Figure 1: Universal/International ACLS Algorithm

**Adult Cardiac Arrest**

**Primary ABCD Survey**
- **Focus**: basic CPR and defibrillation
  - **Check** responsiveness
  - **Activate** emergency response system
  - **Call** for defibrillator
  - **A Airway**: open the airway
  - **B Breathing**: Check for breathing, Look, Listen & Feel
  - **C Circulation**: Check pulse, start chest compressions
  - **D Defibrillation**: attach ECG monitor / defibrillator

**Assess rhythm**

**Secondary ABCD Survey**
- **Focus**: more advanced assessments & treatments
  - **A Airway**: place airway device as soon as possible
  - **B Breathing**: confirm airway device placement by examination (confirmation device is recommended)
  - **C Circulation**: establish IV / IO / Central Line Access
  - **D Differential Diagnosis**: search for & treat identified reversible causes

**Consider causes that are potentially reversible**
- Hypovolemia
- Hypoxia
- Hydrogen ion - acidosis
- Hyper-/hypokalemia, other metabolic
- Hypothermia
- "Tablets" (drug OD, accidents)
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis, coronary (ACS)
- Thrombosis, pulmonary (embolism)

1 April 2011
Figure 2: Ventricular Fibrillation/Pulseless VT Algorithm

1. **Primary ABCD Survey**
   - Assess Rhythm

2. **Pulseless VF / VT**
   - Defibrillate x 1st shock (360 J for Monophasic or equivalent 150 J – 200 J for Biphasic)
   - CPR 1-2 mins
   - Rhythm after first 1st shock?

3. **Persistent or recurrent VF/VT**
   - Secondary ABCD Survey
     - Place airway device
     - Confirm & secure airway device
     - Establish IV / IO / Central Line Access
     - Differential Diagnosis
   - Adrenaline 1 mg IV push
   - Defibrillate within 1 min
   - CPR
   - Adrenaline 1 mg IV push
   - Defibrillate within 1 min

4. **Return of spontaneous circulation**
   - **PEA**
     - Go to Fig 3
   - **Asystole**
     - Go to Fig 4

5. **CPR 1-2 mins**
   - Assess vital signs
   - Support airway
   - Support breathing
   - Provide medications appropriate for blood pressure, heart rate, & rhythm

6. **Check rhythm after CPR.**
   - If rhythm is VF, continue with VF algorithm
   - If VF is converted, follow algorithm for ROSC, PEA or Asystole.

7. **Amiodarone**
   - 300 mg IV push
   - CPR
   - Defibrillate within 1 min

8. **Lignocaine**
   - 50-100mg IV push
   - CPR
   - Defibrillate within 1 min

9. **Mg SO4 1-2 g IV**
   - if polymorphic VT/ Torsades
   - CPR
   - Defibrillate within 1 min

10. **Check rhythm after CPR.**
    - If rhythm is VF, continue with VF algorithm
    - If VF is converted, follow algorithm for ROSC, PEA or Asystole.

**Note:**
- CPR must be continued at all times & also when drugs are given
- Stop CPR briefly only for analyzing rhythm
- If IV access is unavailable, do not delay shock. Continue CPR-drug-shock

Amiodarone 150 mg IV push

1 April 2011
Assess rhythm

Pulseless Electrical Activity
(PEA = rhythm on monitor, without detectable pulse)

Review for most frequent cases & treat accordingly
- Hypovolemia
- Hypoxia
- Hydrogen ion - acidosis
- Hyper-/hypokalemia
- Hypothermia
- "Tablets" (drug OD, accidents)
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis, coronary (ACS)
- Thrombosis, pulmonary (embolism)

Adrenaline 1 mg IV push, repeat every 3 to 5 minutes.
Figure 4: Asystole: The Silent Heart Algorithm

Primary ABCD Survey

Assess rhythm

Asystole

Confirm Asystole in more than one lead

Secondary ABCD Survey

Adrenaline 1 mg IV push, repeat every 3 to 5 minutes.

Search for & correct reversible causes (Refer to PEA algorithm)

1 April 2011
Figure 5: Bradycardia Algorithm

Primary ABCD Survey

Assess rhythm

Bradycardia
- Slow (absolute bradycardia = rate < 60 bpm)
- Relatively slow (rate less than expected relative to underlying condition or cause)

Secondary ABCD Survey

Serious signs or symptoms?
Due to the bradycardia?

No

Type II second-degree AV block
or
Third-degree AV block?

No

Observe

Yes

Intervention sequence
- Atropine 0.6 mg\(^a\)
- Transcutaneous pacing if available
- Dopamine 2 to 20 mcg/kg per min
- Adrenaline 2 to 10 mcg/min Infusion

Note: Atropine is given in a dose of 0.6 mg intravenously & may be repeated every 3-5 min up to a maximum dose of 2.4 mg.

Yes

• Prepare for transvenous pacer
• If symptoms develop, use transcutaneous pacemaker until transvenous pacer placed

23 August 2011
Unstable, with serious signs or symptoms, i.e., Heart Failure, SBP<90, in shock

Immediate synchronised Cardioversion

Narrow Complex Tachycardia

- Paroxysmal supraventricular tachycardia (PSVT)
  - Adenosine 6mg rapid iv push
  - Lignocaine 50-100mg IV push
  - Amiodarone 150mg IV push over 10 mins

Wide Complex Tachycardia

- If strongly suspect aberrancy
  - Amiodarone 150mg IV push over 10 mins

- If uncertain WCT
  - If still VT, synchronised cardioversion

Polymorphic VT

- Adenosine 12mg rapid iv push
- Lignocaine 50-100mg IV push
- Amiodarone 150mg IV push over 10 mins

- Correct abnormal electrolytes
- Treat ischemia if present

**Medications:**
- Magnesium
- Consider overdrive pacing if bradycardia related

* either drug depending on availability and experience

- Atrial fibrillation
- Atrial flutter
- Use rate control drugs (eg: amiodarone, Diltiazem, Verapamil or Digoxin. Consider anti-coagulation/aspirin)
- Vagal maneuvers
- * Adenosine 6 mg rapid IV push
- * Verapamil 1 mg / min (up to max 20 mg)

**Figure 6: Tachycardia Algorithm**

1 April 2011