Cardiac Arrest
CPR

Prof Hugh Grantham
Grotto del Cam, near Naples, and their recovery is much hastened thereby. If, however, the person have fallen into water, and be cold, then he must be put to bed in an airy room and warmth applied by hot bottles to the feet and stomach. Attempts should be made to empty the lungs of the air they contain, and to fill them with fresh air. This may be easily done by one person pressing, with both his hands, the breast-bone firmly down towards the back, whilst another, with his hands outspread, presses as nearly as possible the whole surface of the belly, which forces the bowels against the diaphragm, or great muscular partition between the chest and belly, and thrusts it up into the chest: by these means the lungs are brought into almost as small a space as when a person by his own will expires forcibly and throws out a large quantity of air, which lifts up the epiglottis, if still closed upon the chink of the windpipe. The hands are then to be suddenly withdrawn, when the breast-bone, freed from pressure, rises, and increases the capacity of the chest, which is further enlarged by the bowels returning to their usual place and ceasing to force the diaphragm into the chest; immediately the air rushes down the windpipe and fills the lungs. This proceeding which must
Old CPR
The dark ages!

- The big advances in survival from cardiac arrest were a long time ago.

1980..!
Community response what do we know?

- Under ½ the cardiac arrests have bystander CPR
- Any RESUS is GOOD
Out-of-hospital cardiac arrest review of demographics in South Australia to inform decisions about the provision of automatic external defibrillators within the community.

Zeitz K, Grantham H, Elliot R, Zeitz C.

• 1,305 cases
• (CPR) was performed in 495 (37.9%)
• (VF) or ventricular tachycardia (VT) in 419 (32.1%)
• (24.1%) of all arrests had return of spontaneous circulation
• 30-month period, there only was one location that recorded more than one cardiac arrest
Out-of-hospital cardiac arrest—review of demographics in South Australia to inform decisions about the provision of automatic external defibrillators within the community.

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- (CPR) in 495 (37.9%)
- 30-month period, there only was one location that recorded more than one cardiac arrest
Any CPR is better than None

• 3 fold improvement in outcome
• Supported by ARC
MCG Study

- Twenty-eight consecutive events from December 1989 to December 1997
- Incidence 1:500,000 attendances
MCG Study

• 28 patients, 24 (86%) left the venue alive and 20 (71%) were discharged home
Who’s better at CPR?

• Novices with no fear?
• Trained rescuers?
• Health professionals?
• Super specialists
BLS

Basic Life Support

D  Dangers?
R  Responsive?
S  Send for help
A  Open Airway
B  Normal Breathing?
C  Start CPR
   30 compressions : 2 breaths
   if unwilling / unable to perform rescue breaths continue chest compressions
D  Attach Defibrillator (AED)
   as soon as available and follow its prompts

Continue CPR until responsiveness or normal breathing return

December 2010
Ideal CPR

Only team with 100% success
Role of CPR

- To maintain oxygen supply to brain and heart
- Prolong the V. F. phase of dying
Key points

• Compressions
• Compressions
• Compressions
Starting

• Absence of movement/response
• Absence of normal respiration

• Checking a pulse is not necessarily a high priority
• Shout for help/send for help
Compressions first

• Gets the resuscitating started
• Overcomes the objection to mouth-to-mouth
Ventilation component voluntary

• “if willing and able”
• If not continuous compressions

How much do I like this chap?
Rate

- Rate of 100 approximately (not more than 120)
- Staying alive
Depth

- 1/3 of the chest or 5 cm
- push hard
- should be tired at 2 min
The chest is a pump

• Forward motion of blood is achieved through the whole chest pumping not heart compression
Multiple compressions

- Increasing aortic pressure with each pump.
Advanced Airways

• LMA and above continuous compressions
• One ventilation every 15
Will I do harm?

- no
Defibrillation

• As soon as possible
• 200J
Charge defibrillator

• Defibrillator is charged at the end of every 2 min cycle
• We then either shock or dump
Children same but...

- In paediatric setting ratios 15:2
- 4 J per kilo or next highest setting available
Neonates

• If wet and slippery use ratio of 3:1
Everything else is the same
Artificial Respiration.

Useful in Drowning, Electricity Accidents, Suffocation, etc.
First try tickling the throat with a straw or feather. If tickling the throat fails, try artificial respiration. (See Illustrations, p. 1146.)

Artificial Respiration.—Remove coat and shirt. Turn patient on his back with coat rolled up under shoulders. Let head drop backward. Pull out his tongue, and keep it out by tying it to lower jaw. This may be done with a handkerchief crossed under chin and tied back of neck; or else thrust a long pin through the tongue, being sure it is long enough to rest against the teeth and keep the tongue out.

Kneel at his head, grasp his arms just below the elbows, draw his arms outward, then upward to sides of head. This expands the chest. Bring his arms down along his sides in front of chest, and press inward on chest firmly. This drives air out of lungs. Alternate these movements slowly about fifteen times per minute. Continue for at least one hour. Apply ammonia or smelling salts to the nostrils at intervals.

Do not be easily discouraged. Life has sometimes been restored only after several hours' work. When breathing is restored, wrap in blankets. Rub whole body briskly, rubbing toward the heart. Give stimulants, though very cautiously.
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Publicity

- Official recognition
- Media recognition
Thousands of Bystanders/observers

I was at the ground and saw the whole thing unfold. There was no panic, just calm professionalism from all involved and a great outcome. What a magnificent effort!

I'm trained in CPR, ARE YOU???
Cats club doctor suffers heart attack on field

Dr XXXX was taken from the field by ambulance, shielded from onlookers with blankets, about 10 minutes before the Adelaide-Geelong match started.

- Dr YYYYY said he was grateful for having completed a refresher emergency resuscitation response course organised by the Cats about six weeks ago.
- *I only hope your gp is as up to date as Dr YYYYY*
Will this photo save more lives than a CPR course?

"Having so many people looking on, I think it will be a positive thing, a real wake-up call, because if someone fit and healthy can collapse in the middle of AAMI Stadium, maybe (others) should be careful as well,"
Stopping

Ensure the agreement of all present

– Pulseless electrical activity in the presence of adequate oxygen and adrenaline
– Persistent refractory V. F. Despite anti-arrhythmic
– Persistent asystole