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# Drowning for Love

**The Aquatic-Victim-Instead-of-Rescuer (AVIR) Syndrome - Drowning fatalities involving those attempting to rescue a child.**

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## **Abstract**

Non-intentional child drowning remains a leading cause of child mortality. A related and secondary syndrome comprises those who drown in impulsive, altruistic attempts to go to the aid of a drowning child. Such 'rescuers' who attempt to save a drowning child may themselves drown, a tragic event we term the AVIR Syndrome or Aquatic Victim-Instead-of-Rescuer.

## **Methods**

This study comprises a five year (1 July 2002 to 30 June 2007) total population Australian survey, using the National Coroners Information System (NCIS) to identify cases and an analysis of every immersion rescuer-victim dyad where the primary 'victim' was a child and where the 'rescuer' drowned.

## **Results**

In Australia (2002-2007), 17 rescuers drowned in 15 incidents in which the primary victim was a drowning child. In 93% of incidents the primary 'child-victim' survived; 82% of victims were unfamiliar with the aquatic location (i.e. were a visitor); 76% of victims were a male parent, partner or first degree relative. Alcohol is not generally involved.

## **Conclusion**

We define the AVIR syndrome as one which involves typically: a) a male, parent, partner or relative; b) an unfamiliar water hazard; c) a 'rescuer' who is a tourist; d) where alcohol is not usually involved; and e) where the primary victim usually survives. We posit that an increased awareness of such risks; the promotion of rudimentary rescue skills (e.g. being able to throw a lifeline); and increased advocacy for parents to learn the simple and basic lifesaving skills of non-contact rescue will help reduce these drowning tragedies.

## Introduction

Child drowning remains a confronting challenge to all. Of the more than 410,000 victims who drown annually worldwide <sup>1</sup>, some 20% are children <sup>2</sup>. Drowning is the second leading cause of unintentional death in children aged 1-4 years in the United States and Africa <sup>3</sup> and the leading cause of death in this age group in nations as sociologically disparate as Australia <sup>4</sup> and Bangladesh <sup>5</sup>. In China, drowning is the second highest cause of unintentional injury death, after traffic-related injuries <sup>6</sup>.

Reduction of these preventable deaths requires heightened advocacy and intensified research in both national and international contexts. The prevention of child drowning requires age-, site-, and syndrome- specific approaches <sup>7,8</sup>. In one year (2007-08) 261 Australians drowned, of whom 40 were children under the age of 15 years <sup>9</sup>. Preventative approaches include: public education campaigns to warn of risks <sup>10</sup>; ergonomic approaches to isolate water hazards, particularly domestic swimming pools and household ponds <sup>11</sup>; the promotion of swimming and water safety skills <sup>12</sup>; legislative approaches <sup>8</sup>; and secondary endeavours such as improved rescue and resuscitation skills; and better paramedic and intensive care facilities to turn potential fatalities into survivors <sup>13</sup>.

The great majority of children who drown, in all immersion scenarios, do so within a few metres of the water's edge <sup>7</sup>. Once a child is in life-threatening difficulties, potential salvage can be effected by both non-contact <sup>14,15</sup> and contact rescues <sup>15</sup>. Such attempted rescues, usually by a parent or relative, may result in an extension of the tragedy of primary child drowning; and result in the death of the rescuer. We refer to this syndrome as the AVIR (Aquatic-Victim-Instead-of-Rescuer) syndrome. Tragically, this AVIR syndrome of 'rescuer-victim' is all too common. In Australia alone, over 15 years (1992-2007), 86 "rescuers" have drowned in attempts to save a primary drowning victim, this latter usually a child <sup>9,16,17</sup>. Often, the near-drowned child survives; but in one important sense remains a victim who has lost a parent or guardian.

The AVIR syndrome features regularly in newspaper reports in the United Kingdom <sup>18</sup>, Asia <sup>19</sup>, the United States <sup>20-22</sup>, and in Australia <sup>23-26</sup>. However, the issue has not hitherto been addressed in the scientific or medical literature. Every case involves the altruistic and instinctive impulse to save a drowning child's life. For this reason preventative approaches are particularly challenging. We posit that this specific type of multiple drowning tragedy can be addressed by a focus on stratagems to empower parents and guardians confronted with what many appreciate is a non-discretionary action-impulse to rescue their dying child. In this paper we define and examine this double-tragedy syndrome, and suggest recommendations for its prevention.

## Methods

We have conducted a total population, consecutive, unselected survey and review of every case of unintentional drowning death in Australia over the most recent 15-year period (1992-2007), undertaking case-finding by interrogation of the annual data reports of the Australian Bureau of Statistics (ABS) 'Causes of Death' <sup>16</sup> and the National [Australian] Coroners Information System (NCIS) <sup>17</sup> (implemented in 2000). Such case-finding was complemented by a) media reports using a comprehensive national media monitoring system ('Media Monitors'); b) The Royal Life Saving Society – Australia's annual Member Reports; c) the Surf Life Saving Australia National Coastal Safety Report <sup>27</sup>; and d) the annual National [Australia] Drowning Report <sup>9</sup>. Using this approach, more than 90% of such primary case identifications, registrations and reports are mutually inclusive.

In the context of this total population survey, we have identified a subset of all drowning deaths which have involved an attempted in-water rescue by a second person(s) over the most recent 5-year period (1 July 2002 – 30 June 2007) for which detailed data is available within the NCIS <sup>17</sup>. This dataset comprises comprehensive individual details of forensic and social circumstances relating to the drowning death(s). Using this approach we have identified a consecutive unselected series of victims where a relative or guardian was the altruistic "rescuer". This series thus includes every such immersion rescuer-victim dyad where the 'rescuer' drowned; and includes details of the death or survival of the primary child victim.

A child has been defined (WHO criteria) as an individual under the age of 19 years <sup>28</sup>. We have defined a drowning death using the WHO consensus definition <sup>29</sup>. This case series includes every case of fatal immersion in fresh, brackish, or salt water at all sites including pools, rivers, estuaries, dams, beaches (surf and still water) and open ocean. Data have been retrieved for victims involved in all activities including wading, swimming, boating, surfing, fishing and accidental falls or entry into the water. Homicides were *a priori* excluded from final inclusion in this dataset; however none

occurred in this series. This project received ethical approval from the Victorian Department of Justice Human Research Ethics Committee (CF/07/13729) and conforms to best-practice research ethics of the Royal Life Saving Society - Australia.

In studies such as this, the primary population of rescuers who successfully save an otherwise drowning child remains unknown, as such incidents do not feature in drowning statistics. Therefore, because a fatality (either 'rescuer' or child) is not recorded, the denominator which defines risk cannot be ascertained.

## Results

A total of 27 victims over the 5 year (2002-2007) survey period drowned in attempts to rescue a primary victim. In this series 16 adults and one child drowned during their attempted rescue of a child (average age = 36.1 years; range 8-55 years). Fifteen of such 'rescuers' were first degree relatives or guardians who perished in an attempt to rescue a child (53% parent, 27% uncle, 13% step parent, and 7% child). In the other two cases one 'rescuer-victim' was the guardian of the child and the other was a bystander to the incident. Fifteen were male; fifty seven percent were overseas visitors or tourists. Fourteen of the 15 of the primary 'victims' survived (93%). In two cases was alcohol known to have been consumed prior to the rescue attempt. (Tables 1 and 2)

[Insert Tables 1 and 2]

## Illustrative Cases

We describe three typical and representative examples of the AVIR syndrome:

### Case 1

In December 2002, both parents and their four children arrived by car at a sand beach on an inland freshwater Australian river for a family picnic. Whilst unpacking their car, their 7 year old son entered the water which was flowing swiftly. The boy experienced difficulties. The father, an able swimmer, entered the water and placed the child on his shoulders and called for help. A bystander entered the water downstream, took the child and brought him to the water's edge. The father (apparently exhausted) drowned, his body being recovered downstream four hours later.

### Case 2



In December 2004 a British ex-policemen and his partner and her two children, together with friends and their children, were enjoying a beach picnic at a protected but tidal, wave-washed, saltwater bay in South Australia. The children went swimming and got into difficulties in the water. The policeman, who could swim, entered the water and with help rescued the four children. In the attempt he was tumbled onto rocks and carried out to sea where he drowned. His body was washed ashore two-hours later, 500 meters from the incident site.

### **Case 3**

In 2002 a husband and wife and their two children were camping on the banks of a freshwater tidal Queensland river. The father, 'a reasonable swimmer', drank 12 cans of beer and went swimming with his six- and seven- year old children. The children experienced difficulties in the strong current. The father held their heads above water, himself being submerged in the rescue attempt. Other members of the camping party rushed into the water and assisted the children to safety. The father remained submerged and was dead when extracted from the water soon afterwards.

## Discussion

Parents and guardians instinctively and impulsively go to the aid of their drowning children. Such will always occur. This means that preventative approaches are particularly challenging. Our experience of water safety generally <sup>7-9 13 15 27</sup> and the analysis from this specific study indicate that empowering parents with personal lifesaving skills is the only practical way in which this double-tragedy drowning syndrome can be reduced. The basic paradigm of aquatic lifesaving is to effect a rescue without placing oneself at risk <sup>14</sup>. This study indicates that the sole specific preventative stratagem is prior training in both non-contact and contact basic lifesaving techniques. Only with such prior training can parents be empowered to effect potential rescues which will reduce the incidence of this tragic syndrome where the 'victim' survives and the parent or guardian dies. Such training is simple and enjoyable <sup>15</sup> and we believe can be summarised by the adage 'ever parent a lifesaver'.

Our research studies have demonstrated that only 20% of unpractised adults can throw a line within two meters of a target at a first attempt; and that 20% of adults do not secure the end of a flung rope<sup>14</sup>. By contrast trained children can affect a 10m accurate throw and pull a potential victim to safety within 23 seconds <sup>14</sup>. These skills of using an improvised 'line', for example a garden hose is simple to learn.

The AVIR syndrome is of course not limited to child drowning victims. Over 400 adults commit suicide annually in Ireland of whom 100 drown themselves. In Ireland between 2001 and 2006, eight would-be rescuers of such drowning victims themselves drowned in the attempted rescue, and another six had themselves to be rescued by police officer <sup>30</sup>. Extensive experience of colleagues in the International Life Saving Federation has proved that the risk of drowning can be significantly reduced if a rescuer is trained, even in the most hazardous of circumstances. In Australia, many thousands of successful rescues at beaches have been completed by lifesavers of Surf Life Saving

Australia, many in dangerous circumstances, with very few rescuers lives lost<sup>27</sup>. If potential rescuers are trained, the eventuated risk is very rare. Volunteers trained by the Royal Life Saving Society have also affected many successful rescues.

Possessing the basic skills of non-contact rescue is, in one sense, a form of 'secondary' prevention, instituted after a potential victim is already drowning. Advocacy to reduce the rate of all forms of drowning must be directed primarily towards education, safety design and legislation<sup>78</sup>. Education implies supervision, prior training and the acquisition of rescue skills. Supervision in tern comprises three elements - vigilance, attention, and proximity (ref); to which we add an essential forth component preparedness.

Research from the Brisbane drowning study<sup>78 13 14</sup> has highlighted the fact that whereas drowning is the end of a life it is the beginning of a new phase for relatives and loved ones<sup>31</sup>. To date, there has been no published study of the emotional or sociological sequelae of the child or family survivors of the AVIR syndrome.

## **Conclusion**

We define this AVIR (rescuer-victim immersion dyad) syndrome as one which involves typically a) a male, parent, partner or relative; b) an unfamiliar water hazard, in 80% of incidents, the sea; c) a 'rescuer' who is a tourist or overseas visitor; d) where alcohol is not usually involved; and e) where the primary victim usually survives. We posit that an increased awareness of such risks; the promotion of rudimentary rescue skills such as being able to throw a life line; and that increased advocacy for parents to learn the simple and basic lifesaving skills of non-contact rescue will help reduce these drowning tragedies.

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Table 1. Details of 17 'rescuers' who drowned while attempting to save a child drowning victim. Consecutive unselected series, Australia (2002-2007), by geographic status, site of drowning and victim-rescuer relationships.

		Male	Female	Total
Residence of Rescuer	Local Citizen	3	0	<b>3</b>
	Intrastate tourist (i.e. travelled more than 150km to venue)	7	1	<b>8</b>
	Interstate Tourist	2	0	<b>2</b>
	International Tourist	3	1	<b>4</b>
Site of Drowning	River/Creek/Stream	2	0	<b>2</b>
	Harbour/Bay/Inlet	2	0	<b>2</b>
	Beach	5	2	<b>7</b>
	Ocean	3	0	<b>3</b>
	Lake / Dam / Water hole	3	0	<b>3</b>
Relationship to primary victim	Parent	7	2	<b>9</b>
	Sibling	1	0	<b>1</b>
	Step-parent or partner	1		<b>1</b>
	Uncle	4	0	<b>4</b>
	Guardian or Bystander	2	0	<b>2</b>
<b>Total</b>		<b>15</b>	<b>2</b>	<b>17</b>

Table 2 Features of the AVIR (Aquatic Victim-Instead-of-Rescuer) syndrome (N=17)

	Percent
<b>Males</b>	88%
<b>Parent, partner, first degree relative</b>	88%
<b>Visitor to location</b>	82%
<b>Primary victim survives (n=15)</b>	93%