ACLS Overview

- Advanced Cardiovascular Life Support (ACLS) provider course is designed to enhance the healthcare providers' skills in the diagnosis and treatment of cardiopulmonary arrest, acute arrhythmias, stroke, and acute coronary syndromes (ACS).
- To successfully pass the ACLS course, AHA requires you successfully manage a mega-code. A mega-code is hands-on, dynamic, in real time practice of treating a life-threatening cardiac emergency that may include ventricular fibrillation, ventricular tachycardia with or without pulses, asystole, pulseless electrical activity, bradycardia and more. In addition, you're required to pass a written exam with a score of ≥ 84%.

ACLS Goals are to:

1. Prevent cardiac arrest
2. Treat cardiac arrest
3. Improve outcomes of patients who achieve ROSC (Return Of Spontaneous Circulation) after cardiac arrest

The foundation of successful ACLS is good BLS, including:

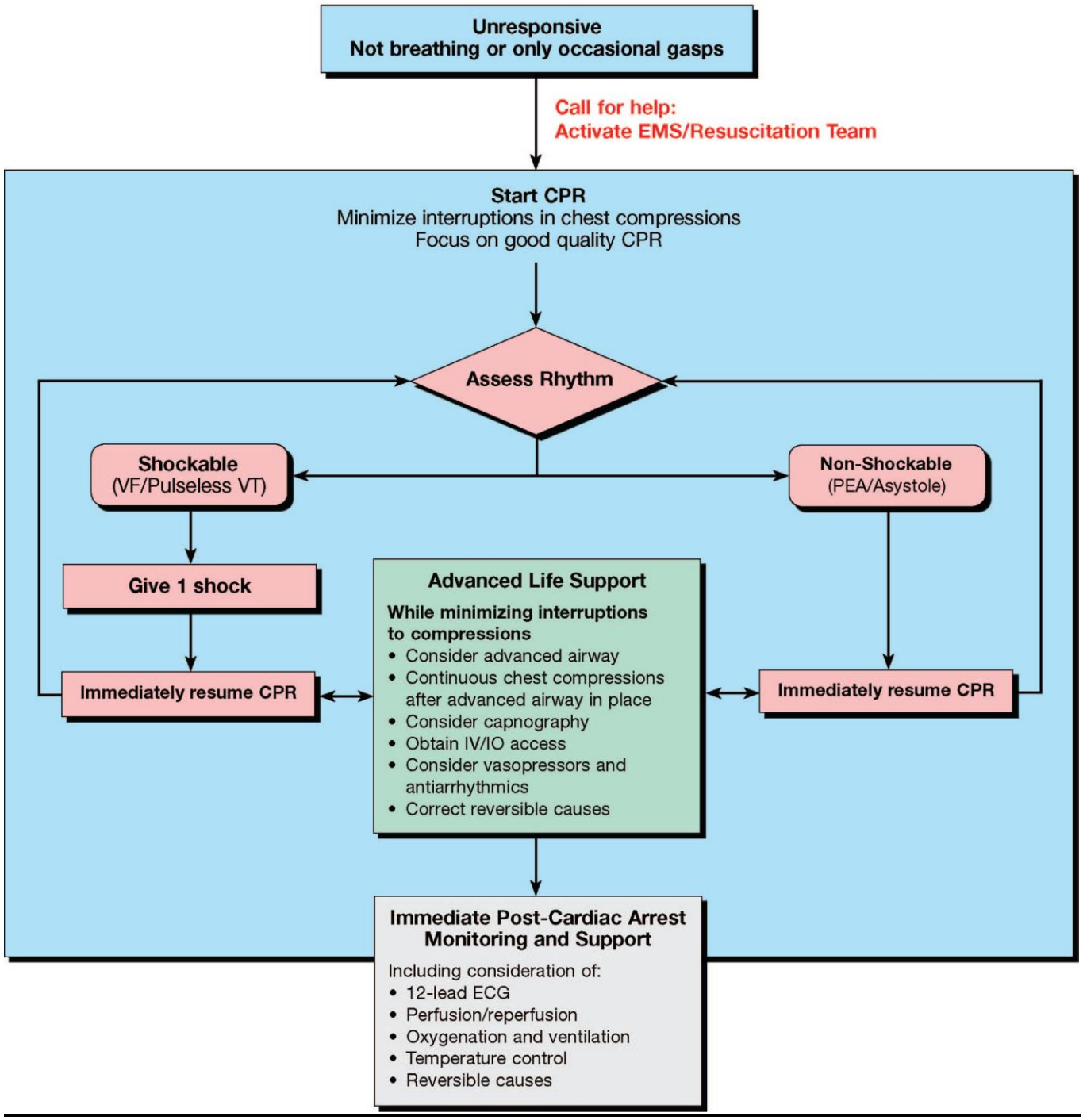
1. Prompt high-quality CPR with minimal interruptions
2. Attempted defibrillation within minutes of collapse for VF/pulseless VT

<u>The BLS survey</u>:

The 2010 AHA guidelines for CPR alters the BLS sequence by eliminating "look, listen, feel" followed by 2 rescue breaths. This change promotes earlier initiation of chest compressions in cardiac arrest patients. The BLS survey is no longer represented by the letters A, B, B, D but is represented by the numbers 1, 2, 3, 4 instead.

1. **Check responsiveness**: Tap and shout, "are you all right" and simultaneously look at the chest for breathing
2. **Activate the emergency response system** immediately for any unresponsive adult victim with no breathing or only gasps
3. **CPR:** Check the carotid pulse for 5-10 seconds. If no pulse start CPR beginning with chest compression:
   - Compressions should be initiated within 10 seconds of recognition of the arrest.
   - For adults, compress at the lower half of the sternum between the nipples using heel of one hand, other hand on top
   - Push hard (at least 5 cm or 2 inches) and fast (100/min)
   - Allow complete recoil after each compression
     Give 30 compressions (should take 18 seconds or less) then open the airway and give 2 breaths. Continue Cycles of 30 compressions : 2 breaths. Switch providers every 2 minutes to avoid fatigue
   - Deliver each rescue breath over 1 second using pocket mask or bag mask. Give sufficient tidal volume to produce visible chest rise and avoid excessive ventilation. Release completely between breaths to allow exhalation.
4. **Defibrillation**: once defibrillator arrives, turn on the power and apply the paddles (or pads) to the victim's chest to check the rhythm:
   - If the rhythm is shockable rhythm (VF/pulseless VT) → give **1 shock** 360 J for monophasic defibrillators and device specific usually 200 J for biphasic defibrillators) → follow each shock immediately with **2 minutes CPR** (5 cycles), beginning with compressions.
   - During the 2 minutes CPR, start the **ACLS survey:**
     - **A.** Airway: is the airway patent? Is an advance airway indicated?
     - **B.** Breathing: are ventilation and oxygenation adequate?
     - **C.** Circulation: is monitor attached? are chest compressions effective? Has IV/IO access been established?
     - **D.** Differential diagnosis: search for reversible causes (Hs & Ts)
   - At the end of the 2 minutes, check rhythm:
     - If still shockable rhythm → continue CPR while defibrillator is charging → **1 shock** → 2 minutes CPR & review ABCD (consider IV fluids/drugs) → check rhythm… and so on
     - If asystole → continue CPR & review ABCD (consider IV fluids/drugs) → check rhythm and pulse after 2 minutes… and so on
     - If perfusing rhythm → Check pulse:
       - If there is pulse → post resuscitation care.
       - If there is no pulse (PEA) → continue CPR and manage as asystole.

Universal Cardiac Arrest Algorithm



Details on the ACLS survey

- To give the victim the best chance of survival, **3 actions must occur within the first moments** of a cardiac arrest: activation of the EMS system, provision of CPR, and operation of a defibrillator

- For a presumed victim of **drowning or other likely asphyxial arrest** the priority would be to provide about 5 cycles (about 2 minutes) of conventional CPR (including rescue breathing) before activating the emergency response system.

- EMS providers who **did not witness arrest** may provide 5 cycles (about 2 minutes) of CPR before attempting defibrillation; particularly if the victim is child > 1 year (Defibrillation is not considered in infants < 1 year)

- In **newly born infants**, arrest is more likely to be of a respiratory aetiology, and resuscitation should be attempted with the A-B-C sequence unless there is a known cardiac aetiology.

- Consider compression ratio of **15:2** only for children in case of presence of two rescuers

- **The lay rescuer should not attempt to check for a pulse** and should assume that cardiac arrest is present if an adult suddenly collapses, is unresponsive, and is not breathing or only gasping

- Compression depths are as follows:
  - Adults: **at least** 2 inches (5 cm)
  - Children: **at least** one third the depth of the chest, approximately 2 inches (5 cm)
  - Infants: **at least** one third the depth of the chest, approximately 1½ inches (4 cm)

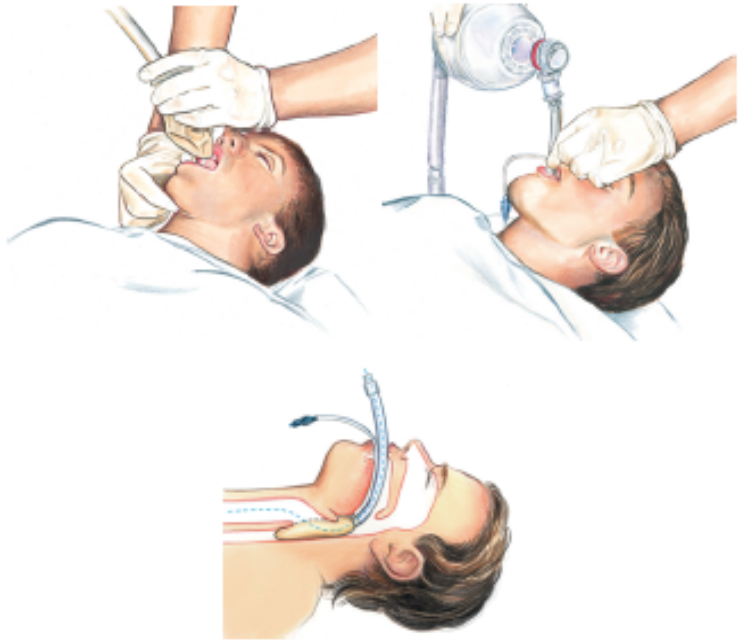
- The routine use of **cricoid pressure** during airway management of patients in cardiac arrest is no longer recommended

- **Suction attempts** to clear the airways should not exceed 10 seconds

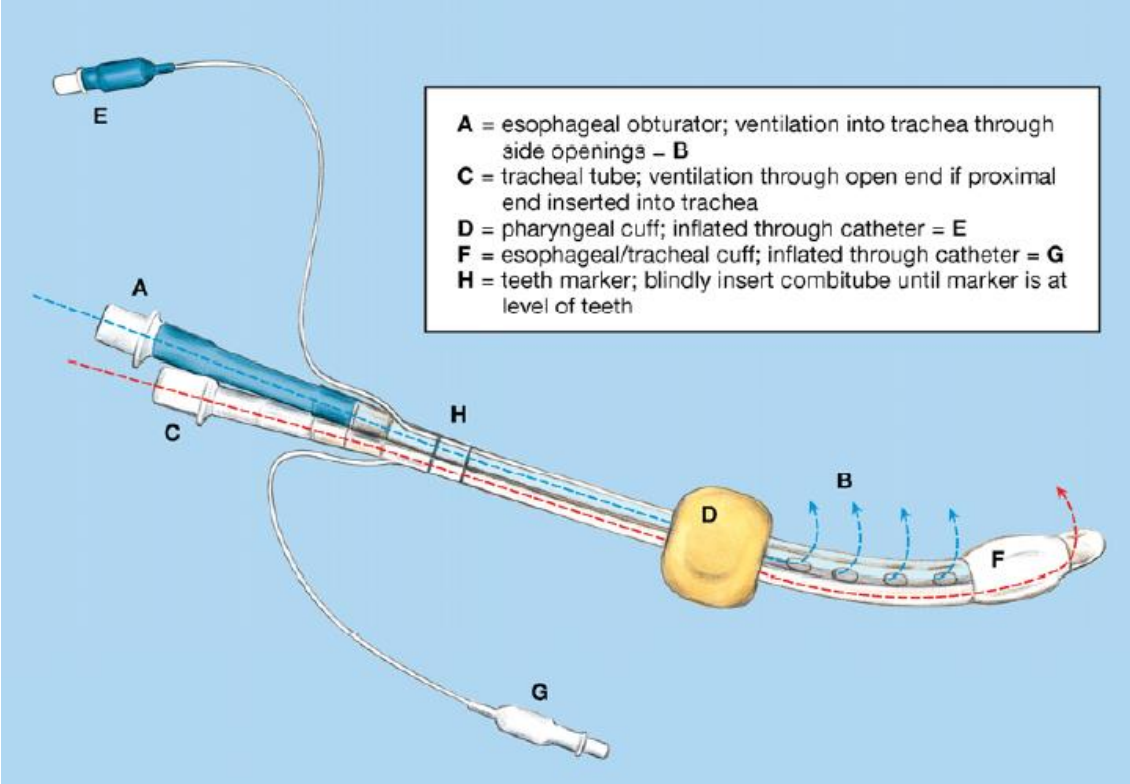
- Healthcare providers must weigh the benefit of **advanced airway placement** against the adverse effects of interrupting chest compressions. If bag-mask ventilation is adequate, healthcare provider may defer insertion of an advance airway until the patient fails to respond to initial CPR and defibrillation or until ROSC.

- **Supraglottic advanced airway devices** such as a laryngeal mask airway (LMA) or oesophageal-tracheal tube (Combi tube) can be placed during chest compressions and continue to be supported as an alternative to endotracheal intubation (ETT).

- **Blind insertion of the Laryngeal Mask Airway (LMA)**

Step	Action
1	*Equipment preparation:* Check the integrity of the mask and tube according to the manufacturer's instructions. Lubricate only the posterior surface of the cuff to avoid blocking the airway aperture.
2	*Patient preparation:* Provide oxygenation and ventilation, sedate as indicated, and position the patient. Note that use of the LMA poses risks of regurgitation and aspiration in unresponsive patients. You must weigh these risks against the benefit of establishing an airway using this specific device.
3	*Insertion technique (Figure 8):* • Introduce the LMA into the pharynx and advance it blindly until you feel resistance. Resistance indicates that the distal end of the tube has reached the hypopharynx. • Inflate the cuff of the mask. Cuff inflation pushes the mask up against the tracheal opening, allowing air to flow through the tube and into the trachea. • Ventilation through the tube is ultimately delivered to the opening in the center of the mask and into the trachea. • To avoid trauma, do not use force at any time during insertion of the LMA. • Never overinflate the cuff after inflation. Excessive intracuff pressure can result in misplacement of the device. It also can cause pharyngolaryngeal injury (eg, sore throat, dysphagia, or nerve injury).
4	Insert a bite-block, provide ventilation, and continue to monitor the patient's condition and the position of the LMA. A bite-block reduces the possibility of airway obstruction and tube damage. Keep the bite-block in place until you remove the LMA. 

- **Blind insertion of the Combitube Oesophageal-Tracheal Combitube**



Step	Action
1	*Equipment preparation:* Check the integrity of both cuffs according to the manufacturer's instructions and lubricate the tube.
2	*Patient preparation:* Provide oxygenation and ventilation, sedate as clinically indicated, and position the patient. Rule out the following contraindications to insertion of the Combitube (according to the manufacturer's instructions): • Age younger than 16 years or height less than manufacturer's recommendation for adult and small adult sizes. • Gag reflex present • Known or suspected esophageal disease • Ingestion of a caustic substance

3	*Insertion technique:* • Hold the device with cuffs deflated so that the curvature of the tube matches the curvature of the pharynx. • Lift the jaw and insert the tube gently until the black lines on the tube (Figure 5 H) are positioned between the patient's teeth. (Do not force, and do not attempt for more than 30 seconds.) • Inflate the proximal/pharyngeal (blue) cuff with 100 mL of air. (Inflate with 85 mL for the smaller Combitube.) Then inflate the distal (white or clear) cuff with 15 mL of air. (Inflate with 12 mL for the smaller Combitube.)
4	Confirm tube location and select the lumen for ventilation. To select the appropriate lumen to use for ventilation, you must determine where the tip of the tube is located. The tip of the tube can rest in either the esophagus or the trachea. • *Esophageal placement:* Breath sounds should be present bilaterally with no epigastric sounds. Provide ventilation through the blue (proximal/pharyngeal) lumen. This action delivers ventilation through the pharyngeal side holes between the 2 cuffs, and air will enter the trachea. Because the tip of the tube rests in the esophagus, do not use the distal (white or clear) tube for ventilation. The distal cuff will also lie within the esophagus; inflation of this cuff prevents the ventilations that you deliver through the pharyngeal tube from entering the esophagus. • *Tracheal placement:* Breath sounds are absent and epigastric sounds are present when you attempt to provide ventilation through the blue (proximal/pharyngeal) lumen. Immediately stop providing ventilations through the blue lumen and provide them through the distal (white or clear) lumen that opens at the tip of the tube in the trachea. With endotracheal placement of the tube, the distal cuff performs the same function as a cuff on an ETT. Detection of exhaled CO_2 (through the ventilating white or clear lumen) should be used for confirmation, particularly if the patient has a perfusing rhythm. • *Unknown placement:* Breath sounds and epigastric sounds are absent. Deflate both cuffs and withdraw the tube slightly, reinflate the blue cuff, and then reinflate the white (or clear) cuff (see steps above). If breath sounds and epigastric sounds are still absent, remove the tube.
5	Insert a bite-block, provide ventilation, and continue to monitor the patient's condition and the position of the Combitube. A bite-block reduces the possibility of airway obstruction and tube damage. Keep the bite-block in place until you remove the LMA.

- **Confirm** correct placement of advanced airway devices by physical examination (5 point auscultation) and quantitative waveform capnography

- **Secure** the device to prevent dislodgment (purpose made tube holder)

- **Monitor** the adequacy of ventilation and oxygenation by clinical criteria (chest rise and cyanosis), quantative waveform capnography and oxygen saturation.

- Once an advanced airway (tracheal tube or supraglottic airway) has been inserted, rescuers should provide **continuous chest compressions without pauses** for ventilations (100 compressions/minute and 8-10 breaths/minute). Provide 10-12 breaths/minute for ventilation without chest compression; i.e. for respiratory arrest without cardiac arrest. The rate for children is 20/min

- Give **supplementary oxygen** when indicated:
  - For cardiac arrest, administer 100% oxygen
  - For others, titrate oxygen administration to achieve oxygen saturation ≥94%

- Delivery of supplementary oxygen: **flow rate and percentage of oxygen delivered**

Device	Flow Rates	Delivered O_2*
Nasal cannula	1 L/min	21%-24%
	2 L/min	25%-28%
	3 L/min	29%-32%
	4 L/min	33%-36%
	5 L/min	37%-40%
	6 L/min	41%-44%
Simple oxygen face mask	6-10 L/min	35%-60%
Face mask with O_2 reservoir (nonrebreathing mask)	6 L/min	60%
	7 L/min	70%
	8 L/min	80%
	9 L/min	90%
	10-15 L/min	95%-100%
Venturi mask	4-8 L/min	24%-40%
	10-12 L/min	40%-50%

- **Monitor CPR quality**:
  - Quantative waveform capnography: if PETCO2 <10 mm Hg→ Poor CPR quality
  - Intra-arterial pressure: if diastolic BP <20 mm Hg→ Poor CPR quality

Flat line protocol in asystole:

- Confirm electrodes are well connected to the patient
- Check the connections from the electrodes till the power source
- Check monitor **(power** on, check another **lead,** increase the **gain)**

Summary of ACLS drug groups

Asystole/PEA	**VF/Pulseless VT**	**Tachycardia**	**Bradycardia**	**Shock** (hypotension)	**Special Situations**
Epinephrine	Epinephrine	Adenosine	Atropine	Norepi	Sodium Bicarb
Vasopressin	Vasopressin	Calcium Channel Blockers	Dopamine	Dopamine	Calcium Chloride
	Antiarrhythmics: • Amiodarone • Lidocaine	β-Blockers	Epinephrine	Dobutamine	Glucagon
	Magnesium Sulphate	Digoxin			Digibind
		Antiarrhythmic: • Amiodarone • Lidocaine • Procainamide • Sotalol • Propafenone • flecainide			
		Isoproterenol			
		Magnesium sulphate			

Drugs for shockable rhythm (to be considered during CPR after the second shock):

1. Epinephrine 1 mg IV/IO, repeat every 3 to 5 min, follow each dose with 20 ml flush, elevate arm for 10 to 20 seconds after dose
2. Or may give 1 dose of vasopressin 40 U IV/IO to replace first or second dose of epinephrine
3. Consider antiarrhythmics before or after the 3rd shock:
   - Amiodarone (300 mg IV/IO once, then consider additional 150 mg IV/IO once) or
   - Lidocaine (1 to 1.5 mg/kg first dose then 0.5 to 0.75 mg/kg IV/IO, maximum 3 doses or 3 mg/kg)
   - Consider magnesium, loading dose 1 to 2 g IV/IO for torsades de pointes

Drugs for Asystole/PEA (to be considered during CPR immediately once IV/IO available)

1. Epinephrine 1 mg (10 ml 1:10000 solution) IV/IO, followed by 20 ml NSS for flush; repeat every 3 to 5 min
2. Or may give 1 dose of vasopressin 40 U IV/IO to replace first or second dose of epinephrine

Drugs for shock (hypotension)

1. Dopamine: 5-10 mcg/kg/min IV infusion.
2. Norepinephrine: 0.5-1 mcg/minute.
3. Dobutamine: 5-20 mcg/kg/min IV infusion.

Drugs for unstable bradycardia- consider the following drugs while awaiting TCP:

1. Atropine: 0.5 mg IV; may repeat to a total of 3 mg
2. Dopamine: 2-10 mcg/kg/min IV infusion
3. Epinephrine: 2-10 mcg/min IV infusion

TCP for unstable bradycardia

- It is reasonable to initiate pacing in patients with bradyarrhythmias in the event the heart rate does not respond to atropine or other chronotropic (rate-accelerating) drugs
- Use TCP without delay in advanced HB (3rd degree or 2nd degree type II). If TCP is ineffective, prepare for transvenous pacing

Drugs for stable tachycardia

1. Adenosine: used in supraventricular tachycardia, 6 mg rapid IV push over 1-2 seconds, followed by NS bolus of 20 ml. A second dose (12 mg) can be given in 1-2 minutes if needed. A third dose (12 mg) can be given in 1-2 minutes if needed.
2. β Blockers
   - Atenolol: 5 mg IV over 5 minutes, then repeated in 10 minutes
   - Esmolol: 0.5 mg/kg over 1 minute, then infusion of 0.05 mg/kg/min (maximum: 0.3 mg/kg/min)
   - Labetalol: 20 mg IV over 2 minutes, repeated every 10 min to a cumulative dose of 300 mg.
   - Metoprolol: 5 mg IV every 2 minutes for 3 doses.
   - Propranolol: 1 mg IV over 2-10 min, repeated every 5 min to a maximum of 0.15 mg/kg
3. Calcium Channel Blockers
   - Diltiazem: 0.25 mg/kg over 2 minutes; may repeat in 15 minutes at 0.35 mg/kg.
   - Verapamil: 2.5-5 mg over 2 minutes; may repeat 30 mg in 30 min.
4. Digoxin: .01-.015 mg/kg (50% initially then 25% in 6 h and 25% 6h after 2nd dose)
5. Antiarrhythmics
   - Amiodarone:
     - Rapid IV infusion 150 mg diluted in 100 ml D5W over 10 minutes. May repeat every 10 minutes.
     - Slow infusion: 1 mg/min for 6 hours.
     - Continuous infusion: 0.5 mg/min for 18 hours.
   - Lidocaine: 0.5-0.75 mg/kg IV push. Maintenance infusion: 1-4 mg/min.
   - Procainamide: 20-50 mg/minute until arrhythmia suppresses, hypotension occurs, the QRS is widened by 50% or a total of 17 mg/kg is given. Infusion: 1-4 mg/minute.
   - Propafenone: Oral dosage - 150 mg TID. May be increased to a maximum of 900 mg/day if needed. IV dose (not approved in the United States): 1-2 mg/kg at 10 mg/min.
   - Sotalol: 80 mg BID orally. Usual dose: 160-320 mg/day. Maximum: 640 mg/day Dosage IV (not approved in the United States): 1-1.5 mg/kg at a rate of 10 mg/min
6. Isoproterenol: Infuse at 2-10 mcg/min. For refractory torsades de pointes; and in bradycardia in denervated hearts.
7. Magnesium Sulphate: 1 - 2 gm. in 100 ml D5W over 5 minutes for treating torsades de pointes (polymorphic ventricular tachycardia). Also for hypomagnesaemia states such as alcoholism, malnutrition, TPN.

Drugs in Special Situations

Drug	Indications
Sodium Bicarbonate (1 mEq/kg IV bolus)	1. Known pre-existing hyperkalaemia 2. Known pre-existing bicarbonate-responsive acidosis; e.g. diabetic ketoacidosis, TCA or aspirin overdose, cocaine, or diphenhydramine. 3. Prolonged resuscitation with effective ventilation; upon return of spontaneous circulation after long arrest interval. N.B. Not useful in hypercarbic acidosis (e.g. cardiac arrest and CPR without intubation)
Calcium chloride (5-10 ml of 10% solution)	1. Known or suspected hyperkalaemia (e.g. renal failure) 2. Ionized hypocalcaemia (e.g. after multiple blood transfusions) 3. As an antidote for toxic effects (hypotension and arrhythmias) from calcium channel blocker overdose or B-blocker overdose
Glucagon (3 mg initially followed by infusion at 3 mg/hour as necessary)	Adjuvant treatment of toxic effects of calcium channel blocker or B-blocker
Digibind (3-5 vial in chronic intoxication; 10-20 vial in acute intoxication) – each vial (40 mg) binds 0.6 mg of Digoxin	Digoxin toxicity with the following: • Life-threatening arrhythmias. • Hyperkalaemia (potassium level > 5 mEq/L) • Steady-state serum level > 10-15 ng/mL for asymptomatic patients
Treatments for polymorphic VT: **M**agnesium, **O**verdrive pacing, **P**henytoin, **I**soproterenol, **L**idocaine	

Automated External Defibrillator (AED) Use

- **For children from 1 to 8 years of age**, an AED with a **pediatric dose-attenuator** system should be used if available. If an AED with a dose attenuator is not available, a standard AED may be used.
- **For infants (<1 year of age)**, a **manual defibrillator** is preferred. If a manual defibrillator is not available, an AED with a **pediatric dose attenuator** is desirable. If neither is available, an AED without a dose attenuator may be used.

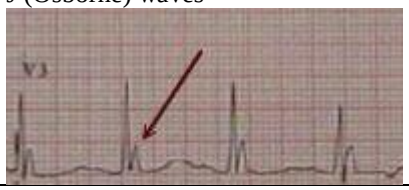
Defibrillation in special situations:

- Treat VF/VT in hypothermic cardiac arrest with an initial defibrillation shock. Repeat shocks for VF/VT only after core temperature rises above 30 ^{0}C
- If patient in VF/VT has an AICD, perform external defibrillation per BLS section, if AICD is delivering shocks, wait 30 to 60 seconds for completion of cycle.
- If patient has implanted device, place paddles and pads at least 2.5 cm form the device.
- Any medication adhesive patches should be removed and the chest wiped clean
- Avoid any inflammable anaesthetics or concentrated oxygen

Synchronized Conversion:

- Explain to the patient and position him
- Insert IV line, connect pulse-oximetry
- Standby crash cart and suction
- Sedation/analgesia
- Power on, select energy & select pads → position pads on patient's chest
- Synch button, adjust R-wave gain until sync markers occur with each R wave
- Charge
- Announce the clearing chant (I'm going to shock on three…and turn off oxygen supply) → press the discharge button and hold it down until the device discharges) → check the monitor.
- If tachycardia persists, check the pulse, reset the sync mode and increase the dose in a stepwise fashion
- If the rhythm changed to VF/pulseless VT) → cancel the sync mode and give shock (treat as cardiac arrest with shockable rhythm)
- For cardioversion of atrial fibrillation start with biphasic energy 120 to 200 J or monophasic energy 200 J.
- For cardioversion of atrial flutter and SVT start with energy 50 to 100 J with either a monophasic or a biphasic device. If the initial cardioversion shock fails, providers should increase the dose in a stepwise fashion.
- Stable monomorphic VT responds well to monophasic or biphasic waveform cardioversion (synchronized) shocks at initial energies of 100 J. If there is no response to the first shock, it may be reasonable to increase the dose in a stepwise fashion.
- Treat unstable polymorphic VT with D/C shock

DD for PEA and asystole (5H, 5T)

Condition	History	Signs	ECG before arrest	Management
Hypoxia	Airway problems (intubation), O2 sat., ABG result	Cyanosis	Slow rate	Check airway, oxygenation, ventilation
Hypovolemia	Blood loss, dehydration, diuretics, postural collapse	Flat neck veins	Rapid rate, narrow complex	Volume infusion
Hydrogen ion (acidosis)	Renal failure, DM, pre-existing acidosis, prolonged CPR, ABG result	Dialysis fistula	Low voltage	NaHCO3, hyperventilation
Hyperkalaemia	Renal failure, Drugs, ABG result	Dialysis fistula	Peaked T, small P, wide QRS	NaHCO3, Glucose insulin, CaCl
Hypokalaemia	Diuretics, recent dialysis, ABG result		Prominent U flat T, wide QRS, prolonged QT	Potassium, magnesium
Hypothermia	Exposure to cold	Central body temperature	Slow rate J (Osborne) waves 	Rewarming (avoid hyperthermia)
Tablets	Ingestion, empty bottles at the scene	Pupils, neurological examination	Prolonged QT (TCA) Slow rate (digoxin, B-blockers, Ca blockers)	Drug screen, lavage, activated charcoal, specific antidotes (Digibind, glucagon, calcium, narcan)
Tamponade	Trauma, history of pericardial effusion, malignancy (radiation therapy, metastasis), renal failure, traumatic CPR.	No pulse with CPR, distended neck veins	Rapid rate, narrow complex	pericardiocentesis
Tension pneumothorax	Trauma, history of chest pain and breathlessness, central line, traumatic CPR, intubation.	No pulse with CPR, distended neck veins, tracheal deviation, unequal breath sounds, difficult ventilating patient	Slow rate, narrow complex (hypoxia)	Needle decompression
Thrombosis (PE)	History of chest pain and breathlessness, haemoptysis, oral contraceptives, orthopaedic surgery	No pulse with CPR, distended neck veins	Rapid rate, narrow complex	Pulmonary arteriogram, surgical embolectomy, thrombolysis
Thrombosis (ACS)	History of chest pain and IHD		ST-T changes	Thrombolytic therapy

Finding	Differential Diagnosis
History of airway problem	Hypoxia
History of volume loss	Hypovolemia
History of renal failure	Acidosis, Hyperkalemia, Tamponade
History of drugs/medications	Drug overdose or drugs causing Hypovolemia, hypokalaemia or hyperkalaemia, pulmonary embolism
History of trauma	Tamponade, Tension pneumothorax
History of chest pain	Tension pneumothorax, pulmonary embolism, ACS
Cyanosis, tracheal deviation, unequal breath sounds, difficult ventilating patient	Hypoxia
Flat neck veins	Hypovolemia
Distended neck veins & no pulse with CPR	Tamponade, Tension pneumothorax, pulmonary embolism
Central body temperature	Hypothermia
Abnormal Pupils	Drug overdose
Slow heart rate before arrest	Hypoxia, Hypothermia, drug overdose, Tension pneumothorax
Rapid heart rate before arrest	Hypovolemia, Tamponade, pulmonary embolism
Wide QRS complex	Hypokalaemia or Hyperkalaemia
ST-T changes	Acute Coronary Syndrom (ACS)
Prolonged QT	Hypokalaemia or drug effect
Prominent U wave	hypokalaemia

ABCs for breathing victim:
Airway: position (semi-setting)
Breathing: oxygen and pulsoximetry
Circulation: IV and monitor
Stability:

- Symptoms (chest pain, SOB, neurological symptoms)
- Signs (hypotension, basal crackles, high JVP & LL oedema)

ABC for Carotid massage: exclude **elderly** and patients with history of **CVA/TIA**; **explain** to patient, then ABC

- **A**rterial **B**ruits
- **C**rash cart

Post resuscitation care (after Return of Spontaneous Circulation "**ROSC**"):

1. Stop CPR
2. Support respiration as needed: check spontaneous breathing, RR and O2 saturation
3. Support circulation as needed: check HR and BP, verify existing intravenous access and treat arrhythmias appropriately
4. Monitor the patient's temperature after resuscitation and avoid hyperthermia. Unconscious adult patients with ROSC after out-of hospital cardiac arrest should be cooled to 32°C to 34°C for 12 to 24 hours when the initial rhythm was VF (Class IIa). Similar therapy may be beneficial for patients with non-VF arrest out of hospital or for in-hospital arrest (Class IIb)
5. Monitor blood glucose and electrolytes abnormalities
6. Identify and treat reversible causes of arrest (review the H's and T's)
7. Determine the baseline post arrest status of each organ system and support organ function as needed
8. Transfer the patient to a special care unit for observation, continuous monitoring, and further therapy.

Checklist before termination of CPR:

1. Acceptable basic CPR has been provided
2. Advanced airway device has been confirmed
3. All rhythm appropriate drugs have been given
4. Ventricular fibrillation has been eliminated
5. Any underlying reversible condition has beencorrected
6. 10 minutes or longer time has been elapsed

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