

# First Responder



JUNE '08 Newsletter

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## Strong winds blow toddler and pram into icy cold lake

An article in last months Chicago Tribune reports of a miraculous save of a young 2 year old boy who fell into the 5-degree Celsius cold waters of Lake Michigan and was submerged for at least 15 minutes before divers retrieved him and took him to a hospital. The incident occurred when wind had swept the 2 year old, strapped in a jogging stroller, into the icy cold lake.

Rapid response from the Chicago Fire Department rescue crew may have helped the boy survive. A helicopter with two divers aboard happened to be minutes away at Midway Airport when they heard the wind had blown a boy into the lake. Officials said the helicopter reached the scene in four minutes, shortly before another team of department divers and a paramedic crew arrived. By that time the local harbourmaster had rescued a 65 year old man who had attempted to go to the boys aid.

The first diver into the harbour spotted the boy's hair waving in dark water beside him within three minutes after he dropped from the helicopter. The toddler, still strapped into the jogging stroller, was brought to the surface to paramedics on the ledge above. At the time of the article being published the boy was still in a critical condition.

Research into similar incidents in the last three decades has shown that children can survive submersion in cold water for up to 66 minutes in one extreme case.

One reason may be their tendency to respond to such submersion with what amounts to a form of mini-hibernation. In what some experts call the "diving response," breathing stops, the heart beats more slowly and the body diverts blood from the extremities to the heart, brain and other organs where it's needed most. That reflex may help children more because their internal temperature can drop faster than an adults - a cue for their metabolism to slow down.

Drowning is a leading cause of accidental death among children both in Australia and the USA, and most cases of prolonged submersion end in death. But being submerged in cold water can elicit two very different responses, which can affect whether the person survives. One is the cold shock response, which many people have instinctively as soon as they feel icy water on their face. The victim gasps, then hyperventilates, leading to increases in heart rate and blood pressure. "The heart is working hard and pretty soon you tire yourself out, and you're more likely to drown," said Dr. Dave Beiser, an emergency physician at the University of Chicago Medical Centre.



*Paramedics wait whilst a diver searches for missing boy*

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- \* Instructions for Use

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The other reaction is the diving response, so named because it resembles some of what happens to mammals such as whales and dolphins when they swim for long distances underwater. But the diving response alone is not enough to ensure survival, Pozos said, "it must be accompanied by a drop in internal temperature. A fast drop is possible in children because they have a higher ratio of surface area to weight, meaning cold water cools the body more quickly than it would for an adult". Researchers also believe many children are aided by swallowing or breathing in cold water, which helps cool their internal organs and slows their metabolism.

Once a child gets to a hospital, doctors must be careful not to attempt rapid warming, said Dr. Russ Horowitz, an attending physician in the emergency department of Children's Memorial. About one-third of children who endure cold-water submersion suffer long-term neurological damage, Horowitz said. The chances for recovery are relatively good for children because their brains are still growing and retain much of the plasticity that people lose as they grow older.

Research also suggests that children stand a better chance of survival if they fall into very cold water -- less than 10 degrees Celsius or so. Warmer water will not trigger the diving response or lead to a slower metabolism. For most children, the limit of survival after submersion in warm water is about 15 minutes.

But in the most extreme case of cold water survival ever recorded, a Salt Lake City toddler lived after being submerged in cold water for 66 minutes in 1986. That girl, Michelle Funk, appeared blue and lifeless after being pulled from an icy creek, and her internal temperature was as low as 18 degrees Celsius.

But after hours of the hospital team administering warm fluids and warmed air and putting her on a heart-lung bypass machine, the girl revived. Bit by bit, she regained her sight, her speech and fine motor control. By the time the Utah doctors published a medical journal article on the case in 1988, the girl had essentially returned to normal.

## INTRAOSSEOUS VASCULAR ACCESS PROGRAM

### CAIRNS

June 27, 2008

July 18, 2008

August 29, 2008

(Half day)

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## Anaphylaxis - a growing epidemic !!

For years, millions of parents have been advised to avoid feeding their children certain foods which could cause severe allergic reactions even if there was no history of having allergies in the family. Doctors thought that there wasn't any harm in avoiding things like peanuts, just in case they did trigger allergies.

Allergy specialists now believe we've been tinkering with our immune system without really knowing how it works, and an allergy generation has been born.

Since this advice became widespread, allergies in children have soared. Last year, Australian doctors filled out 45,000 prescriptions for EpiPens, the adrenaline injections to treat the anaphylactic shock that severe allergies can cause.



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- \* Stethoscope (Sprague)
- \* Penlight torch
- \* Paramedic shears
- \* Sharps container
- \* Stifneck Select Cervical Collar
- \* Instructions for Use

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That's up 10,000 on the previous year and 40,000 more a year than were prescribed ten years ago.

Admissions for anaphylactic shock at Melbourne's Royal Children's Hospital have doubled in the past four years and tripled since 2001.

At Princess Margaret Hospital in Perth, Professor Susan Prescott is one of the people who's now working on the delicate process of what to tell parents they should now be doing. Professor Prescott say "I think in the next year or two, you're going to hear that the current recommendations for avoiding foods and delaying the introduction of solid foods in infancy and avoiding things like eggs, milk and peanut in young children, is going to be changed. We are not going to be any more recommending the delayed exposure to these foods. The earlier, maybe the better".

Allergy specialist Dr Ray Mullins has a clinic in Canberra and says "in the ACT there has been a 14-fold increase in food allergy consults in the last 13 years and a tenfold increase in peanut allergy".

When the immune system over-reacts to cat hair, pollen or peanuts, it sparks a chain of chemical responses that can cause all sorts of uncomfortable and even dangerous symptoms, from sneezing to swelling. No-one's quite sure why some people respond this way and others don't. One theory is that it is thought to be genetic. The other thing that's a mystery is why these allergy epidemics have been coming in waves.

The rise of allergies was first noticed in the 1980s, when asthma started to become common. It was followed by a wave of eczema and then hay fever. For some reason, asthma rates have plateaued. Researchers say, the new kid on the block now is the food allergy.

Death from anaphylaxis in children is extremely rare. Even though food allergies are more common, there's been only one death of a child under five in the past 10 years from a food allergy.

Food intolerance that can make anyone feel ill at times should not be confused with allergic reactions to food. A true allergy is the immune system going haywire, and while it can produce those same symptoms, it usually happens much faster and there can also be a rash, and in severe cases, swelling, a drop in blood pressure and shock. This can all happen in less than a minute. In very severe cases, and without first aid or an adrenaline injection, people can die.

Ninety percent of food allergies are caused by nuts, eggs, milk and soy. Peanut allergy is the most common and dangerous, but no-one's quite sure why peanuts are so bad. It does have several proteins that when eaten, travel quickly around the body in large amounts, causing trouble.

The treatment for severe allergies that cause anaphylaxis is an adrenaline injection. In Australia, doctors prescribe small self-injectable needles called Epi-Pens, and you can put one in your pocket or purse and have it handy, just in case.

Late last year, Access Economics produced a report that put the cost of allergies to the Australian community at more than \$7-billion a year.



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Professor Susan Prescott says "there has been a huge recognition recently that may be by avoiding foods or delaying the introduction of foods to infant diet may actually be doing more harm than good. We need to understand that this practice has risen out of what was thought was best, and it was thought that perhaps the immature immune system was better off not seeing these things until it had become more mature. But now we know, of course, that the development of tolerance to these foods is actually dependent on early, regular exposure to these foods and that's how in animals and normal humans that tolerance develops".

Dr Ray Mullins from Canberra says" there is going to be the so-called cohort effect, particularly with peanuts, which is the one that strikes fear into most people. We know that only 20 percent of people with peanut allergy will ever grow out of it. So 80 percent of the little kids we're seeing today will be teenagers in 10 years time and older adults later on and we're going to see this cumulative effect in older generations, the so-called allergy generation which will need resources. And we do not have enough specialists to go around, but we also need to upskill our general health workforce".

Monash University is hoping to have a peanut vaccine within five years. It won't be the silver bullet. Like other allergy vaccines it'll be a series of therapy injections, and will probably be expensive.

## Anaphylaxis - Do all first aid courses include EpiPen training ?

This obviously must not be the case. Education Queensland and the Queensland Ambulance Service have piloted an Anaphylaxis management training program targeted at school staff in the SE regions of the state.

What information should be given in First Aid classes regarding the treatment of Anaphylaxis?

Firstly, the cause and current frequency of anaphylaxis should be discussed. The previous article was mainly concerned with food allergies, but other provoking factors need to be mentioned such as reactions to medicines, plants, insects as well as food. It needs to be stressed that an anaphylactic reaction can manifest itself with respiratory compromise due to severe bronchospasm (asthma attack) or massive tissue swelling due to leakage of plasma from the circulatory system into the tissues resulting in potential airway occlusion.

Immediately assistance from Emergency Services should be sought along with the rapid administration of adrenalin. This can be done via an EpiPen (auto injection system) or ampoule, syringe and needle. EpiPens are available in 2 sizes; adult and junior. The Adult size EpiPen contains 0.3mg of adrenalin whilst the Junior contains only 0.15mg adrenalin. EpiPens are most effective when used at the beginning of the reaction. If a full anaphylactic reaction has developed, the amount of adrenalin available in the EpiPen may not have the desired effect, so first aiders should be quick in their recognition and actions of this life threatening emergency.

A question often asked "can the adult EpiPen be used on a child suffering an anaphylactic reaction".

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“The ResQPOD® is the only impedance threshold device on the market.”



**New and Revolutionary Aid to CPR**

First aiders should be aware of the fact that the maximum dose of adrenalin for a child in anaphylaxis is actually far higher than what is contained in the adult EpiPen.

Finally, all participants in a first aid class should have used an "EpiPen Trainer". This device closely resembles a true EpiPen. Students should be trained in the injection procedure which includes the steps of removing the safety cap, pushing the EpiPen into a large muscle such as the middle outer thigh and holding it in the muscle for a complete 10 seconds allowing the drug to be auto injected.

A first aid class should have sufficient numbers of "EpiPen Trainers" to allow participants to practice repeatedly with the device until comfortable with its use.

**DOES YOUR FIRST AID PROVIDER DO THIS ??????**

## The Last Word

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### WOUND CLOSURE PROGRAM

#### CAIRNS

July 18 2008

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### IV FLUID THERAPY PROGRAM

#### CAIRNS

August 23 2008

Half day full-time plus pre course study

Limited spaces. Conditions and prerequisites apply

The challenge of improving CPR quality is now the main focus in resuscitation research. The last few decades has seen the emphasis on defibrillation and newer pharmacology as therapies for the sudden cardiac arrest (SCA) victim. With only one in two out-of-hospital SCA having an initial shockable rhythm (in the USA it is suspected as being as low as one in three to four) it is becoming apparent that manual CPR as we know it can only go so far.

The American Heart Association gives high recommendation for the use of equipment such as Threshold Impedance Devices (ResQPOD) as adjuncts to enhance vital circulation during CPR. It also suggests that compression only CPR be used for the untrained responder, the unwilling responder and for phone CPR when instructions are being given over the phone to untrained responders.

Often no feedback is available after CPR delivery, making it difficult for well meaning rescuers to recognise performance errors. Only in the past few years has the ability to provide real time feedback during CPR become available.

Technology will supply the answer to improving CPR. There is a variety of devices able to do this such as AEDs with real time CPR feedback giving audio/visual assistance. Devices that can assist with or replace manual chest compressions; battery powered chest compression load distributing band and air drive piston system.

But what is most disappointing is the poorly understood technology relating to the creation of and enhancing of the thoracic vacuum during chest compressions which can more than double blood flow to the heart, Cardio Pump and Impedance Threshold Devices (ITD). Together with new CPR guidelines, survival rates for SCA are soaring. One recent study of in-hospital arrests showed that with new CPR guidelines and ITDs, initial arrest survival increased by 75% and survival to hospital discharge increased to 62%. These are statistics that just a few short years ago were thought to be impossible.

Many 1000s of people are taught CPR annually and probably walk away from classes thinking they will be able to perform CPR well. How many of these people have an unrealistic expectation of the success of CPR. First aid training organisations must take some of this blame because our classes should be incorporating the new technologies.

Maybe its about time to start teaching CPR in a more realistic fashion !!!!!

**Charles Makray**  
Managing Director

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