

First Responder



April '09 Newsletter

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**EMERGENCY
MEDICAL
TECHNICIAN
PROGRAM
CERTIFICATE LEVEL IV**

**CAIRNS April 27
MELBOURNE June 1
11 days full-time**

PLEASE ENQUIRE ABOUT OUR
ON-SITE PROGRAMS

**P H E R T
PROFESSIONAL
DEVELOPMENT
PROGRAM**

**CAIRNS
May 25–27 2009
3 days full-time
(see page 7 for details)**

A little oxygen is good – a lot of oxygen is better – REALLY?

At every level of pre-hospital care provision we've always taught that a little oxygen is good and a lot of oxygen is better. The closer oxygen saturation is to 100%, the better -- or so we are told. New evidence is challenging this long held believe and may be telling us that our current practice may not be in the best interest of the patients?

A few years ago we saw clinicians start to limit supplemental oxygenation given to newborns and neonates. It was always known that high- concentration oxygen was associated with the development of retinopathy of prematurity (ROP), formerly called retrolental fibroplasia, in premature infants (a cause of blindness). Later, it was also found that neonates resuscitated with high-concentration oxygen had worse outcomes than those resuscitated with room air. For example, infants resuscitated with 100% oxygen have a greater delay to first cry and a greater delay to first respiration. Studies showed a significant decrease in mortality when neonates were resuscitated with room air instead of 100% oxygen.

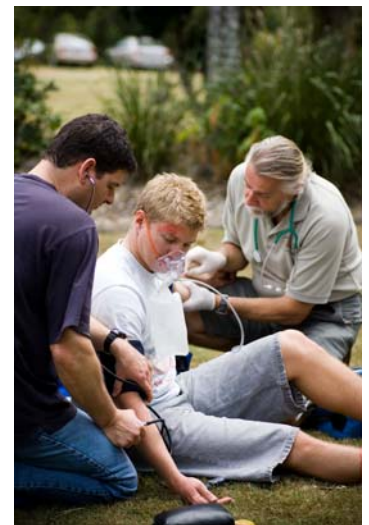
Next, the development of toxic chemicals called "reactive oxygen species" or "free radicals" is believed to be the cause of "reperfusion injury". Reperfusion injury occurs when oxygen is reintroduced to ischemic tissues (tissues starved of oxygen), such as may be found during a cardiac arrest or possibly a stroke. Stated another way, the injury does not occur during periods of hypoxia (lack of oxygen to the cells). It occurs after oxygen is restored to the affected tissues. These "free radicals" occur naturally, but the body has systems that process the free radicals into less toxic substances, thus avoiding significant cellular damage. But following a period of hypoxia, a large number of free radicals are produced that overwhelm the protective systems (antioxidants) and cellular damage occurs. This damage is called "oxidative stress." So, the evolving thought is that, in some conditions, high concentrations of oxygen can be harmful.

Some of the conditions that are now being considered in the light of this developing evidence are:

Stroke- The brain is quite vulnerable to the effects of oxidative stress. It has fewer antioxidants than other tissues. So the question posed is "should we give oxygen to non-hypoxic stroke patients"? Studies have shown that patients with mild-moderate strokes have improved mortality when they receive room air instead of high-concentration oxygen.

Current research indicates that supplemental oxygen should not be routinely given to patients with stroke and can, in some cases, produce poor outcomes.

Acute Coronary Syndrome- The myocardium (heart muscle) is highly oxygen dependent and vulnerable to the effects of oxidative stress. To date there's no evidence that giving supplemental oxygen to acute coronary syndrome patients is helpful, but important to note there's no evidence it's harmful.



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Post-Cardiac Arrest: The evidence here is quite limited but it is known that virtually all current therapies for cardiac arrest (drugs, intubation) are of little, if any, benefit. The primary therapies remain CPR (often with limited ventilation initially) and defibrillation followed by induced hypothermia. The whole purpose of induced hypothermia is to prevent the detrimental effects of oxidative stress and the other harmful effects of reperfusion injury.

Trauma: The role that oxygen should play in non-hypoxic trauma patients is now being questioned. Small levels of research exist but an interesting study out of New Orleans demonstrated that there was no survival benefit to the use of supplemental oxygen in the prehospital setting in traumatized patients who do not require mechanical ventilation or airway protection.

Carbon Monoxide (CO) Poisoning: We have learned a lot about carbon monoxide poisoning. In the past few years knowledge of the mechanism of CO poisoning has proven it is a lot more complex than once thought. It's also known that there's no reliable evidence that hyperbaric oxygen (HBO) therapy improves outcome (although it's still widely used). The goal of treatment in CO poisoning is to eliminate CO through ventilation -- not hyper-oxygenation. Although oxygen can displace some CO from hemoglobin, the induction of free-radicals may be worse than the effects of CO. Much more research is required to provide conclusive answers to these challenges.

Neonates: The science is clear in regard to supplemental oxygen in neonates. It should be used only when room air ventilation fails.

The goal of oxygen therapies is to avoid hypoxia. If the patient's oxygen saturation and ventilation are adequate, supplemental oxygen is probably not required.

Editor's note: Information for this article was gathered from a lecture "The Oxygen Myth" given by Dr. Bryan E. Bledsoe, an emergency physician in Texas. Bledsoe also leads the Street Medicine Society, a group of physicians who got their start as EMS professionals.



\$ 4,999.00 (GST Free)

KIT INCLUDES:

- ★ Oxy Resus Soft Pack
- ★ ZOLL AED PLUS
- ★ ResQPOD
- ★ IGEL AIRWAYS (3 sizes) plus accessories
- ★ All brass multi flow regulator
- ★ Bag Valve Mask Device - disposable - Adult & Child sizes
- ★ Therapy Masks (adult & child)
- ★ Oropharyngeal Airways - Set of 3
- ★ V-Vac Suction Kit with spare cartridge
- ★ X-Collar Cervical Splint
- ★ Instructions for Use

Postage, Handling & Cylinder not included

What's wrong with this picture ??? Win one of 10 new i-gel airways

INTRASOSSEOUS VASCULAR ACCESS PROGRAM

CAIRNS

May 3, May 27, 2009
(Half day)

Prerequisites apply

Limited spaces-prerequisites apply

Our last newsletter was devoted to the subject of QUALITY CPR. In that article we discussed the techniques that could be improved upon during real life CPR scenarios.

The picture right, shows a cardiac arrest resuscitation taking place.

What poor techniques and/or potential problems can you see??

We reckon there are at least 4 major problems that that are obvious.

The first 10 readers to email us what they think are the four major problems that can be seen in this picture get a new i-gel airway (size 4) delivered to them in the post.

Email your answers to:

emt@FirstResponseAustralia.com.au



RESPONDER PRO

Oxygen Resuscitation Trauma Kit with Diagnostics



\$ 1,795.00 (GST Free)

PACK INCLUDES:

- DHS 100 Oxy Resus Pack
- All brass multi flow regulator
- ResQPOD
- Bag Valve Mask Device - Adult disposable including mask, tubing and reservoir
- Therapy masks (adult)
- Oropharyngeal Airways Set of 4
- V-Vac Suction Kit
- Glucometer (Accu-chek)
- Sphygmomanometer (palm style)
- Stethoscope (Sprague)
- Penlight torch
- Paramedic shears
- Sharps container
- X-Collar Cervical Splint
- Instructions for Use

Sydney Airports strengthens "Chain of Survival"

This month sees Sydney Airport Corporation (SACL) strengthen their "chain of survival" by adopting "Impedance Threshold Device"(ITD) technology. All the Airport's oxygen resuscitation kits have been fitted with the new revolutionary ResQPOD, a device when used in the resuscitation of a cardiac arrest victim more than doubles the blood flow during CPR.



Kits installed throughout the complex. Since the Olympics, Sydney Airport's "duty terminal coordinators have been continually trained and updated in the most up to date resuscitation technology.

One driving force for the inclusion of the new ResQPODs into the emergency response arsenal, was the evidence supporting the ResQPOD. Putting together the facts that less than 1:2 cardiac arrest victims are shockable by a defibrillator, standard CPR is inherently inefficient, usually poorly performed and the impressive survival statistics where ResQPODs are used, the decision to enhance the "chain of survival" was an easy one.

Since the Sydney Olympic Games, Sydney airport has always had a strong commitment to providing quality First Response at its International and Domestic terminals by having Defibrillators and Oxygen



Cleaned your stethoscope lately ?

Stethoscopes carried by ambulance crews are not always cleaned as often as they should be. As a result they may be exposing some patients to drug resistant bacteria. Researchers who looked at stethoscopes used by emergency medical services workers in New Jersey found that a significant number carried a bacteria resistant to standard drugs- Methicillin



Resistant Staphylococcus Aureus

(MSRA). Some of the ambulance workers could not recall the last time the instruments had been cleaned.

The study's lead author, Dr. Mark Merlin of Robert Wood Johnson Medical School, said it was unclear how big a threat MRSA on a stethoscope posed to a patient. As incidents of bacteria infection become more common, & with the possibility that it will become more resistant to antibiotics, it is important to reduce its spread. Researchers asked ambulance crews arriving at an emergency department over a 24 hr period to let their stethoscopes be tested. They also asked when the instruments had last been cleaned. Of 50 stethoscopes tested, 16 had the bacteria, which a simple alcohol swab is usually enough to kill. The authors suggested that although the cleaning an entire ambulance after every patient may not be practical, cleaning a

stethoscope, is not labour intensive, does not require much time, & does not require any special equipment beyond currently stocked items.

How often does your first aid equipment get cleaned?

ATTENTION EMTs

Are you registered with
the Australasian Registry
of Emergency Medical
Technicians

AREMT

Gain recognition for your
hard earned
qualifications

Visit the website to see
what AREMT can do for
you!!!!



gel

ADVANCED AIRWAY KIT

Includes:

- ★NEW I-GEL Airways
- Size 3,4,& 5 with gel
- ★ResQPOD
- ★Bag Valve Mask
- Adult & Child
- ★Gloves
- ★Carry Case

\$ 399.00

(GST Free)

Heart Disease epidemic amongst US firefighters

Preliminary findings in the world's first study of first responders at risk of suffering sudden death or other significant cardiac events has just been released. US Firefighters aged 40 and over were assessed for their increased risk of cardiac disease. Firefighters are known to have a three hundred percent increased risk for cardiac disease as compared to other segments of the population. "Preliminary findings show that one third of firefighters had heart disease that is unrelated to traditional risk factors, such as high cholesterol," says Dr. Superko of St Joseph's Hospital in Atlanta. "Those results are astounding and point at job duties and environment as the primary determinants for early death in our country's first responders."

The Atlanta hospital team performed a comprehensive, scientific battery of sophisticated blood and imaging tests on three hundred firefighters in Gwinnett County, Georgia.

Study volunteers underwent a comprehensive genetic screen of more than a million genes including newly identified KIF6 (statin responsiveness gene) and 9p21 (myocardial infarction gene), advanced phenotype (blood) and imaging analyses, diet and exercise review over the year-long study.

Stress and psychological pressures related to the job, as well as diet, exercise issues and inherent personality, interacting with a genetic predisposition to heart disease, probably have tremendous impact on the risk of heart attack in these first responders. "Stresses such as being awakened from a dead sleep by a loud, shrieking siren several times during the night, responding through the rush of adrenaline, carrying a 45kg of equipment on your back, and meeting people at the very worst possible moments in their lives every day, you can begin to understand the toll it takes on the first responders. Emotional and psychological stress that is encountered each day as Firefighters respond to society's most brutal moments from murders to car wrecks and death need to be considered. Finally, those who serve as first responders have a mind-set and a desire to help people. They certainly bring a competitive nature to the job but also a profound desire to help and to do the best for others." says Dr. Superko.

These elements create an environment that puts them at an increased risk for cardiac disease. Gwinnett Fire Department has instituted exercise programs within local firehouses and the county now re-reimburses for fitness club memberships. The department also educates firefighters on proper diet and nutrition with one-on-one opportunities as well as "lunch and learn" programs in the station houses. The traditional firehouse alarm in Gwinnett stations has now been replaced with softer alarms and even-voiced prompts to awaken sleeping first responders.

As a result of the study, Saint Joseph's Hospital and Dr. Superko's team implemented a two month screening program for all Atlanta first responders (firefighters, Police and EMS) regardless of age in order to provide them with some basic and advanced diagnostic tests at prices affordable to firefighters. Several physicians are providing their services free of charge. "There are tremendous costs associated with early deaths of our first responders in every community as we lose men and women in their 30s, 40s and 50s who are our first line of defense but who don't live to perform their jobs for very long," says Chief Rolader. "With the results of this study, we can implement programs across the country that will save lives."

Final results are expected to be submitted for presentation consideration at the annual American Heart Association meeting.



FRA launches new Pre-hospital care Professional development program

First Response Australia this month launched, what it believes is one of the country's most unique programs in Pre-Hospital Care. The "Pre-Hospital Emergency Resuscitation & Trauma" program (PHERT) has been developed as a professional development program aimed at all allied health care workers.

The PHERT professional development program is a unique two to three-day multi-disciplinary continuing education program designed to further develop and increase knowledge and skills in delivering critical Emergency Care.

The PHERT professional development Program with optional workshops consists of lectures and practical skill stations followed by scenarios and assessments.

Completion of the program re-qualifies participants such as "industrial medics", EMTs to the highest level of Pre-hospital Care training available to private industry and therefore supersedes all other qualifications that fall below diploma level in pre-hospital care.

Day one of the program enables participants to revise and enhance their knowledge and skills with in interactive case studies and skill stations which involve the following areas:



- Advanced Airway Management
- Impedance Threshold Device Technology
- Haemorrhage Control
- Intravenous Therapy
- Spinal Immobilisation
- Musculoskeletal Immobilisation
- Chemical Splashes & Burns Management
- Multi Casualty Incidents

Day two into the program, participants are challenged in a series of medical and trauma scenarios. This is where the underpinning knowledge and skills are assessed.



Day three (AM) of the program (optional) give participants the opportunity to gain qualifications firstly for Intraosseous Vascular Access. This unique course only available from First Response Australia, enables participants to attain skills and qualification to administer an infusion of intravenous fluids and/or medications using specialist emergency care equipment. The course content includes: background & introduction to FAST 1 system, difficulties with IV vascular access, basics of vascular access by IO, advantages of IO vascular access, procedures for use, indication, precautions, troubleshooting, flow rates and assessments.

Day three (PM) participants learn skills to enable the correct management of wounds. The 5 hour, hands on program includes: wound cleaning and assessment techniques, wound closure with sutures and alternative techniques such as tissue adhesives.

The program was developed by Charles Makray (director) and Neil Trehwella (co-ordinator of pre-hospital care studies) of First Response Australia. "In Australia there is no such program that delivers the latest advances, innovations in medical and trauma emergency management" says Neil Trehwella. "This program represents the most up to dates trends occurring in pre-hospital care" Trehwella says. "To date there have been one or two products delivered in this area but they typically consist of franchised programs from overseas and do not represent up to date technology and trends. "What makes our program so different is the new technology incorporated into the course, especially in the area of emergency resuscitation, which other programs don't even include" say Charles Makray.

New products @ FRA



i-gel AIRWAY KIT.

This compact kit incorporates two new technological advances in first aid and pre-hospital care.

The new *i-gel* airway from Intersurgical represents the latest advances in supraglottic airways. A non inflatable cuff with gastric drain tube that can be reliably inserted in less than 6 seconds. What was once a paramedical skill has now become a first aid skill, enabling the operator to protect and maintain an airway with much greater ease than using the traditional pocket mask. With a secured airway CPR can become more efficient, allowing compressions and ventilations to be asynchronous.

Next we have what is undoubtedly the single greatest advancement in CPR - the *ResQPOD*, an Impedance Threshold Device that more than doubles blood flow to the brain and heart by enhancing the negative pressure naturally produced in the chest during CPR. It is this action that draws more blood back to the heart and therefore increasing output.

An adult and child bag valve mask is included in the kit.

Retails at \$399.00 (GST free)

Discounts are available for bulk purchases.



CardioPump.

Newly released into Australia the CardioPump permits the rescuer to actively re-expand the chest during the decompression phase of cardiopulmonary resuscitation (CPR). Active compression decompression CPR (ACD CPR) enhances the intrathoracic vacuum (negative pressure) during chest wall recoil, resulting in more blood being returned to the heart (preload). Enhanced preload leads to increased cardiac output on the subsequent chest compression.

The design of the device allows the rescuer to use the same position and compression technique as for standard CPR. The suction cup sticks to the chest and transfers a lifting force to the thorax. Active chest decompression is obtained simply when the operator swings their body weight upwards after each compression while holding on to the CardioPump's handle. Chest compression is accomplished in the same manner as for standard manual CPR by pushing

down on the CardioPump. The device is available with a metronome which guides operators to the correct compression rate.

In-hospital and out-of-hospital studies have shown that performing ACD CPR:

- Increases arterial blood pressure
- Increases coronary perfusion pressure
- Lowers intrathoracic pressure during the decompression phase of CPR
- Increases short-term and long-term survival rates



Performing ACD CPR with the CardioPump and ResQPOD®

When ACD CPR is performed in conjunction with the ResQPOD Impedance Threshold device (ITD) haemodynamics are further improved

Retails at \$449.00 with metronome(GST free) & \$399.00 without metronome(GST free)

Discounts are available for bulk purchases.



Prehospital Emergency Resuscitation & Trauma Program



Enhance & Update Your Skills

Who should attend ?

This unique 2-3 day multi-disciplinary program is designed to further develop and enhance knowledge and skills of health care professionals.

Suitable to refresh qualifications and gain currency in skills for pre hospital care providers and provide valuable professional development to any allied health care worker.

This program is recognised by the Australasian Registry of Emergency Medical Technicians (AREMT).



Quality Prehospital Care Providers

This program delivers the latest advances (innovations) in medical & trauma emergencies management including:

- Advanced Airway Management**
- Impedance Threshold Device Technology**
- Haemorrhage Control**
- Intravenous Therapy**
- Intraosseous Vascular Access**
- Spinal Immobilisation**
- Musculoskeletal Immobilisation**
- Chemical Splashes & Burns Management**
- Wound Care & Closure**
- Multi Casualty Incidents**

The program is practical based and includes case studies, skill stations and scenarios.

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