



Jonathon Webber

Honorary Senior Clinical Tutor
Auckland

Drowning - Nurses Programme

Saturday, 22 June 2013

Start 4:30pm

Duration: 30mins

Sportsdrome



Rotorua GP CME 2013
NZMA
New Zealand Medical Association

General Practice Conference & Medical Exhibition

20-23 June 2013 | Energy Events Centre | Rotorua

From Drowning to Survival: *A Resuscitation Case Study*



**Protecting our community
in the water**

In it for life



Presentation Overview

- The New Zealand Drowning Scene
- Drowning Terminology
- Wet Chain of Survival
- Case Study: Romesh
- Other Considerations in Aquatic Emergency Care
- Where to From Here?

Drowning in New Zealand

A Serious Public Health Issue

- The third most prevalent cause of unintentional injury resulting in death
- Our drowning rate is **2.6 per 100,000 of population**
- *Australia's* drowning rate is **1.27 per 100,000 of population** (284 people drowned in the year ended 30 June 2012)
- **93*** New Zealander's drowned in 2012 and **176** required hospitalisation



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Drowning Prevention Strategy

Towards a Water Safe New Zealand 2005–2015

Te Rautaki Ārai i te Toremitanga Kia Tupu ai a Aotearoa hei Whenua Haumaru ōna Wai 2005–2015



Hon Ruth Dyson



Minister for ACC



Implementation Plan 2007–2011

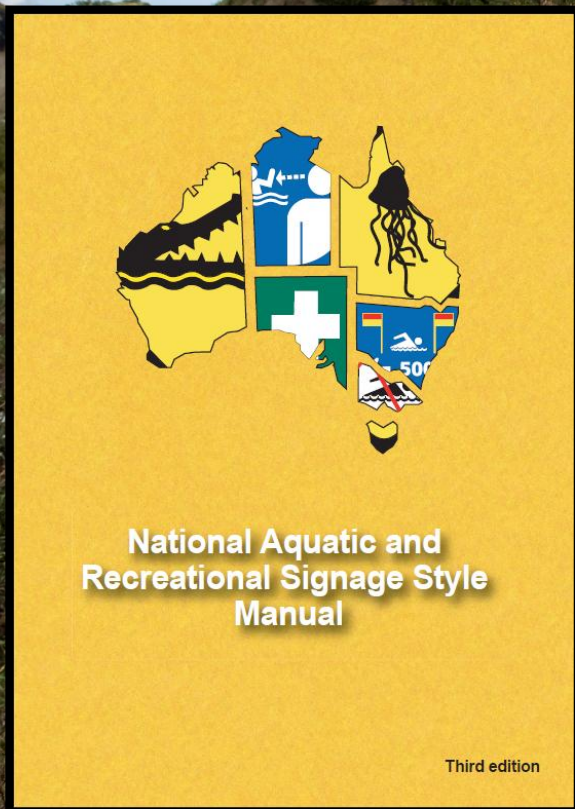


Causes of Drowning

The Drowning Chain:

1. Ignorance, disregard or misunderstanding of the hazard
Educate and inform
2. Uniformed or unrestricted access to the hazard
Provide warnings and deny access
3. Lack of supervision or surveillance
Extend lifesaving services as required
4. Inability to cope once in difficulty
Increase survival skills





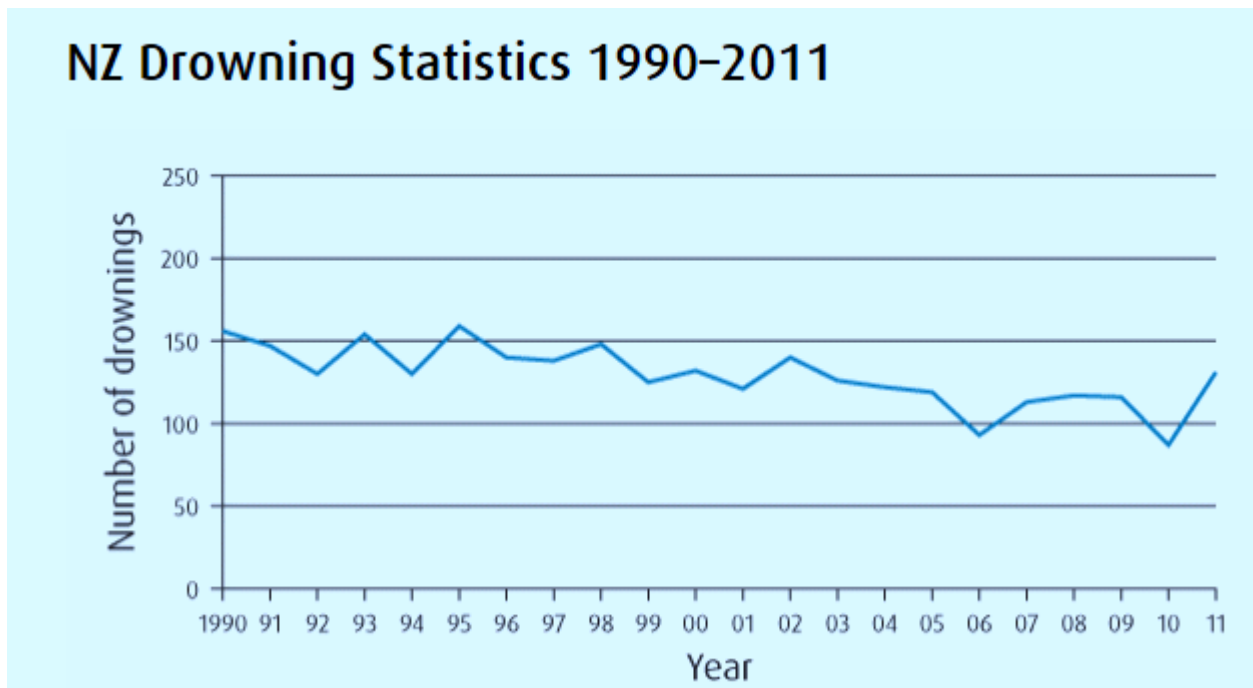


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NORTHERN REGION



So is it working??

2013 Provisional Drowning Toll: **39***



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Drowning Terminology

Background

- Over 30 different terms have been used to describe the drowning process and outcome from submersion and immersion-related incidents
- To improve clarity and to help comparability of future scientific and epidemiological reports, new definitions related to drowning were published in **2003**. These definitions have been accepted by the World Health Organization (WHO)
- Despite this many academics, health professionals, educators, emergency services personnel and the media **continue to use the old terminology**

Accepted Drowning Terminology

- ***Drowning:*** The process of experiencing respiratory impairment from submersion/immersion in liquid (WHO 2005)

The drowning process can be interrupted at any point and survival occur. The victim may live or die after this process, **but whatever the outcome, he or she has been involved in a drowning incident**

- ***Drowned:*** Death from drowning
- ***Other outcomes:*** Morbidity or No-morbidity (“non-fatal” drownings)

Other Drowning Terminology

- ***Immersion:*** Part of the body is under water
- ***Submersion:*** The whole body is under water
- ***Witnessed:*** Drowning episode is observed from the onset of immersion or submersion
- ***Unwitnessed:*** Victim is found in water, no-one saw the event



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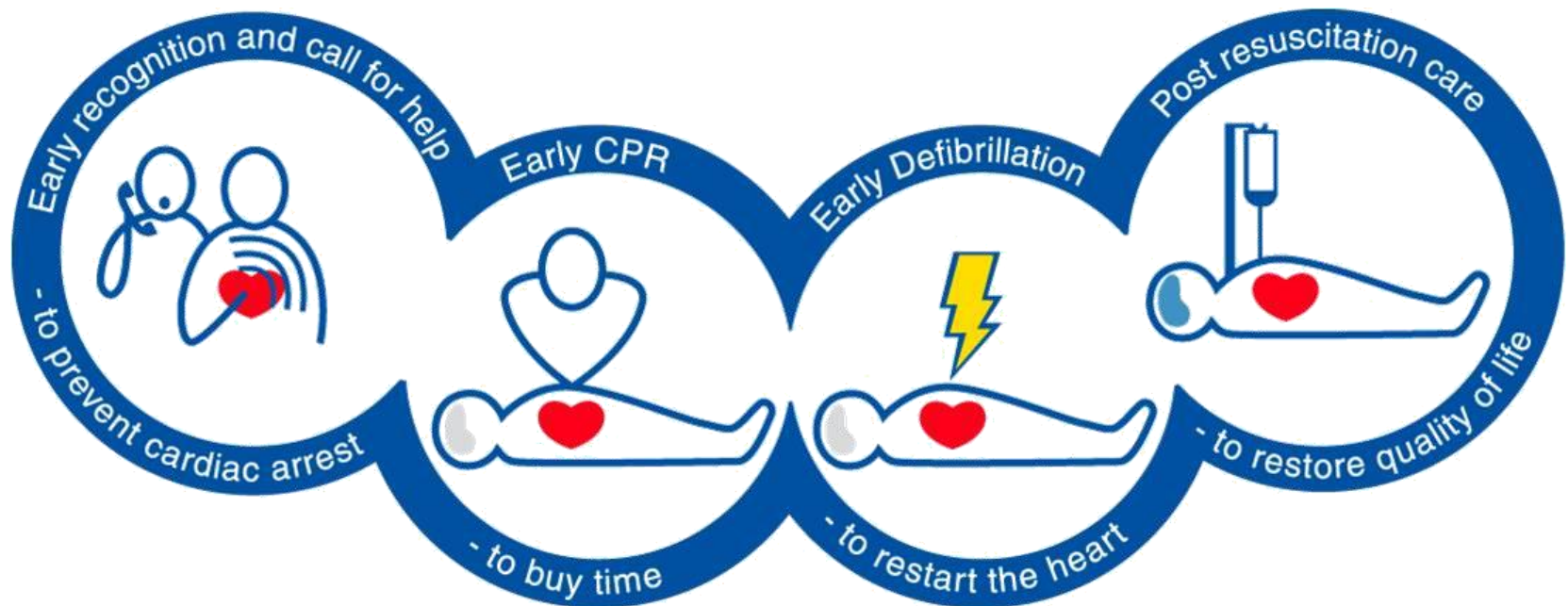
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Old (Abandoned) Terminology

- Near Drowning
- Secondary Drowning
- Active, Passive and Silent Drowning
- Wet vs. Dry Drowning
- Salt vs. Fresh-water Drowning

Chain of Survival

For Sudden Cardiac Arrest



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Wet Chain of Survival



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“You are the weakest link!”

Problem statements:

- How do you raise the alarm in a surf or aquatic emergency?
- How do we ensure the appropriate **local** resources are responded?
- **How do you recognise a drowning victim?**



Drowning Detection

Background

- Not all in-water behaviour is indicative of drowning
- Parents, caregivers and even some lifeguards can fail to recognise the **seriousness** of the behaviour they observe
- Adolescents (and non-swimmers) may not have the **cognitive ability** to recognise victims in distress
- Victims rescued by lifeguards require medical care **less often** than those rescued by bystanders (6% vs. 30%)



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“We didn’t know he was drowning!”

In the latter stages of drowning, a victim:

- cannot call out for help because they're gasping for air
- cannot wave for help because they're fighting to keep from going under
- will extend their arms to the side and push down on the water's surface to keep their head above the water (Instinctive Drowning Response)
- often looks like they're playing around

Note: non-swimmers may submerge with no surface struggle. Children may “bob” head down, appear to be “dog-paddling” or just sink



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“Dead heroes can’t save lives”

Attempting Rescue

- In many case reports it is the person in distress that **survives**, and the **rescuer that drowns**
- DrownBase™ records **81 people** as having drowned in New Zealand while rescuing others from 1980-2012
- This represents 1.7% of the total number of drownings during the same period

So, should you attempt a rescue?

In my opinion...

No. Not unless you have been trained to do so:

- Avoid entering the water if possible. **Only enter the water with some form of flotation**
- Always use **non-contact tows**. Remember **you** are a source of buoyancy to a drowning victim
- In most cases, **providing buoyancy** to the patient will interrupt or stop the drowning process

Public Rescue Equipment (PRE)



Talk, Reach, Throw, Wade, Row & Tow



Talk



Reach



Throw



Wade



Row



Non-contact tow



Contact tow



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Drowning Resuscitation

General Principles



- The DRSABCD approach applies to all drowning victims. Start CPR on any victim located within **1 hour** of being reported missing
- Immediate resuscitation **at the scene** is essential for survival and neurological recovery after drowning
- Prompt initiation of **rescue breathing** and basic life support is more important than defibrillation and advanced life support interventions
- Victims who have spontaneous circulation and breathing when they reach hospital **usually recover with good outcomes**

Drowning Resuscitation cont...

Initial Assessment

- There is no need to clear the airway of aspirated water. The majority of drowning victims aspirate only a modest amount of water
- The routine use of suction is **not supported** by clinical evidence
- As soon as the victim is removed from water, check responsiveness and breathing. If the victim is not breathing normally, start resuscitation immediately
- **Chest Compression-only CPR should only be used as an interim measure***



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Supraglottic Airway Devices



A Word of Caution

- Although now widely recommended for use in resuscitation, there is **no evidence** to support the routine use of SGAs in drowning
- Due to reduced pulmonary compliance, the high inspiratory pressures often required in drowning can result in ineffective ventilation from air leaking around the cuff or entering the stomach (ERC, 2010; Baker & Webber, 2011)
- Effective bag-mask ventilation or intubation (with a cuffed endotracheal tube) should remain the mainstay of advanced airway management in drowning
- The NZRC has indicated that endotracheal intubation is set to become a **Level 8** provider skill



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Case Study: Romesh

Non-fatal Drowning Considerations



- Patients resuscitated, those with an altered level of consciousness, foam in the nose/mouth or difficulty breathing **require ambulance transport to hospital**
- Consider calling for help **before** the victim is returned to shore
- Spontaneously breathing patients often froth. **Do not suction**; apply the mask and leave the froth to go in and out with the oxygen
- Most post-drowning “collapse” is due to **physical exhaustion** (fatigue) as opposed to breathing problems
- Patients with no cough or foam in the mouth or nose can **safely be discharged from the scene** with advice to see a doctor or call 111 if breathing problems develop (Spilzman, 2007)



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Other Considerations

Suspected Spinal Injury



- Remove all drowning victims from the water by the fastest and safest means available, and resuscitate them as quickly as possible
- The incidence of spinal injury in drowning victims is low: ~**0.5%** (ERC, 2010)
- Spinal immobilisation in an open-water environment is **virtually impossible** to perform and will **delay resuscitation** of the victim

Immersion Hypothermia

Cold Shock is the Killer



- The three phases of cold water immersion have been described using the “**1 – 10 – 1**” phrase:
 - **Cold Shock: 1 minute** to focus on keeping your head above water (to avoid aspiration) and control breathing until the hyperventilation subsides
 - **Cold Incapacitation: 10 minutes** of useful muscle time to self-rescue, activate an EPIRB etc. before muscle cooling will impair performance
 - **Hypothermia: 1 hour** immersed in **ice-cold water** until a person will be rendered unconscious
- Far more people die from **drowning** than will ever die from immersion-related hypothermia

www.coldwaterbootcamp.com



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Space Blankets

Science Fact or Science Fiction?



- Foil blankets are commonly used to prevent/treat hypothermia **despite** inconsistent results of studies into their effectiveness (Chadwick et al, 1997)
- One randomised controlled trial showed space blankets were less effective than two thin cotton blankets at maintaining normal body temperature perioperatively (Siew-Fong et al, 2003)
- In contrast, the Mediwrap® blanket has been shown to be as effective as a forced air warmer at maintaining normal body temperature before and during surgery, and **more effective** after surgery (Rathinam et al, 2009)
- A sleeping bag wrapped in plastic sheet to form a “vapour-trap” is a much better alternative when improvised materials must be used



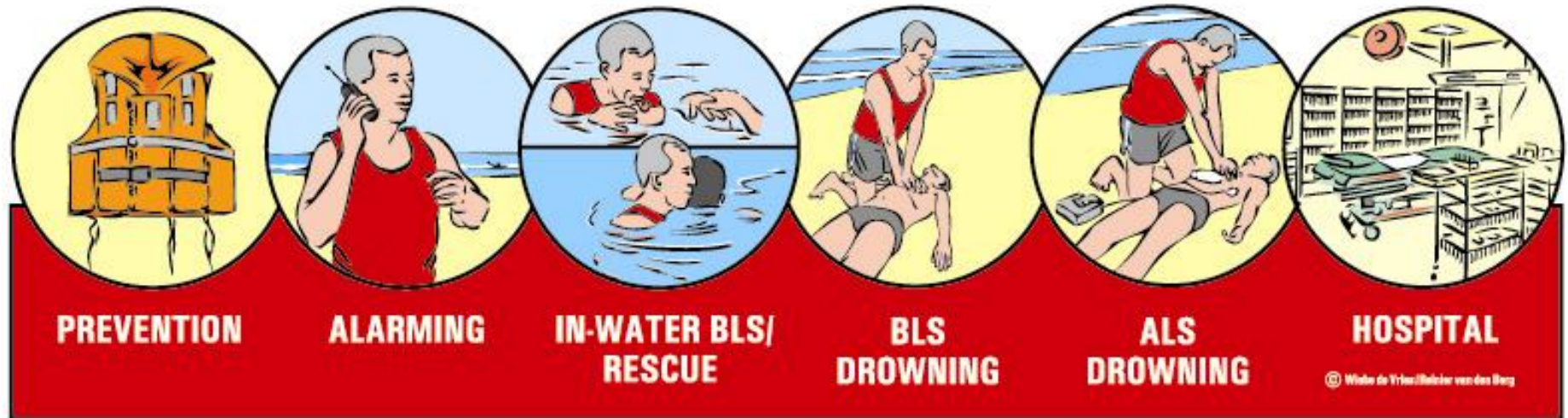
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Where to from here?

Review of the Wet Chain of Survival



My Thoughts...

We need a “Call to Action”

1. Wear a lifejacket & check conditions: *To prevent drowning*
2. Recognise drowning: *Victims may not call/wave for help*
3. Call for help: *To activate the rescue services*
4. Provide flotation: *To interrupt the drowning process*
5. Remove from water: *Attempt rescue with flotation only*
6. If not breathing, start CPR: *Continue until ambulance arrives*



An Integrated Approach Saves Lives

With thanks to:

- Piha Surf Life Saving Club
- United North Piha Lifeguard Service
- SurfCom (Surf Life Saving New Zealand)
- Piha/Karekare First Response Unit
- St John Ambulance
- Northland Emergency Services Trust
- New Zealand Police
- Auckland City Hospital (Adult Emergency Department & Department of Critical Care Medicine)



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