Port Kembla, Royal National Park, Cape Banks, Little Bay, Manly, Avoca, and Munmorah State Recreation Area. These nine areas represent 54% of the total rock fishing fatalities in this study.

The results indicate that 38% of rock fishing fatalities occurred in the Sydney metropolitan region, 23% occurred in the eastern suburbs of Sydney and 47% occurred in the greater Sydney metropolitan area between Pittwater and Royal National Park.

For 61% of rock fishing fatality incidents the deceased travelled less than 30km to go rock fishing. For 11% of incidents the deceased was rock fishing in their own postcode area.

On 80% of occasions the deceased was conscious and able to stay afloat for some time before going under the water.

The behaviour of the deceased was a contributing factor for the majority of fatalities. For example:

- Fishing in a dangerous location and conditions contributed to 30% of fatalities.
- The deceased was rock fishing alone at the time in 24% of incidents.
- Not paying adequate attention to the ocean contributed to 20% of fatalities.
- Twenty-three percent of the deceased were identified as not being able to swim.
- Alcohol was a possible contributing factor in at least 10% of incidents.

Seventy percent of fatalities occurred during rough and very rough sea conditions and 11% of fatalities occurred during calm conditions highlighting that a calm sea does not guarantee safe rock fishing conditions.

The majority of fatalities occurred during moderate and large waves.
Information provided by Manly Hydraulics Laboratories indicates that 60% of fatalities occurred during a rising tide and that 80% of fatalities occurred during wave directions of between South-South-East and East-South-East.

**Discussion**

This research has highlighted four broad objectives to address the safety of rock fishing in NSW:

1. Improve the knowledge of rock fishers on the risks associated with this activity;
2. Reduce the extent of risk taking behaviour whilst rock fishing;
3. Promote safe rock fishing practices such as the use of proper safety equipment in particular flotation aids, not fishing alone and being cautious of dangerous rock fishing conditions; and
4. Increase the ability of rock fishers to stay afloat long enough for rescue agencies to arrive by increasing the time the rock fisher can stay afloat in the water and improve the response times of rescue agencies.

As outlined in the research results, human behaviour was a significant contributing factor for the majority of rock fishing fatalities. Education therefore provides a tool to address the safety of rock fishing by addressing those behaviours that are often associated with rock fishing fatalities.

The use of education to address rock fishing safety was also supported in research conducted in New Zealand\(^2\) and by the IDCWS\(^1\) which determined that the majority of experienced rock fishers consider community awareness and angler education as the most effective way to reduce rock fishing fatalities.

To assist in future rock fishing safety education campaigns this research has highlighted 13 key rock fishing safety messages. For example the research highlighted the value of using life jackets and other floatation aids when rock fishing which could have assisted the 80% of the deceased who were conscious after being washed into the water but were not able to stay afloat long enough for rescue organisations to arrive at the scene.

In addition this research has also provided information that will enable education campaigns to be directed towards those sectors of the community that are considered most at risk to rock fishing fatalities. For example rock fishing safety education should be directed towards Chinese, Vietnamese and Korean communities in particular in Sydney’s Western Suburbs. An option to achieve this is to provide rock fishing safety information in community newspapers in these areas and conduct rock fishing safety seminars in Chinese, Korean and Vietnamese community groups.

The NSW Water Safety Taskforce is looking to trial a local community media campaign and rock fishing technique and safety seminars for the Chinese community in conjunction with the Australian National Sportfishing Association in 2003.

Further options to address the safety of rock fishing include:
• A survey of rock fishers which is to be conducted in September – December 2003;
• The development of a rock fishing voluntary code of practice;
• Continued research of rock fishing coronial files to monitor trends in rock fishing fatalities and evaluate current preventive strategies;
• Consider rock fishing search and rescue procedures to determine whether there are improvements to be made to response times; and
• Extension of the Angel Ring Project operated by the Australian National Sportfishing Association and currently funded by NSW Fisheries.

Further information on rock fishing safety and the full report of the Investigation into the coronial files of rock fishing fatalities that have occurred in NSW between 1992 and 2000 can be found at www.safewaters.nsw.gov.au

References


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Lifejackets – Ed Kwanten

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Introduction

Lifejackets can be an emotive issue. The issue of the wearing of lifejackets in certain situations was raised at a meeting held by the Waterways Authority in February 2002. This followed a review of the Authority’s Boating Incident Reports for the period 1 July to 31 December 2001. At this meeting it was agreed that a committee be formed to investigate the matter further.

Research

A comprehensive review of all fatal boating incidents reported to the Authority during the period 1 July 1997 and 30 June 2001 was conducted. This report revealed that, of the 71 fatalities reported during this time, almost half could be attributed to some form of fishing activity. Further research over a 10 year period was then conducted. This revealed that, of the 149 fatalities reported during the last decade, again almost 50% could be attributed to some form of fishing activity.

A closer examination of fishing incidents between 1992 and 2002 yielded the following results:

Most commonly reported:

- **Vessel type**: Open runabout
- **Vessel length**: 0-5m
- **Incident type**: Fall overboard
- **Incident cause**: Lack of judgement/alcohol
- **Weather condition**: Clear
- **Water condition**: Calm
- **Visibility**: Good
- **Incident time**: mid to late afternoon
- **Average age**: 40 to 52 years

All of the people involved in the fatal fishing incidents were male. Most of the individuals killed were on their own when the fatal incident occurred.

The Authority’s findings were also reflected in a nationwide report commissioned by the National Marine Safety Committee (NMSC) into fatal and non fatal boating injuries in Australia. The report, which spanned 20 years, showed the most commonly reported fatal boating activity to be
fishing. In the majority of cases the incidents occurred between 12noon and 4pm most often when weather conditions were favourable. The type of vessel most frequently involved were open runabouts less than 6m in length.

Overall data indicated that a greater focus on education, particularly of the ‘at risk’ groups was considered essential.

Legislative Changes

In NSW currently only vessels capable of a speed of not less than 10 knots and any other vessel not less than 5.5m in length are required to be registered. Further, a boating licence is only required for operating a vessel at speeds of 10 knots or more (and PWC at any speed).

The *Marine Safety Act 1998* was assented to in November 1998 following extensive public consultation. It amends the existing registration and licensing requirements as follows:

- All power driven vessels will be required to be registered; and
- All operators of mechanically powered vessels will need to be licensed.

The Act is awaiting finalisation of its Regulations before it can be proclaimed. It is anticipated that this will occur in early 2004.

Bar Crossings

Over the last 10 years approximately 200 incidents and 16 fatalities have occurred at bar crossings in NSW.

Following a double fatality at the Narooma Bar in 1998 the Authority embarked on a range of initiatives to address the issue and a significant education campaign conducted.

These initiatives included the introduction of a 24 hour weather telephone service; delivery of specific bar crossing education seminars at relevant locations; the release of a bar crossing brochure and the development of Statewide and regional bar crossing campaigns throughout the boating season.

The number of incidents and fatalities has shown little decrease since these initiatives.

After reviewing the situation, the Authority proposed an amendment to existing legislation to incorporate this new requirement. It is already compulsory for people onboard commercial vessels to wear lifejackets when crossing bars.

The Member for Bega has also raised in Parliament the need for the compulsory wearing of lifejackets by all people on recreational vessels crossing bars.
Following this and other representations, the Minister for Transport Services agreed to the amendment, subject to consultation. It is hoped to be introduced at the commencement of the boating season on 1 October 2003.

**Education Campaign**

A key focus of NSW Waterways Authority is education. By using the statistical data gathered the Authority is able to pin point those groups most ‘at risk’ and engineer a campaign to best target the issue and the audience. In the past year that campaign has been ‘Boat smart from the start: Know when to wear your lifejacket”

Knowing when to wear your lifejacket is a campaign designed for boaters to identify situations in which they should put their lifejacket on. Situations such as; deteriorating weather, large swells, crossing a bar, standing in a boat to change the anchor or even when they are suffering from fatigue.

The ‘Boat Smart’ concept was pitched to the Australia New Zealand Safe Boating Education Group (ANZSBEG) and resulted in the first national boating safety campaign. This enabled a range of material to be developed as the cost was being shared.

Nationwide the ‘at risk’ audience tended to be similar – fishermen between the ages of 40 to 52 years.

A range of material (brochures, stickers, posters and the like) was developed and branded “Boat Smart from the Start”. Media releases conveying the “Boat Smart” message were then distributed with positive support from radio, print and television throughout NSW.

The Sydney International Boat Show took the concept one step further with a Boat Smart tank. Remote control boats as well as a display on lifejacket in 2002 and 2003 promoted the concept of ‘knowing’ when to wear your lifejacket.

Preliminary analysis has shown the campaign to be a success with the least number of fatalities recorded during the peak summer boating season October 2002 – April 2003.
What can be learned from analysis of the causal patterns of drowning in children? – Ann Williamson

Ann Williamson, Penelope Irvine and Samantha Sadural
NSW Injury Risk Management Research Centre, University of New South Wales

In NSW, drowning is the second most common injury-related cause of death, for under six year olds, only slightly less common than motor vehicle-related injury (Schmertmann and Williamson, 2002). Furthermore, children under five years of age have markedly higher drowning and near-drowning rates compared to virtually all other ages. For these reasons, there is clearly a particular cause for action to promote water safety for this age group. The problem is, what should we target and what sort of action is likely to be most effective in reducing this problem in this vulnerable age group?

In answering these questions, one of the obvious starting points is to attempt to understand as much as we can about how and why drowning occurs for children in this age group. Previous reports have provided some information on some of the causal features. For example, a number of studies have highlighted two year olds as the most vulnerable age group and that there are differences in the location of drowning even within the under six year old age group (eg: Thompson and Rivara, 2002; IRMRC, 2000; SWSAHS, 2000). For infants, bathtubs present the largest drowning hazard, whereas drownings for toddlers in the one to four year old age group are more likely to occur in swimming pools. Most of the previous research on the causes of child drowning has focused on the role of the individual factors leading most immediately to the drowning, but very little work has looked at the wider circumstances of the drowning or at the relationships between the events and factors that contribute to the drowning.

Study of the causes of drowning in under six year olds in NSW

The NSW Injury Risk Management Research Centre undertook a study of the causes of drowning in under six year olds which was commissioned by the NSW Water Safety Taskforce. The aim of this study was to describe the wider causal circumstances associated with the causes of drowning in under six year olds and to look for common factors across cases in order to define more specific directions for action to prevent similar incidents occurring in the future.

The study looked at all cases of drowning fatalities involving children under the age of six years who drowned in NSW between January 1995 and April 2001. Ninety drowning cases involving this age group were identified in the coroner’s files and of these, 82 cases involved unintentional
drowning and could be physically located and read (three cases could not be located in the coroners system). For each case, the causal circumstances were coded and classified using a framework developed in previous studies of workplace fatalities (Williamson and Feyer, 1990). The method allows for coding of up to three precursor events leading to the contact between the child (coded as involving environmental, equipment, behavioural or medical-related events) and the water as well as other pre-existing contributing factors (including involvement of safety equipment or devices, supervision, location of the child in the period leading up to the event, pre-existing medical factors, environmental factors, common or standard practices). Further details of the method can be seen in the full report on the project (Williamson, Irvine and Sadural, 2002).

The overall results reinforced the findings of other studies, but also revealed more about the specific causal patterns of drownings in different locations. The study found the same age-related findings as expected based on other studies. Similar to other studies, boys were shown to be most at risk for outdoor drowning, but not those occurring in bathtubs, drownings were most common in metropolitan areas in pools, followed by bathtubs, then dams and lakes/rivers, and in rural areas most common in dams. Most drownings occurred in summer and on weekends between 9am and 3pm, while those on weekdays occurred mostly in the late afternoon or early evening period. For under three year olds most drownings occurred in the child’s own home.

The analysis of the causal patterns in different locations showed a number of important similarities and a few differences which serve to direct efforts to prevent them. The most consistent finding for all locations was that lack of direct adult supervision was a contributing factor which set the scene for the child to either come into contact with the water hazard or, as in the case of most bathtub drownings for a child already in contact with water to get into difficulties without the adult’s protection. In some settings, particularly natural bodies of water and bathtubs, the child had some form of supervision, for example a number drownings occurred in bathtubs when the infant was left in the care of an older child and in a number of natural water drownings the child was being supervised indirectly by an adult who was busy doing other activities at the same time. Previous studies have also highlighted adult supervision of the child as an important factor in child drownings (WSAHS, 2000; NSW Child Death Review Team, 2001). Supervision and most importantly, active supervision is undoubtedly a major cause of infant and toddler drowning and needs to be actively targeted in water safety programmes.

The study also showed that pool and natural water drownings often involved failures of safety devices intended to protect the child from the known water hazard. Again, other studies have also shown this. Thompson and Rivara (2002), for example reviewed the literature on evaluations of swimming pool fences and concluded that pool fencing, especially isolation fencing that separates
the pool from the house and fences with dynamic latching gates, are important protective devices against child drowning. In this study, however, there were a number of cases of pool drowning where the way the fence was used compromised the effectiveness the fence and others where maintenance of the pool fence also contributed to the drowning. Clearly the appropriate usage and maintenance of pool fences are issues that need targeting.

**Where are we now? The challenge for further action**

From this analysis and from a number of others both in Australia and elsewhere we now know a considerable amount about how and why under six year olds drown. The results from all of this work are largely consistent and unambiguous. They identify three main factors involved in drowning in young children:

- the characteristics of young children, especially infants and toddlers which make them vulnerable in the presence of water hazards,
- the lack of effective safety barriers that separate the child from the water hazard,
- the lack of active adult supervision.

The main conclusions that can be drawn from this and previous research is that we *do* know what are the causes of drowning in under six year olds. Further research on the causes of these tragic cases is not what is needed now. What we *do not* know is the best approaches to translating this knowledge into effective drowning prevention. Clearly we need to consolidate this knowledge about the causes of drowning in children and use it to rethink our drowning prevention strategies. Looking at the drowning statistics shows that there has not been much change in drowning rates for under six year olds over the last decade or so. The best we can say about the strategies we have been using is that have been effective in keeping the rates at roughly the same level. But we need to do better. The focus in water safety for young children needs to some new programmes and approaches and we need to evaluate them to ensure that they work and that we understand why they work.

In summary, the research on the causes of drowning in under six year olds indicates that the following approaches will be most effective themes for the development of water safety programmes.

1. We need to focus on active safety measures not just passive one’s. Ensuring that young children are under direct adult supervision would clearly have the most impact on preventing drownings. Just telling parents to watch their children, though, is not enough. We know enough now to be able to tell parents more than just a general message. We can tell them, for example which children are most vulnerable, where and when. This
2. We need to ensure that parents know that bathtub drownings do occur and that a young child cannot be left unsupervised in the bath under any circumstances, even for a minute.

3. We need to continue to work on advocating for well-designed swimming pool fences and other passive safety interventions but we also need to reinforce the safe and effective use and maintenance of these devices.

4. The combination of these passive devices with active involvement of the child’s supervisors/guardians is clearly the approach that best targets the major causes of drowning for under six year olds.

References


Western Australia Water Safety Framework: 2003-2006 – A strategic framework for addressing drowning, near drowning and related injuries – Chantelle Jeffery

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Development of the Framework

- The development of the Western Australia Water Safety Framework was endorsed by the Ministers for Health, Sport and Recreation, and Education in 2002.
- A final draft of The Western Australia Water Safety Framework: 2003–2006, A Strategic Framework For Addressing Drowning, Near Drowning And Water-Related Incidents In Western Australia, and a Discussion Paper have been developed by the Management Committee.
- The Management Committee is comprised of the Department of Health – Injury Prevention Unit, the Department of Sport and Recreation and the Department of Education.
- The vision for the Framework is to have a downward trend in the number of drowning and near drowning incidents in Western Australia. The objectives of the Framework are to:
  - Facilitate strategic management of the prevention of drowning and near drowning in aquatic environments;
  - Ensure an efficient use of available resources; and
  - Achieve a collaborative and cooperative approach among government agencies, peak bodies and water safety service providers.
- The Framework was developed after review of the National Water Safety Plan and water safety plans from other States.
- The Management Committee agreed to a consultation and review process that considered the sensitivity of the issue and competitive nature of the non-government sector in particular. It was agreed that an independent organisation should undertake separate consultation workshops for the government and non-government sector.
- The purpose of the consultation process was to obtain feedback and recommendations for improving the draft WA Framework. The specific outcome required of the consultation was to achieve agreement on the content of the Framework and any modifications that may be required, and achieve a collaborative and comprehensive Framework for WA.
- Following the first round of consultation the agencies consulted were committed to the Framework’s success and interested in being involved further through working parties to implement the framework. Agencies were particularly cooperative and keen to ensure the development of a relevant and useable Framework.
- The draft Framework was refined to incorporate the feedback raised in the first round of consultation. Particular emphasis was on redefining the scope of the Framework with some reference to roles and responsibilities of agencies.
- The second round of consultation with government and non-government stakeholders was completed in June 2003. The Framework and the Implementation Plan are due for release by late 2003.
Threats and enablers to the implementation of the Framework

- Threats and enablers to the Framework were discussed as part of the consultation process. There were understandable differences between government and non-government agencies.

Threats

- Both sectors saw the following factors as potential threats to the implementation of the Framework:
  - Issues in relation to Government commitment for the Framework, policy disagreements and political changes. These factors all impacting on the sustainability and longevity of the Framework; and
  - Insufficient resourcing to implement the Framework, particularly for government agencies who nominated as a supervisory agency for one of the strategic directions. (A lead agency would be required to convene and support one working party to develop an Action Plan and a Monitoring Plan for one of strategic directions).
  - The lack of funding for drowning and near-drowning prevention was raised by the non-government agencies that are providing water safety services to the community.
  - The non-government agencies found it threatening that the Framework could result in a change in focus and move away from the successes to date. There was concern as to the lack of clarity of the roles and responsibilities for government agencies involved in the prevention of drowning and near drowning.

Enablers

- The enablers from both sectors, for the implementation of the framework included:
  - Government support and commitment to drowning and near-drowning prevention considering its salience to the Western Australian community and environment;
  - The inclusion of non-government agencies in the development and planning stages, and ensuring links with the metropolitan and regional community; and
  - Ensuring the Framework includes an evaluation plan, appropriate communication plans and a process for reporting progress and achievements. This would assist agencies to link their own strategic directions to the directions in the Framework.
  - The Management Committee has considered these threats and enablers and where possible, include changes into the Framework document and in the policy development process.

Current Issues

Implementation of the Framework

- The Injury Prevention Unit (IPU) has assumed responsibility for monitoring the overall Framework, and to ensure that there are other nominations for supervisory agency so that the Framework can be implemented as an across-government initiative.
- If no other government agency assumes a “supervisory role” the implementation of the Framework will not proceed. The IPU is unable to implement the Framework if there is no formal partnership with other government agencies.
Nomination of Supervisory Agencies

- The WA Framework is modelled on the successful New South Wales Water Safety Framework and implementation strategy. In New South Wales, three government agencies have assumed “lead agency” status for one of each of the three strategic directions of the Framework. For the purpose of the WA Framework the term “lead agency” has been changed to “supervisory agency”.
- In assuming this supervisory agency role, the agency agrees to work in partnership with other relevant water safety service providers to achieve the intended results of the Framework. This includes but is not limited to:
  - Providing executive support to form a subcommittee that developed an action plan for the strategic direction;
  - Identifying and involving key partners in the identification of strategies for each strategic direction for which they were responsible;
  - Ensuring the formal organisational endorsement and support for these strategies and targets; and
  - Developing an action plan in partnership with other key organisations, to monitor the implementation of the strategies, develop effective performance indicators and reporting on the achievement and evaluation.
- It is appropriate that the IPU take on a supervisory role for the Research and Evaluation strategic direction. Two other government agencies are required as “supervisory agency” for the other two strategic directions; Water Safety Education and Awareness, and Legislation and Enforcement.
- Initial discussions have occurred with the Department of Sport and Recreation (DSR), Department of Local Government and Regional Development (DLG & RD) and Department of Education (DOE). The IPU is continuing discussions with these agencies, and has high level support and encouragement from the Director General, Department of Health.
- Recent discussions between the Injury Prevention Unit and Department of Housing and Works (DHW) have been very successful. DHW has committed to taking on the role of supervisory agency for the strategic direction Standards, Legislation and Enforcement.

Future Directions

- The Injury Prevention Unit will continue to liaise with DHW to formalise the roles, responsibilities and resource implications as a supervisory agency.
- The Injury Prevention Unit will establish operating guidelines to identify the terms of reference, membership, sub committees and operating guidelines of the WA Water Safety Taskforce.
- Once supervisory agencies are identified the WA Water Safety Framework will be disseminated to government and non-government agencies.
- Implementation of the Framework will involve the development of Action Plans for each strategic direction, monitoring and evaluation of water safety/drowning prevention strategies and evaluation of the Framework itself.
Introduction

A walk to one of the many tour desks that proliferate in the tourist areas of any of Queensland’s holiday destinations will show to even the casual observer the extent and scope of water based adventurous activities available to entice thrill seeking participants. The “A”s of Adrenaline, Adventure and Action appear regularly in both product names and descriptions.

For practitioners of occupational health and safety this growing industry presents a challenge not only in the application of risk management principles, but also in satisfying conflicting public, industry, media and policy considerations. The experience of Workplace Health and Safety Queensland in its dealings with the recreational diving and snorkelling industry provides a useful, if somewhat cautionary, illustration of this process.

The Regulatory Experience of the Recreational Diving and Snorkelling in Queensland

A succession of fatal recreational diving incidents in the late 1980s attracted considerable media and coronial interest and prompted the then Division of Workplace Health and Safety (“The Division”) to release part 36 of the Workplace Health and Safety Regulation 1989 “Dive Shops, self employed scuba instructors and dive charter vessels”. This regulation marked the beginning of a succession of evolving standards for the recreational dive and snorkelling industry (Table I).

Table I Queensland recreational diving and snorkelling standards

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<tr>
<th>Regulation</th>
<th>Status</th>
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<tr>
<td>Workplace Health and Safety Regulation 1989- Part 36 Dive Shops, Self employed SCUBA Instructors and Dive Charter Vessels – Repealed</td>
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<tr>
<td>Code of Practice for Recreational Diving at a Workplace 1992- Repealed</td>
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<td>Code of Practice for Recreational Diving and Recreational Snorkelling at a Workplace 1995 – Repealed</td>
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<tr>
<td>Workplace Health and Safety Regulation 1997- Part 12 Underwater Diving Work – Current</td>
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<tr>
<td>The Compressed Air Recreational Diving and Recreational Snorkelling Industry Code of Practice 2000- Current</td>
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<tr>
<td>The Industry Code of Practice for Recreational Technical Diving 2002- Current</td>
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This regulatory part prescribed standards for dive equipment, air purity, equipment available on dive vessels and operational requirements to be ensured by the dive master. In some this cases the regulations can only be described as arbitrary, where the outcome appears to have more to do with measuring compliance than improving health and safety. For example regulation 264(3) (j) limits
any diver to undertaking no more than four dives in any one day. As a control measure to limit the risk of a diver developing decompression illness it is inadequate in that there is no reference to individual dive profiles.

The reaction from the recreational diving industry to these regulations was negative, loud and long (Spencer 1990). The prescriptive nature of regulation and lack of flexibility when applied to the wide range of variation found within the industry made its effectiveness as a risk management tool questionable. Also it made no real reference to the differing standards applicable to differing risk categories within the overall group, for example resort divers as opposed to certified divers. With limited resources applied to this new area, compliance monitoring and enforcement efforts were also low.

Despite this mixed start, the underlying need for a regulated was recognised by the peak recreational diving employer’s organization, the Queensland Dive Tourism Operators Association, later to become Dive Queensland (Heywood 1996). In partnership, the Division and Dive Queensland developed the 1992 Code of Practice for Recreational Diving at a Workplace. This new standard provided a much more extensive document in a more flexible code of practice format. Specific sections applied differing standards to differing risk groups so that sections were developed catering for the differing needs of resort divers, divers in training and certified divers. This represented the first attempt at a holistic approach.

The Division had by this stage recruited specialist diving inspectors and begun compliance monitoring and enforcement activities. The following years from 1992 until 1998 saw the Code of Practice revised progressively following significant incidents. The deaths of 3 resort divers in 1994 and 95 saw the addition of advice to ensure that all resort divers be kept under close supervision so that the instructor is able to render immediate assistance if required. Since these amendments, there has been one resort diving fatality between 1995 and 2003.

The second major revision led to the addition of a new section to the Code of Practice, Part 5 Recreational Snorkelling. A fatal incident off Cairns whereby a 16 year old girl drowned in circumstances where she was left behind after going on a snorkelling tour conducted from a tender vessel operating remotely from the main vessel, again prompted coronial criticism. These section focussed on the differing operational standards required when snorkelling in remote as opposed to a prime location.

Both of these revisions were incorporated in the 1995 Code of Practice for Recreational Diving and Recreational Snorkelling at a Workplace, itself a Code of Practice under the new Workplace Health and Safety Act 1995.
The disappearance of Thomas and Eileen Lonergan whilst diving from MV Outer Edge near St Crispin’s Reef in January 1998 prompted the largest and most holistic review of the legislation since the original 1992 Code of Practice. The then Minister for Employment Training and Industrial relations set up a Diving Industry Taskforce to examine and report back on the overall approach managing health and safety within the recreational diving and snorkelling industry in Queensland. This taskforce started a process of consultation with a variety of stakeholder groups against a background of intense media interest, broader tourism industry concerns, a coronial investigation and the manslaughter trial, and subsequent acquittal, of the master of the MV Outer Edge.

This matter was also prosecuted under the Workplace Health and Safety Act 1995 securing a conviction of the employer and the, then, largest fine for a recreational diving matter. Section 2.5(b) of the Code of Practice was used as the standard to demonstrate that an obligation had not been fulfilled in that reasonable precautions had not been taken to manage a risk. The section required that the person in control of the workplace should ensure that a safety log is maintained on each trip. The safety log should have been completed and each person accounted for on board prior to the vessel weighing anchor. The log in question was not completed. Reasonably, for the log to have been completed would have ensured all divers had returned from the last dive.

The Taskforce consisted of directors from two major Queensland diving operators, a dive inspector from the Division, the senior officer in the Queensland Police Dive Squad and was chaired by the chairperson of the Queensland Chamber of Commerce and Industry. Initial criticism from the diving industry regarding the makeup of the Taskforce was addressed through more inclusion and consultation with dive operators. This included extensive periods for consultation, public meetings and individual consultations at all major coastal centres.

The report from the Taskforce (Diving Industry Taskforce 1999) recommended that the existing Code of Practice be reviewed in both content and legislative basis. A further recommendation led to the appointment of another specialist diving inspector. Following a further extensive program of face to face and written industry and other stakeholder consultation, the result were amendments to Part 12 Underwater Diving Work of the Workplace Health and Safety Regulation 1997, and the release of the Compressed Air Recreational Diving and Recreational Snorkelling Industry Code of Practice 2000.

By combining regulatory and industry code of practice provisions, flexibility is maintained whilst improving the robustness of monitoring and enforcement activities. The first state-wide audit program was conducted in 2001. 59 recreational diving and snorkelling workplaces were audited and 169 Improvement Notices issued. This process and outcome achieved a high degree of
operator support (Thompson 2002). Partly as a result of these changes, but also as an outcome of
the prosecution policy adopted by the Division in 1999 the number of successful prosecutions has
also increased under the current standards.

As with the 1992 Code, subsequent incidents have prompted further amendments to the standards.
A fatal incident involving a recreational dive worker using a semi enclosed enriched air nitrox
(EANx) rebreather off Cooktown highlighted how changes in plant and technology coming from
adventurous innovators could trickle down into the teaching sectors exposing less experienced
divers to the peculiar risks created by these diving systems. Diving using gases other than air was
outside the scope of the existing standards, and so a new code of practice was developed
commencing in February 2002.

The Industry Code of Practice for Recreational Technical Diving incorporates diving using both
open circuit and rebreather SCUBA systems for gases other than air as well as decompression stop
diving on all gases. Developing this standard illustrated the issues that could occur when
technologies and systems previously the preserve of diving innovators and explorers moved into
the mainstream.

The final substantive amendment to the standard resulted from concerns following two fatal
incidents in December 2002 and January 2003. Both involved recreational snorkellers, one a dive
instructor, developing hypoxic blackout and subsequent drowning after extended breath hold
diving. Although these incidents represent a well known risk affecting younger, more experienced
and male participants in snorkelling activities, the circumstances were largely unknown in
Queensland snorkelling workplaces where major risk factors include age, health and inexperience.
The Compressed Air Recreational Diving and Snorkelling Industry Code of Practice has been
amended to provide advice to snorkellers to manage this risk.

**Measures of Success?**

True measures of incident rates in the recreational diving and snorkelling industry are currently
unknown and other indicators paint a sometimes contradictory picture. Although incident rates,
particularly mortality rates are well determined, the denominator or activity participation rates
across the different sectors for recreational diving and snorkelling have not been determined in
Queensland since 1994 (Windsor 1996). However at that time information extrapolated from this
study concluded that the fatality rate for recreational divers was significantly lower in Queensland
than in other areas (Table II). This may support the view that the regulatory regime contributed to
these lower rates in Queensland.
Table II: Ratio of recreational diving fatalities per number of dives in Queensland and other areas (Santoro 1996)

<table>
<thead>
<tr>
<th>Location</th>
<th>Ratio of Deaths per 100,000 Dives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>1 death per 430,000 dives</td>
</tr>
<tr>
<td>Rest of Australia</td>
<td>1 death per 120,000 dives</td>
</tr>
<tr>
<td>USA</td>
<td>1 death per 100,000 dives</td>
</tr>
<tr>
<td>Japan</td>
<td>6.5 deaths per 100,000 dives</td>
</tr>
</tbody>
</table>

This lack of recent denominator is acknowledged in other studies (Wilks and Davis 2000) and means that statements made in this paper regarding diving and snorkelling safety since 1996 are constrained to limited and sometimes anecdotal information available. Likewise there is some doubt that rates of incident reporting are consistent across different jurisdictions. (Walker D 2002)

What can be ascertained is that each year in Queensland we continue to see a succession of recreational diving and snorkelling workplace fatalities (Table III) and that the causes remain largely unremarkable and unchanged (Edmonds 1999 and Walker D 2002).

Table III: Recreational Diving and Snorkelling workplace fatalities in Queensland 1993-2003.

<table>
<thead>
<tr>
<th>Year</th>
<th>Divers</th>
<th>Snorkellers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1994</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>1995</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>1996</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>1997</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>1998</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>1999</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>2000</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>2001</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>2003</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

When these incidents do occur there are still often alarmist media reports that continue to challenge the safety credentials of the Queensland dive and snorkel industry. (Metcalfe 1998 and Reid 1998). However the independent investigation and scrutiny that then follows by the Division is largely supported by the industry as being their best defence in such media allegations and any subsequent legal undertakings.

A recent study of admissions to Queensland hospitals, between 1995-1998 for overseas tourists, reports that diving and snorkelling related injuries, particularly treatment for decompression illness; drowning and non fatal submersions were the leading causes of water related incidents. (Wilks and Coory 2000)

However anecdotal evidence from the two recompression chambers operating in Queensland has suggested a fall in up to 30% in the numbers of recreational divers being treated in the years 2000-2002.
The Queensland recreational diving and snorkelling industry is a growing market sector. New operators are regularly entering the market and predictions made in 1995 were for a consistent rate of growth of 5% per annum between 1995 and 2005. (Reef Tourism 2005- 1996). The arrival of new and larger diving vessels in Cairns alone is an almost a monthly occurrence. However no measures of snorkelling or diving activity exist.

Imitation is a sincere form of flattery. The Queensland experience has also been used as the basis for the development of other standards. Australian Standard AS/NZS 2299.3 2003 Occupational Diving Operations- Recreational Industry Diving and Snorkelling consists primarily of an amalgam of the current Queensland compressed air and technical diving regulation and codes (AS/NZS 2299.3- 2003). In Western Australia, following a spate of fatal diving incidents primarily involving overseas tourists, the Department of Sport and Recreation has released the Diving and Snorkelling Codes of Practice- Recreational Diving using Compressed Gas and Recreational Snorkelling (Department of Sport and Recreation - 2003). This document is also based on the Queensland standards. In New South Wales the process of developing recreational diving standards is ongoing following coronial recommendations that directed that the Queensland standards be considered as a part of the development process.

The current regulatory standards are being proactively supported by the Division of Workplace of Workplace Health and Safety. There is a network of diving specialist diving inspectors and investigators based in the major diving centres. Other inspectors can now access training in diving as a part of the Division’s ongoing professional development program.

The combination of regulatory and code standards mean that breaches of those standards can more easily be prosecuted where appropriate under the Department’s Enforcement framework. This can be illustrated by a recent case, (Pukallus v Clayton 2002.) following the death of a recreational snorkeller, which was based upon the failure by the obligation holder to comply with section 86J (4) (a) of the regulation requiring a lookout to be able to recognise relevant hazards and snorkellers in difficulty.

The Division is providing the industry a wider range of monitoring and educational programs than before. Educational programs are regularly conducted for operators and workers, particularly workers undergoing dive instructor training. A further outcome of the audit program conducted in 2002 was the development of a range of sample documents, including head count records, dive safety logs and advice for snorkellers regarding medical conditions, being included as appendices in the latest reprints of the code. Another initiative is to assist operators in compliance with certain assessment and advisory requirements by providing medical advice and briefing documents translated into ten common languages of non English speaking visitors to Queensland.
Conclusions

The current Industry Code of Practice for Compressed Air Recreational Diving and Recreational Snorkelling expires on 31 January 2005. Based on previous experience the process of consultation and drafting will take at least 12 months and so now is an appropriate opportunity to reflect on past experiences to produce the best standard possible. The experience gained by Workplace Health and Safety in 14 years of writing and administering standards for the Queensland diving and snorkelling industry may also have considerable application for other authors and administrators of similar standards. In summary the key considerations are:

- Recognise that the goal of risk elimination is not possible in a snorkelling and diving workplace.
- Good standards provide a level of surety and consistency to all stakeholders.
- Standards must maintain the fundamentals of the activity. Avoid the stultifyingly safe.
- Focus on sectors within the industry where individual competence is least.
- Learn from previous incidents so that once learned means never forgotten.
- Consult broadly and regularly with the relevant industry. Unworkability, excessive costs and documentation should be minimised. Acknowledge their expertise.
- Consult with consumer and relevant expert groups to ensure public confidence is maintained.
- Use a regulatory basis where appropriate for a robust enforcement framework, but use advisory standards in conjunction to allow for operator variation and flexibility.
- Maintain a holistic approach to standards to ensure all operational variables and progressive operational states are addressed.
- Effort spent in developing standards without a matching effort in education, assessment and enforcement is likely to be a wasted effort.
- Consider the result from the participant’s perspective. The best controls are not readily apparent to the participant.

The management of risk in the recreational diving and snorkelling industry in Queensland has been a major achievement of Workplace Health and Safety. In the progressive development of suitable standards many useful lessons for participants in all diving and snorkelling workplaces, and occupational health and safety managers of the same, have been learnt. In partnership and with realistic mutual goals the role for health and safety in this sector can continue to be rewarding.

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Perceptions of water safety of individuals from CALD Backgrounds and tourists to NSW – Katrina Haddrill

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2 Injury Prevention and Policy Branch, NSW Health.

The National Water Safety Plan identified people from culturally and linguistically diverse (CALD) backgrounds and tourists to Australia as two population groups with a high risk of drowning.1

There is minimal reliable information regarding the incidence of drowning in individuals from a CALD background. However, an analysis of all drownings in Australia found that during 1992-1998 119 tourists drowned – the majority in open water in Queensland and NSW.2

In NSW, little was known regarding whether or not current key water safety messages were meaningful or effective with CALD communities or about this group’s perceptions of water safety. Also there was no information about water-related activities undertaken by tourists visiting NSW.

Census data shows that Chinese languages (Cantonese and Mandarin) are the most common languages spoken in NSW, other than English.3

A series of 5 focus groups were held with Chinese individuals of different ages and genders to determine their awareness of water safety issues, current water safety practices/behaviours, current water safety attitudes, and impact of current water safety messages.

Also a series of random structured interviews were conducted with Chinese tourists departing Sydney International Airport to determine if they undertook any water-related activities in NSW, current water safety practices/behaviours, impact of current water safety messages, and what some of the Australian Standard 2416 water safety signs meant to them.

The findings of the focus groups and intercept interviews were presented to an Advisory Group consisting of Chinese community organisations who devised a number of strategies for raising water safety awareness within the Chinese community and Chinese-speaking tourists to NSW.

Focus groups

Overall, the Chinese community in NSW comes across as being cautious and vigilant when undertaking any form of water activity. Key water activities included: swimming at the beach, swimming at a pool, rock fishing and boating/fishing. The community primarily relates to water

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activities in a social context – providing opportunity to meet and mingle with friends and family whilst enjoying a leisurely sport.

In terms of communication, most SafeWaters messages evaluated were well received by the community. The top four messages that the community nominated as being most important on information seeking and relevant were: Always supervise children near water; Take care when rock fishing (amongst males); Learn to swim and survive; Never swim alone (amongst females). The community showed a strong preference for messages depicting real life stories. Television commercials in Chinese are the most preferred means of communication among the Chinese community, followed by posters, newspaper and radio advertisements.

**Intercept interviews**

Swimming is a popular water activity with Chinese speaking tourists to Australia. Also, over half of the interviewed Mandarin speakers had undertaken inland river activity.

Recall of water safety signs was relatively high, however somewhat lesser amongst those who have undertaken rock fishing, swimming and inland river activity. One-third of Chinese tourists interviewed were aware of swimming between the flags as a safety measure. However, of concern is that over one-third of tourists perceive that there are no safety procedures available when undertaking certain water activities.

**Chinese Advisory Group**

Strategies for raising water safety awareness with the Chinese community and Chinese-speaking tourists to NSW that were recommended by the Chinese Advisory Group (CAG) included:

- Generic versus specific messages – more specific messages could help water activity participants in understanding types of safe behaviour. The general messages should use more idiomatic types of slogans in Chinese (rather than translating an English message).
- Use of community groups to convey messages to people - this could involve an in-depth education process to help people learn about water safety measures.
- Information on water safety could be passed on to the public by community organisations through organised events, such as an information expo, Chinese festivals and other celebrations.
- Use ‘advertorial’ style information from ‘real life people’ of Chinese background that have experienced water related incidents.
- Water safety information could be sent via the ethnic Chinese school network.
- Water safety information could be sent directly to new migrants through the various community services run by Chinese organisations. It was suggested that the NSW Water Safety Taskforce could provide speakers to community groups to talk about water safety issues.
- Organise a Water Safety Week for the Chinese community in order to focus promoting water safety measures.
• Actively publicise to the Chinese community the water safety website which provides information about patrolled beaches.
• Translated water safety messages on stickers and leaflets provided to coach/tour companies for their Chinese-speaking visitors.
• A half-day tourist guide-training course to arouse awareness on water safety among guides and to urge them to advocate safety messages to overseas visitors.
• Currently training is provided (about home care and first aid) for Chinese childcare workers. It is suggested that the NSW Water Safety Taskforce should approach the community organisations to add a more concrete water safety aspect to this training.
• Chinese community groups often organise harbour cruises. Some boat rental companies could make the groups take on the responsibility of reviewing water safety procedures with their members.
• Training of bilingual educators on water safety issues, so they can provide public talks for community organisations and/or Chinese church groups.

Based on the information obtained from the focus groups, intercept interviews and advice from the CAG a series of water safety awareness raising initiatives and training courses have been proposed.

A water safety initiative specifically targeting the Chinese community has been devised to take place in 2003 including:

- Training of bilingual swimming instructors
- A rock fishing safety seminar
- Water Safety seminars for Chinese-speaking guides
- Translated media releases specifically targeting rock fishing, boating, and home pool Safety/Learn to Swim classes
- A school poster competition

For further information on the NSW Water Safety Taskforce and water safety initiatives being conducted with CALD communities go to www.safewaters.nsw.gov.au

References

3. ABS. 2001 Census Basic Community Profile and Snapshot, NSW, Australia (www.abs.gov.au)

Acknowledgments: The authors acknowledge invaluable assistance from the NSW Water Safety Taskforce and from Multicultural Marketing and Management.
Introduction

Despite the attention to Indigenous health issues over the past decades there has been little overall change, with the health of Indigenous Australians being described as poor, particularly in rural and remote communities. A state government environmental health program for remote communities commenced in 2000 and included the sealing of internal roads, improved housing and in three communities; the provision of aquatic facilities.

Royal Life Saving was contracted by the Department of Housing and Works in May 2000 to manage the aquatic facilities (2000 -2006) in the remote Aboriginal communities of Burringurrah, Jigalong and Yandeyarra. As the drowning rate of Indigenous children in Australia is three times higher than non-Indigenous children, Royal Life Saving's mission statement to prevent the loss of life and injury in the community with emphasis on aquatic environments, plays a significant and necessary role for Aboriginal health.

Physical activity is associated with lower mortality rates and swimming therefore is an appropriate physical activity in hot climates. Aquatic activities also have the potential to decrease boredom in remote communities where there are limited social and recreational opportunities.

Furthermore in Aboriginal communities with pools in central Australia, health workers found that there was an overall reduction of infections, especially skin, ear and eye infections coinciding with the periods that the swimming pools were open.

Methods

Community development projects of this size require close consultation, cooperation and collaboration and Royal Life Saving is working with the community and other key stakeholders to achieve the best possible outcomes.

Programs are designed to encourage active community participation with the facility providing a strong social focus for the community. Recreational, educational, social and training programs are
being implemented and include water polo, Swim and Survive learn to swim, resuscitation and Traineeships in Community Recreation. Each community has adopted a 'no school, no pool' policy or ‘school means pool’ as one community has more positively coined it, whereby each child is given a daily 'pool pass' for attending school.

The children participate in a number of activities at the pool, including swimming lessons, work experience and holiday programs. They have painted brightly coloured murals on the buildings, displaying their creative talents and encouraging ownership of the aquatic facility.

The Telethon Institute for Child Health Research has conducted health checks on children at both Burringurrah and Jigalong, visiting four times at approximately six month intervals between July 2000 (prior to the pools opening) and March 2002. The research team includes epidemiologists, paediatricians, Ear Nose and Throat (ENT) specialists, an audiologist, an Aboriginal Health Worker, Indigenous research staff and a registered nurse.

To assist the research team, the pool manager records daily pool attendance for obtaining data on how often children on the study swim in the pool. The researchers are interested in any changes in the burden and severity of ear, eye, skin disease and general well being of the children following the introduction of a pool. To monitor for any long term health gains the health survey will continue for another three years and also include the children from the Yandeyarra community.

**Results**

Each community has embraced the ‘no school, no pool’ policy with the school principals reporting a marked increase in school attendance and an overall improvement in the children’s behaviour.

Social programs at the aquatic facility are popular, with birthday parties, barbeques and movies nights proving to be regular features on the community calendar. Swimming and lifesaving carnivals are held each season to highlight the children’s progress in swimming and water safety skills.

A number of community members are currently undertaking traineeships, providing skills and knowledge to undertake future operations and management of the facility, through the provision of real career opportunities.

Recently published results from Telethon Institute for Child Health Research reveal that the children appear healthier since the pools have opened, and the incidence of skin sores and ear infections have decreased significantly.\(^3\) A community survey at Burringurrah showed that there was a most positive support for the swimming pool.
**Conclusion**

The aquatic facility has become the ‘hub’ of the community, offering a meeting place within a safe and healthy environment. With effective management and appropriate program implementation, community capacity and community health can be enhanced. Furthermore this project offers promise for improved health status in Aboriginal children, particularly in remote communities and suggests serious consideration for wider implementation.

**References**


The Surfing Victoria Indigenous Surfing Program – Max Wells

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Surfing Victoria
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Ph. 0352612907

The Program.

The program has evolved over the last three or four years and has several different components of which Surfing Victoria, Steve Parker as convenor of the Indigenous Sub Committee and Rangi Pito as state champion and various representatives of Sport & Recreation Victoria are all involved.

Components.

1. Community Visits.
Are normally done by Steve Parker and either Ralph White, Mark Williams or Peter Montga from Sport and Recreation. These visits are aimed at meeting and briefing koori educators and others from local communities to outline / promoting the program and opportunities it provides.

These are then followed up with return visits where small clinics for interested kids are conducted, normally after school.

2. Camps.
Role models go to camps to promote surfing. The largest camp is at Phillip Island where surfing / water safety is an integral component taught to all participants. Coaching, equipment and support is provided by the local Surfing Australia affiliated surf school, Island Surfboards Surf School. This camp is in partnership with Swinburne University and has as its educational goal the improvement of secondary school retention rates within Victorian Indigenous Communities. This camp open to communities from across the state.

There are other camps organised by Sport & Recreation Victoria which are also attended by the indigenous role model / coaches (particular by Steve Parker) through out the year.

3. The Roxy Surf Jam.

Is a major girls program that Surfing Victoria conducts across the state. In 2002 an indigenous component was incorporated into the program and this was a huge success with significant numbers of koori girls participating. This was also partnership program with SRV personnel and local koori educators.
4. **The Victorian Indigenous Surfing Titles.**

The event has been held at Warrnambool South Western Victoria each February for the last three years. In 2003 participant rates increased as per previous years, in particular there was a significant increase in the number of teenage girls actively participating. We believe this is because of the regional role model visits and running activities such as the Roxy Surf Jam. This event also has an important cultural component with a welcome dance included and local elders incorporated into the opening ceremony and presentations.

Other Surfing Victoria activities that the key indigenous role models have been involved in were the Rip Curl Pro and the Roxy Women’s Surfing Festival.

**Future Directions.**

Future goals include the desire to increase the number of fully qualified coaches from indigenous backgrounds.

Increase the number of regional visits and clinics. Expanding these into inland regions with a water safety emphasis.

Further develop the community networks which have been established.

**Conclusion.**

Indigenous surfing in Victoria is all about partnerships.

These partnerships are between Surfing Victoria and its indigenous sub committee and other groups such as Sport and Rec Victoria, VASR, and local indigenous co-ops and communities.

Funding for our programs come from various sources that are all co-ordinated by Surfing Victoria, these include federal government via Surfing Australia, Sport and Rec Victoria, Surfing Victoria programs via SunSmart and Play it Safe by the Water and in 2002 Victorian Aboriginal Youth Sport and Recreation Association provided a small grant for equipment which was put towards two surfboards and additionally the surfing industry have donated wetsuits for use in the programs and prizes for events.
Water Safety and Diving Safety – Preventing injury through safer diving -Jenny Blitvich

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Introduction

Each year, approximately 25 Australians sustain a catastrophic spinal cord injury (SCI) from a shallow water diving incident (1). The most common injury is of C5/6, resulting in tetraplegia or tetraparesis (2). Most of the injured are males in the 15-34 year age range. Typically, their diving skills are self taught (3) and they are unaware of the dangers associated with diving into shallow water and the skills required to perform ‘low risk’ dive entries. In 50-80% of cases, alcohol consumption is involved (eg.4).

The financial burden of such injury is great, impacting upon the injured person and their family as well as the Australian community as a whole. Walsh (5) estimated the financial cost of each spinal cord injury to be $1.2 million, as measured in 1987 dollars. Life expectancy is decreased by 15 – 25 years following spinal cord injury (6). The emotional and social impact can only be imagined.

The importance of reducing the rate of diving SCI has been recognised by both Commonwealth and State Governments in Australia (7, 8). However, worldwide, diving SCI prevention programs have focussed only on increased awareness and have demonstrated little if any impact on the incidence of injury (4, 9, 10). Increased awareness alone is not sufficient. A comprehensive approach is required, addressing skills and policy, along with public awareness.

Most research in diving considers competitive performance (11-13), investigating the effect of different dive entries on performance, rather than on safety. Diving SCIs are usually sustained by recreational swimmers, who tend to have a lower skill level than their competitively trained counterparts. This paper discusses a series of studies, conducted at the University of Ballarat in conjunction with The University of Western Australia. The first study examined characteristics which distinguished ‘low risk’ and ‘high risk’ dives among recreational swimmers. The second study involved teaching safer diving skills to a group previously identified to be of low diving skill level, while the third study tracked these participants over time, to establish whether their newly acquired skills were retained over the long term, without further intervention.
Characteristics of ‘low risk’ and ‘high risk’ dives among recreational swimmers (14)

Ninety-five first year university students (average age 19.9 years) performed three or four dives which were video-recorded for later analysis. The types of dives investigated were: dive entries from deck level to tread water (Treadwater); deck level to swim 25 m (Deck); starting block height to swim 25 m (Block); and for those comfortable to do so, a running dive entry to swim 25 m (Running). Maximum depth reached was used as an indicator of risk, and velocity at maximum depth, distance at maximum depth, angle of entry and flight distance were measured for each dive. Descriptive analysis was used to examine hand and arm position during the underwater pathway of the dives. Participants also completed a questionnaire designed to elicit information about their swimming and diving background. Unlike previous diving studies, participants were recreational rather than competitive swimmers. To mimic the circumstances where injury occurs, they were not aware that the dive was the focal point of the study, assuming that the researchers were investigating their swimming and treadwater ability.

Statistical analysis determined which dive parameters made the greatest contribution to dive depth. Stepwise multiple regression was applied to predict depth for each dive condition and comparisons among selected variables were made using beta weights of the resulting multiple regression equations.

The Treadwater dive condition was found to have the greatest depth, and hence the greatest risk. This is the type of dive likely to be performed by a recreational swimmer who is entering the water to ‘play’ rather than to swim laps. Entering the water for ‘play’ is a typical circumstance when SCI is sustained. Angle of entry was found to be the most influential variable, followed by velocity at maximum depth, distance at maximum depth and swim rank. In all conditions involving swimming after the dive (ie Deck, Block and Running), distance at maximum depth was shown to have the greatest influence on the depth of a dive. Flight distance and angle of entry were the next most influential variables. Other findings of this study were:

- skill levels of participants varied widely
- depths reached also varied widely (0.14 m to 1.78 m, as measured at the ear-hole)
- velocity at maximum depth was sufficient in all 316 dives to dislocate cervical vertebrae
- velocity at maximum depth was sufficient to crush cervical vertebrae in 310 dives

Several factors were found to contribute to safer dives. Safer dives were shallower, with hands locked together and arms extended beyond the head offering protection against impact. Locking hands together was important to prevent the arms being forced apart upon impact with the water. The level of risk was increased for some participants who allowed their hands to break apart and...
pull backward to perform a breaststroke arm action at, or before reaching maximum depth. In pulling both arms backward, the head and neck were left exposed and unprotected.

Individuals who performed safer dives implemented steering techniques. Hyperextension of the hands at the wrists, raising the upper trunk and arching the back, and slight hyperextension of the neck along with raising the arms were used to aid steering-up towards the surface. Flight distance, distance to maximum depth and angle of entry also affected dive depth. Participants with longer flight distances, shorter distances to maximum depth and shallower entry angles performed shallower, safer dives.

The findings of this study indicate that every dive entry has the potential to cause spinal cord injury should impact with a solid surface occur. It is recommended that divers strive to surface in as short a distance as possible by maximising flight distance and aiming for a low entry angle. Implementation of steering-up techniques will assist in minimising dive depth.

**Teaching Safer Diving Skills (15)**

Thirty-four recreational swimmers identified from study one to have low diving skills took part in an intervention program to improve diving skill. Participants completed seven 10-minute session which emphasised locking hands together (“Lock Hands”); extending the arms beyond the head to lock the head in position (“Lock head”), and developing steering and gliding skills (“Steer-up”).

Diving skills sessions were conducted at the end of the regular swimming classes which were part of the participants’ university course. Initial sessions (sessions 1-3) were conducted in the shallow end of the University of Ballarat Aquatics Laboratory (1.2 m deep) and did not involve head first entries. Gliding and steering skills, with “hands locked” and “head locked” were performed. The following progressions were conducted:

1. completely submerge, then push off the wall and glide forward in a streamlined position
2. completely submerge, push off the wall in a streamlined glide and steer the body to the surface
3. completely submerge, push off the wall in a streamlined glide, steering the body through hoops placed at various levels and surfacing through a hoop
4. push off the bottom of the pool and steer over and under a series of foam ‘noodles’ to surface through a hoop

Once steering and gliding skills had been acquired, and participants were consistently maintaining the “lock hands” and “lock heads” positions, it was safe to move onto head first entries at the deep end of the pool (2.0 m). As students had already spent approximately 30 minutes practising steering and gliding activities, they progressed rapidly through the remaining sequential steps. The sequence moved through sitting, crouching and standing dives. The sitting dive was considered of great importance, as this was used to ensure participants acquired skills in achieving horizontal rather than vertical velocity. Students sat on the edge of the pool, with their feet positioned flat
against the side wall of the pool. In the “lock hands, lock head” position, they extended their body forward, and pushed firmly with their feet against the pool wall. They were asked to imagine that their body was stretched out horizontally, and that their feet gave a final push to propel them through the water. Upon entry, they used steering-up skills to keep the dive shallow.

Following mastery of the sitting dive, participants moved quickly through the crouching and standing dive and then onto dives from block level. The need to maintain the “lock hands, lock head” position was continually emphasised, along with implementing ‘steering-up’ skills. Achieving a long flight, and therefore a shallow angle of entry was also highlighted.

At the conclusion of the intervention program, another video-recording session was conducted, and participants repeated the same dive entries as at the initial filming session. The same parameters were measured, and repeated measures ANOVAs were conducted to determine whether dive depth and other parameters had changed. Maximum depth was significantly decreased, and the action of performing a breaststroke-like arm action was completely eliminated. Both these factors contributed to safer dives post-intervention. Locking the hands together improved markedly, with hands allowed to separate in 71% of dives pre-intervention, but only in 3% of dives post-intervention. The treadwater dive, which was found to be the deepest and hence most dangerous pre-intervention, demonstrated the greatest decrease in depth following intervention. Velocity in all dives was sufficient to damage vertebrae, reinforcing the fact that every dive has the potential to result in catastrophic injury.

**Retention of Safer Diving Skills (16, 17)**

To determine whether the skills achieved in the diving skills intervention program were maintained without further practice, participants were invited to return for another data collection eight and 20 months after the conclusion of the intervention. Twenty-two students attended the Post-8 data collection, while 21 attended the Post-20 session. These time periods were matched to the time between the end of one summer and the beginning of the next (eight months) and then the beginning of the following summer. The same video-recording procedures were followed, and participants also completed a survey designed to determine whether any formal swimming or diving instruction/practice had occurred since the intervention program. Repeated measures ANOVAs were again conducted to determine statistical significance.

This study showed that skills were maintained over the extended retention period. Extremely little diving had occurred in the intervening period, reinforcing skill maintenance in the absence of practice. This is an important finding, as every dive, even the first after a long break, must be safe to avoid the possibility of injury. None of the participants performed the dangerous breaststroke-
like arm action at Post-8 or Post-20. The number of students who did not lock their hands together on entry increased slightly but was below the level observed among these participants pre-intervention.

For the Treadwater dive condition (the most dangerous pre-intervention) the significantly shallower dive depth achieved after the intervention program was retained over both the long (Post-8) and very long term (Post-20). This indicates that for adults a short period of instruction resulted in a relatively permanent change in this important measure.

**Conclusions**

The findings demonstrate that if learn-to-swim programs formally incorporate a progressive practice sequence to teach diving skills, then there will be a decreased risk of swimmers sustaining a diving spinal cord injury. Adult learners who entered the intervention program with poor diving skills were able to maintain improvements in diving safety over a non-practice period of 600 days. If all recreational swimmers acquired the knowledge of the dangers inherent in diving, along with the skills necessary to perform low risk dive entries and implemented these skills during every head first entry, then the risk of sustaining a shallow water diving spinal cord injury could be minimised. Spending approximately 70 minutes on a diving skills program is a small time investment in a prevention strategy to protect against the possibility of a lifetime of tetraplegia following a diving accident.

For full details of these studies, see 14-17. For more details of the diving sequence, see 18.

**References**


Government Subsidised Water Safety Awareness Program for child under 5 - Judith Green

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Description
The Water Safety Awareness Program (WSAP), is a Northern Territory Government subsidised initiative that will be available to Territorians with children under five. The subsidy will entitle eligible parents/guardians to participate free of charge, in a series of five structured lessons as part of the ‘Parent and Child Water Safety Awareness Program’. The program will have a flexible delivery so that it is inclusive of remote areas.

Background to Subsidy
In June 2002, the Chief Minister the Hon Clare Martin, announced a Five Point Water Safety Plan to help prevent children drowning. This followed pressure from local aquatic providers and recommendations made by the Australia Water Safety Council. The five point plan included the introduction of swimming pool fencing legislation to Australian Standards, the establishment of a Water Safety Advisory Council to advise Government and a government subsidised water awareness program for child under 5.
The Northern Territory Water Safety Advisory Council (NTWSAC) was directed to devise a scheme that would support the subsidy. The NTWSAC consulted with the RLSSA NT and a Water Safety Awareness Program was developed that will be released in the Northern Territory in October 2003.

General Information
The five elements in the prevention of drowning of under fives are pool fencing, supervision, water familiarisation, resuscitation and education. In conjunction with recent pool fencing regulations, the aim of the WSAP is to capture the other elements and reduce the high rate of drownings in the Northern Territory.
The WSAP, which is designed to be accessible to all Territorians, is not a learn-to-swim program, nor will it ‘drown proof’ children, therefore supervision should always be present. As the parent or guardian must undertake a component of basic drowning resuscitation as part of program, there
will be an increase in the number of people within the Northern Territory with knowledge of resuscitation and skills to impart water awareness to children.

The proposed program should not be viewed as a one-stop measure as children need to be continually exposed to water awareness strategies as they grow and develop. The desired outcome of the program is to provide basic principles that can be used and practised during the course of the young child’s development. The aim will be to provide parents or guardians with the skills to continue working with their child.

Supervision and education are seen as important components in reducing the number of drownings. For the WSAP to have long term and ongoing benefits, it is vital that parent / guardian participation and education are components of the program.

**Issues and Elements of Program**

In considering a scheme the following issues had to be considered:

- the geography of the NT;
- remote locations;
- clientele - understanding of English;
- weather - vast differences in conditions; and
- access to instructors across the Territory

**Program Structure**

The program that was developed is known as the ‘Water Safety Awareness Program for Under 5s’ which was developed by the Royal Life Saving Society (Aust) NT Branch specifically for use with the WSAP voucher scheme. It includes four water based sessions using a group situation and a one hour workshop on emergency care including basic resuscitation. It is important to note that this does not constitute a resuscitation course. The slogan for the program is ‘take care be aware’.

The Water Awareness Program is not recommended for babies six months or younger.

Each session will have a value of $10, with a total voucher program value of $50 per child.

**Aim of Program**

To provide parents and carers of children under 5 with a basic resuscitation experience, water safety knowledge, rescue techniques and skills to develop their child’s confidence and ability in water

Ultimately to reduce the rate of drowning and water related incidences in the under 5 age group

**Program Design Parameters**

- Longevity – skills that would be taught to parents as well as children

- Deliver key water safety knowledge to the parent/carer
- Provide the parent/carer with the skills and knowledge to continue working with their child
- Five - 1/2 hour sessions – to cater for attention span of children.

**Key Elements**

The parent and carer must attend with the child
The child can only access the program whilst they are under 5
The session outlines are defined
Providers are registered and satisfy defined safety standards

**Session Design**

Each session includes an aim, the delivery method, outcomes-for the parent and outcomes - for the child. Each session will also incorporate 3 important safety messages that are reinforced through each session.

**Session Details**

The five sessions will incorporate the following:

**Session One**  Emergency Care, basic resuscitation;

**Session Two**  Perform basic water rescue, familiar with different holds and recognise the importance of play in teaching skills;

**Session Three**  Familiar with the technique to teach entry and exits in & from the water and the use of toys to encourage movement;

**Session Four**  Floating and movement strategies including submersion preparation; and

**Session Five**  Movement (assisted and independent) and knowledge on development and expectations of the child in water.

**Management and delivery of Program**

The WSAP will be managed by the RLSSA NT in consultation with the NTWSAC. The role of the RLSSA NT will be to develop and administer the program and to provide training and expertise to all registered providers within the program.

Any accredited instructor in the Northern Territory with Austswim Teacher of Infant Aquatics can be registered as a service provider for the WSAP. The RLSSA NT will offer training, support and expertise to all registered providers within the program.

Accredited session instructors will be required to attend a training workshop with RLSSA NT on the components of the “Child and Parent Water Safety Awareness Program”. Workshops will initially be offered in Darwin, Alice Springs, Katherine, Nhulunbuy and Tennant Creek.

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Support

A comprehensive database has been developed to collect statistical data on the program and this will assist in the review of the program’s outcomes and success.

A Voucher booklet has also been developed which will contain that five lesson vouchers as well as additional information regarding the program, water safety information resuscitation chart, emergency action plan.

Financial Considerations

The set up costs will be greater in the first year of operation as this will include production costs of the database, printing of the vouchers, promotion, development and administration of the WSAP. It is estimated that 27% of the allocated funding for 2004/2005 will be required for the establishment and administration of the program. In the following year, the administration costs will be lower. All remaining funding will be available for vouchers for distribution.

It is anticipated that over the two year implementation period, the number of vouchers available will allow approximately 7,000 children in the 0-4 year age group to attend the series of five lessons that make up the WSAP. This means that over 36% of the Northern Territory 0-5 population will be able to benefit from the subsidy to supply five free water safety awareness sessions.

It should be noted that the voucher value of $10 each is based on research into the average cost of a half-hour infant aquatic lesson. The WSAP consists of five lessons, therefore the set of five vouchers for the whole program is valued at $50.

Promotion

A brochure will be produced on how to access the WSAP and this will be distributed to key agencies. Information on the program will be available to health centres, hospital maternity wards, public swimming pools, preschools, childcare centres, local councils and links made on the Office of Sport and Recreation’s website. An advertisement campaign will also be promoted in the NT News.

Conclusion

The Northern Territory Government subsidised Water Safety Awareness Program is to be implemented in October 2003 to reduce the number of drownings in the Northern Territory in the under five age group. The NTWSAC looks forward to being able to report that the initiative has had a positive impact on reducing the number of water related deaths and injuries within the Northern Territory.
Pool fencing legislation in Australia in 2003: the way forward –
Ruth Barker

Ruth Barker, Dawn Spinks, Richard Hockey, Rob Pitt

Toddler drowning in private swimming pools is the most common single cause of death for
Australian children aged 1 to 4 years. Pool fencing is a proven method for preventing these
deaths\(^4\). In 2003, the standards and descriptions for pool fence design are different in each state.
This paper establishes reproducible and meaningful definitions for pool fencing and compliance.
In order to comment on relative efficacy of the two pool fence configurations now required for all
new pools in Australia, data from a published series of toddler drowning in Queensland is re-
examined.

Definitions

Pool Fence Technical Specification

For these pool fence definitions, all fences, doors and windows that restrict access to the pool by a
toddler are taken to conform to Standards Australia specifications for pool fence construction,
window construction and door and gate closing and latching.

Pool Fence Location

*Perimeter fencing* - the boundary of the house allotment has a fence restricting access to the
property by a toddler but there is no restriction of physical access for toddlers from the house to
the pool.

*House containment* - the only fence restricting access to the pool is perimeter fencing but all doors
and windows in the house restrict access to the pool by a toddler.

*3-sided Fencing* - a fence and building wall restricts access to the pool by a toddler but there is
restricted access via a house-door from the house to the pool.

*4-sided Fencing* - a fence or building wall restricts access to the pool by a toddler and there is no
direct door access from the house to the pool but may include a window.

*Isolation Fencing* - as for four-sided fencing except all ancillary structures (not related to the
function of the swimming pool) excluded from the pool area and a maximum distance between the
pool fence and the edge of the pool is prescribed.

References:

\(^4\) Pitt, W R and Balanda, K P. Childhood drowning and near-drowning in Brisbane: the contribution of domestic
Pool Fence Compliance

Two levels of compliance for “fenced” pools in which a drowning has occurred need to be clearly distinguished in a study considering the efficacy of pool fencing. Static compliance refers to the ability of the fence or access point to meet relevant Australian standards for restricting access to the pool by a toddler after all temporary impediments to compliance are removed. Dynamic compliance refers to the absence of temporary impediments of a non-structural nature that impair the barrier function at the time of a drowning or near-drowning incident (eg. a rope tying a pool gate open).

Inspection Compliance

Inspection compliance refers to the static compliance of pools subject to an inspection process.

Fenced pools

Peer reviewed publications, press articles, police reports and coronial inquests often describe a pool as a fenced pool even when the fence lacks static compliance. It is not logical to regard a pool as fenced when, even after temporary impediments to compliance are removed, the pool fence still does not function according to the Australian Standard. This paper proposes that pools with defective fencing should be referred to as such and should be excluded from a discussion of fenced pools.

Primary and secondary access hazard

Toddlers can only drown in fenced pools (possessing static compliance) if they are let through the barrier, let themselves through the barrier or climb the barrier. The primary access hazard for pool fence design reflects the relative efficacy of a pool fence when it is operating as designed with full compliance. Very few toddlers drown having climbed a pool fence, let themselves through a pool gate or whilst swimming with others. Therefore, the primary access hazard is largely determined by a particular design’s ability to discourage others from allowing the toddler access to the pool area. The secondary access hazard is the likelihood of a child gaining unintended access through the barrier of a fenced pool because of a lapse in dynamic compliance.

Analysis of Queensland drowning data

Having proposed new definitions of fenced pools, access hazard and static and dynamic compliance, we re-examined our data on toddler drowning in private pools 1992 to 2001. We compared access hazard of inground pools and spas with purpose designed and constructed 3-sided and 4-sided fencing. Above ground and indoor pools do not contribute to this analysis because they usually have no requirement for this type of fencing.
Results

In the decade 1992 – 2001, 56 children 0 – 4 years old drowned in private inground pools and spas. We had insufficient information to classify pool fencing configuration in six cases. Of the remaining 50 cases, 13 toddler deaths occurred in unfenced pools. Of the remaining 37 pools, four had a barrier judged not be designed or constructed with materials to function as a modern pool fence. Of the remaining 33 pools, 21 toddlers gained access because of a breach in static compliance.

Of the 21, only three toddlers drowned in pools with defective fencing because of problems with the fence itself (holes or missing panels). Eleven deaths were attributed to defective house doors in 3-sided pools and seven to defective gates in 4-sided pools (predominantly with accessible latches or self-closers that failed). The relative risk for unintended access via doors in 3-sided fences compared to pool gates in 4-sided fences was 2.88 (95% CI 1.02 – 8.75). If the four fences with makeshift gates are returned to the analysis, the relative risk for house doors decreases to 2.20 (95% CI 0.87 – 5.67). Overall, 76% (38/50) of toddlers drowned because of non-existent or defective fencing.

The remaining 12 toddlers drowned either because of a primary access hazard or secondary access hazard in a fenced pool. Six had been given access to the pool yard by parents. This occurred solely in 3-sided arrangements. No toddler drowned in a compliant 4-sided pool under the same circumstances. One child was thought to have climbed the pool fence (a 4-sided fence). For the primary access hazard, the relative risk for 3-sided compared to 4-sided pools is 10.98 (95% CI 1.33 – 505.00).

The remaining five toddlers drowned in situations where the pool gate failed dynamic compliance (one in 3-sided arrangement and four in 4-sided). In all five cases the door or gate had been propped or tied open to allow for ease of access to the pool area for older children or for home maintenance. Numbers are too low to compare the pool fence configuration but suggests that pool gates in 4-sided fences are subject to temporary impediments to compliance (secondary access hazard).

Discussion

No previous study comparing types of pool fencing has attempted to separate primary and secondary access hazard for fenced and other pools because of the difficulties in collecting detailed fence descriptions. Separation is required in order to understand the efficacy of pool fencing in terms of primary design and secondary access compliance and to frame standards for pool fence design. Separation requires prospective death scene investigation using standardised
data collection forms and uniform definitions for pool fencing. We recommend that the Australian Water Safety Council adopt the pool fence definitions used in this paper and promote them for use by all states and territories. **The death scene investigation form being developed for the National Coronial Information System should incorporate these definitions.**

Three quarters of toddler drowning in pools with defective fencing or no fencing could have been prevented by a system to ensure static compliance. This result is constant with available evidence indicating that inspection compliance with pool fence legislation is less than 50%.³ ⁵ ⁶ Western Australia is the only jurisdiction that has required regular inspections of pool fences, effective since 1992. There, inspections every fourth year has been shown to improve compliance and a recent parliamentary review recommends increasing the frequency of inspections to every two years⁷. Fifty per cent compliance is unacceptable and all states and territories should require regular pool inspections. **Improved compliance through inspection should be a priority for the Australian Water Safety Council.**

The Australian Standard for the location of pool fencing is inadequate because it neither specifies an adequate standard for new pools nor a flexible and separate standard for existing pools. Standards for retrofitting pool fencing to existing pools are more complex than those for new pools. Individual legislation takes different approaches to compensate for this deficit in the Australian Standard but the result is significant discrepancy in standards. The current standard was formulated in 1993. Pool fence advocates put a vigorous case for both 4-sided fencing for new pools and separate standards for existing pools. Although the standard was much improved, the attempt to produce a 4-sided Australian Standard for new pools failed. **The Australian Standard for pool fence location is out of date and the Australian Water Safety Council should approach Standards Australia with a request to reconvene the relevant committee to upgrade the current standard.**

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Standards:

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Swimming pool fencing in various forms, has been a legal requirement in most Australian states and territories for at least the past ten years, however the compliance of domestic swimming pools with the requirements of this legislation remains an ongoing problem. Following the introduction of mandatory fencing laws across Australia, studies have consistently documented baseline swimming pool fencing compliance levels of 50% or less (1,2,3,4,) and local government authorities have demonstrated a poor track record in the initiation and maintenance of ongoing pool inspection programs.

The National Injury Prevention Advisory Council (1999) suggested that further reductions in the rate of child drowning could be gained by increasing the compliance of swimming pool fencing with legislative requirements, and also identified that “gaining the co-operation of local government in enforcing compliance with the legislation is an important component of efforts in this area.” (p.23) (5).

Before local government authorities can be practically assisted and encouraged to address the compliance levels of domestic swimming pools, it is essential that more is known about their existing management practices and the barriers which clearly impact on local councils’ capacity and motivation to implement inspection programs.

Three local councils in regional NSW participated in this study which compared their approaches to managing domestic swimming pools and the levels of compliance achieved in relation to the requirements of the current NSW Swimming Pools Act (1992). The three councils (referred to as Councils A, B and C), represented a small, medium and large local government area based on their residential populations. The study also included a survey of pool owner attitudes to pool fencing and inspections, and the trial of an outsourced non-council run inspection program in one local government area.
Management Processes and Compliance Levels

The management processes implemented within each of the three councils varied significantly, however a number of key processes presented as significant to the efficient management of domestic swimming pools and the resultant levels of compliance.

The current NSW Swimming Pools Act (1992) was a major influence on the way in which each Council interpreted their responsibilities and managed the inspection of domestic swimming pools. Quality information systems and the existence of a working pool register were important to the effective monitoring of pools and the co-ordination of inspection programs. Clear lines of managerial responsibility were important to ensure that priority was given to domestic swimming pool compliance programs and sufficient program resources were allocated for this purpose. Efficient enforcement protocols were important to the management of inspection program costs and to facilitate the achievement of compliance. Regular contact with pool owners during inspections was identified as important for them to develop a practical understanding of the requirements of the Act and receive advice about adequate maintenance of their pool fences.

Council A

Council A participated in the trial of an outsourced inspection program where a sample of pools were inspected by Royal Life Saving Society trained inspectors. At the first inspection, baseline compliance levels were 48.6% compliant and 51.4% non-compliant. There was a 55.5% conversion rate to compliant status in the sample of non-compliant pools when a second inspection was completed.

Council B

Of the pools on Council B’s register, 31.6% had “unknown” status, meaning inspections were still pending, leaving a remaining 66.2% compliant, and 2.2% non-compliant. However, when considering only the pools with “known” status, 96.8% were compliant and only 3.2% were non-compliant.

Council C

At the first inspection, 45.7% of the pools were compliant and 54.3% were non-compliant.

Pool Owner Survey

205 pool owners (20.5%) responded to a written survey and almost all (98.5%) were owner/occupiers of the property. Only 16% of respondents had children under the age of 5 years living at the residence, however 66% of respondents stated that children under the age of 5 years
had visited their home in the previous six months. 77% of respondents had completed a resuscitation course, however, whilst 44% had completed it in the previous 1-3 years, 34% had completed a course more than 10 years ago.

95.6% of respondents reported having a fence surrounding their pool, and the same proportion believed that fencing should be required by law and supported council inspecting pools. The most commonly suggested timeframes for inspections were 1-2 yrs (40%) and every 5 years (23%).

Outsourced Inspections

A trial inspection program, conducted by Royal Life Saving Society (RLSSA) trained inspectors, yielded both positive and negative outcomes as an inspection management option for Council A. Outsourced inspections have been implemented successfully in other locations including Western Australia (RLSSA) and by private contractors in the Noosa Shire, Queensland. This study did not draw any conclusions on the overall value of outsourced inspection programs, but rather described the experience and concluded that it may be an appropriate, workable option for other Councils depending on their individual situation.

Essential Elements for Best Practice

Experienced local government inspectors and managers repeatedly identified the significant weaknesses and limitations of the current NSW Swimming Pools Act (1992) in ensuring the safety of domestic swimming pools and recommended its immediate review. It was felt that improving the legislation could singularly have the greatest impact on improving local government practice in relation to domestic swimming pool inspections and compliance levels. A number of other best practice elements for local government were identified.

- Recognised priority for a domestic swimming pool compliance program
- Clear lines of responsibility across and within relevant divisions of Council
- Project management and appropriate human, financial and IT resources allocated
- Electronic swimming pool register or database linked to a general property management system
- Efficient enforcement protocol, including the use of fines, fully endorsed by Council
- Comprehensive training of inspectors on the requirements and enforcement of the Act
- Annual quota of inspections completed
- Maximum 3-5 year inspection cycle
- Inspections conducted throughout the year and/or during a “blitz” period
- Inspection fee implemented to assist with program costs
- Pool owners present during inspections
- Strategies including booked appointments to deal with property access and pool owner awareness issues
- Use of inspection time for simple pool owner education initiatives
- Complementary local media campaign to raise community awareness of domestic swimming pool safety and drowning prevention measures
Direct communication with pool owners via mail outs, etc.

**Recommendations**

The recommendations arising from the study related to the NSW Swimming Pools Act (1992), inspection fees, database development, inspector training, inspection checklists, pool owner awareness strategies, and local government support strategies.

A complete copy of the final report will be available on the Safe Waters website at [www.safewaters.nsw.gov.au](http://www.safewaters.nsw.gov.au)

**References**


Jellyfish mortality and morbidity in Australia and the World: improving the statistics - Peter Fenner

Jelly Fish Stings = Mortality and Morbidity in Australia and the World

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In the past year there have been a number of deaths from marine stings reported by the media in the Indo-Pacific region. These deaths have always occurred regularly but are not reported locally and so are not widely publicised in the world press. In contrast the recent 2 deaths from Irukandji and one from Chironex in Australia (Queensland) stirred a huge world interest and promotion of requests for funding, but which did not assist the promotion of tourism in Australia and north Queensland.

Information from other Countries is difficult to obtain with communication within the Country poor: authorities claim not to know of the problem and local government and tourist operators seem afraid to release the information released because of its potential effect on tourism.

Jellyfish that have caused human fatalities or severe envenomation and morbidity will be presented with their worldwide geographical locations. However, reports of fatal and severe stings are probably under-estimated or under-reported and probably represent just the tip of an iceberg. Most if not all tourists visiting these areas have no idea of the extent of this problem and are not advised by travel firms and/or travel consultants. This knowledge is essential for Tourist Operators and Travel Medicine advisors who advise tourists to these regions: failure to do so may result not only in unnecessary human mortality and morbidity, but also an increase in unwanted litigation.

**INTRODUCTION**

Human deaths after Jellyfish stings have been documented in Australia since 1884 with at least 63 recorded deaths from Chironex fleckeri a multi-tentacled box jellyfish (chirodropid) in tropical waters around Australia. There have been 36 deaths in Queensland, 27 in the Northern Territory, but none to date from Western Australia. Other unrecorded Australian deaths have certainly occurred.
World Distribution And Deaths From Box Jellyfish (Cubozoans)

Old reported deaths in the Philippines\(^4\) in 1908. Deaths from Jellyfish stings in countries other than Australia have since been confirmed, \(^5,6,7,8\) but many still remain inadequately authenticated.

**Distribution and Fatalities**

**Indo-Pacific Region**

Chirodropids have now been confirmed in the tropical Indo-Pacific oceans westwards to the Maldive Islands \(^4,10,11,12\) Brunei, the Philippines and southern Japan (Okinawa), Sarawak, Sabah (Marsh 1993 pers. comm.), Papua New Guinea. Malaysian archipelago, Gulf of Thailand \(^1\), Java and Southern India.

Deaths have previously been reported from Penang, Malaysia; the Philippines; Bougainville island, Solomon Islands; ‘North Borneo’ (now Sarawak, Brunei, Sabah); d’Entrecasteaux islands and (Papua) New Guinea.

**The Americas**

The chirodropid Chiropsalmus quadrumanus (Muller 1859) occurs in waters along the eastern coast of the Americas between the tropics, including many Caribbean islands. \(^14,17\) Serious stings from Chiropsalmus quadrumanus have also been reported from beaches in Puerto Rico during the summer months (Cutress B 1992, pers comm), and more recently on the Florida coast.

A fatal chirodropid envenomation occurred on 20 June 1990 in a 4-year-old boy at Galveston Island in the Gulf of Mexico, after envenomation with 1.63m of tentacle contact on his left arm. He died within 20 minutes from what was reported as cardiac arrhythmia and pulmonary oedema, despite cardio pulmonary resuscitation by paramedics. \(^7\) Remaining nematocysts (stinging cells) on the envenomated skin were identified as being from the chirodropid Chiropsalmus quadrumanus (Muller) 1859, previously described in that region. \(^14\) Macjar, in Galveston (pers. comm. 1996), also believed a second human fatality has occurred;

Physalia physalis (the Portuguese man-o’war) is actually a siphonophore (a hydroid colony), and not a true jellyfish, although it is popularly regarded as one. Three fatal envenomations from Physalia have been reported in the southern areas of the United States on the Atlantic coast. \(^8,9\) Serious envenomations have also been reported both sides of the Atlantic. \(^15,16,17\)

**Africa**

The chirodropid Chirodropus gorilla Haeckei, 1880 occurs in the tropical oceans of west Africa. \(^18,19\) There are no reported deaths nor serious stings from Chirodropus in these waters.
South India / Sri Lanka

The chirodropid Chiropsoides buite ndijki occurs in the south of the Bay of Bengal. Hearsay suggests serious stings but despite investigation facts remain incomplete. A specimen with a 12cm bell diameter was captured by Dr Fernando in 1993, whilst SCUBA diving in deep water near Colombo (pers. comm Dr Fernando 1993). This species was previously reported in the waters of Java, south India and Indo China.

Other serious Jellyfish envenomations occur in the Indian region 20,21

Brunel / Sabah / Labuan Island

Deaths and severe stings from jellyfish have occurred in Brunei and Sabah (Hooper 1992, pers. Comm.).

Fatal Stings

1- Penanjong Beach 7 July 1969 - a seven-years-old English girl died after a jellyfish sting in thigh-deep water. Resuscitation on the beach was ineffective and the moribund child was taken on a 10 minute drive to hospital where she later died. The cause of death was stated to be ‘heart failure’.

2. On the north coast of Labuan Island at Tanjung Kubong, 2 July 1992, a 10 year-old boy was stung whilst swimming with his father. He was taken to hospital within 30 minutes of envenomation, but died 4 hours later.22

Other, serious but non-fatal stings have occurred. 23

Four other deaths suspected in this region cannot yet be confirmed: In 1983 a 14 year-old British girl on Tutong Beach, Brunei; in 1989 a Malay man on Tutong Beach: In 1990 a Malay man in Miri (Sarawak); and 1991 a Malay man whilst fishing off ‘a beach’ (Nor Azila 1992 pers. Comm.).

Medical Officers working at the Labuan District Hospital have been quoted as saying that there are 2-3 deaths per year from jellyfish stings (Nor Azila, personal communication 1993). In addition, every year another 1 or 2 victims that survive are brought in unconscious, intubated and given intra-muscular (IM) chlorpheniramine and adrenalin. They commonly remain unconscious for some 12-24 hours. 24

Malaysia

Two fatalities have been reported from the Island of Langkawi, a tourist resort in Kedah, a northern state of Malaysia (pert comm. Dr Iekhsan Othman. Malaysia 1999).
Japan

Chiropsalmus quadrigatus\textsuperscript{25,26} has been confirmed in Okinawa (latitude 27°) their distribution extends to the Amani Islands in the north (latitude 28°).

There have now been 3 reported fatal envenomation cases, the last being in 2001.

Philippines

The Philippines was visited in 1987 to study jellyfish and research evidence of fatal jellyfish stings (PJF). Chirodropid jellyfish were well-known in the area with stings occurring annually. Almost every village described a death every two to three years, usually a child. With some 50 small villages around the bay of Sual alone, and many hundreds in tropical and sub-tropical areas of the Philippines, an estimated annual death rate from jellyfish stings in the Philippines of 20-40 was not thought to be excessive. Similar conclusions were reached more recently by Dr Paul Cornelius of the British Museum of Natural History (unpublished observations April 1994). As a death certificate is not necessary for burial at present, verification of these estimates in the Philippines currently is not possible.

China

Fatal envenomation

Apart from Physalia, the only other non-cuboid jellyfish presently known to cause human death are large specimens (up to a metre diameter) identified as Stomolophus nomurai (pers. comm. Mingliang 1991), a jellyfish found in the Yellow Sea between China and South Korea. Reports of eight deaths have now been published, five of these in detail.\textsuperscript{27,28} Victims die with pulmonary oedema some 2-24 hours after the initial envenomation.

Discussion

Sting seasons

In the southern hemisphere, chirodropid stings occur mainly in the summer months (December - May). In Australia, areas closer to the Equator have a longer season for chirodropids. In the Northern Territory stings have occurred in every month, with deaths in all months except July,\textsuperscript{1,2} whereas their occurrence the furthest south (around Gladstone, south Queensland) may only be the months of December and January.

Stings in the northern area of Borneo (which is in the northern hemisphere) usually occur in the dry hot season, with its calm seas from March to July. The sting in December reported above was an unusual occurrence for that time of year as it was the rainy season with stormy seas and
somewhat lower temperatures. This is in contrast with the southern Tropics with their hot, wet season from November to June.

**Vinegar application**

Two to ten per cent acetic acid in water was recommended as a first aid treatment for Chironex fleckeri nematocyst inhibition by Hartwick et al in 1980. Household vinegar (in Australia 4-6% acetic acid in water) has been a traditional Philippine treatment for box jellyfish stings since the turn of the century, although other ‘traditional’ treatments including gasoline, urine and the juices of local plants were also used. Stings from cubozoan jellyfish in Malaysia described by fishermen in Kukup are also treated with vinegar (PJF, personal observation 1987). It is not known how long this remedy had been used.

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The popularity of waterslides is evidenced by long queues of pool patrons waiting their turn to descend slides at aquatic centres on a warm summer’s day. Centre managers attest to their role in increasing attendance numbers at complexes (1), with waterslide users clearly enjoying the slides (2). However, with the introduction of water slides comes the risk of injury, and steps are required to minimise this risk.

In Australia, Australian Standards AS 3533 Amusement Rides and Devices applies to waterslides. AS 3533 Part 1: Design and Construction relates to aspects such as stairways/walkways/platforms; surfaces; pump location and design of the slide. Part 2: Operation and Maintenance includes a section on supervision, in specific relating to spacing of riders (3). It states:

- 4.2.4.1 (b) Order and spacing
  - (ii) “the dispatching of riders at no less than a minimum spacing which has been established as safe by exhaustive testing and may be signalled by an automatic light or similar device”

The Guidelines for Safe Pool Operations, published by The Royal Life Saving Society – Australia, also contains advice with regard to waterslides. (4)

Waterslide use can result in injury. The typical categories of injury are dental injury (most authors) head and face injury, especially when travelling at speed (5), cuts, abrasions, bleeding noses (6) and fractures, including spinal injuries (7). While the majority of these injuries are minor, a small proportion are serious, including vaginal injury (8) and spinal injury (7, 9).

Poor design, poor construction and inadequate management are considered to be the causes of injury. (6). Gordon and Stevens (10) identified several specific causes of injury:

- collisions with other users, especially when riders form a ‘chain’
- contact with the edge of ‘tube’ or splash pool
- slide design (one slalom slide with a 45° dip followed by a sharp right turn resulted in 68 left eyebrow injuries out of 135 injuries treated over one summer).
For slides where the splash pool is lower than the lip of the slide, increased injury is observed because riders drop into the pool more heavily (10), when compared to slides where the lip of the slide is underwater.

Slide design can be addressed with appropriate modelling and analysis (11). With adequate care with design, incorporating computer-aided modelling, analysis and design technology, engineers are able to test effectively slides in a virtual environment, ensuring safety prior to construction. Recent advances in computer-aided design should enable newly constructed water slides to have the best safety features incorporated in their design.

However, even in recent times, sound principles have not always resulted in best practice. Ball (12) investigated a slide which used a traffic light system to indicate when it was safe for the next rider to commence their descent. It was found that this method was not satisfactory in times of heavy usage. Even when following the traffic light cues, occasional collisions still occurred. It was noted that patrons and lifeguards implemented voluntary injury prevention strategies at these times, and did not rely fully on the traffic light system.

Similarly, even waterslides with excellent design features need to be maintained in excellent condition and managed appropriately if injury risk is to be minimised (13). Mittelstaedt (1) provides a practical list of guidelines for water slide users, waterslide lifeguard instructions and water slide management.

**Current Study**

In this study, a waterslide complex at a large regional aquatics centre was observed during an afternoon on a hot summer day. Two slides, one open and one enclosed, terminated in a common stand alone splash pool. Two hundred and eighty-eight water slide descents from the open slide were observed, including a 30-minute non-fee session. Velocity was measured by radar as users exited the slide in 267 of the descents. Side view and front view video recordings were made for assessing body position of slide users.

**Findings**

Velocity on exit ranged from 1.69 m/sec (6.1 kph) to 5.63 m/sec (20.3 kph). These velocities are in excess of those considered by Stone (14) to be sufficient to dislocate (1.2 m/sec) or crush (2.4 m/sec) cervical vertebrae. Hence, there is potential for serious (catastrophic) injury should the head impact a solid object.

Velocities varied with the body position of the user, and with what could be described as their level of confidence. Whilst signs were present indicating that users should be seated and facing
forward when descending the slide, various behaviours were observed. Table 1 provides a summary of findings.

**Table 1. Velocity and Body Position**

<table>
<thead>
<tr>
<th>Body Position</th>
<th>Maximum Velocity</th>
<th>Minimum Velocity</th>
<th>Average Velocity</th>
<th>Number of Descents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kneeling</td>
<td>5.64</td>
<td>2.47</td>
<td>3.930</td>
<td>7</td>
</tr>
<tr>
<td>Standing</td>
<td>5.55</td>
<td>2.64</td>
<td>4.22</td>
<td>5</td>
</tr>
<tr>
<td>Feet first on back</td>
<td>5.33</td>
<td>2.17</td>
<td>4.00</td>
<td>24</td>
</tr>
<tr>
<td>Sitting</td>
<td>5.28</td>
<td>1.72</td>
<td>3.27</td>
<td>152</td>
</tr>
<tr>
<td>Head first on stomach</td>
<td>5.22</td>
<td>2.44</td>
<td>3.93</td>
<td>52</td>
</tr>
<tr>
<td>Feet first on stomach</td>
<td>4.78</td>
<td>3.28</td>
<td>4.04</td>
<td>3</td>
</tr>
<tr>
<td>Head first, lying on back</td>
<td>4.44</td>
<td>2.66</td>
<td>3.67</td>
<td>16</td>
</tr>
<tr>
<td>Side on</td>
<td>4.28</td>
<td>2.94</td>
<td>3.58</td>
<td>7</td>
</tr>
<tr>
<td>Sitting backwards</td>
<td>1.69</td>
<td>1.69</td>
<td>1.69</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>267</td>
<td></td>
</tr>
</tbody>
</table>

The highest exit velocity was observed during a kneeling descent. On this occasion, the slider descended the slide in a kneeling position but at the end of the slide performed a dive into the splash pool. This behaviour should be considered to be of high risk. The splash pool is relatively small in size, and not particularly deep. It is not beyond the realms of possibility that impact could be made with either the pool bottom or the opposite side wall of the splash pool. This behaviour should be forbidden.

The highest average velocities were achieved during standing descents, where only the feet were in contact with the slide. Only 5 standing descents were observed, but these occurred during the ‘free session’ when slide usage was at its greatest. Descending in a standing position increases the possibility of overbalancing, and could easily result in injury.

Head first descents provide little or no protection of the head and neck, and reached velocities sufficient to cause catastrophic spinal cord injury should impact occur. Except in specifically designed slides and splash pools, head first entries should not be permitted. Appropriate design features to permit head first entries would include adequate depth and a relatively large proportion of the final section of the slide gradually sloping underwater, in order to progressively reduce the exit velocity (15).

More than 50% of the descents were in a seating position. Sitting descents provide good vision, sizeable contact with the slide, a slower descent and upon water entry the slider’s velocity is quickly decreased because the body position provides considerable frontal resistance. This body position should be encouraged.
Conclusion

Waterslides can provide great enjoyment for aquatic centre patrons. However, it is vital that appropriate steps are taken to prevent injury. Careful design is required to ensure risk minimisation. Slides must be maintained in excellent condition. Best practices in supervision must be applied, specifically through:

- adequate time gaps between users
- appropriate body position during descent (sitting, facing forward is recommended)
- effective application of waterslide rules through conscientious lifeguard supervision, with supportive centre management.

With suitable injury prevention and risk management strategies, complexes with waterslides can enjoy the increased patronage that accompanies them and water slide users can safely participate in this recreation activity.

References

Australian Beach Safety Database – 2003 And Beyond

Katherine McLeod

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Background

The Australian Beach Safety and Management Program (ABSAMP) was established in 1990 as a joint program between Surf Life Saving Australia (SLSA) and the Coastal Studies Unit (CSU), University of Sydney. The main aims of the program are to:

- develop a comprehensive, standardised and scientific information base on all Australian beaches with regard to their location, physical and geographical characteristics, access, facilities, usage, rescues, physical and biological hazards, and level of public risk under various wave, tide and weather conditions.
- expand and improve the management and safety services of all Australian beaches, and to assist other countries to develop similar programs.

The database is the core of the program and when complete will contain information on every one of Australia’s 11,000 beaches. The data on each beach has been collected into a series of separate state databases in two software packages: MapInfo is a geographical information system (GIS) that is used for geographical analysis of every beach, while Microsoft Access is used for data entry, management and analysis.

Data on each beach is acquired from a range of interrelated sources: topographic maps and aerial photographs, aerial and ground site inspections, beach conditions (produced by patrolling lifesavers filling in beach maps) and published data. All information is filed as a hard copy, and all appropriate information then extracted for entry into the database.

In order to address public risk on beaches we need to know both the nature of the hazards and the type and level of usage. The ABSAMP database provides accurate information on the nature and level of beach hazards, as well as categorising each beach into one of 15 general types. An assessment of the location and level of access, parking, accommodation and facilities, all contained in the database, can be used to gauge likely seasonal usage.

Beach hazards are elements of the beach environment that expose the public to danger or harm, specifically the natural beach and surf zone processes and morphology. Beach hazard rating refers to the scaling of a beach according to its associated hazards. The rating ranges from a low rating of...
1 (safest) to a high rating of 10 (extremely hazardous), and is based on a combination of beach type and wave height. The beach hazard rating was developed to provide a simple yet effective method of scientifically rating both the average and prevailing hazards on each beach, for all beach conditions. Public beach risk is a product of the beach hazard rating and the level of beach usage.

ABSAMP has to date assessed the type and level of hazard of 90% of Australia’s 11,000 beach systems. With only Tasmania remaining to be assessed (in progress), the national database covering every beach is scheduled to be complete in 2004.

**Current Development & IT Strategic Plan**

Now that the ABSAMP database is nearing completion, the focus is shifting from data collection to more advanced applications of the research. The preliminary step in this process is to consolidate the separate state databases into a single comprehensive national database and GIS, that will be accessible via the internet to authorised users.

However, ABSAMP is just one of SLSA’s core data sets, and one of the long-term goals of the program has been to link it directly to data on drownings and other incidents (Incident Report Database), as well as SLSA membership and patrol data, since currently any collation and analysis of data across these data sets must be performed manually. True analysis of the effectiveness of SLSA’s lifesaving or education programs would be significantly easier if all the core data sets were integrated into one virtual online GIS. One other obvious application of ABSAMP would be its integration with the coastal risk auditing program, to streamline the process, reduce potential auditor error and produce audit reports of a consistent and high quality format.

The vision of the ABSAMP system going forward is a comprehensive, complete database comprising core information for all Australian beaches, which is tightly integrated and loosely coupled with other core databases within the SLSA IT environment, and incrementally improving in accuracy as more data is captured.

This integration of SLSA’s core data systems has already begun with the development of an IT Strategic Plan that provides the guidelines for a consistent approach to building and integrating data systems. The outcome of this for SLSA will be an IT framework of systems, processes, methodology and standards that is able to accommodate and support the organisation’s objectives into the future, and ultimately save lives.

SLSA’s goal is to be able to maintain a central set of integrated web-based IT systems that support international open standards and where possible are developed or bought under General Public
Licence Agreements. The systems should also provide as close as possible to real-time information, and will provide security and conform to SLSA’s privacy policies.

![Figure 1: SLSA Core Strategic IT Systems](image)

Figure 1 shows the four core SLSA strategic IT systems and their dependencies on each other. This shows that:

- Members, Incidents and Competition systems are dependent on the Beaches (ABSAMP) system for beach reference data
- Incidents and Competition systems are dependent on the Members system for member reference data

The major implications for all systems include a requirement to provide an interface for querying data from the other systems, as needed, and a call to get relevant data from the other systems.

**Coastal Risk Auditing Program**

The Coastal Risk Auditing Program evolved out of ABSAMP in response to greater numbers of drownings and increased risk exposure to the public from development and increased accessibility of the coast. The Australian federal and some state governments recognised the need to conduct coastal safety audits in developed regions, and in particular to conduct audits in association with new coastal developments, so that all beach hazards and risk levels are known and the appropriate level of beach safety resources put in place.

The Risk Auditing program is available to local government authorities, private developers and all those with an interest in promoting a safe environment. The objectives of the program are primarily to identify hazards on the beach and in the adjacent infrastructure, to improve the safety of the coastal environment for all users and reduce the litigious liability of those in control of this environment.
A risk assessment is conducted based on the findings of the audit and a report detailing recommendations is developed. Further assistance is provided to the local government authority or land manager in implementing the recommendations, which may include the need for new signage that complies with Australian Standards and/or the provision of lifesaving services.

ABSAMP is now being linked directly to the Coastal Risk Auditing Program, with the expansion of the database to include additional attributes collected by auditors, resulting in an updated audit and reporting database for all Australian beaches. The new data fields include such things as signage, access paths, beach user groups and their activities, council regulations and emergency services details. More data fields have also been added to existing data on car parks and hazards. In addition to the existing ABSAMP beach hazard rating, a risk evaluation rating will also now be included, that takes into account the beach population and frequency of use, as well as the hazard rating.

This development of the web-based ABSAMP auditing system includes linked data entry forms, integration of GIS mapping, full reporting capabilities, public access components and integration with other SLSA operational systems (incident reporting and membership databases).

Auditors can then check what they encounter against the report produced by the system, update or correct information as required, and provide additional comments. This information will then be fed back into the ABSAMP database, checked and verified, and update the existing data. A high quality and consistently formatted audit report can be automatically produced from ABSAMP, including colour illustrations of signage required and other recommendations.

This process will have two main advantages: it will enable auditors to perform audits in a more consistent, structured and efficient manner, while at the same time ensuring the existing data is maintained and up to date through field validations by the auditors.

**Incident Reporting**

Incident reporting provides the most immediate feedback of the effectiveness of the various training, education and other initiatives undertaken by SLSA to improve water safety. Incident recording must occur at club level, as near as possible in timing to the occurrence of the incident (drowning, rescue, injury etc).

Currently this information is recorded on a paper form and forwarded to surf lifesaving state centres, where it is then entered into a local PC based system using Microsoft Access and a specifically written application. The information in these state databases is exported to a predefined format and emailed to the national office, where the various emailed database extracts
are collated using an automated process in another Microsoft Access application. This collated database is then used to build national reports.

This incident reporting system has provided SLSA with an improved mechanism for maintaining and reporting on incidents over the fully paper based systems that had been used previously. However the system does suffer from some strategic weaknesses that will be addressed under the SLSA IT Strategic Plan. In addition to the inherent problems associated with duplicate data sets, this model also does not easily allow for connection to the other core data sets, and ABSAMP in particular. Consolidating the data into a centrally managed database that is available securely over the internet will address most of these issues directly.

The new web-based Incident Report Database is currently in testing and is due to be launched at the end of September 2003, for use in the 2003/04 patrol season. In its first season of use, data entry will only be mandatory for a small range of incident types, namely: drownings, near drownings, member injuries and employee injuries. Other incident types, such as rescues and first aid cases, will be optional this season but will become mandatory in following patrol seasons.

**SurfGuard**

Following on from the establishment of this data system framework will be a more ambitious project, known as SurfGuard. This project is the result of collaborative planning and innovation to combine the various information sources, background and skills of the interested parties, namely SLSA, CSU and Realsurf.com. The project will link ABSAMP beach data with real-time and forecast weather and wave data, to enable advance forecasting of beach and surf conditions up to several days in advance.

The goal of SurfGuard is to allow lifesaving personnel to gain a better indication of the likely surf conditions, along with associated hazards and risk levels, to allow more informed decision making for allocation of resources on the beach. This can also potentially be extended to the general public, to assist in decisions about whether or not to go to the beach, and which beach is most appropriate for their needs and abilities.

Realsurf.com is recognised as not only the most successful water sports web site in Australia but also a good guide to the likely surfing conditions within a few days of any specific interrogation. The site provides information on weather, swell and other information from a range of sources including the Bureau of Meteorology (BOM), the Manly Hydraulics Laboratory (MHL) and Virtual Buoys group.

This project will operate under the same principles of the IT Strategic Plan, but will extend the integration of data sets to include data from external agencies, such as the BOM and MHL.
Introduction

Beaches are popular recreational destinations for Australians and visitors to Australia, however they are potentially hazardous places. Therefore, it is important that beach users are able to identify a beach location that is suitable for their abilities and needs. Sport and Recreation Victoria commissioned Monash University Accident Research Centre to explore strategies for prevention of unsafe incidents at beaches by providing beach users with appropriate information concerning beach suitability.

One suggested strategy for the identification of user-friendly beaches was raised in the Victorian parliament [1]. It was proposed that appropriate beaches be designated as “Family Friendly Beaches”, thereby providing a means for families to identify a “safe” beach suitable for family recreation. The study sought to determine the feasibility of identifying “Family Friendly Beaches” along the Victorian coast.

Additionally the study sought to review existing beach information strategies to identify any other approaches appropriate for Australian conditions.

The fundamental starting point for the development of any such strategy is an understanding of the actual nature of hazards present at Victorian beaches. While the incidence of deaths by drowning at Australian beaches is well documented [2-4], other types of deaths and safety issues at beaches have received little attention and are not well understood. Therefore, this study also determines the nature and frequency of incidents that may compromise the safety of beach users at Victorian beaches.

The study’s aims were:

- Determine nature and incident of deaths, injuries and crimes occurring at beaches.
- Determine the feasibility of identifying “Family Friendly Beaches” in Victoria.
- Identify other suitable beach user information strategies.
Method

Datasets relating to deaths, injuries and crimes occurring at Victorian beach and foreshore locations were analysed to determine the frequency and nature of incidents at beaches. The sources of incident data were: National Coroners Information System (deaths); Victorian Emergency Minimum Dataset (injuries); Victorian Admitted Episodes Dataset (watercraft related injuries); Victoria Police Law Enforcement Assistance Program (criminal offences).

The study undertook a program of consultation with major stakeholders including beach managers, emergency services, marine safety, tourism and environmental agencies to determine their response to the suggested identification of “Family Friendly Beaches” and draw on their expertise concerning possible alternative strategies.

An extensive review of published literature and electronic information was also conducted to identify beach information systems and practices, both nationally and internationally, and the nature and incidence of hazards at beaches and methods of risk reduction.

Results

Beach hazards

- Deaths
On average there were 2.5 deaths per month at beach locations in Victoria. While most of these deaths were due to external causes, primarily drowning, almost 20% of deaths were due to natural causes, and these were usually related to cardiac disease. Additionally, a substantial number of deaths at beach location were due to intentional self-harm.

- Injuries
An average of 6.8 people per month presented to hospital emergency departments with injuries sustained at beach locations, with 9% of these injuries being sufficiently severe to require admission to hospital.

- Crimes
An average of 66 criminal offences were reported at Victorian beaches. While most offences were committed against property, a substantial number of offences were committed against people, the majority of these being sexually related offences.

“Family Friendly Beaches” concept

Consultation indicated that while the notion of identifying “Family Friendly Beaches” had considerable appeal, in application it may be inappropriate and be likely to create difficulties.

The main objections were:
• In culturally diverse communities “family” has many different meanings.
• Focussing on a stereotypical family would fail to meet the varied needs and preferences of the broader community.
• Potential for litigation in the event of death or serious injury at designated beaches.
• Overall risk of injury for adolescents and adults under 30 years is as great as that for children, therefore a broader community approach to beach safety is required.
• Beach classification needs to underpinned by a comprehensive beach management system, consistent with the Victorian Coastal Strategy [5], and recognising the diversity of needs of beach users.

**Beach information strategies**

A variety of beach information strategies were identified, although many of them had a strong tourism focus with little or no information concerning beach safety characteristics. However, several approaches were found to have potential for providing appropriate models for methods of delivery of beach safety and amenity information. These included electronic and hard copy beach guides, beach hazard rating systems, newspaper beach bulletins and beach accreditation programs.

**Discussion**

While a number of methods of delivering beach information were identified, consultation with stakeholders suggested that a more systematic approach was needed to the provision of information to beach users. Beaches are dynamic systems and beach information needs to be kept up to date by adequate monitoring of conditions. Stakeholders indicated a strong preference for the development of a state-wide beach information management system, one output of which would be the provision of information to beach users. The system would also be expected to serve a strategic beach management role, allowing the classification of beaches according to their characteristics and targeted type and level of usage.

A model of beach classification was developed, based on the Levels of Service (LOS) model employed by Parks Victoria for management of parks and reserves across Victoria. The Parks Victoria LOS model seeks to define consistent standards for facilities and services, and provide better management of visitor expectations, the right services in the right places and a range of recreational activities in appropriate settings.

As an adaptation of the Parks Victoria LOS system, the proposed beach classification model classifies beaches on the basis of level of hazard, presence of services and amenities and other attributes as appropriate (Figure 1).
Figure 1  Proposed Levels of Service classification of beaches

<table>
<thead>
<tr>
<th></th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard rating</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifeguard</td>
<td>No patrol</td>
<td>Patrol</td>
<td>Patrol</td>
<td>No patrol</td>
<td>No patrol</td>
<td>Patrol</td>
</tr>
<tr>
<td>control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amenities</td>
<td>None</td>
<td>Some</td>
<td>Some</td>
<td>None</td>
<td>Some</td>
<td>High level</td>
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<tr>
<td>Other</td>
<td>......</td>
<td>......</td>
<td>......</td>
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<td>......</td>
</tr>
<tr>
<td>attributes</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

The LOS system would be underpinned by a central database of beach related information. A modified form of the database of the Australian Beach Safety and Management Program (ABSAMP) has been identified as an appropriate source of data for the proposed system.

References

Giddy Goanna’s Water Safety Book is being Developed and Your Input is Sought – Pam Brown

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Affiliations: Author & creator of Giddy Goanna children’s books
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Giddy Goanna, a unique children’s health and safety program, is currently developing resources on water safety. Giddy Goanna is a fun and entertaining program, that interacts with a large number of professional and community organizations to develop educational resources on an ever widening range of health and safety issues. To date, Giddy has released five books and is developing more books plus songs, a TV show, video and a “Giddy Live” touring show. Giddy Goanna is a non-profit charity, which aims to become self-sufficient through the sale of large quantities of reasonably priced resources. Once successfully operating in Australia, Giddy aims to benefit children in many countries throughout the world.

Giddy Goanna commenced in 1995 and has subsequently released five books, covering safety on farms, roads and in the home. The program uses a positive interactive learning approach where children are involved in deciding what are the safest behaviours in order to solve puzzles. The results of several external evaluations conducted on the program have concluded that the Giddy Goanna program has a positive effect on the knowledge, attitudes and behaviours of children.

The key to the success of the program, is that children love the products and demand them repeatedly for their entertainment. Building on this, Giddy Goanna is currently expanding the range of resources to include a TV show, CD of music, video/DVD, and a “Giddy Live” touring show.

The books appeal to children aged 2 – 9 years and are predominantly used in the home, with frequent reports that the Giddy books are the children’s favourite books, being read time and time again. School teachers also praise Giddy’s books and find them very useful for a range of areas, including literacy, numeracy, health/safety, science and SOSE (Study of Society and the Environment). Giddy Goanna plans to develop a range of blackline masters for the 8 curriculum areas to compliment the books, and will be available free from Giddy’s web page.

To access more information about Giddy Goanna or for a copy of the books, please visit www.giddygoanna.org.
Water safety has been included in the Farm Safety books and the Backyard Safety book, but now Giddy is developing an entire book dedicated to water safety. It is aimed to have this book completed by March 2004. Consultation and input from a wide range of people (children, parents and health/safety/education experts) has been the means of developing such relevant, useful and adored books.

During and after the 2003 Water Safety Conference, we would like to gain some input from health/safety professionals regarding the content of Giddy’s Water Safety book. For a copy of the draft artwork, please attend the interactive session on Tuesday 23rd September at 3:15pm or contact me on giddy@giddygoanna.org. It is proposed to cover the following aspects in Giddy’s water safety book:-

**Giddy’s Safety Tips**

It is really important that children are aware of Giddy’s safety tips. Sometimes children can remind adults of the safe way to do things.

**Supervision**

- Most drownings involve children under five years old.
- Proper supervision around water by an adult at all times is vital to prevent young children from drowning. This includes pools, beaches, lakes, dams, ponds, nappy buckets and bathtubs. Know where young children are at all times.
- If you must leave a pool or water area for any reason, take the child with you.
- No-one should swim alone or without someone watching them.

**Swimming Lessons and First Aid Lessons**

- Teach children to swim as soon as possible. It is recommended to start at two years old. Babies can start learning basic water survival skills from two months. This does not make children “drown-proof”.
- Everyone should learn CPR (Cardio-pulmonary resuscitation), water safety and first aid. It saves lives.
- A resuscitation poster should be on the pool fence. It is also a good idea to put a resuscitation poster in other places where people often look, such as behind the toilet door. This will help everyone remember how to resuscitate and save a life.
- Unless you are a properly trained life-saver, do not try to swim out to save anyone in trouble in a river, ocean, storm drain, irrigation channel…. Instead throw out a line or branch or something that will help them float.

**Sun**

- It is best not to swim in the middle of the day when the sun’s rays are the strongest, generally between 11am and 3pm. Head for the shade during these times.
- Remember the sun safety slogan:-
  “Slip on a Shirt, Slop on some Sunscreen, Slap on a Hat, Slurp up some Water, Wrap on some Sunglasses and Seek out some Shade”.

© AWSC
• Wear sun-safe swimmers, that cover your arms and legs. Also wear a sun-safe swimming hat and sunglasses.
• Put 30+ Sunscreen on everyday, even if it’s cloudy.
• Re-apply sunscreen every hour when swimming.
• Drink lots of water. People often get headaches and cramps because they don’t drink enough water. Their brain and muscles get dry and dehydrated.
• It’s good idea to have some shade over pools.

**Pools and Spas**

• Most child drownings occur in backyard pools or spas.
• Make sure you can clearly see young children at all times.
• All pools and spas need a proper pool fence and a self-closing and self-latching gate.
• The pool-gate must always be shut properly. Do not prop pool gates open.
• Never go inside the pool fence, unless you have an adult supervising you.
• Never put outdoor furniture, a dog kennel or other things up against the pool fence, as this can make it easier for young children to climb over the fence.
• There should not be direct access from the house to the pool or spa. There should be a proper pool fence and gate between the house and pool or spa.
• Gates and fences need to be maintained, so the gate always closes properly and there is no way for children to easily get over or under the fence.
• It can be slippery around the edges of pools, so walk, don’t run. Areas around pools should have an anti-slip surface. An anti-slip coating can be applied.
• Skimmer boxes must be covered.
• Never sit on suction holes or skimmer boxes.
• Tie up long hair when in spas, so you don’t get sucked down under the water.
• Always check if there is a pool or a spa when visiting someone else’s house. All pools need to be fenced safely, as nearly half of child drownings occur when visiting a friend or relative.

**Beach**

• Swim at an area supervised by lifeguards or lifesavers.
• Some countries also have flags on the beach to show you where it is safest to swim. Always swim between the “red and yellow” (or safe) flags. Learn what the different colour flags mean.
• Read the safety signs at the beach. Ask life-savers for advice on where to swim.
• If you are in trouble in the water, raise one arm for help.
• “Good Waves” are lots of fun. But some waves can be very dangerous.
• Plunging waves or dumpers can be very dangerous as they break with great force and can throw a swimmer onto the sand beneath. This can break your neck or spine.
• Spilling waves are good for body surfing and catching a ride on. The top of the wave tumbles down the front of the wave. They do not dump you like plunging waves do.
• Surging waves may not break at all. They are like moving bumps in the water and are good for children and poor swimmers.
• Rips are very dangerous and are they most common reason why people need to be rescued. Rips pull you away from where you are swimming and the water becomes to strong to swim against.
• What does a Rip look like?
  o Water is brown, as sand is being stirred up
  o Foam on the water going out to sea, and not just at the shore
  o Waves are breaking on both sides of the rip, but no waves breaking in the rip
• Foam and debris is floating out to sea
• Rippled water when the water around is generally calm.

• How can I escape from rip or a strong current?
  o Don’t panic! Stay calm, float or tread water.
  o Call out and raise one arm in the air so people know you need help.
  o Float with it, do not try to swim against it. Swim across it or along the beach until you reach a sand bar to stand on or the current is not strong and you can swim to shore.

• Never touch jelly-fish or stingers. Some types can sting you and some can kill you.

**Diving and Swinging**

• When diving, keep your hands over the top of your head until you come up to the surface again. This way, if you do dive too deep and hit the bottom, your hands will hit the hard surface or object first and not your head. This will help prevent your head and spine from being hurt.
• Do not dive into water that you cannot see the bottom. There may be objects under the water, like logs or rocks, and it may be shallower than you think.
• Never dive into the shallow end of a pool.
• Be careful when diving into dark bottomed pools, as it is difficult to judge how deep the water is.
• Never run and dive straight into the surf, as you may hit a sandbar. Walk in first to test the water.
• Body surf with one or both arms in front of your head.
• Never swing off a rope into water. You may let go too late and crash onto the bank or fall onto an object under the water. These can break your spine.
• At creeks and swimming holes, always walk first into the water, so you can tell how deep it is. It is a good idea to carry a long stick with you when you first go in to help check out the bottom.
• Jumping and diving into tidal areas, such as off jetties is very dangerous, as it can be difficult to judge the tide. It may become much shallower than you realize very quickly.

**Farms and Creeks**

• Farms often have many water hazards such as dams, ponds, creeks, cattle troughs, tanks, irrigation channels and ring tanks. Never go near these unless you have an adult with you. Have very clear rules where older children are allowed to go on a farm.
• It is very important to have a safe fence around the house on a farm, so young children do not wander off and drown. Fenced play areas for children on farms are vital.
• If swimming in a creek, always have an adult supervising. Never dive or swing into a creek. Always enter feet first, and use a stick to test the depth as you go in.
• It is dangerous to swim in dams and tanks. The water can be very cold and you can get cramps and drown.
• Never swim in irrigation channels or ring tanks, as you could get sucked into the huge pumps and drown.

**Toddlers**

• A toddler can drown in a very small amount of water.
• Wading and paddling pools need to be emptied and stored upright or deflated when not in use.
• Buckets, eskies, sand-pit toys and other things that can hold water need to be emptied out or have a lid securely on them when not attended by an adult.
• Garden ponds need to have a mesh cover over them that can take the weight of a young child.
• Post-holes need to be filled in, so they don’t collect water.

**Food & Alcohol**

• Do not swim straight away after eating. WHY………………..
• It is very dangerous to swim or dive after drinking alcohol.

Giddy’s Safety Tips do not cover all aspects of water safety.

For more information, contact Health, Emergency or Safety Organisations or visit [www.giddygoanna.org](http://www.giddygoanna.org) for links to other health & safety organisations.

(The links are yet to be established on Giddy’s web-site.)

Giddy Goanna is a non-profit organization dedicated to improving the health and safety of children and their families throughout Australia. A wide range of relevant organizations and individuals are consulted in the development of all Giddy Goanna resources, with the aim of producing high quality resources that are applicable to children throughout Australia and are complimentary to resources produced by other organisations.

If you would like to comment on the development of Giddy’s Water Safety book, but were unable to attend the Interactive Giddy Goanna session at the 2003 Water Safety Conference, please contact us directly via email (giddy@giddygoanna.org) or phone (07 4639 3888) or mail (PO Box 832, Toowoomba, 4350). The more input we receive, the better we can make the books.

Your input is greatly appreciated.
The *Maatschappij tot Redding van Drenkelingen* was established in 1767 to promote awareness of drowning in the Netherlands. The organisation has initiated the World Congress project in 1998 to facilitate involved experts, institutions and organisations to further develop insight in methods to reduce drowning and improve the outcome after drowning. The activities merged together during an interdisciplinary, international and interactive convention in Amsterdam in June 2002.

An important result of the World Congress on Drowning, that was attended by more than 500 experts from all over the world, was the establishment of recommendations. The recommendations were prepared by task-forces in the preceding years and extensively discussed by experts during the congress.

Implementation of each recommendation is expected to contribute to a reduction of the annual number of drowning (some 500,000 drowning deaths each year worldwide) and to the improvement of treatment.

On behalf of all participating experts of the World Congress on Drowning, we would like to inform you about these recommendations. We would advocate to study all the recommendations, select those of importance for your organisation and include the implementation of the relevant recommendations in your action plans for the coming three years. It is beyond the capacities of our national organisation to take care of the implementations worldwide.

The *Maatschappij tot Redding van Drenkelingen* will contact experts and other organisations involved again at the end of 2005 to be informed on the progress and difficulties in the implementation. At that time, the *Maatschappij tot Redding van Drenkelingen* would like to know if the initiative has created new activities and concerted actions in your organisation. Based on this evaluation, a new initiative may be taken to give all involved experts, institutions and organisations the opportunity and facilities to meet each other again.

Please do not hesitate to contact the *Maatschappij tot Redding van Drenkelingen* when you have any questions, remarks or suggestions.

J.C. van Dorp
Chairman *Maatschappij tot Redding van Drenkelingen*

Prof. Dr. JTA Knape
Chairman Scientific Steering Group

Prof. Dr. JJLM Bierens
Project coordinator World Congress on Drowning
Final recommendations of the World Congress on Drowning Amsterdam 26 – 28 June 2002

The World Congress on Drowning is an initiative of de Maatschappij tot Redding van Drenklingen
Established in Amsterdam in 1767

As a result of an interactive process that was initiated in 1998 by nine task forces, including some 80 experts, and finalized during plenary sessions, expert meetings and research meetings in 2002 at the World Congress on Drowning, recommendations were made in the field of drowning prevention, rescue and treatment. This was the first time that many of these subjects were addressed in a global forum.

The congress was attended by more than 500 persons. Although not every participant was directly involved in the development of each recommendation, these recommendations can be considered to be the most authoritative recommendations on the issue of drowning prevention, rescue and treatment at this moment.

Many of the foremost authorities have been involved in the preparations during the four years prior to the congress and have been actively involved during the congress. The draft version of the 13 final recommendations was presented at the plenary closing ceremony of the congress. That preliminary version of the recommendations was distributed by e-mail and adapted as a result of the comments received. An additional series of detailed recommendations in the areas of rescue and diving (breath hold, scuba and hose diving) were agreed upon within the nominated task forces.

This final version of the recommendations was then agreed upon by the members of the scientific steering group and the chairs of the nine task forces (epidemiology, prevention, rescue, resuscitation, hospital treatment, brain and spinal protection, immersion hypothermia, diving and drowning and water-related disasters).

All recommendations, together with the preparatory documents as consensus papers, reports of expert and research meetings, will be published in 2003 in the Handbook on Drowning.

A list of names of the members of the scientific steering group, task forces and attendees of the World Congress on Drowning is included.

1. A new, more appropriate, world-wide uniform definition of drowning must be adopted

A uniform definition of drowning is important for purposes of registration, diagnosis and research.
The following definition was accepted: “Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid.”

All organisations involved in epidemiological research and vital statistical data collection as well as rescue organisations and the medical community should consider and preferably accept this new definition as a basis for useful communication and include it in their glossary. Further consultation of drowning experts is needed to uniformly classify morbidity and mortality due to drowning.

2. There is a great need of adequate and reliable international registrations of drowning incidents

International and national registration procedures of the number of drowning victims, immersion hypothermia victims, rescues, and hospital data are needed to better appreciate the world-wide burden of drowning. Also clinical data, for example on resuscitations and rewarming techniques, are needed to improve treatment.

International organisations, such as The World Health Organisation (WHO), the International Red Cross and Red Crescent organisations (IRCRC), the International Life Saving Federation (ILS), the International Life Boat Institute (ILF) and Diver’s Alert Network (DAN), as well as national organisations, institutions and medical research consortiums are advised to set up and coordinate data-collection.

3. More data must be collected and knowledge gained about drowning in low-income countries and societies

According to repeated WHO reports, over 80% of all drownings occur in low-income countries or in low-income groups in high income countries. Nevertheless only few epidemiological data about these risk groups are available. The WHO, IRCRC, ILS, ILF and the European Consumer Safety Institute (ECOSA) are encouraged to expand the research on drowning risk factors in these low-income groups because this is expected to have a major impact in reducing the risk of drowning.

4. Preventive strategies and collaboration are needed

The vast majority of drownings can be prevented and prevention (rather than rescue or resuscitation) is the most important method by which to reduce the number of drownings. The circumstances and events in drowning differ across many different situations and in different countries world wide. Considerable differences exist in the locations of drowning and among different cultures. Therefore, all agencies concerned with drowning prevention – legislative bodies, consumer groups, research institutions, local authorities and designers, manufacturers and retailers - must collaborate to set up national and local prevention initiatives. These will depend on
good intelligence and insightful research, and must include environmental design and equipment
designs as a first route, in conjunction with education, training programs and policies which
address specific groups at risk, such as children. The programs must be evaluated and the results
of the evaluations must be published.

5. All individuals, and particularly police officers and fire fighters, must learn
to swim

Knowing how to swim is a major skill to prevent drowning for individuals at risk. International
organisations such as WHO, IRCF and ILS, and their national branches must emphasize the
importance of swimming lessons and drowning survival skills at all levels for as many persons as
possible. The relationships between swimming lessons, swimming ability and drowning in
children needs to be studied. In addition, certain public officials who frequently come in close
contact with persons at risk for drowning, such as police officers and fire fighters, must be able to
swim for their own safety and for the safety of the public.

6. Rescue techniques must be investigated

Most of the current rescue techniques have evolved by trial and error, with little scientific
investigation. Rescue organisations such as the ILS, ILF, IRCRC but also the International
Maritime Organization (IMO) must be encouraged to evaluate the self-rescue and rescue
techniques in their training programs in accordance with current scientific data on the
effectiveness and efficiency. Based on the data, the best rescue techniques must be selected for
education and training programs.

7. Basic resuscitation skills must be learned by all volunteer and
professional rescuers as well as lay persons who frequent aquatic areas or
supervise others in water environment

The instant institution of optimal first aid and resuscitation techniques is the most important factor
to survive after drowning has occurred. Resuscitation organisations, such as organisations, in
particular those related to International Liaison Committee on Resuscitation (ILCOR), as well as
professional rescue organisations and other groups who frequent aquatic areas, must promote
training programs in first aid and Basic Life Support for anyone who frequently visits or is
assigned to work in the aquatic or other water environment.
8. Uniform glossary of definitions and a uniform reporting of drowning resuscitation must be developed and used

To increase the understanding of the dying process and the resuscitation potential in drowning, a uniform reporting system must be developed and used for the registration of resuscitation of drowning.

International resuscitation organisations, such as ILCOR-related organisations and medical groups, must establish a uniform reporting system, facilitate its use, be involved in the analysis of the data and support of recommendations based on the studies.

9. Hospital treatment of the severe drowning victim must be concentrated

The optimal treatment of drowning victims includes dealing with specific severe complications such as the Acute Respiratory Distress Syndrome, pneumonia, hypoxic brain damage, hypothermia and cervical spine injuries. Due to the limited exposure and experience of most physicians with drowning victims, these victims should ideally be treated in specialised intensive care centres for optimal treatment and promotion of clinical research.

10. Treatment of the patient with brain injury resulting from cardiopulmonary arrest attributable to drowning must be based on scientific evidence. Due to the absence of interventional outcome studies in human drowning victims, current therapeutic strategies must be extrapolated from studies of humans or animals having similar forms of acute brain injury

The following recommendations for care of drowning victims who remain unresponsive due to anoxic encephalopathy are made on the basis of best available scientific evidence. The highest priority is restoration of spontaneous circulation. Subsequent to this, continuous monitoring of core and/or brain (tympanic) temperature is mandatory in the emergency department and intensive care unit (and in the prehospital setting to the extent possible). Drowning victims with restoration of adequate spontaneous circulation who remain comatose should not be actively rewarmed to temperature values >32-34°C. If core temperature exceeds 34°C, hypothermia (32-34°C) should be achieved as soon as possible and sustained for 12-24 hours. Hyperthermia should be prevented at all times in the acute recovery period. There is insufficient evidence to support the use of any neuro-resuscitative pharmacologic therapy. Seizures should be appropriately treated. Blood glucose concentration should be frequently monitored and normoglycemic values maintained. Although there is insufficient evidence to support a specific target PaCO₂ or oxygen saturation during and after resuscitation, hypoxemia should be avoided. Hypotension should also be avoided.
Research is needed to evaluate specific efficacy of neuroresuscitative therapies in drowning victims.

11. **Wearing of appropriate and insulating life jackets must be promoted**

Without floating aids, a subject generally drowns within minutes due to swimming failure in cold water. Therefore, the development of insulating and safe garments for aquatic activities is needed. Life jackets should always be worn when immersion can occur to prevent submersion in an early stage. When only non-insulating floating aids can be used, the victim should consider whether swimming ashore is achievable.

12. **The balance between safety and profitability of recreational diving must remain critically observed**

It was agreed that self-regulation within the world-wide recreational diving industry continues to be the practical route for further improvement but that there is a need to counter the perception that there is a conflict between commercial interest and safety.

13. **Safety of diving fishermen needs more attention**

Subsistence fishermen, who are predominantly found in the poor countries around the world, use equipment that is minimal and their training, regulations and medical support appear to be zero. To improve diving-fishermen safety and reduce drowning there is a need to collect data on accidents and drowning among representative samples of diving fishermen around the world. This should be followed up with international non-governmental organisations, other charities and appropriate UN development initiatives so that existing academic societies, training organisations and others could deliver suitable medical and diving advice and training for fishermen compatible with the limits of available local resources.

Several more specific recommendations have been proposed and need the full support of related organisations.

These recommendations refer to the further development of existing research projects such as:

- Global uniformity of beach signs and safety flags
- Risk assessment of beach hazards
- Determination of optimal visual scanning techniques
- Construction of the most adequate rescue boats, including alternatives such as jet boats, hovercrafts, with minimum risk of injuries for the drivers

Other recommendations were made to improve practical aspects related to:

- Legal aspects of drowning incidents
- Evacuation planning of large passenger ships
All recommendations, together with the preparatory documents as consensus papers, reports of expert and research meetings, will be published in the Handbook on Drowning. The Handbook will be available in 2003.

A large number of additional recommendations were elaborated before and during the World Congress on Drowning by the members of the task forces rescue and diving (breath hold, scuba and hose diving). These detailed recommendations are included in the appendices.

All recommendations need full support from governments, organisations, institutions and individuals to enable reduction of the last remaining field of neglected injuries. Each year some 500,000 persons world-wide are still dying from drowning. This is too much.

**Appendices to Recommendations of the World Congress on Drowning**

**Overview recommendations task force Rescue**

During the preparation of the World Congress on Drowning, experts have prepared documents on a wide variety of topics. These topics have been further elaborated at the congress by the members of the task force rescue. Because of practical limitations in time, and the wide variety of subjects to be covered, there were no opportunities to include these recommendations in the final procedures.

Recommendations aimed at all national and international governmental bodies, including IMO, Search and Rescue organisations, the International Lifeboat Institution and prevention institutions

1. The existing standard for the evaluation of hazard presented at beaches should be implemented as the world-wide standard to enable the development of appropriate drowning prevention strategies at beaches.
2. Communities throughout the world which can expect to face flooding, must prepare themselves and the emergency workers they designate, to effectively respond to flood rescue.
3. Search and rescue response must be ensured in areas around the world where there is significant maritime traffic, whether it be cruise liners, cargo ships, fishing boats or leisure craft.
4. The International Aeronautical and Maritime Search and Rescue Manual should be reviewed and incorporated by the sea rescue organisations of all of the nations of the world to ensure a coordinated and effective approach to maritime emergencies.
5. The Incident Command System, which has been developed to allow for effective oversight and organisation of emergency responses, should be adopted by all aquatic rescue organisations worldwide.

Recommendations aimed at all national and international bodies in the area of rescue, including the International Red Cross and Red Crescent organisations, the International Lifeboat Institutions and the International Life Saving Federation
1. Scientific study should be undertaken to form a basis for determining the skills and minimum competencies required to rescue another human in an aquatic emergency.

2. Further research is needed in the area of surveillance, scanning and vigilance by lifeguards from a physiological and psychological perspective to determine the best methods of instruction and practice.

3. Further research should be undertaken to identify appropriate use and training of the personal watercraft (PWC) in aquatic rescue.

4. Rescue communications must provide dependable, robust, integrated, and effective command and control for all involved segments of the response system, not simply point to point communications.

5. Sea rescue providers should ensure that their rescue craft keep pace with available technology, evaluating and embracing effective new types of surface rescue craft and air rescue craft.

6. It is recommended that common terms for spinal injury immobilization techniques be adopted by all lifesaving organisations and that the terms should be vice grip, body hug, and the extended arm grip. Studies should be conducted on each of these methods to establish the best possible methods of extrication.

7. All lifesavers should be taught the standing backboard technique, to allow for immediate stabilization of the spine of a person who walks up to the lifeguard complaining of spinal pain post trauma.

8. An international study of fund-raising activities by aquatic lifesaving organisations should be commenced to identify the most effective methods.

**Overview recommendations task force task force Diving (breath hold, scuba and hose diving)**

During the World Congress on Drowning, experts of the task force Breath hold, scuba and hose diving have finalised a consensus document on a variety of topics.

**It was agreed that**

1. Well-constructed national regulations have been effective where enforced and that any significant improvements in health and safety would arise only from a more inclusive definition of working divers and a wider application of existing procedures.

2. Self-regulation within the world-wide recreational diving industry continues to be the practical route for further improvement but that there is a need to counter a perception that there is a conflict between commercial interests and safety.

3. The training agencies comply with international quality assurance and control procedures (QA/QC) such as the International Standard ISO 9000 series and also encourage independent monitoring to assure the effective and safe use of existing and new procedures.

4. Subsistence fishermen who are predominantly found in the poor countries around the world, use equipment that is minimal and that their training, regulations and medical support appear to be zero.

To improve diving-fishermen safety and reduce drowning there is a need to collect data on accidents and drowning among representative samples of diving fishermen around the world.

This should be followed up with international non-governmental organisations (NGOs), other charities and appropriate UN development initiatives so that existing academic societies, training organisations and others could deliver suitable medical and diving advice and training for fishermen compatible with the limits of available local resources.
5. The collection of diver morbidity and mortality data and the associated contributory factors for each incident is a necessary first step in reducing drowning incidents among divers. Also needed are the denominator data that will allow the calculation of risk.

6. Recreational divers are free to dive when, where and how they like but the diver also has an obligation to the public. Any underwater accident to a diver can put buddy divers and rescuers at considerable risk.

7. Greater stringency is needed in the assessment of the physical, mental and medical fitness of all who choose to dive. A single assessment of fitness for diving at the beginning of diver training should not be considered valid throughout the rest of the diver's life. Re-assessments are recommended at intervals that may diminish with advancing years and re-assessment may also be needed after illness or injury.

8. To give a medical opinion on a diver's fitness, the doctor should have prior knowledge of the unique hazards faced by a diver. Whenever possible, the medical assessment should be conducted by a doctor acknowledged as competent in this special subject. It is recommended the training of diving doctors, both for the medical examination of divers and also for the treatment of medical emergencies in diving, complies with guidance such as that published by the European Diving Technology Committee (ECHM) and the European Committee for Hyperbaric Medicine (EDTC). Periodical revision training is also important.

9. The mental, physical and medical standards of fitness in each category of diving should be harmonised internationally.

10. Greater emphasis should be placed at all levels of training on the causation and prevention of in-water fatalities.

11. After some 3 to 5 years without regular diving, the individual should be subject to a formal re-assessment of competence before re-entering the water.

12. The policy of training children as young as 8 years old to dive should emphasise the immaturity of mental outlook that many young persons may have when an emergency occurs.

13. Emergency procedures should be consistent with a variety of equipment in a variety of configurations.

14. Programs of refresher training should be established to maximise practical re-learning and updating of basic emergency skills. This is needed particularly after an individual's equipment has been modified.

15. Self-rescue and buddy-rescue procedures should be compatible with the equipment used and the environmental conditions.

16. Training of rescuers should include the procedures for recovery of the victim from the water into a boat and transfer of the patient from the deck of a boat to a helicopter or some other emergency transport vehicle.

17. Hand signals and basic procedures used in diving emergencies, whether at depth or on the surface, should be standardised and promoted through rescue and diving agencies throughout the world.

18. Rescuers must be made aware that the treatment of drowning in a diver might be complicated by other medical conditions such as carbon monoxide poisoning, envenomation and omitted decompression arising from that same dive.

19. National and international standards of medical care should be written for all medical emergencies in diving by suitable academic bodies.

20. Drowning is mostly a diagnosis of exclusion and often is a presumptive diagnosis based on purely circumstantial evidence. All diving-related deaths should be thoroughly investigated, including a complete autopsy, evaluation of the equipment and a review of the circumstances surrounding the fatality by knowledgeable investigators with appropriate training and experience.
The post-mortem examination of a drowned diver should be conducted by a pathologist who is knowledgeable about diving (or who is advised by a doctor who is knowledgeable about diving).

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**Summary Evaluation of National Water Safety Plan**

**Background**

In 1995 Paul Giles put together a document looking at the development of a National Water Safety Strategy called “Towards a National Water Safety Strategy”\(^8\). This document provided a qualitative review of accidental drowning and submersion deaths in Australia, focusing on the high risk age groups, aquatic activities and environments. In particular he examined near-drowning, rural drowning, diving, toddlers, boating, rockfishing, swimming and a National Water Safety Centre.

Following this the Australian Water Safety Council (AWSC) was formed in February 1998 and included members from Royal Life Saving Society Australia, Surf Life Saving Australia, AUSTSWIM, Australian Swimming Coaches & Teachers Association (ASCTA), Australian Swimming Incorporated, Kidsafe Australia, Farmsafe Australia, Australia and New Zealand Safe Boating Education Group, Australian Local Government Association, Standing Committee on Recreation and Sport (SCORS) and Surfing Australia.

The AWSC acts as a consultative forum focusing on the presentation of key water safety issues to government, industry and the community. The AWSC does not represent an additional layer of organisation bureaucracy and liaises closely with kindred bodies at State, National and International Levels.

The first activity of the AWSC was the 1\(^{st}\) National Water Safety Conference at the Melbourne Sports and Aquatic Centre in May 1998, the recommendations and spirit of cooperation engendered at the conference were incorporated into the objectives and priorities presented in the National Water Safety Plan.

**National Water Safety Plan**

The National Water Safety Plan (The Plan) was published in July 1998 and launched by the then Federal Minister for Sport and Tourism the Hon Jackie Kelly. The Plan included four key result areas:

- Water Safety Research,
- Management of Aquatic Locations,
- Water Safety Education, and
- Targeting Key Demographics.

Under the key result areas there were 21 recommendations. The Plan also included an action plan that described the key factors, available programs, research needs, campaign strategy and budget for each of the key result areas.9.

In 2000 at the 2nd National Water Safety Conference a minor review of The Plan was conducted and it was found that some of the goals had been achieved such as:

- Formation of Water Safety Councils in the states
- Increased federal and state funding of water safety initiatives
- Greater corporate support
- Establishment of the Australian Water Safety Research Committee with specific research initiatives funded by Commonwealth Departments:
  - Analysis of Drowning in Australia
  - National Coronial Information System

The conference also re-endorsed The Plan and made some minor changes.

**Evaluation**

In late 2002 the Australian Water Safety Council undertook the process of a major review of The Plan. The Australian Water Safety Council formed the Consultative Committee for Water Safety Research (CCWSR) to help undertake the evaluation. The CCWSR meet several times in late 2002 and produced a questionnaire to help in the evaluation. A literature review, key informant interviews, analysis of progress of recommendations and data analysis are also used to evaluate The Plan.

**Literature Review**

An examination of Medline for the key words “drown” and “drowning” identified 2,722 references. Articles that were published before 1990 (1020), non English (690), duplicates (24), and articles not related to water drowning (318) were excluded. This left 670 articles.

The analysis of the articles using the following categories:

- Editorial
- Medical
- Epidemiological
- Medical – Animal
- Alcohol
- Meta-analysis
- Evaluation
- Program
- Homicide
- Suicide
- Unsure
- Analysis of Drowning in Australia
- National Coronial Information System

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The majority of the articles were epidemiological (where drowning was mentioned in terms of size but did not refer to prevention strategies) and medical (which examined drowning mechanism and issues around length of submersion, fresh water versus salt water and treatment). There were also a number of articles where the title mentioned drowning in an appropriate context but there was not an abstract included on Medline to make further classification.

Data Analysis

Drowning deaths that were registered in the years 1992-2001 and collected by the Australian Bureau of Statistics in the causes of death records were used for the analysis. All people who drowned in years prior to 1992 but were recorded subsequently were also excluded from the analysis.

Between 1992 and 2001 there were 4,156 drowning related deaths, the majority of these were accidental drowning deaths (61.6%). Predominantly the number of people drowning per annum has been declining in Australia with some minor peaks in numbers along the way. In 1999 both accidental deaths were at a six year high and water transport related drowning deaths were at three year high (Table 1).

Table 1. Identifiable drowning deaths by underlying cause of death, Australia 1992-2001: case counts for persons

<table>
<thead>
<tr>
<th>Year of Death</th>
<th>Accidental Drowning (a)</th>
<th>Water transport drowning (b)</th>
<th>Suicide by Drowning (C)</th>
<th>Homicide by Drowning (d)</th>
<th>Drowning Undetermined (e)</th>
<th>Drowning due to Environmental Factors (f)</th>
<th>ABS Identified Drowning NEC (g)</th>
<th>Total</th>
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<td>576</td>
<td>41</td>
<td>91</td>
<td>52</td>
<td>398</td>
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</tbody>
</table>

(a) ICD-9 E910 to 1997; ICD-10 W65-W74 from 1998
(b) ICD-9 E830 or E832 to 1997; ICD-10 V90 or V92 from 1998
(c) ICD-9 E954 to 1996; ICD-10 X71 from 1997
(d) ICD-9 E964 to 1996; ICD-10 X92 from 1997
(e) ICD-9 E984 to 1996; ICD-10 Y21 from 1997
(f) ICD-9 E908 to 1997; ICD-10 X37 and X38 from 1998.
(g) All other drowning deaths identified by the ABS Drowning Flag

Accidental drowning deaths over the past 10 years have averaged 256 deaths per annum, however the average for the last five years has been lower (av. 248) than the previous five years (av. 264). The age standardised drowning rate has been declining since 1999, although there will not be as
big a downward trend when all the 2001 cases are available. Males had a consistently higher rate of drowning deaths than females (Figure 1).

**Figure 1. Yearly trend in accidental drowning rate; Australia, 1992-2001: age-adjusted rates by sex and overall**

![Graph showing yearly trend in accidental drowning rate](image)

The analysis goes on to further explore drowning death by activity, age, location, presence of alcohol or drugs, state and time of year.

**Key Information Interviews and Questionnaires**

The key informant interviews provided an opportunity for exploration of particular issues in greater detail than would otherwise have been obtained via just a questionnaire. It allows for the questions to be adapted for each person and focus on differing issues depending upon experience and work setting (eg government, industry, charity etc).

The interviews were semi-structured following a prescribed order, however where appropriate issues were explored in more detail or the order was changed to follow the discussion. There were 35 interviews conducted.

The following groups were involved in the Key Informant Interviews

- Royal Life Saving Society Australia
- Surf Life Saving Society Australia
- Health departments.
- Departments of Sport and Recreation
- Austswim
- Research Personnel
- Australian Water Safety Council - Members

The questionnaires were designed to help with the evaluation and as such were broken down into thirteen sections (Table 2). The questionnaire was made available via the web at
http://www.watersafety.com.au and also electronic copies were e-mail out and hardcopies sent out via Australian Water Safety Council members. There were forty-nine questionnaires that were returned by the end of August 2003.

**Table 2 Sections of the Evaluation Questionnaire**

<table>
<thead>
<tr>
<th>• General information</th>
<th>• National Water Safety Plan</th>
<th>• Management of aquatic locations</th>
<th>• Safety Audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lifesaving/Lifeguarding</td>
<td>• Research</td>
<td>• Training/Education</td>
<td>• Boating/Sailing</td>
</tr>
<tr>
<td>• Diving</td>
<td>• Fishing</td>
<td>• Aboriginal and Torres Straight Islanders</td>
<td>• Cultural Diverse Communities</td>
</tr>
<tr>
<td>• Media</td>
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</tr>
</tbody>
</table>

The major findings from the interviews and the questionnaires were:

- The need for a communication plan and increased promotion of The Plan. The development of a smaller document for specialised groups (such as a local councils guide to the National Water Safety Plan) would help with the communication.
- The 0-5 years age group is still an important group to be targeting
- There are problems with measuring effectiveness of The Plan and as such performance indicators need to be developed. The performance indicators need to be inbuilt in the next plan.
- New plan should be at a strategic level not operational
- The Plan needs to refer to, make reference to or acknowledges state plans
- The Plan needs to be reviewed on a basis and feedback provided to all stakeholders
- The four current key result areas are still appropriate but they may need to go into further detail.
- Continue to provide forums for discussion
- More research and dissemination of research
- Need for consistency across Australia.
- More work needed with special populations

**Progress of Recommendations**

The members of the Australian Water Safety Council were asked to completed a matrix that examined the recommendations and strategies that sat underneath the recommendations and rate weather they had been completed, partially completed ongoing not started, or not applicable. Of the 80 strategies that sit under the recommendations, the majority are on-going.

A full report of the evaluation will be available at the end of October 2003.
During the summer of 1997-1998, a high number of drownings caused the NSW Premier to consider the development of a strategic framework to address water safety issues in NSW. In 1998, a 10 point water safety plan was developed, including a public awareness campaign to encourage safer swimming at NSW beaches and waterways.

The Department of Tourism, Sport and Recreation assumed the government responsibility for water safety in NSW and established the NSW Water Safety Taskforce.

The Taskforce recognised the need for a coordinated response to water safety in NSW and developed the NSW Water Safety Framework 2001-2003\(^1\). The framework identified three key priority areas of evidence, standards and education. Following on from these priority areas are seven objectives and 19 strategic directions. Each priority has a lead agency which is the primary government agency responsible for the development and implementation of the strategic directions. Three sub-committees comprising key government and peak water safety agencies were formed to support these key priority areas.

<table>
<thead>
<tr>
<th>Key Priority Area</th>
<th>Lead Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>NSW Department of Tourism, Sport and Recreation</td>
</tr>
<tr>
<td>Evidence</td>
<td>NSW Health</td>
</tr>
<tr>
<td>Standards</td>
<td>Waterways Authority</td>
</tr>
</tbody>
</table>

The Framework identified that evidence was needed to provide the NSW Government and water safety agencies with information to further inform water safety education, policy and legislative action.

Although the Framework identified specific groups at risk of drowning, the circumstances surrounding drowning of 0-4 year olds, the magnitude of drowning of rock fishers and the perceptions of water safety of people living in rural and remote regions and their subsequent water safety behaviours in NSW were not known.
The NSW Water Safety Taskforce has been working on these and other strategic areas for three years and described are three examples of how the three sub-committees have become integrated and worked together to further the aims of the Taskforce.

**Children aged 0-4 years**

The Taskforce funded the NSW Injury Risk Management Research Centre to conduct an analysis of drownings involving children aged five years and under in NSW using coronial records\(^2\). From this analysis, a basic epidemiological description of the drownings was conducted and causal patterns were identified. From this research, a lack of direct adult supervision, a lack of understanding of the vulnerability of children at different developmental stages and inadequate or an absence of barriers to water were identified as key areas to target. As a result further research was conducted regarding the compliance of swimming pools to the NSW Swimming Pools Act 1992 in three differently sized local government areas in NSW and also conducted was a survey of all local government councils in NSW regarding the information held regarding residents’ swimming pools and their enforcement of the Act.

The results of all three research projects informed the Standards sub-committee who developed a home swimming pool checklist ([http://www.safewaters.nsw.gov.au/poolchecklist.htm](http://www.safewaters.nsw.gov.au/poolchecklist.htm)), amended pool resuscitation signage to include key water safety messages, such as supervision, and the sub-committee is currently in the process of developing a discussion paper on a possible review of the NSW Swimming Pools Act 1992 and Regulation 1998.

To raise awareness in the NSW community around water safety issues and young children, the Education sub-committee entered into a formal partnership with The Wiggles to record radio community service announcements highlighting the themes of direct adult supervision and learn to swim. To further target parents and caregivers of young children an existing resource of Royal Life Saving, the Keep Watch program, was utilised, along with community health nurses around the state. The Keep Watch program focused on the key messages that the Taskforce wished to promote and Royal Life Saving officers were funded to conduct workshops with community health nurses, providing them with resources, such as posters, pamphlets, and a CD-rom that included presentation materials and fact sheets relating to the stages of child development and drowning risk. Community health nurses were encouraged to then promote water safety messages within their local community.
**Rock fishing**

An investigation of the demographic profile of rock fishers and the circumstances surrounding these rock fishing fatalities over a nine year period in NSW were conducted. Results were presented to a focus group of fishing industry associations and rock fishing enthusiasts and recommendations for action were endorsed.

The Education sub-committee developed community service announcements for ethnic radio highlighting rock fishing safety and NSW Fisheries has developed a brochure outlining the key safety aspects of rock fishing, in consultation with the Taskforce. Also proposed are rock fishing technique and safety seminars for key at risk culturally and linguistically diverse (CALD) groups, such as the Chinese, Korean and Vietnamese communities. All rock fishing resources have been translated into key CALD languages.

A voluntary code of practice for rock fishing and an angel ring life buoy program which places angel rings at key locations where rock fishing fatalities here occurred are being investigated by the Standards sub-committee.

A need for further information regarding rock fishers and the frequency of their rock fishing activity, their knowledge, attitudes and behaviours in relation to rock fishing was acknowledged and currently a program for surveying rock fishers in NSW using NSW Fisheries Fishcare volunteers is being explored.

**Rural and regional communities**

Residents of rural and regional NSW were surveyed regarding their use of water-related facilities and locations and their perceptions of water safety and personal water safety behaviour. Focus groups were also conducted in remote NSW by the Department of Tourism, Sport and Recreation and Farmsafe NSW to gather further information regarding water safety and to identify appropriate strategies for drowning prevention in rural communities.

Key recommendations were the use of barriers to restrict access of young children to water, the promotion of water safety messages, encouragement of swimming competency levels in primary and high schools, and the supply of information on patrolled beaches for holiday planning.

In rural and regional NSW safe play areas are being promoted by the Education sub-committee in partnership with Farmsafe NSW. In addition the Keep Watch resource for community health nurses contains specific information for regional communities, including water safety tips for rural

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10 Volunteers talk to anglers about fishing rules and responsible fishing and help in a range of activities, such as fishing clinics, catch surveys and community fishing events.
areas. Surf Life Saving are expanding the delivery of the Beach to Bush program and associated resources supported in part by government funding.

**Other initiatives**

Other initiatives being considered by the Taskforce include: a community grants program, and further awareness raising through the development of specific campaigns to address key water safety at risk groups, such as young children, tourists, rural and CALD communities. A further program of research and evaluation has been proposed that will seek to address issues such as: why there is a higher risk of drowning and near-drowning risk for people who reside in remote and very remote locations in NSW, determine whether the information gathering model used with the Chinese community in NSW would have success with other CALD communities, and the assessment of the cost effectiveness of different water safety prevention strategies.

Currently, the NSW Water Safety Taskforce is being evaluated to determine the most effective structure and process for the continuation of the Taskforce to sustain a successful government and peak water safety organisation approach to water safety in NSW. Also being evaluated is the NSW Water Safety Framework 2001-2003 and this will determine future priorities for water safety in NSW, along with recommendations for the establishment of a new water safety plan.

For further information on the NSW Water Safety Taskforce and water safety initiatives being conducted go to [www.safewaters.nsw.gov.au](http://www.safewaters.nsw.gov.au)

**References**


**Acknowledgments:** The authors acknowledge invaluable assistance from the NSW Water Safety Taskforce.
Management of water safety requires information on the size and nature of the water safety problem. This information can be used for a range of different purposes including the development of water safety policy, the deployment of rescue services, the development of new water safety interventions and the evaluation of the effectiveness of water safety activities. Many water safety organisations collect information on water safety incidents, but not all collect the same information or collect it in the same way. Over recent years, the NSW Water Safety Taskforce has funded research to look at the possibility of addressing this problem.

This work began with the development by the Evidence Subcommittee of the Taskforce of a suggested Minimum Water Safety Dataset to be used to collect rescue information at beaches and public swimming pools. A feasibility trial of a minimum dataset was conducted by the Injury Risk Management Research Centre (IRMRC) in NSW using lifeguards and lifesavers as data collectors.

The feasibility trial involved a four week trial data collection conducted at ten locations and data was recorded by APOLA, Surf Life Saving and Royal Life Saving. The report on the feasibility trial indicated that:

- there was a need to strengthen the definitions used for rescues, which included major rescues and minor rescues and to modify a few data items to make them more usual;
- preventative actions should also be emphasised as they are likely to counter balance the number of rescues;
- there were problems in lifeguards and lifesavers collecting the data, especially at busy times and on busy beaches. It was suggested that the data collection should be by dedicated independent observers doing a comprehensive data collection period a couple of times a year, would enable the collection of reliable and accurate data during busy periods, particularly on data items associated with the rescued person.

As a result of the trial it was decided to undertake a second trial data collection using trained dedicated data collectors. It was decided to only conduct the trial at Surf beaches and during the busy summer and easter periods as well as to clarify the definitions of rescue to include:

**Rescue—major**: any rescue where the rescue of the person involved more than one lifeguard/lifesaver or a member of the public to render assistance OR where the rescued persons had to be resuscitated OR where an other agency had to render assistance (e.g. ambulance, rescue helicopter).
**Rescue**: any rescue where a person was physically assisted or supported to return to shore or other place of safety (eg retrieving a person in difficulty).

**Preventative action**: any water safety advice provided to the public (eg asking people to swim between the flags; use of PA and/or whistle).

**Methodology**

A total of 14 research assistants were recruited and trained to collect the following information:

1. An hourly Observation sheet which detailed:
   - The number of lifeguards/lifesavers on the beach over the hour
   - Tide times (first hour only)
   - Location of the flags for the last hour
   - The number of major rescues *
   - The number of non-major rescues*
   - The number of preventative actions in total and inside and outside the flagged area *
   - Details of the weather, including temperature, sea conditions, wind conditions and direction, wave type and wave height, presence of rips
   - Number of people in the location including on the sand, in the flagged areas and outside the flagged areas. *

2. Details of Major/non-major rescue sheet which covered:
   - Age or age group, *
   - gender,
   - main language spoken at home
   - Suburb of usual residence or overseas
   - Indigenous status
   - Swimming ability of person rescued *
   - Activities of person just before rescue
   - Who performed the rescue and how they knew the person was in difficulties
   - Location of the person at rescue point including depth of water and with respect to the flags
   - Use of rescue equipment
   - Use of first aid equipment
   - Need for ambulance
   - Involvement of alcohol and drugs
   - Narrative description of what happened

* For some of the above items, provision was made for the data collectors to make their best estimates and this is indicated on the collection form.

The data collection was carried out over a one week period at the end of January (25th January to 1st February inclusive which included the long weekend) and during the Easter period (18th to 21st April inclusive). The data collection occurred at all times when the flags were out and the beach was patrolled. The beaches involved in the summer collection were Bondi, Maroubra, Freshwater, Palm Beach and Avoca. The Easter collection occurred at Bondi, Maroubra, Freshwater and Palm Beach as these were likely to be most busy.
**Results**

The results of the first, summer data collection only have been analysed so far. The period of the trial included a long weekend (Australia Day) and the end of the school holidays. This meant that the trial covered three weekend days and four week days. It also coincided with a surf carnival at one beach (Freshwater) which disrupted data collection for one afternoon, and a public concert at another (Maroubra) which did not disrupt data collection.

Over the summer trial period, 37 major and nonmajor rescues occurred, most at Maroubra and Avoca beaches (32% and 30% respectively) and least at Freshwater and North Bondi (14% and 16% respectively). Approximately half of the incidents occurred during the long weekend (54%). Five incidents could be classified as major rescues, including one drowning fatality. Three incidents involved non-submersion-related events such as a cut, a sprain and a missing person.

While the data analysis is still being conducted, some patterns are emerging on the types of incidents that were collected. Most of the incidents involved males (68%) and most were in the 6 to 25 years age group (75.7%). The greater majority were classified as English-speaking (75.7%). Just over half were judged by the rescuer to be weak swimmers and only three cases were judged to be strong swimmers. Most were swimming, wading or paddling at the time of the incident (78.4%), with a few cases involving body boarders and the drowning fatality occurred while skin diving. In nine of the cases, the incident occurred in one metre of water or less, although the estimated depth of water ranged from 0.75 metres to 10 metres. Most of the incidents occurred outside the flagged area (82.9%), with most occurring more than 100 meters away (40.5%). Only two cases occurring outside the flagged area occurred within 10 metres of the flags and only six cases occurred within the flags. Life guards and lifesavers were involved in approximately equal numbers of rescues, and three cases involved members of the public. Where rescue equipment was used, it mostly involved a rescue board (75%), with the remainder involving rescue boats. Three cases involved at least one of EAR, CPR and oxygen and an Ambulance was called for each of these cases, although in one case, it was refused.

There were 1,107 preventive actions counted across all of the beaches during the trial period. Just over ten percent of these were related to the flagged area (11.6%), the majority related to events and circumstances occurring outside the flagged area. The number of preventive actions varied considerably between the beaches, with the least at North Bondi (1.6%) and the most at Maroubra (37.9%). While the number of preventive actions is likely to be influenced by the work style of the lifesavers or lifeguards, this pattern may also be related to the rated level of danger at each of the beaches. Based on the ratings developed by Andrew Short, Maroubra beach, is rated at 7 and...
North Bondi is rated at 4 which correspond respectively to the highest and lowest (safest) ratings of the beaches in the trial.

The results so far indicate that almost all of the hourly observation variables were able to be collected by data collectors. Most importantly, the collectors were able to use the type of rescue variables and to differentiate major and nonmajor rescues and preventive actions. They were also able to make estimates of the size of the crowd at various locations on the beach and to code the details of the weather and beach conditions. Most of the variables on the Major/nonmajor rescue data collection sheet were also able to be collected, although some presented problems. The main variable that was not collected well was the suburb of usual residence which could only be collected in 14 cases. The person’s exact age was only collected in nine cases, but the data collectors were able to make estimates of age group for all other cases. A number of other variables were also able to be estimated, including language spoken at home which was coded unknown in only two cases, swimming ability which was collected directly in nine cases, but rescuers were able to make estimates for the remainder of cases.

Further analysis is looking at the data collected on the estimates of the size of the crowd at particular locations on the beaches. This type of information will be useful in the long term for assessing the likelihood of incidents occurring at different beach locations, under different conditions and at different times.

In conclusion, the results of this trial so far indicate that:

1. Dedicated data collectors would be an effective method for collecting water safety relevant information as they were able to collect information about a range of types of incidents occurring on beaches.
2. The information collected would be useful for a wide range of water safety purposes, including analysis of the relationships between beach conditions and water safety incidents, the timing and allocation of water safety staff and evaluation of new water safety programmes.
3. The results of this trial so far, combined with those of the first trial involving data collection by water safety professions suggest that dedicated data collectors may not be cost-effective for all beaches and all times throughout the summer. It seems that a combination of collections by dedicated collectors on very busy or more dangerous beaches and collections by lifeguard/lifesavers at less busy times would be the most cost effective.
Comparison of resuscitation cases and rescues performed by Surf Life Saving Australia from 1996 - 1999 has been previously assessed. Recently a number of innovations have been introduced into Surf Life Saving Australia, including remote control video cameras mounted on high-rise buildings near the surf, personalised watercraft with attached rescue mats as a rapid one-person response for rescues, oropharyngeal airways and, in the past season, a trial of pulse oximeters in rescue and resuscitation cases.

Rescue and resuscitation statistics in this first period were separated into the areas inside and outside the patrolled area and assessed. This showed that the patrolled area had the highest incidence of rescues and resuscitations with 95.2% of cases successfully resuscitated within the patrolled area during patrol hours. However, 54.8% of cases occurred outside the patrolled areas, during patrol hours with 62.3% successfully resuscitated; Resuscitation success rates fell lineally with increasing distance from surf clubs; Differences between rescue and resuscitation cases included age groups, with the 0 - 15 age group being a large proportion of the rescues both inside and outside the flags, but a very small percentage of the total resuscitation cases, whereas the largest percentage needing both rescue and resuscitation occurred in the 40-60 age group; Alcohol was detected in twice as many of the resuscitation cases compared to rescues; statistical differences between rescues and resuscitation cases occurring in rips and; the percentage of those vomiting and/or regurgitating.

Assessment of the past 3 years rescues and resuscitation are now being assessed and will be compared to previous statistics to give a preliminary and early assessment to assess if recently-introduced methods have had any early impact on these statistics.
Drowning is a leading cause of death and disability. In 2000 an estimated 409,272 people drowned, making it the 2nd leading cause of unintentional injury death globally after road traffic accidents.

Low to middle income countries of the world contribute the greatest proportion to the global burden of drowning. The South East Asian Region of the World Health Organisation (SEARO), the African Region (AFRO) and the Western Pacific Region (WPRO) accounted for 77% of all drowning deaths in 2000.

There are several important epidemiological risk factors that have been studied and reported in the literature. These include gender, age, race, epilepsy, access to water, occupation, and alcohol consumption.

Prevention strategies such as “Learn to swim” programs for children and mandatory isolation pool fencing have been shown to be effective in reducing the risk of drowning. Other strategies such as legislating for the use of personal flotation devices whilst boating and the provision of lifeguards at beaches have also been shown to be effective in reducing the number drowning deaths. However on a global scale, it is important to remember that successful prevention strategies must include causes of drowning other than from recreational activities.

There are limitations on the scope and availability of drowning data that makes an accurate global picture difficult to construct. Uniform case definitions for drowning need to be established to enable effective evaluation of prevention strategies and all categories of drowning should be included in official statistics so the true burden of drowning can be better understood.
An enormous amount of research has been undertaken into the area of unintentional drowning in Australia. Peer review journals contain extensive articles reporting on rates of drowning, government agencies have commissioned numerous reports into water-related deaths and drowning was one of the four national injury prevention priority areas for 2001-2003. This work has led to the identification of many risk factors associated with preventable drowning and successful interventions have been implemented to address them. This is illustrated in Figure 1, which demonstrates the gradual decline in the number of unintentional drowning deaths in Victoria according to financial year between 1988/1989, where there were 71 deaths, and 2002/2003 where there were 40 deaths.


Much of this success can be attributed to public health and safety organisations government agencies and industry groups, who on many occasions worked together to develop and implement strategies to reduce the number of drowning related injuries and deaths in Victoria. For example, the *Play it Safe by the Water* campaign developed six key strategies:

- Public Awareness;
- Education and Training;
- Toddler Initiative;
- Improved Water Safety Signage;
- Extension of the Lifesaving Season; and
- Family Friendly Beaches
In terms of public awareness *Play it Safe by the Water* aired a series of three television commercials, which focused on three different aquatic environments and addressed the associated risks of each. These were: the beach; inland waterways; and backyard swimming pools. The three target audiences of the public awareness campaign were the risk taker aged 18-25 years of age (later extended to 30 years of age), parents of toddlers, and the general community. Action orientated messages were also used in the public awareness campaign as a means of influencing behavioural practices in and around aquatic environments. These messages were not only prevalent in the television commercials, but also in the print media, on the Victorian Water Safety website, and in other publications.

In terms of education the Royal Life Saving Society Australia (RLSSA), Victoria Branch, run a number of water-safety programs. These include:

- **Keep Watch** - a public awareness and education campaign aimed at reducing toddler drowning. The program focuses on four key points: supervision; pool fencing; water familiarisation; and resuscitation.
- **Swim and Survive** - launched in 1982, this program is aimed at school children to teach them swimming and aquatic survival skills.
- **Junior Lifeguard Club** - a program for 8-15 year olds to introduce them to lifesaving activities.
- **Wet 'N' Wise** - an education resource kit, which was sent to every Australian primary school. It contains water-safety lesson plans, teaching resources, posters and a board game.

The RLSSA have also developed the *Infant Aquatics* program. The four key components of this program are: water familiarisation; water-safety; early buoyancy; and swimming development.

In relation to legislation, safety barrier requirements for private swimming pools and spas have been in existence at both State and National level for many years. During the 1990s in Victoria existing legislation was amended and new legislation was introduced. This created two regimes of legislation, one for swimming pools and spas built or constructed prior to 8 April 1991 and one for swimming pools and spas built after 8 April 1991. The most significant variation in the legislation was in relation to the requirements for self-closing gates and doors. That is, pre-1991 swimming pools were required to have doors and gates that were self-latching but not self-closing whereas the post-1991 swimming pools were required to have both, in accordance with Australian Standard 1926.1. This disparity was rectified in 2002, where from July of that year owners of swimming pools constructed prior to 8 April 1991 were required to ensure that all doors and gates forming part of the pool barrier were self-closing as well as self-latching/locking. This amendment brought the pre-1991 swimming pools up to the same standard of post-1991 swimming pools, that is the Australian Standard.
Clearly, progress has been made in reducing the number of drowning deaths. An example of where a considerable reduction in drowning has been achieved is in relation to drowning of young children in private swimming pools and spas. This is illustrated in Figure 2 below.

**FIGURE 2** Drowning of 0-5 Year Old Children in Victoria

Why then was more research undertaken into drowning in Victoria, and how have the findings of the research furthered knowledge about preventable drowning incidents? In 2001 the Public Health Branch of the Department of Human Services (DHS) established an injury prevention research officer at the State Coroner's Office under the Victorian Injury Prevention Research Program. The DHS research program aims to better understand the socio-environmental determinants of safety intervention uptake and barriers to uptake. It was recognised that there was valuable information at the State Coroner’s Office that was inaccessible to most persons and therefore not being utilised.

Drowning was the first area selected for examination and in order to determine areas for further investigation, information on all drowning deaths that occurred between 1999 and 2001 were collated from coronial files. Two areas where there were large numbers of preventable drowning deaths were children aged 0-5 in the home and water vessels. In terms of 0-5 year old children, three bodies of water around the home were examined separately: dams, private swimming pools and spas and bathtubs. The general aims of the research were to obtain a greater understanding of known risk factors and identify any other factors that appeared to play a role. In particular, the two main factors under examination were carer supervision and safety barriers.

Police reports, witness statements, post-mortem reports and coroner's findings were reviewed to identify motivators and barriers to safety behaviours as well as other contributing factors. In
addition to reviewing the coronial file, public health and safety organisations and regulators were consulted in order to examine the social context in which these deaths occurred.

The major findings of the research were:

- carers supervision was absent and they were most often engaged in home duties and assumed that the child was happily playing although a water hazard was known to be in the vicinity;
- safety barriers:
  - dams - inadequate to prevent a young child from accessing water.
  - private swimming pools and spas:
    - high frequency of barrier non-compliance, particularly in relation to latches;
    - point of non-compliance also point where child accessed the swimming pool/spa;
    - high incidents of drowning at locations with house containment fencing, both when child located inside and outside the house;
    - swimming pool/spa owners unaware of "technicalities" of safety barrier requirements;
    - poor barrier maintenance;
    - little or no enforcement of safety barrier legislation.
- other factors:
  - water recreation:
    - dams - drowning incident occurred in an unstructured water recreation setting;
    - private swimming pools and spas - earlier water recreation precursor to the drowning incident.
    - bathtubs - carers were in the habit of leaving the child (in some cases infants) alone or in the care of another child under 5 years in order to prepare the child’s clothes or attend to other home duties.
  - when the child was known to be outside the house and in the vicinity of water, such as a dam, swimming pool or spa, carers underestimated:
    - how quickly the child could wander off;
    - the child's ability to negotiate safety barriers/fences; and
    - the child's inability to perceive water as a danger.

While conducting the research it was alarming to see the same deaths occur in the same circumstances over time and space. On closer examination, the attitudes of carers to supervision and behaviours of children around water were identical, illustrating that some members of the community have not embraced water-safety messages. A possible explanation for this is the amount of exposure water hazards such as dams and bathtubs have received in the public arena compared with private swimming pools and spas, and the number of deaths that occurred each year.

As can be seen from Figure 2, between one and four children drowned across Victoria in bathtubs and/or dams every year between 1989 and 2003, which made it extremely difficult for coroners
working on a case-by-case basis to identify trends. Until the recent advent of the National Coroner’s Information System (NCIS), coroners had no way of easily identifying small groups of deaths over time, given their enormous case load of 4,500 death investigations a year. What may have hindered this further was the concentration on private swimming pools and spas. This was a reasonable focus given the large number of preventable deaths, however during this same period 54 young children drowned in bathtubs and dams (not including other waterways such as ponds, irrigation channels and rivers) compared with 82 for private swimming pools and spas. Furthermore, deaths in private swimming pools and spas were subject to a number of joint coronial inquests that resulted in the formulation of recommendations to the Attorney-General for distribution to the relevant ministers. It was often some of these recommendations that provided the impetus for change.

It is hoped that in the future coroners will utilise the NCIS extensively to identify similar cases and further embrace their important role in injury prevention, particularly in rural areas. Drowning deaths in rural areas are problematic as the population is over-represented in terms of unintentional injury and local magistrates, who act as coroners in these areas, do not have access to previous case information and sometimes do not address prevention in their findings. It has become important in Victoria for the State Coroner’s Office to assist the rural coroners by providing them with research that has been undertaken.

A recent example of how the coronial process facilitated raising awareness of drowning in rural Victoria was during an inquest into the death of a young child in an irrigation channel in Mildura (a town on the north-west border of Victoria and New South Wales). The coroner made available to all parties involved in the case, including the media, a copy of research undertaken into drowning of young children in dams. The risk factors identified from this study were relevant to the investigation and were published on the front page of the local newspaper. This was an effective means of raising awareness of drowning risk factors that are widespread throughout rural and regional Victoria. It was tragic that it took for another child to drown for such information to be publicised.

Two research projects were also undertaken in relation to commercial and recreational water vessels. All deaths that occurred on commercial vessels in Victorian waters between 1991 and 2001 were examined. The results of the study revealed that the majority of deaths resulted from drowning and of men working in the commercial fishing industry. The major contributing factor in these deaths was the absence of personal flotation devices (PFDs). The results also illustrated that the reasons fishermen would not wear PFDs were because they were cumbersome and interfered with their ability to conduct their work. It was recommended that design issues be addressed in
conjunction with the industry and that improved PFDs be trialed by the industry to determine suitability.

This recommendation was taken up by WorkSafe who funded a Fishing for Safety forum that was held across Victoria (including three regional locations) during March and April 2003. The aim of the forum was to raise awareness of the dangers associated with not wearing PFDs and encourage their use in the future. The forum consisted of PFD demonstrations from the three Australian manufacturers, followed by discussions aimed at determining whether the currently available products would suit their needs. Since the forums, WorkSafe has funded a PFD trial involving 144 vessels across Victoria due to begin before the end of 2003.

In relation to recreational water vessels, all fatal incidents that occurred in Victorian waters between 1999 and 2002 were examined. The purpose of the investigation was to identify factors contributing to these deaths and examine safety practices and behaviours of the individuals involved. The primary issue of interest was the availability and use of personal floatation devices (PFDs) by the individuals who died in recreational vessel incidents. The presence and prevalence of alcohol consumption, co-morbidity (pre-existing illnesses), and the prevailing environmental conditions were also considered. Forty deaths occurred from 30 incidents during the study period, primarily in vessels measuring less than 6.5 metres in length. Adult males were over-represented, particularly those aged between 20 and 29 (20%) and 40 and 49 years (23%). In most instances, the deaths resulted from a combination of three factors: hazardous environmental conditions; vessel occupants suddenly and unexpectedly entering the water; and absence of personal flotation device (PFD) use.

It was recommended the National Marine Safety Committee (NMSC), as part of their Review of PFD Standards for Recreational Vessels, determine whether Australian Standard 1512 for personal flotation device (PFD) Type 1 adequately provides for the safety of the user; and whether the PFDs that currently conform to Australian Standard 1512 are of a standard that allows users to wear them comfortably at all times or able to be easily fitted in the event of an emergency (i.e. in the water). It was also recommended that in the event that Australian Standard 1512 is improved to at least the International Standard or the International Standard is adopted in Australia, Marine Safety Victoria mandate compulsory wearing of PFDs in vessels measuring up to and including six metres in length. Finally it was recommended that Marine Safety Victoria enhance education of vessel operators regarding their responsibility for passenger safety and that Marine Safety Victoria, the Royal Life Saving Society Australia and other water safety organisations raise awareness of the dangers of alcohol consumption in and around aquatic environments.
Overall the research undertaken has illustrated that drowning risk factors still exist and there is potential for preventable deaths to continue to occur. Water-safety agencies have an important role to play in ensuring that drowning issues maintain a high profile. They must continue to work together, not only within Victoria but also across other jurisdictions. A number of drowning prevention programs have been implemented in New South Wales and Western Australia and given the similarity between some drowning incidents, particularly in relation to children, their programs could be implemented and evaluated in Victoria.

Improvements could also be made to death investigation processes undertaken for the coroner. The National Minimum Data Set for police investigation developed by the Monash University National Centre for Coronial Information has been trialed in two Victorian police stations and has the potential to provide more systematic information and on a national level. Following from the research undertaken into commercial and recreational vessel fatalities, the State Coroner's Office is liaising with the Water Police and Marine Safety Victoria (MSV) to develop standard protocols for fatal marine incidents. This is being undertaken to ensure that expert information on contributing factors such as environmental conditions and safety equipment is provided to the coroner in an accessible and timely manner.

Another important death investigation issue that requires monitoring is the role of alcohol and drugs and co-morbidity in drowning deaths. Contribution of these factors is a difficult issue, however it may be beneficial to involve forensic medical and scientific experts to assist with accurate determination. Future monitoring of deaths and injuries in a systematic and consistent manner is important in order to remain aware of contributing factors as they arise and to evaluate water-safety programs. In particular, future research and awareness should focus on drowning in the elderly (60+ years), drowning in rural and regional locations and drowning involving water vessels.
Introduction

Issues surrounding liability and water safety were thrust into the public spotlight in 2002 when a NSW Supreme Court jury found the City of Waverley liable for the injuries suffered by a swimmer who dived into a sandbank at Bondi Beach. This decision occurred at the peak of a period commonly described as the "public liability crisis" facing Australian society in general, and providers of sport and recreational services in particular.

At around the same time as the jury was handing down their decision in Swain v Waverley City Council state and federal legislators around the country were penning reforms to the nation's laws in attempt to alleviate the pressures of increased insurance premiums on community organisations, and provide for greater personal responsibility on those who seek to enjoy the benefits of participation in "risky activities".

Scope of law reform

As at the middle of 2003, Australia now boasts a raft of tort law reform, the likes of which have rarely been seen in such a short period of time. Given Australia's federal structure, the law reforms vary between state and territory jurisdictions and reflect varying philosophies and degrees of commitment by the respective state governments.

Law reforms relevant to the context of water safety include:

- Restatement of the principles of negligence and duty of care in the case of obvious risks and recreational activities;
- Legislation providing immunities from liability for volunteers and good samaritans;
- Variation of the duty of care in respect of persons who are under the influence of drugs or alcohol;
- Amendments to laws designed to improve the enforceability of waivers; and
- Legislation dealing with obligations of public authorities responsible for public facilities and areas used by the public

The reforms have been introduced via the amendment of existing legislation (eg Trade Practices Act (1974) Cth) and also via the enactment of new purpose specific legislation (eg the Civil Liability Act (2002) NSW).

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11 This paper is represents a summary of information to be presented by the author at the 2002 National Water safety Conference. It does not intend to provide an exhaustive summary of all law reforms in relation to civil liability, rather a selection of reforms considered appropriate to water safety organisations by the author. Interested persons may contact the author for a more detailed summary table of the recent civil liability reforms.
**Obvious risks**

Civil liability legislation in a number of jurisdictions has sought to limit the possibility of liability in negligence for failing to warn a person of an obvious risk. In an attempt to provide certainty as to the manner in which courts will consider duty of care issues, such legislation creates a presumption that a person who suffers harm is aware of the risk if the risk was an obvious one within the meaning of the relevant legislation.

For example, the *Civil Liability Act (2003)* Qld describes an obvious risk as including those risks that are patent or a matter of common knowledge even though they may have a low probability of occurring.\(^{12}\)

Legislation in respect of "obvious risks" will not generally require that a plaintiff was aware of the precise nature, extent or manner of occurrence of the risk merely that the plaintiff was aware of the type or kind of risk described as obvious.

The law reforms go further to also remove any proactive duty to warn of an obvious risk. In this sense a person or organisation (defendant) does not owe a duty to another person (plaintiff) to warn of an obvious risk to the plaintiff, except in certain prescribed circumstances.\(^{13}\)

In a water safety context then, depending on the jurisdiction it may be the case that if conditions or circumstances in an aquatic environment are not out of the ordinary and are commonly known, then a person injured will be deemed to have been aware of such a risk in any determination of liability for negligence.

For example, if the presence of sandbars, submerged rocks or inconsistent water depth are considered to be obvious risks in an area there will be no duty on the part of a water safety provider, council or other public authority to warn a potential plaintiff of that risk.

**Risk warnings for recreational activities**

Some states have also introduced provisions that deal with the limitation of liability in respect of injuries sustained by persons whilst undertaking recreational activities where a risk warning has been provided.

For example, the *Civil Liability Act (2002)* Tas provides that a public authority does not owe a duty to a person who engages in a recreational activity to take care in respect of a risk if the risk was the subject of a risk warning to that person.

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\(^{12}\) See also *Civil Liability Act (2002)* Tas & *Civil Liability (Personal Responsibility) Act 2002* (NSW)

\(^{13}\) Such as where the plaintiff has requested specific advice or information about the risk from the defendant.
In this context "recreational activity" has been given a broad definition to include any sport (whether organised or not) and any pursuit or activity engaged in for enjoyment, relaxation or leisure.

Importantly, the public authority is not required to establish that the person received or understood the warning or was capable of receiving or understanding the warning. Further, a risk warning can be given orally or in writing, including by means of a sign or otherwise and need not be specific to the particular risk and can be a general warning that includes the particular risk concerned. Finally, a risk warning will be of similar effect in the case of children if the parent of the child or another competent person is accompanying that child at the relevant time.

There are a number of situations in which a public authority is not entitled to rely on a risk warning, including if it was reckless, made contradictory representations about the risk or if the person was required to engage in the recreational activity by the authority.

The above principles have been extended beyond public authorities to any person or organisation responsible for the conduct of recreational activities in other jurisdictions with some minor variations.¹⁴

**Volunteers and safety authorities**

Each state and territory in Australia has now enacted legislation which provides for the protection of volunteers from civil liability in certain circumstances. Whilst the exact operation of the various legislation differs, the same principles apply.

Generally it is the case that where a volunteer is performing his or her voluntary duties in good faith on behalf of a community organisation, that persons will be immune from civil liability arising as a result of their actions. Definitions of "volunteer" "community organisation" and "community work" are used throughout the different Acts and often require that the community organisation be incorporated in order to attract the immunity for the volunteer. The rationale being that the volunteer's liability is transferred to the community organisation which should be incorporated to protect the personal assets of the organisation's members and officers.

Common exceptions to the operation of volunteer immunity provisions include where the volunteer is under the influence of drugs or alcohol, committing a criminal offence or shows wilful disregard for the personal safety of another person.

Some states have also extended immunity from civil liability for volunteers to also include certain safety organisations on whose behalf the volunteers act. For example, the Civil Liability

NSW has provided for the amendment of the *State Emergency and Rescue Management Act (1989)* NSW to provide a good faith immunity from civil liability for accredited rescue units. Accredited rescue units are defined to include organisations involved in the provision of surf lifesaving services.

**Waivers**

There has been significant debate about the use of waivers in sport and recreation and in particular, whether or not such documents are "worth the paper they're written on." Clearly, the intention of law reform by some states and also the federal government is to provide greater enforceability of waivers and uphold the ability of an individual to effectively contract out of rights they might otherwise have exercised as a result of suffering personal injury or loss.

The *Trade Practices Act (1974)* Cth ("TPA") and its state equivalent forms of legislation have traditionally undermined the enforcement of waivers by virtue of provisions which imply terms of fitness for purpose and due care and skill into contracts of service entered by consumers. The federal government has now amended the *TPA* by providing that contracts for the supply of recreational services may exclude the implied terms otherwise required to be upheld in contracts for services in other industries.

Importantly, the rights of an injured person to sue for negligence or breach of other provisions of the *TPA* (such as misleading an deceptive conduct) are not affected by these reforms.

Similarly, state governments have sought to mirror the commonwealth position by amending state fair trading and sale of goods legislation. Such amendments have taken a variety of forms, perhaps the most noteworthy being that of the Victorian amendments which have sought to impose a standard form waiver to be used by sport and recreation organisations. Evidence from the sport, legal and insurance industries is that such forms are not being used and the author understands that this approach is currently being reviewed.

**Other reforms**

A range of other reforms have been made to the civil liability landscape in Australia in response to a review of the law of negligence led by Justice Ipp of the NSW Supreme Court. Some states have been quicker than others to adopt the reforms recommended in the report of Justice Ipp, however the respective Ministers responsible for finance in each state have collectively committed to their implementation. In addition to dealing with concepts of "obvious risks" as detailed above,

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15 See the *Wrong and Other Acts (Public Liability Insurance Reform) Act 2002* Vic which amends the *Goods Act 1958* (Vic).

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such legislation has included modification of the duty of care owed to persons who are injured whilst under the influence of drugs or alcohol or committing a criminal offence.\textsuperscript{16}

These reforms to the law of negligence described above are in addition to legislation regulating the role of lawyers in bringing "unmeritorious claims" on behalf of clients\textsuperscript{17}, provisions dealing with caps on damages awards\textsuperscript{18}, reduction of limitation periods\textsuperscript{19} and minimum thresholds for injuries\textsuperscript{20}.

**Relationship with case law**

In recent months we have seen a number of court decisions handed down in the context of aquatics which might be seen as reflecting a shift in judicial consideration of the issues involved in liability and water safety.\textsuperscript{21}

For example in Swain's case, the NSW Court of Appeal found that it was common knowledge that variations in the sand on surfing beaches can include certain channels and sandbars and that the evidence in this case was that the conditions of the channels and sandbars where the respondent was injured were not materially different from those encountered there on previous hours, days, weeks, months or years, or that they were unusual or more dangerous than those which would be encountered on other surfing beaches in Australia.

In other words, a sign or other warning of the existence of channels and sandbars would not have notified the injured party of something that he did not already know, and therefore could not be used to sustain an argument of negligence on the part of Waverley Council.

The similarities between the rationale adopted by the NSW Court of Appeal in Swain's case with the legislative reform regarding concepts of obvious risk and risk warnings identified are apparent and indicative of the approach of Ipp J to these issues.

**Implications for water safety agencies and providers**

The legislative changes briefly covered in this paper are not the sole solution to countering spiralling insurance premiums and increased claims in the aquatic industry. Organisations involved in water safety will need to carefully consider the non-legal implications of the implementation of such law reform and risk management strategies. Issues such as cooperation

\textsuperscript{16} See for example *Civil Liability Act (2002)* Tas
\textsuperscript{17} See for example *Civil Liability Act (2002)* NSW
\textsuperscript{18} See for example *Wrongs and Other Acts (Public Liability Insurance Reform) Act 2002* Vic which amends the *Wrongs Act 1958* (Vic).
\textsuperscript{19} See for example *Wrongs & Limitations of Actions Acts (Insurance Reform) Act (2003)* Vic
\textsuperscript{20} See for example *Civil Liability Act (2002)* WA
and risk apportionment between local councils, facility operators, hirers and users will most likely become more paramount than ever before, let alone the philosophical issues and barriers to participation which might result from the shift to personal responsibility and risk mitigation.

As a minimum, organisations involved in water safety should seek formal advice as to their position in the liability landscape and how the new legislation might impact on the organisation and its operations. Such bodies should then seek to maximise any protection available to them or their personnel by modifying existing operations and risk management techniques accordingly. Furthermore, water safety organisations should inform their personnel of law reforms such as volunteer protection legislation which may impact on their involvement in water safety activities.
Dedication

To the memories of Molly and Ben Wilson and Catherine and Belinda Leahy. May they rest in peace and may their tragic passing serve as a reminder of how easily life can be taken away.

To Derek Wilson, I know it goes through your mind every day.... if only, if only.... a number of little things could have changed the outcome of that day. To you and Mary, I thank you for your amazing support, guidance, and motivation to make a difference and to strike an ‘if only’ off the list for someone else.

Brett Ellis
Surf Lifesaving Victoria

Water Safety Signage Trials

On January 8th 1998 two sisters, Mary Wilson and Sharon Leahy, left their Melbourne suburban homes in two vehicles with their 11 children. They were heading to the Mornington Peninsula for a day at the beach and had intended to go to Rye Beach, however became lost along the way and ended up at the entrance to Gunnamatta Beach. The attendant at the park tollbooth collected the toll and informed Mary that the beach was patrolled. The cars pulled up at the car park and then as Mary and Sharon unloaded the car and organised the infant twins, the older children (the eldest being 17 years old) excitedly bolted over the dunes to the beach. Both Mary and Sharon believed it was patrolled and they had issued clear instructions to the children. What Sharon and Mary didn’t know was that they had entered the first of two parking areas. The patrolled beach was at the second car park, a further 800m down the road.

On the way to the surf the children passed a man with red bathers on whom they presumed was a lifeguard. They entered the water where other people were swimming on a shallow sandbar. Within seconds of entering the water a large set of waves built up and had washed the children into a rip, which quickly pulled them out to sea. Of the seven children, tragically two drowned, two were never found and three were rescued by lifesavers that had been called to the area from the neighboring patrolled beach.

Signage has played an important role in risk and safety management of recreational areas and aquatic locations around Australia and the world. The presentation will review and present the
finds of two water safety signage trials that have taken place over recent years in Victoria. The signage trials have been conducted across a number of coastal and inland waterways, and have had a major impact on the methodology now being used to review and promote aquatic safety signage across Victoria and is starting to impact nationally.

**Signage is important for three reasons:**

I. It informs users of dangers, safety issues and other relevant information.

II. It offers some protection to the land manager and venue operator from litigation because of the duty of care owed by the land manager to warn users of dangers, prohibitions and other safety information.

III. It provides an economical alternative to that of employing a person to stand at every access track into the reserve and inform people of dangers.

Over many years, land managers and venue operators have introduced signage that has taken many different shapes, sizes, and colours. Symbols, wording, and sign location have differed greatly.

The trials conducted, systematically look at the methods use to determine the appropriate signage and systems to promote effective delivery of the key water safety message. These trials have also lead to the development of a manual that gives a clear guide to land managers and venue operators of a best practice signage system that uses existing standards and risk management principles for aquatic and recreational signage.

These trials have had a wide impact across many different agencies in Victoria, this has built on the many previous cross agency projects as part of the Play it Safe by the Water campaign.

The signage trials were driven by Royal Life Saving Society Victoria Branch (RLSSA-V) and Surf Life Saving Victoria (SLSV) and both agencies under the Lifesaving Victoria banner will continue to drive the educational push which has evolved from the trials.

**Trial Methodology**

The scope of works undertaken during the trials by RLSSA-V and SLSV and consultants include:

- Signage field inspection;
- User surveys at all locations;
- Stakeholder interviews in respect of all locations;
- Focus group meetings.

**Signage Field Inspection**

The signage field inspection of the trial water safety signs involved:

- Checking the signs against the audit provided by RLSSA-V or SLSV;
- Visual inspection of the signs in terms of graphics, installation and positioning;
- Recording any imperfections, deterioration, misplacement, or vandalism of the signs;
Recording and plotting the position of other signs in the locality.

**User Surveys**

User surveys were developed to correspond to the selected trial locations. The surveys comprised 20 multiple choice and short answer questions and aimed to establish user information relating to the:

- Nature of visit to the lake;
- Activities undertaken on/around the lake;
- Level of return visitation to the lake;
- Group composition;
- Recollection of the trial water safety signage;
- Recollection of hazards and prohibitions on the trial water safety signs;
- The quality of the location, colour, size, readability and amount of information on the trial water safety signs;
- Recollection of recent water safety information or publicity;
- Age category of respondents;
- Occupation of respondents;
- Origin of respondents;
- Presence of children under the age of 18 in the household.

Weekend visits were targeted when weather was forecasted to be warm to hot to ensure a large number of people would be present at the waterways. Notwithstanding, at certain locations the number of visitors present was limited and this impacted on the number of surveys that could be obtained.

**Stakeholder Interviews**

Telephone interviews were conducted with the relevant Committee of Management representatives from each location. The interviews were aimed at determining satisfaction with the signs and identifying any refinements, including sign placement and information presented.

**Focus Group**

Focus group meetings were conducted and attended by a mix of waterway users and non waterway users to obtain feedback about the effectiveness of the signs and to identify any refinements to the signs.
Summary of key findings

1. Strong support for the concept of establishing a standard water safety sign in Victoria emerged through the survey, focus group research, and discussions with Committee of Management representatives.

2. A comparison of results between the Trial Beach Signage Project undertaken in 2001 for Surf Life Saving Victoria and the Trial Inland Water Signage projects shows that:
   - A slightly higher proportion of inland waterway users saw the trial signs (63%) compared with beach users (54%);
   - Of those respondents who saw the signs, the proportion of people who actually read the signs was similar for both trial signage projects: 61% of respondents stopped to read the trial beach signs and 59% of respondents stopped to read the inland waterways signs;
   - Recall of the hazard and regulation information was generally higher amongst beach users who had read the signs compared with inland waterway users who had read the signs;
   - Recall of sign information was much higher in both surveys if people had actually stopped to read the signs, particularly at the inland waterways.

3. Of the respondents who did not read the trial water safety signs, about half of these people did not read the signs because they were “not interested” and about one third stated that they did not read the sign because they were “familiar with the local area”. Other reasons given for not reading the signs included “busy watching children”, “concentrating on driving” and “the signs didn’t apply to me”. This indicates that there is a general lack of interest in reading the signs due to people’s familiarity with the area and distractions caused by other activities. A publicity campaign is needed to raise awareness of the new water safety signs.

4. Recall of hazards and regulations was generally poor, but higher if people had actually stopped to read the signs. The hazard symbols with the strongest recall were “shallow water” and “submerged obstacles”. The recall of hazards and regulations was generally less than 20% at all the locations.

5. The surveys revealed a high level of satisfaction in terms of the location, colour, size, and readability of the signs as well as the amount of information displayed. All of these features received positive feedback from over 75% of respondents. Stakeholders contacted as part of the project also reported positive feedback from waterway users about the appearance of the signs.

6. Field observations and consultation with stakeholders indicates that sign hardware and installation is generally very good, with no evidence of deterioration or major damage. To date,
the graphics show no signs of fading or deterioration. The use of concrete footings is recommended and should be used for all future sign installations.

7. Field inspections indicate that the sitting of signs at waterway locations is a critical issue in terms of the likelihood of being seen and read. In relation to the choice of sign locations, the following comments are made:

- Choice of signs (i.e. composite paddle, car park signs) need to respond to the access arrangements that exist at many waterways. For example, large car park signs should be considered where access can be gained over multiple large areas;
- Signs should be installed at a comfortable reading height.

8. It is important that Committees of Management continue to be involved in the finalisation of text, symbols and sign locations to ensure the accuracy and effectiveness of the information.

9. The focus group research for the beach signage project identified a range of possible improvements to the trial signs, a number of which were subsequently included in the trial inland waterways project. The inland water safety signage focus group identified a number of additional improvements to meet specific issues in respect of inland waters, including the following:

- Greater use of colours such as red or the red/yellow lifesaving colours would make the sign more eye catching (this was also recommended as part of the trial beach signage evaluation but was not incorporated in the trial inland water safety signs);
- Large amounts of small text are difficult to read at a glance and should be kept to a minimum;
- The use of changeable inserts for information relating to temporary and local waterway conditions would increase peoples’ motivation to read the signs;
- It is important to ensure consistency and accuracy of wording, signs and symbols for all new water safety signs;
- Reflective material should be used for the words and symbols to allow the signs to be read at night.

10. The focus group felt strongly that the rollout of the new signage should be accompanied by a promotional and marketing campaign to raise awareness of the signs. The focus group also emphasised the importance of pre-warning water users of the existence of the signs before they reach the water, which could be achieved through displays at shops and services in the local areas. It is highly likely that a promotional campaign will increase the effectiveness of the signs. User surveys indicate that a higher proportion of respondents (almost 80%) recalled seeing / hearing some form of water safety publicity in recent times.
Teresa Stanley

WaterSafe Auckland look forward to presenting the following programmes in a detail at the forthcoming Australian Water Safety Council Conference.

WaterSafe Auckland Inc is the northern regional organisation in New Zealand working extensively in injury prevention and water safety. Educational strategies extend from preschool to tertiary providers. Community initiatives take a collaborative intersectorial approach and assist local bodies, community organisations together with the educational sector targeting preschool children and their families, the school community, new immigrants and other at risk groups.

School Initiatives -

Yrs 1 – 8 including school management and governing body:

Part 1: Water Safe Policy for Schools to guide principals and boards of trustees to make their schools water safe through a commitment to the teaching of quality aquatic programmes; staff development in aquatic skills and water safety and improved supervision systems for teachers and adult volunteers assisting with Outdoor Education.

Part 2: The WaterSafe Guidelines for Schools offers teachers specific practical information for conducting aquatic activities, planning for safety and a unique supervision system - The Rainbow System to improve safety during aquatic activities.

Part 3: The Rainbow System for teachers and adult volunteers involved in aquatic supervision. Based on a simple colour coding system for identification of students the Rainbow System video highlights the key skills and experience required by the teacher in charge; training of adult volunteers in water supervision techniques and signs of distress in water through to a planned and practiced emergency system.

Targeted educational programmes:

Designed to meet student needs and achievement objectives from the Health and Physical Education in the New Zealand Curriculum document.

1. ‘WaterSense’ – new entrants
2. ‘In at the Deep End’ - practically based programme to develop deep water skills, attitudes and behaviours in older students (year 7 and 8) prior to Aquatic Outdoor Education experiences.
Early Childhood Initiatives -

The PreSchool Water Safety Kit - designed specifically for Early Childhood Education Centres by the Child Safety Foundation of New Zealand in partnership with WaterSafe Auckland. This colourful teaching kit delivers five key child centered water safety messages. It is available with the messages in English or 5 new immigrant languages:

1. Turning on the taps is a grown up’s job – bath
2. I need a grown up before I get in – pool
3. Hold hands near the creek – environment
4. Hold hands between the flags - beach
5. I always wear a lifejacket out on the water - boating

The kit has been extensively evaluated to show between 80% and 95% retention of knowledge by the children and positive changes in behaviour.

Water Hazard Mapping Project uses high-tech as an effective strategy to enhance water safety culture and to provide opportunities to adopt safer behaviours for those taking part. The mother of a twin boy who drowned said that if she had known that the water danger was nearby she would have acted differently when tending to her two children. This information may have saved a life.

The latest GIS (Geographical Information System) mapping system is used to transfer water hazards such as storm water drains and ponds, drain inlets and outlets, home swimming pools, streams, creeks and tidal waterways on to A1 colour, laminated maps. Early Childhood centres receive a kit including these maps as well as parent and teacher information and maps for each child. The collaborative approach of this programme has been the key to its success.
Mary Potter Forbes

The Cost of Drowning: A Methodology to Value the Years of Healthy Life Lost To Drowning and an Estimate of the Cost to NSW based on 1998-1999 Data

Author:

Mary Potter Forbes, NSW Injury Risk Management Research Centre, UNSW

In the cost-of-injury study just completed at the NSW Injury Risk Management Research Centre it was estimated that the total lifetime cost of all drowning incidents that occurred in 1998-1999 in NSW was $72 million. This represented an average cost of $300,000 per injured person. The study valued not only the direct health system costs but also the costs associated with mortality and morbidity. Mortality costs were by far the most significant costs for this particular mechanism, given that near drownings were rarely reported and produced very little morbidity. Recorded drownings were invariably fatal and so the costs associated with this mechanism were those costs associated with lost future work and lost life generally. This paper presents the methodology developed in the study to value these costs – a methodology which provides a practical alternative to the shortcomings of the human capital approach and which involves monetarily valuing the disability adjusted life years lost to the injury mechanism by the production of a cost multiplier derived from an injury specific value of a statistical life.

Note: Co-Author of the Report into the Cost of Injury in NSW 1998-1999 was Mr Chris Aisbett, LAETA Pty Ltd, Consultant Statistician to NSW Injury Risk Management Research Centre
An Overview of Actions of the Queensland Government Irukandji Prevention and Response Working Group

In response to this year’s severe stinger season, and in particular, the fatalities of two international visitors from ‘Irukandji Jellyfish Syndrome’, Tourism Queensland coordinated the first meeting of a whole of State Government response to this issue on Wednesday 8th May 2002. This meeting discussed current marine stinger actions being undertaken by government agencies, community organisations (particularly Surf Life Saving Queensland) and operators, in the areas of community education, research and physical barriers.

Due to the large number of stakeholders involved, it was agreed that there was a need to adopt a collaborative and coordinated approach to this issue amongst all stakeholders. These include all relevant Queensland Government agencies at all levels of Government (i.e. local, State and Commonwealth), research institutions, community organisations, regional tourism authorities and tourism operators in North Queensland. A Queensland Government Irukandji Jellyfish Response Taskforce was established to achieve this coordinated approach, along with two working groups – a Research Working Group and a Prevention and Response Working Group.

The primary role of the Prevention and Response Working Group was identified as being the development of a coordinated education program with the specific target group of tourist education.

The purpose of developing a coordinated education program was to enhance visitor and community safety by:

1. Raising the overall awareness of existing and potential health and safety issues associated with sharing an environment with marine stingers that may present a hazard.

Assisting in the risk management process.

Standardising safety messages to reduce the potential for confusion within the community.

Providing educational material and resources that are relevant and appropriate to different target groups.

The presentation aims to provide an overview of the actions of the Queensland Government Irukandji Prevention and Response Working Group.
**Fran Rein**

**Topic: The Waterways Authority’s new hire and drive system**

In early 2002 the Waterways Authority introduced a new licensing system to regulate hire vessel operations within NSW.

The new system consolidates a number of previous methods of regulating hire activities and creates a level playing field for all operators, irrespective of the type of vessels within their fleet.

The majority of the state’s hire vessels are small powered vessels but kayak and canoe tour operations are a rapidly growing sector of the industry and one in which the Waterways Authority has not traditionally been heavily involved.

The system attempts to streamline administrative processes but most importantly to improve marine safety outcomes. It does this by standardising the operating conditions while also allowing for sufficient flexibility to tailor certain operating conditions to suit individual circumstances.

Licence conditions typically relate to the suitability of the vessels to the conditions in which it will operate, vessel maintenance; providing instructions and familiarisation to hirers (who are generally non-boaters); the standard of safety equipment carried on board; minimum staff qualifications; hours of operation and plying limits.

The system was developed in partnership with a pilot group of hire operators located throughout NSW, with peak industry representatives including Australian Canoeing and the Outdoor Recreation Industry Council, and with the marine insurance industry.

Given that the system has been operating for over a year, the first audits of the licensed operators is about to commence and the Authority has accredited a group of independent auditors to conduct standardised checks on compliance with licence conditions.

During this period that the system has been operational, the *Civil Liability Act, 2002* has been introduced and the Authority is currently assessing any changes to the system which the introduction of this Act may allow.
Matthew Jones

Investigation into the coronial files of rock fishing fatalities that have occurred in NSW between 1992 and 2000

NSW Water Safety Taskforce/Waterways Authority

Key Words: Rock fishing, Safety, Water Safety, fatality, Coroner

In 1993 the NSW Coroner stated that “Rock fishing has the highest fatality rate of any sport in NSW”. Rock fishing continues to be one of the most dangerous pastimes in NSW having accounted for more than 75 fatalities in the last 10 years.

In recognition of the dangers of this sport and the limited information that is available on rock fishing fatalities, the NSW Water Safety Taskforce (WSTF) agreed that research should be conducted into the causal factors associated with rock fishing fatalities in NSW from 1992 to 2000.

The NSW Coroners Court provided access to all coronial records that involved a rock fishing fatality for the study period. Each file was examined and 51 variables that described the incident and demographics of the deceased were recorded.

The 51 variables that were recorded from each fatal rock fishing incident were separated into 1) Incident details; 2) Deceased details; and 3) Weather conditions at the time of the incident.

This data has been analysed to provide details of the circumstances surrounding rock fishing fatalities and the demographics of rock fishing fatality victims. The outcomes of this research will be used to assist the WSTF in developing better informed solutions and preventative strategies to address the safety of this activity in NSW.

Findings from this research include the location of rock fishing black spots, the causal factors surrounding fatality incidents, the number of people fishing with the deceased, the groups of people most at risk from rock fishing and the extent that safety equipment is used. Further results will be available and presented at the conference.
Ed Kwanten

Lifejackets

Waterways Authority

BACKGROUND:
During 2002 a comprehensive review of all fatal boating incidents reported to the Waterways Authority during the period 1 July 1997 to 30 June 2001 was conducted. This review revealed that, of the 71 fatalities reported during this time, almost 50% could be attributed to some form of fishing activity.

Further research into fatal fishing incidents over a ten year period was then conducted. Research from both studies revealed that the majority of incidents occurred mid to late afternoon and late evening, generally in good weather and calm water conditions. The vessels most often involved were open runabouts up to 5m in length and the most commonly reported incident type was “sinking” (in open waters) and “fall overboard” (in enclosed waters).

The study determined that a greater focus on education, particularly ‘at risk’ groups such as fishermen, was essential.

CURRENT POSITION:
An education strategy was developed to increase the wearing of lifejackets amongst boaters in NSW and increase awareness of situations where lifejackets should be worn.

During this time the Waterways Authority became aware of similar problems being faced in North America and their development of an awareness campaign running in the United States entitled “Boat Smart from the Start – wear a lifejacket”.

With approvals from the appropriate authorities in America, the Waterways Authority adapted the campaign artwork and slogan to suit Trans Tasman needs. The slogan was modified to “Boat Smart from the Start – know when to wear a lifejacket”. This was done to reflect the fact that, in States like NSW, lifejackets are compulsory to carry on board, not to wear. The main challenge is to get boaters to be aware that at times of heightened risk (eg: crossing coastal bars, boating alone at night) the lifejackets should be worn.

COMMENT:
The result was a cost effective multi-media campaign that promoted lifejacket awareness. The campaign was supported throughout Australia and New Zealand to provide an international consistency in this fundamental safe boating message.
Ann Williamson

What can be learned from analysis of the causal patterns of drowning in children?

Ann Williamson, Penelope Irvine and Samantha Sadural

NSW Injury Risk Management Research Centre, University of New South Wales

A total of 82 children under six years of age died as a result of accidental drowning in NSW over a six year period (1999-2001). Using NSW Coroners information, the relationships between factors that caused drowning in under six year olds were investigated. The approach used examined the relationships between causal factors rather than looking at the influence of single factors.

Around 40 percent of these drownings occurred in pools, a further 20 percent in bathtubs, and around 15 percent each in dams and lakes/rivers.

There were some common findings across all drowning cases for this age group, but analysis of the causal patterns of circumstances leading up to the drowning showed differences between the locations of drowning which point to directions for interventions. For all drowning locations, the predominant causal feature was a lack of direct adult supervision of the child in circumstances where the child potentially had access to water. Often this was combined with failures of safety equipment such as pool fences and gates combined with the behaviour of the child themselves. In the case of bathtub drownings, however, the child was almost always under 12 months of age, whereas for swimming pools the child was usually between 18 months to two years.

These results suggest strongly that water safety interventions for young children must re-emphasise the importance of education of parents and carers regarding the location of their children with respect to the accessibility of water hazards. The results also demonstrate that more specific information should be provided to parents and carers on the situations and developmental stages of childhood that are most vulnerable.
Western Australian Water Safety Framework 2002-2006 – A strategic framework for addressing drowning, near drowning and related injuries

Injury Prevention Unit, Department of Health WA

The Western Australian Water Safety Framework 2002-2006 outlines the approach the State will take in preventing drowning, near drowning and related injuries. The Framework is designed to achieve better coordination and cooperation between water safety stakeholders to enhance the effective and efficient use of available resources.

The Framework identifies three key focus areas:

- Water Safety Education and Awareness
- Research and Evaluation
- Standards, Legislation and Enforcement

The Framework has been developed subsequent to:

- Extensive consultation with key Government departments, community stakeholders and service deliverers.
- A review of water safety documents from other states and territories.
- A synopsis of drowning and near-drowning incidents for Western Australia completed by the Department of Health.
- A synopsis of service providers and key stakeholders and their contribution to drowning prevention.

In developing the Framework particular attention has been paid to:

- Determining organisational commitment and alignment to the philosophy of the Framework;
- The relevance of the key outcome areas, objectives and strategic directions for the State, and to their organisation;
- Clarification of roles and responsibilities for each organisation;
- Identification of gaps and areas requiring inclusion in the Framework;
- Discussion and refinement of the processes for implementation and monitoring of the Framework; and
- Completion of the Matrix of Current Activities in Water Safety.

The next steps to successfully implementing the Framework are to establish a subcommittee and develop an action plan for each strategic direction, monitor implementation and ensure evaluation.
Christopher Coxon

Adventures in Regulatory Diving

Adventure workplaces, as distinct from amusement devices, are a major part of the Queensland tourism industry. Recreational diving and snorkelling form its most prominent sectors. The nature of occupational health and safety management of adventure workplaces requires an acceptance of risk as a necessary part of the activity.

However the increasing opportunities for relative novices to participate in these activities, particularly where environmental and individual factors can play such a significant role will lead to incidents that attract a high degree of both public and regulatory concern.

Workplace Health and Safety has had a regulatory role within Queensland's recreational diving and snorkelling industry since 1989. The Department has moved from a solely regulatory framework to code of practice and most lately to a combination of both regulation and industry code of practice. The Department has sought to improve safety standards, particularly affecting the most vulnerable participants, without impacting significantly on the fundamental nature of the adventure.

Determining whether this goal has been met satisfactorily is difficult to determine but the lessons learned on the way are useful to dive and snorkel operators, other adventure workplaces and risk managers.
Katrina Haddrill

Perceptions of water safety of individuals from CALD backgrounds and tourists to NSW

Katrina Haddrill1, Rebecca Mitchell2

1 NSW Department of Sport and Recreation.
2 Injury Prevention and Policy Branch, NSW Health.

The National Water Safety Plan identified people from culturally and linguistically diverse (CALD) backgrounds and tourists to Australia as two population groups with a high risk of drowning.

There is minimal reliable information regarding the incidence of drowning in individuals from a CALD background. However, an analysis of all drownings in Australia found that during 1992-1998 119 tourists drowned – the majority in open water in Queensland and NSW.

In NSW, little was known regarding whether or not current key water safety messages were meaningful or effective with CALD communities or about this group’s perceptions of water safety. Also there was no information about water-related activities undertaken by tourists visiting NSW.

Census data shows that Chinese languages (Cantonese and Mandarin) are the most common languages spoken in NSW, other than English. A series of 5 focus groups were held with Chinese individuals of different ages and genders to determine their awareness of water safety issues, current water safety practices/behaviours, current water safety attitudes, and impact of current water safety messages.

Also a series of random structured interviews were conducted with Chinese tourists departing Sydney International Airport to determine if they undertook any water-related activities in NSW, current water safety practices/behaviours, impact of current water safety messages, and what some of the Australian Standard 2416 water safety signs meant to them.

Responses from the focus groups and interviews will be presented at the conference, along with recommendations from key Chinese community groups and other stakeholders that have been used to develop strategies aimed at reducing drowning deaths of individuals from a CALD background in NSW.
Marilyn Lyford

Preventing drowning and promoting safety in Aboriginal communities.

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Introduction: For the past three years, Royal Life Saving has managed aquatic facilities in three remote Aboriginal communities in Western Australia, on behalf of the Department of Housing and Works. Whilst the provision of swimming pools may alleviate many health problems, communities need to be aware of not only the benefits in and around aquatic environments, but also the associated risks of drowning and near drowning.

Purpose: Drowning is ranked the second most common cause of injury death and is three times higher than other Australian children aged 0-14 years. In rural and remote areas, deaths have been reported to occur in aquatic surroundings including rivers, creeks, waterholes and dams.

Method: Recreational, educational, social and training programs are being implemented and include water polo, ‘Swim a Survive’ learn to swim, resuscitation and Traineeships in Sport and Recreation. Swimming and lifesaving carnivals provide opportunities to further develop the children’s water safety and life saving skills.

Results: Health checks conducted by the Telethon Institute for Child Health Research reveal that there has been a marked improvement in the overall health conditions of the children since the pools have been built. The aquatic facility has become the ‘hub’ of each community, offering a meeting place within a safe and healthy environment.

Conclusion: With effective management and appropriate programs, the provision of aquatic facilities can increase community capacity and enhance community health.

Furthermore, these results have provided Royal Life Saving with valuable experience and impetus to develop and promote Indigenous swimming and training programs in both rural and metropolitan Western Australia. Progress to date on these new initiatives will also be presented.
**Max Wells**

**VICTORIAN INDIGENOUS WATER SAFETY & SURFING PROGRAM**

To set up a statewide indigenous surfing program that exposes and creates opportunities for young aboriginals to develop water safety skills and discover the sport of surfboard and bodyboard riding.

**Background**

Surfing Victoria in partnership with Sport and Recreation Victoria (SRV) and Victorian Aboriginal Youth Sport and Recreation (VAYSAR) have been conducting activities and developing programs relating to introducing young Victorian aboriginals to surfing for the past three years.

The evolution of the program has seen the running of and finding a home for the Victorian Indigenous Surfing Titles (now held in Warrnambool each February). The training of Level 1 Surfriding Coaches from within the Koori Community, the facilitation of surfing as a key activity within a major statewide camp in partnership with a major Victorian University and the development of a coastal water safety and surf skill development program.

This program is broken into elements

1. Participation and Skill development
2. Access to facilities and competition structures
3. Research and Development

**KEY PRINCIPALS**

1. Sustainability
2. Community approaches and Partnerships
3. Long term vision

Currently VIS is growing in strength and has a long term plan to be a key element of the Surfing Victoria overall state surfing development program.

The relationship between Surfing Victoria, SRV and VAYSAR the surfing industry, local indigenous communities and ATSIC representatives (the ATSIC chairman has attended two of the last three state titles) and all involved is very positive and all parties are working co-operatively together.
Jenny Blitvich

Water Safety and Diving Safety – Preventing injury through teaching safer diving

Authors: Jenny Blitvich*, G. Keith McElroy* and Brian Blanksby#
Affiliation: *University of Ballarat; #The University of Western Australia

Key words: diving spinal cord injury; water safety; injury prevention; safer diving skills

Diving is the leading cause of sport and recreational spinal cord injury (SCI) in Australia, resulting in approximately 25 cases of tetraplegia (quadriplegia) annually. Typically, the injured person has self-taught diving skills and is unaware of both the potential dangers of diving and the skills required to perform ‘low risk’ dives. This paper describes research evidence of the success of a short intervention program for teaching safer diving, which has been adopted by AUSTSWIM. It also provides details of the program.

Methods:

Thirty-four young adult recreational swimmers, previously identified to have poor diving skills, completed seven 10-minute diving skills sessions. The intervention program was based on an earlier investigation of more than 300 dives, which established characteristics of ‘low risk’ and ‘high risk’ dives. Skills sessions emphasised locking hands together (“Lock hands”); extending arms beyond the head to lock the head in position (“Lock head”), and developing steering and gliding skills (“Steer-up”). Following acquisition of these skills, progressions for head first entries were included.

Four dive entry conditions were video-recorded and maximum depth reached was used as the criterion measure. All participants were invited to follow-up evaluations of diving skill level eight- and 20-months after the program. Twenty-two returned at eight-months and 21 attended at 20-months post. Repeated measures ANOVA was used to compare dives. No formal practice occurred in the intervening period.

Results:

Maximum depth decreased for all dives (p<.05) following intervention. Hands separated in 71% of dives pre-intervention but only 3% post-intervention. Pre-intervention, the dangerous action of pulling arms backward before maximum depth occurred in 30% of dives, leaving the head completely unprotected. This was eliminated following intervention.
Conclusion:

The simple, time efficient intervention program described in this paper has the potential to significantly reduce the incidence of diving SCI. Diving safety was improved and maintained over time, without the need for on-going practice.
Judith Green

Government Subsidised Water Safety Awareness Program for child under 5

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Description
The Water Safety Awareness Program (WSAP), is a Northern Territory Government subsidised initiative that will be available to Territorians with children under five. The subsidy will entitle eligible parents/guardians to participate free of charge, in a series of five structured lessons as part of the ‘Parent and Child Water Safety Awareness Program’. The program will have a flexible delivery so that it is inclusive of remote areas.

Background to Subsidy
In June 2002, the Chief Minister the Hon Clare Martin, announced a Five Point Water Safety Plan to help prevent children drowning. This followed pressure from local aquatic providers and recommendations made by the Australia Water Safety Council. The five point plan included the introduction of swimming pool fencing legislation to Australian Standards, the establishment of a Water Safety Advisory Council to advise Government and a government subsidised water awareness program for child under 5.

The Northern Territory Water Safety Advisory Council (NTWSAC) was directed to devise a scheme that would support the subsidy. The NTWSAC consulted with the RLSSA NT and a Water Safety Awareness Program was developed that will be released in the Northern Territory in October 2003.

General Information
The five elements in the prevention of drowning of under fives are pool fencing, supervision, water familiarisation, resuscitation and education. In conjunction with recent pool fencing regulations, the aim of the WSAP is to capture the other elements and reduce the high rate of drownings in the Northern Territory.

The WSAP, which is designed to be accessible to all Territorians, is not a learn-to-swim program, nor will it ‘drown proof’ children, therefore supervision should always be present. As the parent or guardian must undertake a component of basic drowning resuscitation as part of program, there
will be an increase in the number of people within the Northern Territory with knowledge of resuscitation and skills to impart water awareness to children.

The proposed program should not be viewed as a one-stop measure as children need to be continually exposed to water awareness strategies as they grow and develop. The desired outcome of the program is to provide basic principles that can be used and practised during the course of the young child’s development. The aim will be to provide parents or guardians with the skills to continue working with their child.

Supervision and education are seen as important components in reducing the number of drownings. For the WSAP to have long term and ongoing benefits, it is vital that parent / guardian participation and education are components of the program.
Toddler drowning in private swimming pools is the most common single cause of death for Australian children aged 1 to 4 years. Pool fencing is a proven method for preventing these deaths. In mid 1990, New South Wales became the first state in Australia to legislate a high standard of pool fencing design with other states soon following suit. The degree to which this standard has been maintained has varied from state to state. Only Queensland maintained a high standard of pool fencing to the present time which, in conjunction with media activity, is estimated to have saved 70 toddlers.

In 2003, the standards and descriptions for pool fence design are different in each state. Legislation, regulations and reports often use confusing terms to describe pool fence design. After 30 years of vigorous advocacy Australia has not achieved clear, consistent and stable pool fencing legislation.

This paper establishes reproducible and meaningful definitions for pool fencing and compliance and summarises the different requirements for Australian states and territories. Compliance data from around Australia is compared. In order to comment on relative efficacy of the two pool fence configurations now required for all new pools in Australia, data from a published series of toddler drowning in Queensland is re-examined. Our data supports a recommendation of 4 sided pool fence design for new pools. Furthermore, we put forward recommendations that would improve the standard and consistency of pool fencing legislation in Australia.
Katherine van Weerdenburg

The Illawarra Pool Inspection Project – Local government’s management of domestic swimming pools and its impact on pool safety compliance levels

Authors: Katherine van Weerdenburg, - Illawarra Safe Communities Program
         Frank Wallner - Healthy Cities Illawarra
         Rebecca Mitchell – Injury Prevention Policy Branch, NSW Health

Key words: swimming pools, local government, inspections, compliance, legislation

Abstract: According to the Royal Life Saving Society’s National Drowning Report (2000-01), around one third of all toddler drownings in Australia during the 2000-01 financial year occurred in swimming pools. A number of studies have identified that the absence of, or inadequate pool fencing, is a major factor contributing to children gaining access to a pool.

In NSW, very little consistency exists between local councils in their approach to ensuring pool owner compliance with relevant domestic swimming pool legislation.

The Illawarra Pool Inspection Project, funded by the NSW Water Safety Taskforce, compare the processes employed in the management and inspection of domestic swimming pools by three differently sized local government authorities on the south coast of NSW, and considered possible relationships between the type of inspection program and pool fencing compliance levels.

Pool fencing compliance data was collected in the three local government areas (LGA’s) via inspections conducted by either Royal Life Saving Society officers or council officers. Pool owner/user attitudes towards pool inspections were also surveyed in one LGA.

Results of the Illawarra Pool Inspection Project will be discussed at the conference. The impact of the NSW Swimming Pools Act (1992) on the effective management of domestic swimming pool safety and indications for potential amendments to the current legislation in NSW will also be discussed.
Peter Fenner

Jellyfish mortality and morbidity in Australia and the World: improving the statistics

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In the past year there have been a number of deaths from marine stings reported by the media in the Indo-Pacific region. However, these deaths have always occurred regularly but are not reported locally and so are not widely publicised in the world press. In contrast the recent 2 deaths from Irukandji and one from Chironex in Australia (Queensland) stirred a huge world interest and promotion of requests for funding, but which did not assist the promotion of tourism in Australia and north Queensland.

Information from other Countries is difficult to obtain with communication within the Country poor with authorities not knowing of the problem and local government and tourist operators afraid to release the information released because of its potential effect on tourism. Jellyfish and their worldwide geographical locations that have caused human fatalities or severe envenomation and morbidity will be presented but are probably just the tip of the iceberg. Most if not all tourists visiting these areas have no idea of the extent of this problem and are not advised by travel firms and/or travel consultants. This knowledge is essential for Tourist Operators and Travel Medicine advisors who advise tourists to these regions: failure to do so may result not only in unnecessary human mortality and morbidity, but also an increase in unwanted litigation.
**Jenny Blitvich**

**Waterslide exit velocities, user behaviours and injury prevention**

Authors: Jenny Blitvich and G. Keith McElroy
Affiliation: University of Ballarat

Key Words: Waterslides; Injury Prevention; Risk Management; Supervisory Practice; Waterslide exit velocity

The popularity of waterslides is evidenced by the long queues of predominantly young people waiting their turn to use slides on warm days. This study investigated the exit velocity of waterslide users as well as their body positions and movements. Knowledge of these characteristics provides evidence for development of appropriate risk management strategies to minimise the likelihood of injury during waterslide use.

**Methods:**

288 waterslide exits were observed during recreational use at a large regional aquatics complex during a hot summer’s day. Velocities at exit from the waterslide were measured by radar. Body positions and actions were categorised by qualitative analysis of video-recordings.

**Findings:**

Waterslide exit velocities ranged from 1.69 m/sec to 5.64 m/sec, and were strongly influenced by body position and movement on the slide. Body position differences affected the co-efficient of friction, with velocity highest among those who used the slide in a standing position. Common positions included sitting, lying head-first or feet-first, and kneeling. Velocities were sufficient to crush cervical vertebrae (Stone 1981) in every trial. Waterslide injuries may occur from the manner in which the slider hits the water, the pool bottom, or another person who has not cleared the area.

**Conclusion:**

Exit velocities measured indicate that descent from a waterslide is high risk activity. Aquatic centres should implement appropriate strategies to manage this risk. Appropriate waterslide design and maintenance is essential. Careful supervision by lifeguards is necessary. Supervisory practices should ensure adequate times gaps between users to prevent collisions, and should stipulate users be seated and facing forward. Users should be required to leave the ‘landing area’ quickly, so that the area is clear for the arrival of the next user.
Katherine McLeod

AUSTRALIAN BEACH SAFETY DATABASE – 2003 AND BEYOND

Katherine McLeod¹, Andrew D Short² and Barry Steele³

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The Australian Beach Safety and Management Program (ABSAMP) has to date assessed 90% of Australia’s 11,000 beach systems. Data on beach location, access, facilities, physical and geographical characteristics and resulting hazards have been collected into a series of state databases. With only Tasmania remaining (in progress), the national database is scheduled to be complete in 2004.

The results of this research have been applied in lifesaving operations and planning, through such initiatives as the Coastal Auditing Program. This program evolved from the recognition of the need to conduct safety audits in coastal regions, so that all hazards and risks are identified and the appropriate level of beach safety resources and signage maintained.

With the national beach database nearing completion, the focus is shifting from data collection to further applications. The preliminary step in this process is to consolidate the state databases into a single national database and geographic information system (GIS), that will be accessible via the internet to authorised users.

ABSAMP is now being linked directly to the Coastal Auditing Program, with the expansion of the database to include additional attributes collected by auditors. This will have two main advantages: it will enable auditors to perform audits in a consistent, structured and efficient manner, while also ensuring the existing data is up to date.

Another requirement is for ABSAMP data to link directly to data on drownings, rescues, members and patrols, since currently any analysis of data across these data sets must be performed manually. True analysis of SLSA’s effectiveness would be significantly easier if all SLSA’s core data sets were integrated into one virtual online GIS.

Following on from the development of this data system framework will be an endeavour to link SLSA’s beach and other core data with real-time and forecast weather and wave data, to enable forecasting of beach and surf conditions, hazards and risk levels.
Beach classification system in Victoria: finding a user-friendly beach

Carolyn Staines & Joan Ozanne-Smith
Accident Research Centre, Monash University, Victoria

Beaches are favoured recreational destinations for many Australians, and, as they are also potentially hazardous places, it is important that beach visitors choose locations that meet their needs and abilities. The Victorian government, recognising the need to inform the beach user’s choice of a coastal destination, commissioned the Monash University Accident Research Centre to investigate issues of beach safety and user-friendliness, and to assess the feasibility of employing a beach classification system in Victoria.

This paper reports the main findings of the study:

1. The nature and severity of hazards at Victorian beaches were identified by analysis of data relating to death, injury and crime at beach locations.
2. Characteristics of a user-friendly beach were identified through literature review and consultation.
3. A beach classification and information system was proposed.

The proposed beach classification system enables beach users to identify whether a beach is likely to suit their needs. The beaches are classified on the basis of the central issues of water and beach safety, and beach amenity. Water hazard ratings are primary classification criteria. Fundamental to the system is an extensive central database of up-to-date beach related information, drawing on a number of agencies, and providing an essential knowledge-base for informing both beach users and beach managers.
Pam Brown

Giddy Goanna’s Water Safety Book is being Developed and Your Input is Sought

By Pam Brown  B.Bus., MBA, author and creator of Giddy Goanna

Giddy Goanna, the Child Safety Champion plans to release a book on water safety and would like to conduct an interactive session at the 2003 Water Safety Conference to gain input from a wide range of water safety professionals regarding the draft content of Giddy’s Water Safety book.

Widespread involvement of professionals from throughout Australia in the development of Giddy’s previous five titles covering homes, roads and farms, has enabled the books to be very effective. Group sessions have worked very well previously, with the interaction and discussion generated by the participants highly satisfying for all involved.

Proposed issues to incorporate in Giddy’s water safety book include:- pools, spas, beach, creeks, dams, farms, diving, spinal injuries, sun, CPR and how toddlers can drown in very small amounts of water.

Giddy Goanna is a widely accepted educational safety program for children and their families, which aims to produce books on a wide range of health and safety issues. In time, educational songs, a TV show, Web page puzzles and teacher resources will be produced to compliment Giddy’s books.

Links will be added to Giddy’s web page to take parents, teachers and children to other health / safety organizations, so they can easily access other resources and programs available.

Giddy Goanna is a non-profit organization dedicated to improving the health and safety of children and their families throughout Australia. Giddy Goanna produces a unique range of resources that compliment the work done by other health / safety organizations and can be used either directly at home or in schools and group settings.

We look forward to a wide range of involvement in this session at the Water Safety Conference. Everybody’s input and opinions are most appreciated.

Contact Details:-  Pam Brown, Giddy Goanna Ltd
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Justin Scarr

Reflection on the recommendations from the World Congress on Drowning

Presented by: Peter George (SLSA Director of Lifesaving) and Justin Scarr (RLSSA National Manager – Operations)

The World Congress on Drowning was held in Amsterdam in June 2002. It was initiated by the Maatschappij tot Redding van Drenkelingen, an organisation established in 1767 to promote awareness of drowning in the Netherlands. The Congress was attended by more than 500 experts from all over the world.

An important outcome of the World Congress on Drowning was the establishment of many recommendations. These recommendations were prepared by task-forces in the preceding years and extensively discussed by experts during the congress.

The nine Taskforces areas included;

- Epidemiology
- Prevention
- Rescue
- Resuscitation
- Hospital treatment
- Brain and spinal
- Immersion hypothermia
- Diving and drowning
- Water related disasters

Whilst the full document is enclosed in the conference papers, this presentation aims to provide an overview of the recommendations and an Australian perspective on the conference outcomes.

The main recommendations are as follows;

1. A new, more appropriate, world-wide uniform definition of drowning must be adopted
2. There is a great need of adequate and reliable international registrations of drowning incidents
3. More data must be collected and knowledge gained about drowning in low-income countries and societies
4. Preventive strategies and collaboration are needed
5. All individuals, and particularly police officers and fire fighters, must learn to swim
6. Rescue techniques must be investigated
7. Basic resuscitation skills must be learned by all volunteer and professional rescuers as well as lay persons who frequent aquatic areas or supervise others in water environment
8. Uniform glossary of definitions and a uniform reporting of drowning resuscitation must be developed and used
9. Hospital treatment of the severe drowning victim must be concentrated
10. Treatment of the patient with brain injury resulting from cardiopulmonary arrest attributable to drowning must be based on scientific evidence. Due to the absence of interventional outcome studies in human drowning victims, current therapeutic strategies must be extrapolated from studies of humans or animals having similar forms of acute brain injury
11. Wearing of appropriate and insulating life jackets must be promoted
12. The balance between safety and profitability of recreational diving must remain critically observed
13. Safety of diving fishermen needs more attention
Katrina Haddrill

NSW Water Safety Taskforce – putting research into action

Katrina Haddrill¹, Rebecca Mitchell², Matthew Jones³

¹ NSW Department of Tourism, Sport and Recreation
² Injury Prevention and Policy Branch, NSW Health Department
³ Waterways Authority

Currently, NSW averages 87 drownings each year. Death by drowning is not limited to any particular social group, age, gender or nationality. Given the depth and breadth of what can be classified as an aquatic environment, it is by no means an easy task to ensure people’s safety in and around the water.

In recognition of the importance of water safety and the need for a coordinated approach to water safety in NSW, the NSW Water Safety Taskforce was established. This Taskforce development the NSW Water Safety Framework: 2001-2003 with three key priority areas, associated strategies and actions.

The Framework identified that evidence was needed to provide the NSW Government and water safety agencies with information to further inform water safety education, policy and legislative action.

The NSW Water Safety Taskforce has been working on these strategic areas for three years. The results of which and recommendations flowing from the research, standards and education key areas will be presented at the conference.
Progress towards developing a common water safety data collection for NSW

Management of water safety requires information on the size and nature of the water safety problem. This information can be used for a range of different purposes including the development of water safety policy, the deployment of rescue services, the development of new water safety interventions and the evaluation of the effectiveness of water safety activities.

Many water safety organisations collect information on water safety incidents, but not all collect the same information or collect it in the same way. Over recent years, the NSW Water Safety Taskforce has funded research to look at this possibility of addressing this problem. This work began with the development by the Taskforce of a suggested Minimum Water Safety Dataset. This was then trialled in NSW on ten beaches using lifeguards and lifesavers as data collectors.

The results clearly showed that there were some difficulties in implementing the data collection. Most notably these related to the problems of obtaining practical definitions for some items such as the definition of rescue. In addition, there were difficulties in collecting some information, especially relating to characteristics of the person involved in the water safety incident and, on some beaches due to the difficulty of combining busy workloads with the additional task of collecting water safety information.

Currently, a trial is being conducted using dedicated data collectors in an attempt to look at whether the data collection can be improved by using trained and dedicated data collectors. Preliminary results of this trial will be discussed.
**Peter Fenner**

**SLSA Rescue and Resuscitation statistics: are we improving?**

Associate Professor, James Cook University, Townsville, Australia
National Medical Officer, Surf Life Saving Australia
Chairman, Medical Panel, International Lifesaving
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Comparison of resuscitation cases and rescues performed by Surf Life Saving Australia from 1996 - 1999 has been previously assessed. Recently a number of innovations have been introduced into Surf Life Saving Australia, including remote control video cameras mounted on high-rise buildings near the surf, personalised watercraft with attached rescue mats as a rapid one-person response for rescues, oropharyngeal airways and, in the past season, a trial of pulse oximeters in rescue and resuscitation cases.

Rescue and resuscitation statistics in this first period were separated into the areas inside and outside the patrolled area and assessed. This showed that the patrolled area had the highest incidence of rescues and resuscitations with 95.2% of cases successfully resuscitated within the patrolled area during patrol hours. However, 54.8% of cases occurred outside the patrolled areas, during patrol hours with 62.3% successfully resuscitated; Resuscitation success rates fell lineally with increasing distance from surf clubs; Differences between rescue and resuscitation cases included age groups, with the 0 - 15 age group being a large proportion of the rescues both inside and outside the flags, but a very small percentage of the total resuscitation cases, whereas the largest percentage needing both rescue and resuscitation occurred in the 40-60 age group; Alcohol was detected in twice as many of the resuscitation cases compared to rescues; statistical differences between rescues and resuscitation cases occurring in rips and; the percentage of those vomiting and/or regurgitating.

Assessment of the past 3 years rescues and resuscitation are now being assessed and will be compared to previous statistics to give a preliminary and early assessment to assess if recently-introduced methods have had any early impact on theses statistics.
Jonathon Passmore

The Global Burden of Drowning

Jonathon Passmore, Joan Ozanne Smith
Monash University Accident Research Centre

Drowning is a leading cause of death and disability. In 2000 an estimated 409,272 people drowned, making it the 2nd leading cause of unintentional injury death globally after road traffic accidents.

Low to middle income countries of the world contribute the greatest proportion to the global burden of drowning. The South East Asian Region of the World Health Organisation (SEARO), the African Region (AFRO) and the Western Pacific Region (WPRO) accounted for 77% of all drowning deaths in 2000.

There are several important epidemiological risk factors that have been studied and reported in the literature. These include gender, age, race, epilepsy, access to water, occupation, and alcohol consumption.

Prevention strategies such as “Learn to swim” programs for children and mandatory isolation pool fencing have been shown to be effective in reducing the risk of drowning. Other strategies such as legislating for the use of personal flotation devices whilst boating and the provision of lifeguards at beaches have also been shown to be effective in reducing the number drowning deaths. However on a global scale, it is important to remember that successful prevention strategies must include causes of drowning other than from recreational activities.

There are limitations on the scope and availability of drowning data that makes an accurate global picture difficult to construct. Uniform case definitions for drowning need to be established to enable effective evaluation of prevention strategies and all categories of drowning should be included in official statistics so the true burden of drowning can be better understood.
Drowning in Victoria: Beyond Statistics

Bugeja, L.
Research Officer, Injury Prevention
State Coroner's Office, Victoria

Fatal drowning incidents have declined dramatically over the last thirty years, however each year a large number of preventable drowning deaths still occur in Australia. Epidemiological research has contributed significantly to the determination of the nature and extent of drowning, and the identification of preventative measures. Such measures, which include public awareness, education and legislation, have resulted in the considerable reduction in drowning. Despite this success, a focus on developing targeted evidence based interventions is now required to further reduce incidents of preventable drowning. To assist with this development, an innovative approach was taken by conducting an in-depth examination of coronial information in order to provide an insight into the attitudes and behaviour of individuals involved in drowning incidents over the last five to ten years.

The Public Health Branch of the Department of Human Services established a three-year injury prevention research position at the State Coroner's Office in October 2001. Drowning was the first topic to be examined as it was one of the four National Injury Prevention Priorities for 2001-2003 and has been reported as one of the main causes of unintentional injury. The aim of the project was to look beyond statistics and examine in-depth the socio-environmental factors involved in drowning deaths. Documentation submitted to the State Coroner's Office for the purposes of death investigation, including police reports, witness statements, safety agency reports, diagrams and photographs were examined using qualitative research methods.

The project focused on drowning of young children in the home (dams, private swimming pools (including spas) and baths); water vessels (commercial and recreational); and public swimming pools. With the assistance of experts from the Victoria Branch of the Royal Life Saving Society Australia and Marine Safety Victoria, six reports have been produced containing a number of coronial and public health research recommendations for interventions directed to the water safety and injury prevention community. Major findings and key recommendations of the research undertaken will be presented, focusing on attitudinal and behavioural factors associated with drowning. Future drowning research directions and interventions will be considered in light of the coronial investigation process.
Matthew Finnis

Waiving, Not Drowning

Matthew Finnis  BA/LLB (Hons)

Issues surrounding liability and water safety were thrust into the public spotlight in 2002 when a NSW Supreme Court jury found the City of Waverley liable for the injuries suffered by a swimmer who dived into a sandbank at Bondi Beach. This decision occurred at the peak of a period commonly described as the "public liability crisis" facing Australian society in general, and providers of sport and recreational services in particular.

At around the same time as the jury was handing down their decision in Swain v Waverley CC, state and federal legislators around the country were penning reforms to the nation's laws in attempt to alleviate the pressures of increased insurance premiums on community organisations, and provide for greater personal responsibility on those who seek to enjoy the benefits of participation in "risky activities."

Law reforms relevant to the context of water safety include:

- Amendments to laws designed to improve the enforceability of waivers;
- Restatement of the principles of negligence and duty of care in the case of providers of recreational services;
- Legislation providing immunities from liability for volunteers and good samaritans;
- Variation of the duty of care in respect of persons who are under the influence of drugs or alcohol;
- Legislation dealing with obligations of public authorities responsible for public facilities and areas used by the public

Other law reforms include capping of damages awards and provision for structured settlements, regulations governing lawyers and "no win - no fee" arrangements, as well as prevention of apologies being construed as an admission of liability.

By the middle of 2003, Australia now boasts a raft of tort law reform, the likes of which have rarely been seen in such a short period of time. Given our federal structure, the law reforms vary between various jurisdictions and reflect varying degrees of commitment by the respective state governments. Further, in recent months we have seen a number of court decisions handed down in the context of aquatics which might be seen as reflecting a shift in judicial consideration of the issues involved in liability and water safety.

The challenge now lies for those responsible for water safety and / or the provision of aquatic recreational opportunities to (amongst other things):

- Identify those reforms relevant for their activities / business;
- Understand the impact that the law reforms might have on their current modus operandi;
Develop strategies to take advantage of relief which might be available under the new laws; and
Identify shortcomings and gaps in law reform which require further development or modification of service delivery

However the solution does not end at meeting the above challenges. Rather those involved in water safety will need to consider the non-legal implications of the implementation of such law reform and risk management strategies. Issues such as cooperation and risk apportionment between local councils, facility operators, hirers and users will most likely become more paramount than ever before, let alone the philosophical issues and barriers to participation which might result from the shift to personal responsibility and risk mitigation.

What about the future? What will be the impact of these reforms five and ten years down the track? Less claims and litigation? Cheaper insurance? Safer facilities and waterways? Less participation and activity? Crystal ball gazing aside, Australia can learn a number of lessons in this regard from overseas jurisdictions such as the United States and Canada, where similar reforms have been implemented in the past.

This paper and presentation will seek to:

- focus on those law reforms which are relevant to the context of water safety;
- highlight some recent court decisions in the area;
- consider the impact of the reforms on different sectors of the industry;
- identify strategies for managing risk in light of the current environment;
- address the relationship with insurance, claims and risk management programs;
- consider the future landscape in light of the recent reform.
Warwick Waters

Water Safety Signage: Trials, Evaluation, and Lessons Learnt

The Royal Life Saving Society Australia Victoria Branch and Surf Life Saving Victoria, will present the outcomes of the trials, evaluation and lessons to be learnt from the water safety signage program conducted across Coastal and Inland aquatic venues in Victoria.

The presentation will highlight a number of key strategies under taken by the numerous stakeholders to develop a consistent and effective water safety signage system. We will focus on the benefits of developing a consistent system, which aids organisations many of which do not have a primary water safety focus.

The water safety signage program has been funded under the Victorian Governments Play it Safe by the Water campaign, and be administered by RLSSA-V and SLSV, with partners including Coastal Council of Victoria, Dept of Environment and Conservation, Parks Victoria, Urban Enterprise, and Victorian Managed Insurance Authority.

The Presentation will cover all aspects of the trail programs from initiation through to evaluations and outline the actions identified to be conducted over the next 12 months.

The keys areas to be covered will included:

- **Initiation of the trials:**
  - The Gunnamatta incident

- **Year One & Two Review:**
  - Coastal Trial
  - Coastal Rollout

- **Multi organisational approach:**
  - Private and Government Organisations working together

- **System development:**
  - Signage Standards
  - Delivery methods

- **Year Three Review:**
  - Inland Trial

- **Resources and Support Systems:**

- **Evaluations:**

- **Future Directions:**
Workshops

There are four workshops that will be held during the course of the conference. The first on Monday looking in particular at pool fencing and the Australian Standard AS1926, this workshop will be part of the last session on the day and run until a conclusion is reached; this may mean that the advertised completion time will be later than 5pm. For further information please read the pool fencing briefing paper found following.

On day two there are three workshops. The research workshop will have some papers presented before moving onto the work of developing “Statement of principles”, the research issues paper provides a list of already identified research needs, as well as recommendations.

The other two workshops of education and management of aquatic locations have been broken into three sections. The first section is an introduction based on the discussion paper followed by brainstorming session to identify key issues. The second session will break into smaller workgroups targeted at key issues identified in the following session and at the end of this session they will all come back together into the larger group and talk about their discussion. The aim of the discussion is to try and define the issues within each of the identified areas and how these could be solved at a national level. The final session will be devoted to the development of statement of principles.

Following this the statement of principles will be collated and presented back to the conference as a whole. The statement of principles will then be used by the Australian Water Safety Council in the development of a new National Water Safety Plan.

Please read the workshop briefing papers of the workshop you are planning to attend. The number of places in any workshop will be limited to 35 people. If you have an issue that you wish to raise but were unable to attend a particular workshop, you will find in your conference satchel a slip of paper with “Topic”, “Issue/s” and “Recommendation/s” written on it. Please write your comments on this paper and place it in the Perspex box at the registration table.
Pool Fencing

Briefing Paper for the Australian Water Safety Council

Strategies to:

1. Achieve a pool fence between the house and the pool for all new pools in Australia

2. Improve compliance with Pool Fencing Legislation in all States and Territories

Ruth Barker, Dawn Spinks, Rob Pitt
Queensland Injury Surveillance Unit
SafeCommunitiesQld.org
September 2003

Background

Australia and the World have failed to achieve clear, consistent and stable pool fencing definitions. This confusion is apparent at every level including the highest academic levels as evidenced by the Harborview Cochrane Review of the efficacy of pool fencing which confuses perimeter and 3 sided fencing in their reanalysis of Australian work.

Of more concern, Australia has failed to achieve consistent and stable pool fencing legislation. In mid 1990, New South Wales became the first state in Australia to require a pool fence between the house and the pool for new pools. Queensland had a similar requirement by 1991, as did Western Australia by mid 1992. The NSW legislation was weakened to 3 sided in 1992 and the West Australian legislation was effectively set aside from 1993 to 2001. Queensland, Western Australia and Northern Territory now require 4-sided fencing for new pools and the rest require 3-sided fencing.

By 2003, the standards and descriptions for pool fence design are different in each state. Legislation, regulations and reports often use confusing terms to describe pool fence design. Only Western Australian requires regular pool fence inspections in order to achieve a high level of compliance.
PROPOSAL ONE = That peak water safety and regulatory bodies adopt the FOLLOWING Definitions for Pool Fence Location

Perimeter fencing - the boundary of the house allotment has a fence restricting access to the property by a toddler but there is no restriction of physical access for toddlers from the house to the pool.

House containment - the only fence restricting access to the pool is perimeter fencing but all doors and windows in the house restrict access to the pool by a toddler.

3-sided Fencing - a fence and building wall restricts access to the pool by a toddler but there is restricted access via a house-door from the house to the pool.

4-sided Fencing - a fence or building wall restricts access to the pool by a toddler and there is no direct door access from the house to the pool but may include a window.

Isolation Fencing - as for four-sided fencing except all ancillary structures (not related to the function of the swimming pool) excluded from the pool area and a maximum distance between the pool fence and the edge of the pool is prescribed.

PROPOSAL TWO = That THE NEXT NATIONAL WATER SAFETY PLAN SET A COMPLIANCE TARGET FOR THE AUSTRALIAN STANDARD OF 90%

Compliance is the responsibility of local authorities. Audits by local authorities generally place compliance with the Australian Standard in the range 40 to 60%. Higher levels of pool fence compliance with the relevant Australian Standard and building regulations will require:

a) complete and “up to date” registration of all existing and new pools on a centralised or council-controlled database to assist council enforcement of regulations
b) local authorities enforce initial inspection of all new pools
c) regular inspection by local authorities of new and existing pools to ensure ongoing compliance with safety regulations

PROPOSAL THREE = THAT THE AUSTRALIAN STANDARD FOR LOCATION OF POOL FENCING SET A MINIMUM REQUIREMENT OF A POOL FENCE BETWEEN THE HOUSE AND THE POOL FOR ALL NEW POOLS

Recent data from Queensland establishes that 3 sided fencing poses a greater primary design hazard than 4 sided fencing.
Table 1: Summary of results and relative risk 3 sided v 4 sided pool fences

<table>
<thead>
<tr>
<th></th>
<th>Dynamic compliance</th>
<th>Static compliance</th>
<th>Number drowned</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary hazard</strong></td>
<td>YES</td>
<td>YES</td>
<td>7</td>
<td>RR 3v4 = 10.98 (1.33-505.0)</td>
</tr>
<tr>
<td><strong>Secondary hazard</strong></td>
<td>NO</td>
<td>YES</td>
<td>5</td>
<td>? dynamic gate compliance is a weakness in 4 sided pools</td>
</tr>
<tr>
<td><strong>Defective fence</strong></td>
<td>NO</td>
<td>NO</td>
<td>21</td>
<td>RR 3v4 = 2.88 (1.02-8.75)</td>
</tr>
<tr>
<td><strong>No fence</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td><strong>No info</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Standards Australia proposes to reconvene Committee CS/34 Safety of Private Swimming Pools towards the end of 2003. It is proposed that the current standard formulated in 1993 be upgraded to require a pool fence between the house and the pool for new pools and a flexible and separate standard for existing pools. This will be difficult to achieve but will be easier if there is support from Australia’s peak water safety authorities.
Research

Background

As part of the Australian Water Safety Plan (The Plan) “Water Safety Research” was identified as a Key Result Area and was described as identifying and analysing the problem and recommending solutions. These were the recommendations that were identified in The Plan;

- The establishment of a research coordinating body as part of the Australian Water Safety Council (AWSC) to identify water safety research needs and to facilitate research opportunities and projects.
- A National Water Safety Audit be conducted to determine all currently available services, programs and resources.
- Drowning statistics be collated from the ABS and State Coroners with subsequent information dissemination and access to relevant Water Safety organisations
- The coroner’s reports on aquatic incidents be provided directly to a central agency.

A research coordinating body was established early on and proceeded to recommend that a document that examines drowning in Australia should be produced, the result was the report by NSW Injury Risk Management Research Centre “Analysis of Drowning in Australia and pilot analysis of near drowning in New South Wales”\(^\text{22}\). The coordinating body continued to bubble along and provided support to the National Coroners Information System, which they saw as being pivotal in the further understanding of drowning related cases. In 2002 to enable the evaluation of the NWSP this group was expanded and renamed Consultative Committee on Water Safety (CCWR) with a clear direction to:

- Help evaluate the National Water Safety Plan,
- Develop criteria for assessing the effectiveness of water safety programs and services, and

Early on the AWSC conducted an audit of all available services, programs and resources, however there was very little research that was found to be being undertaken, since this time the amount of research that has been conducted in Australia has increased. This has been both a result of The Plan as well as the formation of State water safety forums. Research conducted includes:

- Analysis of drowning in Australia and pilot analysis of near-drowning in New South Wales (2000)\(^\text{22}\)
- The NCIS Water-Related Death Data Needs Feasibility Study (2000)\(^\text{23}\)
- Research project on the adequacy of inspections of barriers to private swimming pools (2001)\(^\text{24}\)


\(\text{23}\) MUNCCI (2000). *The NCIS and water-related death data needs feasibility study*. Commonwealth Department of Health and Aged Care: Canberra

\(\text{24}\) Stevenson M, Rimajova M, Edgecombe D (2001). *Research project on the adequacy of inspections of barriers to private swimming pools*. Health Department of Western Australia: Perth

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- Analysis of drowning involving children aged five years and under in NSW (2002)\textsuperscript{25}
- Assessment of fatal and non-fatal injury due to boating in Australia (2002)\textsuperscript{26}
- Unintentional drowning: Toddlers in dams in Victoria 1989-2001 (2002)\textsuperscript{27}
- Persisting morbidity among hospitalisations for near drowning, Australia 1997-98 (2002)\textsuperscript{28}
- Perceptions of water safety and use of aquatic areas in rural and remote locations in NSW (2003)\textsuperscript{29}
- Evaluation of the SafeWaters Water Safety Initiative in NSW (2003)\textsuperscript{31}
- Alcohol and Water Safety (2003)\textsuperscript{32}

The production of an annual drowning report by Royal Life Saving Society Australia\textsuperscript{33} (RLSSA) has continued throughout the period of The Plan and with the research above continues to provide insight and annual estimates of drowning numbers. Surf Life Saving Australia (SLSA) also produced a National Surf Safety report, of which the last two are available on their website, these report examine drowning along the coast\textsuperscript{34} which complements the information provided by RLSSA. In the evaluation of The Plan\textsuperscript{35} a further analysis of the ABS mortality data has been undertaken, which provides information for the 1999-2001 years not included in the NSW Injury Risk Management Research Centre report\textsuperscript{22}.

The ABS information for number of drowning deaths in a given year takes 18 months to 30 months before becoming available and as such for up to date information the NCIS should be used. The report on Alcohol and Water Safety\textsuperscript{32} shows how the NCIS can be used to provide a greater level of understanding about drowning deaths than is currently available and also provides direction for prevention activities as well as future research.

**What needs to be done?**

To facilitate the achievement of further quality research in Australia on water safety and aquatic related injury and death the following issues will need to be considered:

\textsuperscript{26} O'Connor P (2002). *Assessment of fatal and non-fatal injury due to boating in Australia*. National Marine Safety Committee: Sydney
\textsuperscript{29} The Hunter Valley Research Foundation (2003) *Perceptions of water safety and use of aquatic areas in rural and remote locations in NSW*. NSW Water Safety Taskforce: Sydney
Future Research

Table 1 Areas identified where more research needs to be conducted:

- Injuries at aquatic locations
- Evaluation of the effectiveness of current programs
- Fishing related injuries and fatalities.
- Exposure information.
- Further evaluation on what we are already doing.
- Design of pool alarms and gates.
- Injuries to lifesavers and lifeguards.
- Effective rescue methods.
- Entry into water.
- When should children first start water safety and swimming classes?
- Issue about ear infections, low blood sodium, extent of problems associated with early familiarisation with water and does it increase the risk?
- Pool Fencing – compliance, inspections, definitions (Standard for water safety barriers)
- Queensland – Near drowning in open drains (Standard)
- Drowning in Dams
- Adherence with local building regulations
- Rural and Remote drowning deaths
- Factors leading to low compliance with pool fencing
- Drowning deaths in Culturally and Linguistically Diverse Communities
- Reasons for increase in drowning and possible prevention of drowning (16-24years)
- Alcohol and water safety –
  - Evidence of extent of alcohol use in aquatic activities in Australia
  - Knowledge attitudes and behaviours of people engaged in aquatic activities about alcohol
  - Risk ratios of alcohol associated with harm from alcohol
  - Evaluation of interventions
- Inappropriate supervision of children
  - Adults particularly those affected by alcohol
  - Older sibling supervision
- Hazard assessment and ratings for beaches including risk and calibrate it against incidents
- Signage compliance (with Australian standards and between states)
- Education methodology by types of education, what is the best type of education for the population.
- Other water areas, water slides, pools in residential complexes, etc

Example of Recommendations for Water Safety Research

Coordination of Research

Research is required into various aspects of Water Safety to confirm that current approaches to Water Safety are correct and that programs and resources are being effective. Without definitive research it is difficult to accurately assess the success of current approaches or the impact of planned strategies. One of the key research bodies for liaison will be the National Health and Medical Research Council (NHMRC).
• **Recommendation 1:** That a Research Coordinating Body be established as part of the AWSC to identify water safety research needs and to facilitate research opportunities and projects. This Australian Water Safety Research Committee would facilitate research through organizations like NHMRC, Australian Bureau of Statistics (ABS), National Injury Surveillance Unit (NISU), National Coronial Information System (NCIS) and Universities

• **Recommendation 2:** That a National Water Safety Audit be conducted to determine all currently available services, programs and resources

• **Recommendation 3:** That the AWSC Research Body facilitate the development of consistent definitions in water safety

### Drowning Statistics

Timely access must be provided to statistics and anecdotal information on drowning, near-drowning and other aquatic related incidents. This information is vital to ensure a quick response to drowning trends and to ensure that corrective programs are targeted effectively.

• **Recommendation 4:** That Drowning Statistics be collated from ABS and State Coroners with subsequent information dissemination and access to relevant Water Safety organizations.
  o RLSSA to continue compiling the National Drowning Report annually
  o The expansion of the Australian Maritime Safety Authority (AMSA) Boating Incident Database to include all aquatic incidents should be investigated
  o Use the National Coronial Information System to identify and report on a regular and timely basis drowning statistics from around Australia.

• **Recommendation 5:** That Coroner’s Reports on aquatic incidents be provided directly to a central collection agency.
  o RLSSA (NSW Branch) currently fulfils this function in NSW. This process could be extended across States and expanded to include Police, Ambulance and Hospital reports.

• **Recommendation 6:** Describe other sources of data about drowning including hospital records, emergency department records, GP records, ambulance records and other sources as they become available.

• **Recommendation 7:** Describe the availability of near drowning statistics and where possible produce report/s describing near-drowning events.

### Evaluation of Current Programs

To make sure that programs continue to be effective, evaluation of current programs need to be undertaken on a regular basis including information about the cost effectiveness of the program

• **Recommendation 8:** Develop indicators that are able to be used as measure of performance towards drowning reduction but not necessarily number or rates of drowning (ie performance indicators). Establish the effectiveness of the indicators to predict the reduction of drowning.

• **Recommendation 9:** Develop and implement an evaluation of the next National Water Safety Plan.

• **Recommendation 10:** Evaluate existing programs using established performance indicators, thus supporting the work of establishing an evidence base for water safety.
Evidence Base

For prevention activities to continue or be developed there needs to be an evidence base about what is effective and reducing the number of deaths from drowning this includes prevention activities as well as effective rescue techniques.

- **Recommendation 11**: That a program of research be undertaken to establish where evidence exists for current water safety or drowning prevention activities
- **Recommendation 12**: Develop a program of work to develop evidence for water safety (This will be undertaken after Recommendation 11).

Exposure Information

Currently in Australia water based activities are a year round concern however the number of people attending beaches and other aquatic location during the summer months climbs dramatically. There exists a need in Australia to better able determine who is visiting aquatic location at any given time and why they are there

- **Recommendation 13**: Development of Studies that examine the factors that precipitate the attendance of people attending aquatic locations, what people are doing while at these locations and the length of time they stay.
- **Recommendation 14**: Examine the injuries at aquatic location that are not directly related to the water (ie broken glass etc)

Specific Location

People in Australia drown in a variety of locations from the farm dam to the backyard swimming pool to the ocean. Each of these locations have specific hazards and different circumstances surrounding drowning. It is possible that both the prevention of these drowning and the people who drown may be different in each setting.

- **Recommendation 15**: Research into the hazards and circumstances surrounding drowning in the various locations including but not exclusive of:
  - Rock Fishermen
  - Boats
  - Dams
  - Beaches
  - Swimming Pools
- **Recommendation 16**: Research into why people from areas classified as remote or very remote have higher rates of drowning and near drowning.

Rescue Information

Due to the volume of rescues each year, data collection by lifeguards from local councils and Surf Lifesaving Australia volunteers need to be improved.

- **Recommendation 17**: Develop systems that are used uniformly and consistently throughout Australia to allow for the identification of at risk groups from the available rescue information.
**Identified Populations Research**

Appropriate strategies for the reduction of drowning of people from different age-groups is necessary to facilitate effective interventions

- **Recommendation 18:** Investigate drowning of 0-4 year olds and appropriate strategies to reduce drowning in this age group.
- **Recommendation 19:** Investigate drowning in other age groups in particular but not exclusive of the following:
  - 65+ Years
  - 15-24 year old males
- **Recommendation 20:** Investigate drowning to people who are visitors to an aquatic location including information about exposure and water safety knowledge for:
  - Overseas travellers
  - Rural people
- **Recommendation 21:** Investigate drowning of people who are NESB including exposure and water safety knowledge

**Protective Factors**

To date much work has been undertaken to examine prevention activities however there may be factors that are important for reducing the risk of drowning.

- **Recommendation 22:** Research on why the drowning risk for the 5-14 years age group is so much lower than at any other age
- **Recommendation 23:** Develop a program of research to explore possible protective factors.
Education

Background

The National Water Safety Plan 1998 identified eight recommendations in the key result area of water safety education. These recommendations were built on the premise that Water Safety is a life skill and a shared responsibility of government, water safety organisations and the community. Water safety education was loosely defined as a balance of water safety knowledge, swimming and personal survival skills and techniques.

The focus of this discussion paper is on the recommendations made in 1998, our progress towards achieving them, their relevance to the future plan and the identification of possible future recommendations.

Two issues emerged from the evaluation of the plan, the first being that the recommendations themselves are not always measurable. Secondly, if they were measurable, the availability and/or quality of evidence to support the evaluation of these recommendations is limited.

For the purpose of this discussion paper the following terms will be used to clarify any statements made about the 1998 recommendations;

- *know* [verb. to perceive or understand as fact or truth]
- *believe* [verb. to have confidence (in); trust; rely through faith (on)]
- *guess* [verb. to form an opinion from evidence admittedly uncertain]

It is important that as a water safety community we acknowledge the differences between what we *know* and what we *believe*, and accept that on occasions our best *guess* may be all that can be achieved today.

Summary of 1998 Water Safety Education Recommendations and progress statements

- **Recommendation 8:** That Water Safety Education in schools comply with the competencies contained in the *National Curriculum Framework*

We *know* that water safety themes exist in the national curriculum framework and in most cases are reflected in state and territory curriculum. It is most common to find water safety as part of wider safety themes in the areas of personal development, health and physical education. Lifesaving and swimming education are also prominent and form an important part of water safety.
Is it enough to rely on compliance with the national curriculum framework? We believe that schools comply with these frameworks. We don’t know to what extent. Does the framework meet the needs of the water safety community anyway?

We know that this recommendation has resulted in some activity at a government level. The Play It Safe Water Safety Education kit is an example. This recommendation has also encouraged the development of additional water safety education materials and programs by lifesaving organisations, often supported by corporate sponsorship. We guess that many of these programs, including those developed and implemented by government are unsustainable without ongoing funding support.

We would like to know the level of commitment made by Education Departments to Water Safety Education. Should state and territory education departments be encouraged to make separate statements about water safety in schools?

- **Recommendation 9:** That Water Safety Competency Targets be set for all Australian children - established at appropriate Age/Developmental levels

The plan divided Water safety competency targets into three areas; infant - pre-school, primary and secondary.

No infant-pre-school targets have been set in Australia. The issue of setting a target for this age-group is complex and considerable opinion exists internationally and locally that would question the appropriateness of setting rigid competency standards for these age groups. What is not questioned is the importance of promoting issues of water safety to parents of children under four.

The current plan sets competencies equivalent to the RLSSA Swim and Survive level four and SLSA Surf Ed for primary aged children. We believe that these are the most appropriate targets. In some cases these standards have been adopted by government departments, for example Tasmanian Education Department.

The competencies established for secondary school are vague and only allude to lifesaving and first aid skills. We guess that more lifesaving education was taking place in secondary schools ten years ago than is being conducted today.

We know that more work needs to be done in understanding aquatic safety achievement levels across Australia. The setting of benchmarks in a national plan is only relevant if government and water safety agencies have an ability to track the population’s progress against such standards over time.

- **Recommendation 10:** That specific attention is provided to ensure access to Water Safety education by people in rural and particularly remote country locations.
This recommendation has been targeted by several programs since the plan was released. Access to water safety education by rural and remote communities has been promoted via web based programs such as RLSSA Wet’n’Wise and guest presentations such as SLSA Beach to Bush. We do not know the effectiveness of these programs but we guess that they have a positive impact.

We know that a more concerted effort should be made to investigate the feasibility and effectiveness of water safety infrastructure and personnel, as well as systematic issues of water safety education in regional and remote areas. For example we know that both RLSSA and SLSA have branches in Coffs Harbour NSW, we do not know with any certainty that this means that the children of this region have higher water safety knowledge and skills and are therefore safer than a similar group not serviced by a local lifesaving branch.

The report titled Perceptions of water safety and use of aquatic areas in rural and remote locations in NSW by the NSW Water Safety Taskforce provides some insights into issues of water safety in these areas. It identifies water safety education whether general or aimed at children are seen by these residents as important in preventing drowning. We know that more needs to be done in this area.

- **Recommendation 11**: That national safety standards be established for Learn to Swim & Water Safety programs conducted by Swimming School operators.

This recommendation is a little ambiguous as it is not clear whether the intent is to have safety standards for the facility, the program or the program supervisor. Safety in the facility should fall within the key result area – Management of Aquatic Locations, those in relation to program supervisors relates more to recommendation 12 and program safety could be related to water safety competency targets.

- **Recommendation 12**: That all Swimming Teachers and Coaches hold an appropriate level of accreditation equivalent to the AUSTSWIM Teacher of Swimming and Water Safety.

The AUSTSWIM award is recognised nationally as the appropriate level of accreditation for teachers of swimming and water safety. Australian Swimming Incorporated coaching accreditations are accepted as the appropriate level of accreditation of coaches of competitive swimming. This recommendation needs to be altered to include the ASI accreditation for coaching personnel.

If a consistent national accreditation for teachers and coaches is beneficial on safety and education grounds, then we believe that there is also a case for a similar system for lifeguards whether pool, surf or open-water.
Competencies in Related Aquatic Fields

The following recommendations are specific to aquatic activities and/or vocations.

- **Recommendation 13: (Boating)** That PFD’s (Personal Flotation Devices) be worn as a mandatory piece of Safety Equipment by all persons on board boats crossing off-shore sand bars. Liability for the wearing of PFD’s in this circumstance to be directed at the boat’s skipper/driver.

This recommendation relates to regulatory and/or legislative interventions and is not specific to education. A more appropriate recommendation for this section of the plan might be specific to education programs that service boat owners and license holders or those that relate to boating safety as part of a broader water safety program.

- **Recommendation 14: (Diving)** That all trainees comply with the requirements of the Standards Australia AS4005.1 - *Training and Certification of Recreational Divers*.

We *know* little about recreational diving standards and their impact on drowning prevention. We *guess* that this is because such groups are not well represented at a national water safety council level. There may be a greater understanding of diving at state and territory level. We *guess* that there are many coroner reports and recommendations which will offer insights and direction to the national water safety plan.

- **Recommendation 15: (Fishing)** That improved access to educational programs and safety systems be provided for recreational fishers.

There are some examples of progress in the number of education programs that target the recreational fisher. We do not *know* if they are effective. Further recommendations should be sought from agencies responsible for fishing both as recreation and a vocation.

**Possible Future Recommendations**

It is suggested that the water safety education recommendations be broken in to four subsets:

- Policy
- Standards and Accreditation
- Program and support materials
- Educational research and evaluation

Future recommendations should be formulated in each of these subsets following principles established by the water safety community at the National Water Safety Conference 2003. To assist this process example principles have been drafted for each subset to facilitate discussion. Recommendations can then be framed during the conference or shortly after.
Policy

We believe that water safety is a life skill and must be part of every Australian child’s education.

We believe that water safety education outcomes would be enhanced if all federal, state and territory government and non-government education departments were to make strong statements of their commitment to water safety education.

We believe that water safety education is not only about the traditional education system, it plays an important role in injury prevention must be addressed by health, emergency services, local government and tourism departments.

Standard and Accreditation

We believe that all Australian children must be given opportunity to achieve a reasonable level of swimming and water safety competence prior to leaving primary school.

We believe that the competencies contained in RLSSA Swim and Survive level 4 best represent this concept of reasonable.

We believe that balanced swimming and water safety education should develop knowledge and skills in a range of aquatic environments for a variety of recreational activities.

We believe that Australian adolescents should be given opportunity to achieve a reasonable level of swimming, lifesaving and water safety competence prior to completing year 10. Reasonable competence at this level is more difficult to define but may be addressed in programs such as RLSSA Bronze and SLSA Surf Ed.

We believe that a national study investigating swimming and water safety achievement levels of primary and secondary students across the country would add significant insights to those responsible for water safety policy, standards and programs.

We believe that water safety organizations, government and the wider community must provide for greater access to water safety education for people in rural and remote communities.

We believe that every swimming and water safety teacher in Australia must hold an appropriate accreditation with recognizes their current teaching and safety competency, and provides ongoing professional development opportunities. We believe that the AUSTSWIM is best placed to administer such an accreditation.

We believe that every swimming coach in Australia must hold an appropriate accreditation with recognizes their current coaching and safety competency, and provides for ongoing professional development opportunities.
development opportunities. We believe that the Australian Swimming Incorporated is best placed to administer such an accreditation.

**Program and support materials**

We believe that every effort must be made to foster the development of sustainable water safety education programs that target all aspects of water safety and all areas of risk within the community.

We believe that co-operation between water safety educators will result in the highest possible return on investment from such development and activities that avoids duplication.

**Research and evaluation**

We believe that the water safety community must develop a greater understanding of the effectiveness of water safety education programs at all levels and in all forms.

We believe that individuals and organisations developing water safety education policy, standards, accreditation and programs must consider all available evidence in the development of these solutions.
Management of Aquatic Locations

**Background**

Australia is a country surrounded by water, and every year the Australian population and visitors to the country are drawn to the water. However every year over 300 people drown in Australian waters and countless others are assisted from difficult situations and revived.

The real tragedy of drowning is that almost every drowning is preventable. It is therefore essential that people are adequately prepared to use our aquatic environments and that these aquatic environments are managed effectively to ensure that the safety of the general public is ensured. This includes all waterways, whether they are ocean beaches, inland waterways or enclosed pools.

In July 1998, the Australian Water Safety Council published a National Water Safety Plan. The National Water Safety Plan, identified a number of key objectives. It will:

- Identify and priorities the major Water Safety issues
- Establish the Water Safety Standards so be applied nationally
- Commit to support, bolster and improve the expertise, programs and resources that are already operating effectively within the system
- Identify and maximize organizational linkages to ensure that duplication of effort and resources are avoided so that positive ideas and best practice are shared throughout Australia.

The Key Result Areas proposed within the Plan are:

1. Water Safety Research
2. Management of Aquatic Locations
3. Water Safety Education
4. Targeting of Key Drowning Demographics

**National Water Safety Conference: Summary of Recommendations**

Three recommendations were drawn from Key Result Area 2: Management of Aquatic Locations. These recommendations are:

- That Safety Audits must be conducted on all Aquatic Locations in particular on all areas used as regular swimming locations – beaches, pools and inland swimming holes.
- That State Legislation be enacted to ensure that *if an aquatic facility is part of a development, or a development is proposed adjacent to an aquatic environment, the Building Application and Development Application must include an appropriate Safety Plan.*
- Appropriate Safety Services must be provided at all locations of aquatic recreation.
Issues

- Have the recommendations from the previous water safety plan been achieved?
- If these recommendations have been met, how has this affected the level of safety around Australian aquatic locations?
- If these recommendations have not been met, what barriers were presented that prevented these recommendations being met?
- Do we need to retain these recommendations?
- If so, what changes need to be made in order to overcome any barriers that were presented?
- What else do we need to achieve?
- How could we deliver this at a national level?
- Moving forward, what recommendations would be developed in a new plan?
An evaluation of the SafeWaters water safety campaign in NSW

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At both national and state levels in Australia the prevention of drowning and near drowning have been highlighted as priority areas for injury prevention activities.1-3 On average around 300 people drown in Australia each year, around 87 of which drown in New South Wales (NSW).4

Public education campaigns can be a powerful prevention strategy when they are combined with other prevention measures that are ongoing. A public awareness campaign, entitled SafeWaters, was devised to raise water safety awareness in NSW on beaches; inland rivers, lakes and dams; and general water safety. This campaign was screened on television during the peak summer swimming season in NSW (December 2001/January 2002) and during the Easter holiday weekend (March/April 2002), with the aim of increasing the awareness of the general community in NSW of water safety issues and appropriate safety precautions.

The key messages of SafeWaters were:

- Learn to swim and survive;
- Always supervise children near water;
- Never swim alone;
- Only swim between the red and yellow flags at the beach;
- Fence swimming pools; and
- Beware of fast flowing water, submerged objects and deep water.

Evaluation of the SafeWaters campaign was conducted using a pre and two post population-based telephone surveys. Recall of the key water safety messages were assessed, along with perceptions of risk, attitudes to, and practices surrounding water safety.

A key finding of the evaluation was an increase in the recall of water safety messages between the pre-campaign survey and the first post-campaign survey (Figure 1). Prompted recall of key water safety messages from the SafeWaters campaign revealed a significant increase in the recall of seven out of the eight key water safety messages in the first post-campaign survey.

Perceptions of risk in relation to water safety were generally high during all three surveys and the two most common safe behaviours reported to be practiced in all three surveys in relation to water safety were: ensuring that young children were constantly supervised when they were in the water; and swimming between the red and yellow flags at the beach.
During the second post-campaign survey in April, recall returned to pre-campaign survey levels (Figure 1). Factors that contributed to the lessening recall of the Easter campaign during April included: that the campaign screened for one week as opposed to three weeks in the December/January period, other campaigns highlighting water safety messages were run during the December/January period and uncharacteristically the campaign did not coincide with the school holiday period in April.

**Figure 1:** Heard or seen any messages about water safety in the past 2 weeks?

![Figure 1: Heard or seen any messages about water safety in the past 2 weeks?](image)

It can be concluded that television is an effective medium for improving awareness of water safety, especially during peak aquatic usage times during summer and school holidays.

The *SafeWaters* campaign will continue in 2003/2004, including a particular focus on people from culturally and linguistically diverse backgrounds, with an investigation of water safety messages that have significant meaning to the Chinese community in NSW.

A copy of the evaluation report of the *SafeWaters* initiative can be obtained at [www.safewaters.nsw.gov.au](http://www.safewaters.nsw.gov.au)

**References**


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Outcomes of a feasibility trial to collect information regarding rescues at beaches and pools

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Information regarding rescues at beaches in Australia is often collected by water safety agencies, such as Surf Life Saving and the Australian Professional Ocean Lifeguards Association (APOLA). In New South Wales (NSW), each water safety organisation had in place a variety of systems to collect information on rescues and collected information on different variables using different coding frames.

The NSW Water Safety Framework: 2001-2003¹ identified that access to comprehensive data through the development and implementation of improved data collection methods would be of benefit in describing the number and circumstances surrounding drownings, near drownings and water-related injuries in NSW.

A minimum dataset for collecting information on beach and pool rescues was developed by the NSW Water Safety Taskforce and was trialed for four weeks at ten locations in NSW (8 beaches and 2 public swimming pools) by the NSW Injury Risk Management Centre. The aim of the trial was to examine what information on water safety from the dataset could be collected regularly and accurately by lifeguards/lifesavers in NSW using hourly records and details of rescue booklets.

Variables from the minimum dataset that were consistently and regularly reported, suggesting that they will provide comprehensive information were items that described conditions of the beach, such as wave type, tide times, sea conditions, and weather and wind conditions. Items associated with rescues that were consistently and regularly reported were sex, age group, activity before rescue, who performed the rescue, depth of water, location of flags, nearest rescue and rescue equipment.

Modifications to some of the variables in the data set were advocated. Items that had a written format, such as crowd attendances or rescue counts, items that required an estimate format, and items that required a long answer were unlikely to be answered. Items consistently not reported in the rescue data included age and type of first aid used in the beach sample.

Certain items were considered redundant as they were often reported as unknown. These were items related to information on the rescued persons such as the swimming ability, postcode of
residence, indigenous status, whether the person was under the influence of drugs or alcohol, and main language spoken.

The data collected from the pool attendants indicated that items associated with the conditions of the pool contained a high proportion of missing data. These primarily include wind conditions, wind direction, weather and temperatures.

A modified version of the minimum dataset for collecting information on water safety rescues, taking into account the recommendations made following the initial feasibility trial, is currently being trialed in NSW. The aim of the current sentinel event trial is to examine what information from the dataset could be collected regularly and accurately by independent observers.

Fourteen research assistants have been recruited and trained by the NSW Injury Risk Management Research Centre to collect data for the sentinel event trial. The trial is being conducted during three time periods in 2003 at five beaches in NSW (Bondi, Maroubra, Freshwater, Palm Beach, and Avoca).

Further information on the NSW Water Safety Taskforce is available at www.safewaters.nsw.gov.au

References


Acknowledgments: The authors acknowledge invaluable assistance from the NSW Water Safety Taskforce.
Access to home pools in Australia continues to grow, providing a recreation venue at home, or at the home of friends for a large proportion of the Australian population. Over the 10 year period from 1988 to 1997, 30,562 new home pools were constructed in Western Australia (1). This poster highlights the design characteristics which can be incorporated in home pools to reduce the risk of diving spinal cord injury. It is aimed to provide safety design information to be used by key stakeholders, such as the Royal Life Saving Society - Australia and the Swimming Pool and Spa Association, which could be made available to all new home pool purchasers whilst the pool is still in the design stage of pool construction. Pool purchasers will then be able to make informed decisions regarding the design of their pools, including features for injury risk minimisation.

**Methods**

Approximately 70% of Western Australian home pools are fibreglass, 20-25% are concrete while the remaining pools are vinyl liner pools (2). In order to collect information about the design of the pools constructed and the clientele installing pools, interviews were conducted with the leading home pool manufacturers in Western Australia. The Swimming Pool and Spa Association, WA (SPASA WA) provided the names of the three largest fibreglass pool companies and the two largest concrete pool manufacturers in Western Australia. Visits to pool display centres and perusal of home pool advertising material was also used to inform the authors of the characteristics of the most common designs of home pools.

Comparison was made with the findings of research conducted by the authors investigating typical dives of recreational standard pool users, including the ‘average’ underwater pathway of recreational swimmers (3). As suburban building blocks in Australian cities decreases in size, and house size increases, the space available for a pool is reduced. One pool manufacturer stated that this has resulted in a trend towards slightly shorter pools in recent years. This may lead to potential problems, as some pool purchasers express a desire for the pool to be “deep enough for dad to dive at the deep end, but shallow enough for the youngsters to stand at the other end”. Without adequate total length of the pool, it is possible that a diving spinal cord injury could be sustained when a pool user dives at the deep end, but makes contact with the upslope to the shallow end of the pool. This risk was highlighted by the authors when they superimposed the underwater pathways from the
‘average’ dive and the deepest dive of 95 young adults who took part in a diving safety related study (4) on the ‘typical’ home pool profile as described by the manufacturers interviewed for this study. The poster shows clearly that for some dive conditions, the diver who performed the deepest dive would have impacted the pool bottom and a catastrophic injury may have been sustained.

Alerting pool purchasers of the potential design problems, and ways to minimise the risk, is an important step towards minimising diving injury. Provision of safety design strategies to new home pool purchasers is one mechanism to inform purchasers. Aspects to be considered by potential home pool purchasers include

- the shape of the deep end, and of the whole pool. To minimise risk, the deep end should be extended rather than short, and irregular shapes should be avoided (5).
- demarcation between deep and shallow water (5)
- characteristics to assist in the estimation of depth
  - inclusion of depth indicators (5, 6)and bottom markings (6)
  - pool surface colour selection
  - adequate lighting (6)
  - filter capacity to ensure water clarity (5)
- signage to prohibit diving in shallow water and to outline spinal injury management procedures (5-7)
- landscaping to eliminate unintentional provision of diving platforms

Endorsement by key stakeholders is necessary to ensure wide promulgation of safe design strategies to new home-pool purchasers.

Conclusion

Diving is a high risk activity with potential catastrophic consequences. It is vital that appropriate precautions be taken to decrease this risk. The inclusion of risk minimisation features in home pools is an important step towards this aim.

References

Skill – a vital leg in the prevention of shallow water diving spinal cord injury

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This poster is a companion poster to the oral presentation “Water safety and diving – Preventing injury through teaching safer diving”. It highlights the need for a multifaceted approach to prevention of shallow water diving spinal cord injury, and presents research evidence of the success of an intervention program for the teaching safer diving skills. It also provides a step-by-step guide to the skills program.

Problem under investigation

Aquatic spinal cord injuries are potentially preventable, but currently make a significant contribution to the rate of traumatic spinal cord injury in Australia each year (1, 2). The typical injured person is a 15-29 year old male (3), with self-taught diving skills (4). The most common injury is dislocation or fracture at the level of C5/C6, causing tetraplegia (quadriplegia) (5-7).

To date, prevention programs have been based on improving awareness, on the assumption that people aware of the severity of a diving spinal cord injury will avoid such injury (7-11). However, increasing awareness has not been successful in preventing diving injuries (9, 12, 13). This paper examines the role of diving skill and its retention in the prevention of diving spinal cord injury.

Objectives

Through the evaluation of an innovative diving skills program, this paper aims to establish the importance of skill in prevention of shallow water diving spinal cord injury. It aims to verify that safe diving skills can be retained in the absence of practice.

Method

Thirty-four young adult recreational swimmers, previously identified as having poor diving skills, completed seven 10-minute diving skills sessions. Skills sessions emphasised locking hands together and holding arms extended beyond the head to also lock in the head, and steering and gliding skills (“Lock hands, lock head, steer-up”). Following acquisition of these skills, progressions for head first entries were included (14). Four dive entry conditions (dive from deck level to treadwater; dive from deck level to swim 25 m; dive from 0.75 m starting blocks to swim
25 m; and a running dive entry) were video-recorded and maximum depth reached was used as the criterion measure. A one-way repeated measures analysis of variance was conducted for each dive condition.

All participants were invited to follow-up evaluations of diving skill level eight and 20 months after the program (15, 16). Twenty-two returned at eight months post and 21 attended at 20 months post. No formal practice occurred in the intervening period.

**Results:**

Kinematic analysis showed that maximum depth decreased for all dives (p<.05) following intervention. Hands separated in 71% of pre-intervention dives but only in 3% of post-intervention dives. Pre-intervention, the dangerous action of pulling arms backward before maximum depth occurred in 30% of dives, leaving the head completely unprotected. This action was entirely eliminated post-intervention and after the 20 month non-practice period. Diving safety was improved following participation in the intervention program.

Comparison of results following the non-practice periods showed that improved safety skills were retained after the program without further practice. Mean maximum depths after 20 months were 10 to 40% shallower, dependant on the dive condition (p<.05). This study is the first in the formal literature to investigate the retention of skill enhancement over a non-practice period of this length.

**Conclusion:**

Although diving must be considered a high risk activity, with adequate precautions and an appropriate skill level, the risk of diving spinal cord injury can be reduced. This study showed that changes made following seven 10-minute skills sessions were retained after a twenty-month period without further practice. Shallower dives were combined with safer hand and arm positions, both decreasing the risk of injury.

The inclusion of appropriate safe diving skills progressions in learn-to-swim programs could decrease the potential risk of diving spinal cord injury.

**Limits**

The participants in this research were young adults of the high risk age group. It is possible that 70 minutes of instruction may not be sufficient time for younger children to acquire the necessary skills. However, this is a minor limitation, as the activities involved in the safe diving program are valuable as water confidence and body orientation activities, and are appropriate to include in learn-to-swim programs.
The emotional and financial burden of spinal cord injury is enormous (17). The intervention program evaluated in this study has the potential to significantly reduce the incidence of shallow water diving spinal cord injury. Specifically, it was shown that a simple, time efficient intervention resulted in shallower dives along with safer hand and arm positions and also that the improvements were maintained over time, without the need for on-going practice.

References

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