



ThinkAskLearn
Health Professional Education

Emergency First Aid Principles

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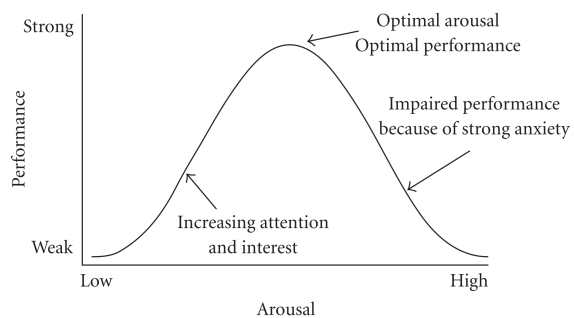
House of GOD – The rules

**AT A CARDIAC ARREST, THE
FIRST PROCEDURE IS TO TAKE
YOUR OWN PULSE**

Samuel Shem (1978)



Yerkes-Dodson Graph



<https://upload.wikimedia.org/wikipedia/commons/2/2a/Yerkes-Dodson.png>





Oxygen in Chest Pain

- Meta-analysis from Cabello et al 2010 (Cochrane)
- 387 patients with MI/14 deaths
- Those patients that had oxygen, 3 times more likely to die
- No change in pain scores if oxygen used



Arguments against study

- Very small number of patients
- Not sufficiently powered to make conclusive statements
- Deaths could be by chance
- Only focused on MI not routine chest pain
- Studies unblinded, one study used was 34 years old,



What is not argued about

- There is very little evidence for the role of oxygen in MI or Chest Pain.
- Large Randomised trial required to clarify the role of oxygen in these patients
- Evidence suggestive of possible harm from the use of oxygen in MI.



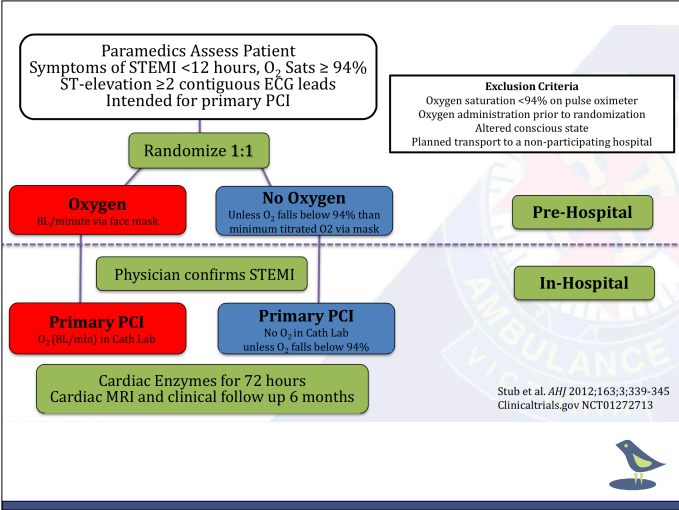
How might oxygen cause harm

- This is not clear
- There might be a number of factors at work:
 - Oxygen free radical pathway that causes further damage
 - Hyperoxia from high concentration oxygen therapy causes a marked reduction in coronary blood flow
 - Excess oxygen is shown to reduce blood flow to the heart, brain or kidney when they have an ischaemic episode unless there is severe hypoxia.



- Stub, D., Smith, K., Bernard, S., Nehme, Z., Stephenson, M., Bray, J., ... & Kaye, D. (2015). Air versus oxygen in myocardial infarction (AVOID) trial sub-study: time-dependent effect of oxygen administration on myocardial injury. *Heart, Lung and Circulation*, 24, S374.





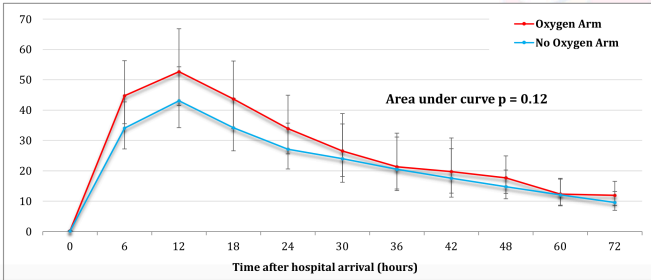
Primary Endpoint

- Myocardial infarct size on cardiac enzymes
- Mean Peak Creatine Kinase
- Mean Peak Troponin I
- Area under curve of Creatine Kinase and Troponin I

Pre-specified Clinical Secondary Endpoints

- ST-segment resolution (12 lead ECG)
- Survival to hospital discharge
- MACCE: Death, MI, Revascularisation, Stroke at 6 months
- Myocardial infarct size on CMR at 6 months

Troponin I, mcg/L	Oxygen Arm N=200	No Oxygen Arm N=205	Ratio of means (Oxygen/No Oxygen)	P-value
Geometric Mean Peak (95% CI)	57.4 (48.0 – 68.6)	48.0 (39.6 – 58.1)	1.20 (0.92 – 1.55)	0.18
Median Peak (IQR)	65.7 (30.1, 145.1)	62.1 (19.2, 144.0)		0.17



Secondary Endpoint CMR Infarct Size at 6 months

CMR Infarct Size	Oxygen Arm N=65	No Oxygen Arm N=74	Ratio of means (Oxygen/No Oxygen)	P-value
Median (IQR), grams	20.3 (9.6, 29.6)	13.1 (5.2, 23.6)		0.04



Values are %	Oxygen Arm N=218	No Oxygen Arm N=223	P-Value
At Hospital Discharge			
Mortality	1.8	4.5	0.11
Recurrent myocardial infarction	5.5	0.9	<0.01
Stroke	1.4	0.4	0.30
Major bleeding	4.1	2.7	0.41
Significant arrhythmia	40.4	31.4	0.05
ECG ST-segment resolution > 70%	62.0	69.6	0.10
At 6 months follow up			
Mortality	3.8	5.9	0.32
Recurrent myocardial infarction	7.6	3.6	0.07
Stroke	2.4	1.4	0.43
Repeat revascularization	11.0	7.2	0.17
MACCE	21.9	15.4	0.08



Where does it leave us

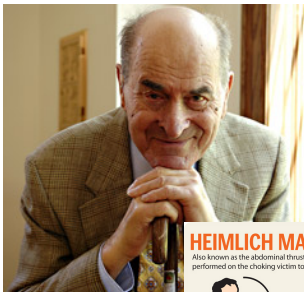
- Resuscitate all patients in 100% oxygen (Not Neonates)
- Post resuscitation titrate oxygen down to maintain saturation of 94-96% (ARC guidelines)
- Do not apply oxygen routinely to patients with Chest Pain
- In chest pain, apply oxygen if patient is in respiratory distress, O₂ Sats < 95% or patient is shocked



No Indications for First Aiders



Use it if trained – ARC 2025

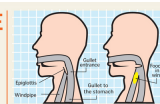


HEIMLICH MANOEUVRE

Also known as the abdominal thrust, this technique can be performed on the choking victim to prevent suffocation.



1 Stand behind the person and lean them slightly forward.



2 Put your arms around the person and make a fist with one hand.



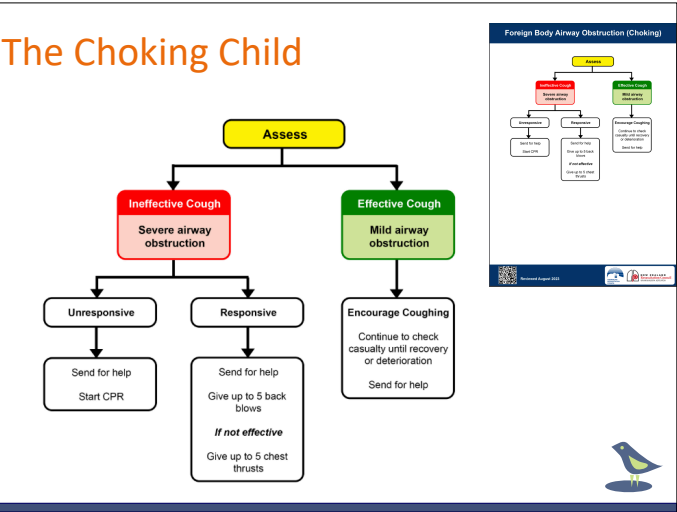
3 Place your fist near the top of the stomach, just below the centre of the rib cage. Place your other hand over your fist and lock tight.



4 Make a quick, hard movement inward and upward. This will create pressure in the chest area which will compress the lungs. Similar to an artificial cough, this will force air out of the windpipe and help to dislodge the food item stuck in the airway.

GRAPHICS: HEIMLICH MANOEUVRE

The Choking Child



The Choking Child

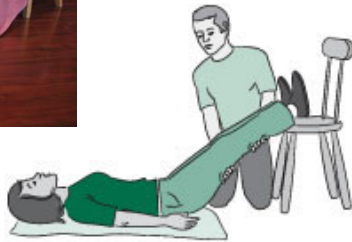
- Finger sweep
- Inspection under direct vision ✓
- Back blows / chest thrusts ✓
- Heimlich manoeuvre

The Choking Child





Passive Leg Raise - Shock



Complications of the Trendelenburg position in the hypotensive patient

- Anxiety and restlessness
- Progressive dyspnea
- Hypoventilation and atelectasis caused by reduced respiratory expansion
- Altered ventilation/perfusion ratios from gravitation of blood to the poorly ventilated lung apices
- Increasing venous congestion within and outside the cranium leading to increased intracranial pressure
- Pressure from abdominal organs is transmitted into the thoracic cavity, which can impair venous return to the heart, leading to a further decreased cardiac output and hypotension
- Increase risk of aspirating gastric contents

<http://ifileinthefastlane.com/trendelenburg-position-for-the-hypotensive-patient-friend-or-foe/>



Part 13: First Aid

2010 American Heart Association and American Red Cross International Consensus on First Aid Science With Treatment Recommendations

S584 *Circulation* October 19, 2010

'Treatment Recommendation

There is insufficient evidence for or against raising the legs as a first aid intervention for shock.'



Passive Leg Raise

- Focus on ABC
- Control Bleeding using direct pressure
- "The role of passive leg raising downgraded on the existing evidence and no longer recommended (NEW)" ARC 2016













