Basic Life Support and Advanced Life Support Refresher

ILCOR 2015

- International Liaison Committee on Resuscitation
- Meet every 5 year
  - American Heart Association
  - European Resuscitation Council
  - Heart and Stroke Foundation of Canada
  - Australian Resuscitation Council
  - New Zealand Resuscitation Council
  - Resuscitation Council of South Africa
  - Resuscitation Council of Asia

Basic Life Support

- DRS ABC
- 30 compression to 2 breaths
  - Rate of 100 compressions/minute
  - Allow full recoil of chest
  - Minimise interruption to compression
- Attach AED/Defibrillator ASAP

Automatic External Defibrillator

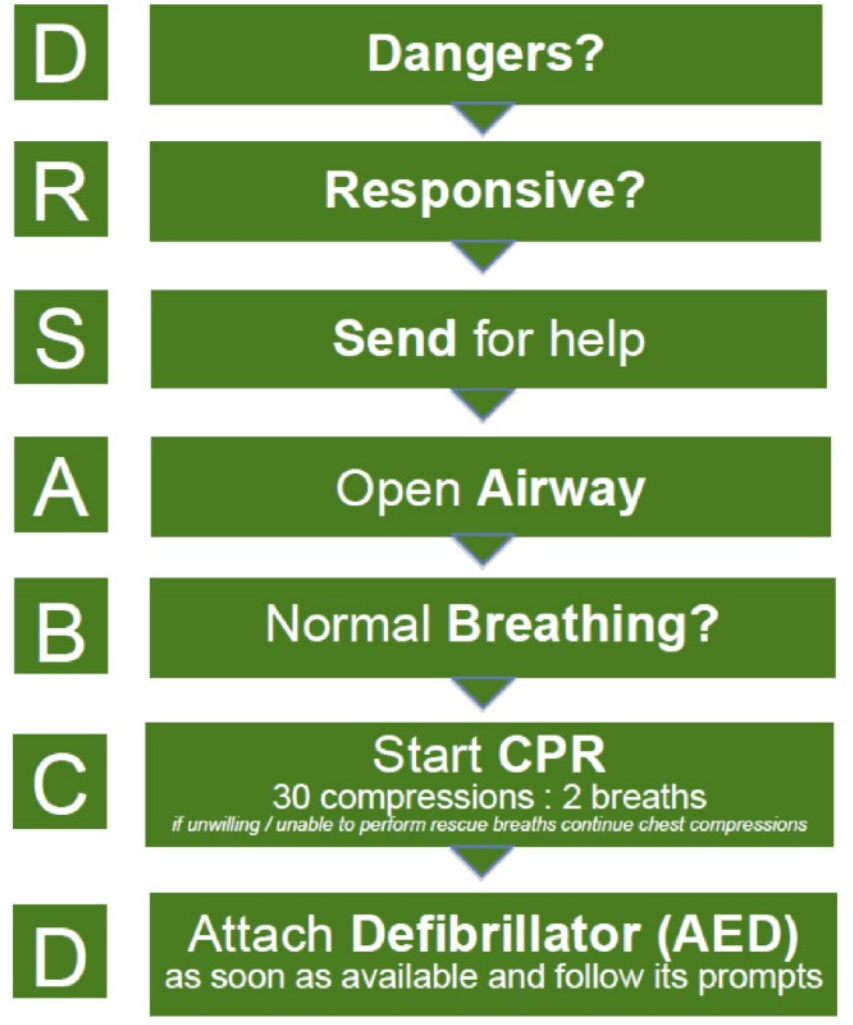
- Voice Instructions
- Cannot view rhythm
- More prolonged interruption to CPR than with manual defib

Glasgow Train Station

Basic Life Support

- Hands only CPR for the lay rescuer
- UK and USA
- Not in Australia yet
- Health professionals still to give rescue breaths!
- http://www.youtube.com/watch?v=ILxjxfB4zNk
- https://www.youtube.com/watch?v=n5hP4DIBCEE

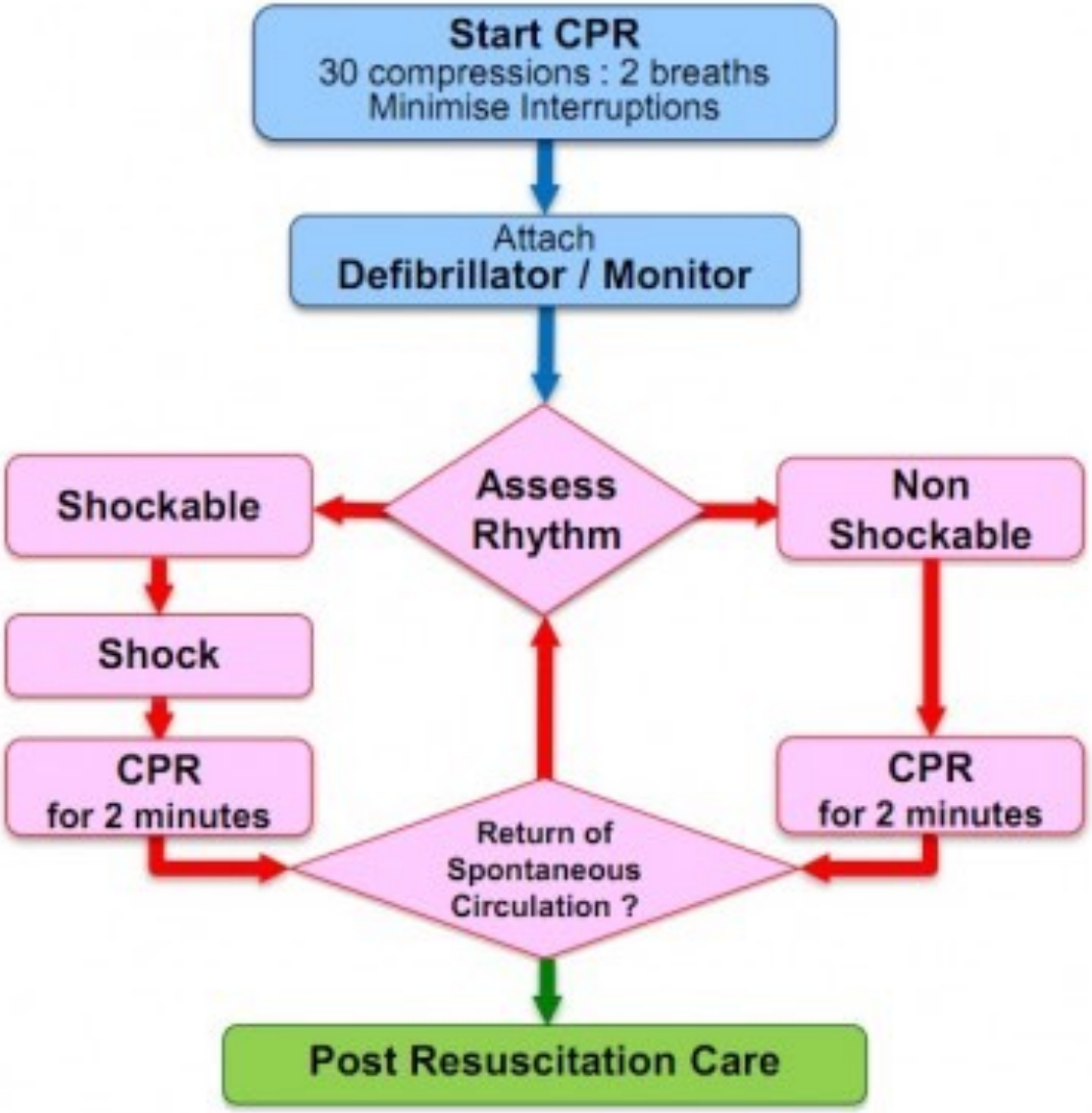
Basic Life Support



Advanced Life Support

- Continuation of Basic Life Support
- Determination of Cardiac Rhythm
  - Shockable / Non-Shockable
- Defibrillation
- Use of Inotropes and Anti-arrhythmic medications
- Identification and Treatment of Underlying Cause

Advanced Life Support for Adults



During CPR

Airway adjuncts (LMA / ETT)
Oxygen
Waveform capnography
IV / IO access
Plan actions before interrupting compressions
(e.g. charge manual defibrillator)
Drugs
Shockable
* Adrenaline 1 mg after 2nd shock
(then every 2nd cycle)
* Amiodarone 300 mg after 3rd shock
Non Shockable
* Adrenaline 1 mg immediately
(then every 2nd cycle)

Consider and Correct

Hypoxia
Hypovolaemia
Hyper / hypokalaemia / metabolic disorders
Hypothermia / hyperthermia
Tension pneumothorax
Tamponade
Toxins
Thrombosis (pulmonary / coronary)

Post Resuscitation Care

Re-evaluate ABCDE
12 lead ECG
Treat precipitating causes
Re-evaluate oxygenation and ventilation
Temperature control (cool)

December 2010

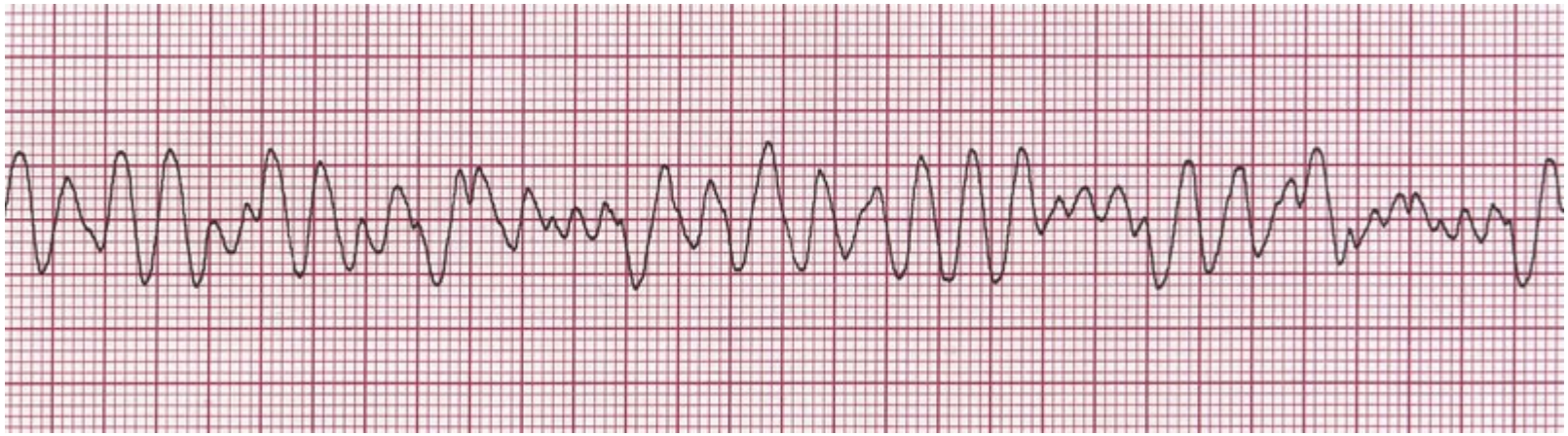
Minimise Interruptions to Chest Compressions

- Chest compressions continue whilst charging the defibrillator
- Chest compressions resume immediately after shock is delivered

Rhythm Check

- COACH pneumonic
  - “Continue chest compressions”
  - “Oxygen away”
  - “All others away”
  - “Charging”
  - “Hands off!!” .....“I`m safe”

    Then safe to deliver shock if VT or VF followed by immediate return to chest compression. If NOT shockable the charge MUST be dumped before commencing chest compressions



Shockable Rhythm

- VF/VT
- Always 200J Biphasic
- Adrenaline given after 2nd shock (and every 2nd shock there after – i.e ever 3-5 mins)
- Amiodarone given after 3rd shock

Non Shockable Rhythm

- Asystole/PEA
  - Immediate adrenaline and then adrenaline every 3-5 mins (every second cycle) there after

Reversible Causes

- 4Hs and 4Ts

- Hypothermia
- Hypovolaemia
- Hyper/Hypokalaemia
- Hypoxia

- Tension Pneumothorax
- (Cardiac) Tamponade
- Thrombosis (PE or Coronary Arteries)
- Toxins

Advance Airway?

- LMA is completely adequate
- ETT is not necessary initially in Cardiac arrest

To Cool or not to Cool

- Randomised Study in New England Journal of Medicine
  - Two groups – one cooled to 33 and the other to 36 degrees Celsius
  - No improvement in mortality
  - No difference in number of complication
- ARC still recommends cooling to 32-34 degrees and it will continue to evaluate the literature and liaise with ILCOR

End Tidal CO2
(AKA Waveform capnography)

- Confirms tube placement and ventilation
- Allows assessment of quality of CPR
- Alerts medical staff to possible ROSC
- Allows determination of poor prognosis

Echocardiography and USS in Cardiac Arrest

- Can visualise the heart
  - ?beating / ?fibrillating / ?asystole
- Allows detection of reversible causes
  - TAMPONADE
  - CORONARY ARTERY THROMBUS
  - Right Atrial Dilatation suggesting PE
  - Tension Pneumothorax

Coronary Perfusion Pressure

- Have to try to maintain a minimum coronary perfusion pressure in order to get ROSC
- This can be estimated by placing an art line and aiming for a systolic of around 40mmHg.
- Once an art line is in you can titrate adrenaline to this number instead of following the algorithm

Future

- Bigger emphasis on
  - Etco2 monitoring
  - Echo / USS during cardiac arrest
  - Coronary perfusion pressure
- Monitors that detect VF *during* chest compressions
- Hands only CPR in BLS

ADULT ADVANCED LIFE SUPPORT
SUMMARY OF CHANGES

Following the ILCOR Consensus on Science and Treatment Recommendations (CoSTR) process concluding in October 2015 a number of ANZCOR ALS guidelines have been reviewed and revised. Treatment recommendations have not changed unless there are compelling reasons to change them. The ILCOR systematic reviews showed that the quality of evidence for many ALS interventions is low or very low, with resultant pre-dominantly weak recommendations. For some ALS recommendations, despite low quality evidence, AZCOR has made strong recommendation consistent with ILCOR, in particular when there was consensus that not doing so could lead to harm. The main developments and recommendations in ALS in these draft guidelines are:

Defibrillation:
If the first shock is not successful and the defibrillator is capable of delivering shocks of higher energy, it is reasonable to increase the energy for subsequent shocks.

Airway, oxygenation, and ventilation:
There is equipoise between the choice of an advanced airway or a bag-mask device for airway management during CPR, and the choice between a supraglottic airway or tracheal tube as the initial advanced airway during CPR.
The role of waveform capnography during ALS is further emphasized, including its use to confirm and continually monitor tracheal tube position, the quality of CPR, and to provide an early indication of return of spontaneous circulation (ROSC).

Circulatory support during CPR:
We recommend against the routine use of the impedence threshold device (ITD) in addition to conventional CPR (which we do not consider is commonly [if at all] used in Australia and New Zealand)
The routine use of automated mechanical chest compression devices is not recommended but they are suggested as a reasonable alternative in situations where sustained high-quality manual chest compressions are not feasible.

Extracorporeal cardiopulmonary resuscitation (ECPR) is suggested as a reasonable rescue therapy for select patients with cardiac arrest when conventional CPR is failing.

Physiological monitoring during CPR:
Cardiac ultrasound during resuscitation is suggested as a diagnostic tool to identify reversible causes.

Postresuscitation care:
Emphasis is placed on avoiding hypoxia and hyperoxia in adults with ROSC after cardiac arrest, while maintaining normocarbia.

ANZCOR now recommends selecting and maintaining a constant target temperature between 32°C and 36°C for those patients in whom targeted temperature management (TTM) is used following ROSC. The suggested duration for TTM should be at least 24 hours.

Fever in persistently comatose adults after completion of TTM should be prevented and treated.
Routine seizure prophylaxis in post-cardiac arrest patients is not recommended.
There are increased suggestions to guide prognostication in the victims who remain comatose after ROSC whether receiving or not receieving TTM postresuscitation care.
Patients who have restoration of circulation after CPR and who subsequently progress to death (by brain death criteria or following circulatory death) should be evaluated for organ donation.