Asystole & Pulseless Electrical Activity

“Flat line” - possible causes:

- Power Off
- Leads not attached
- Lead selection
- Fine VF (rare)
- Asystole

**Adrenaline** 1 mg IV push, every 3 - 5 min

*High dose adrenaline is no longer recommended*

**Sodium bicarbonate 1 mEq/kg**

**Class 1a**
- If known pre-existing bicarbonate responsive acidosis
- If overdose with tricyclic antidepressants
- To alkalise urine in drug overdose

**Class 1b**
- If intubated and continued long arrest interval

**Class 3**
- Hypoxic lactic acidosis
**Do not “shock for asystole”**

**Consider termination of efforts**
- after successful intubation
- IV access
- CPR
- all rhythm-appropriate medications

**Pulseless Electrical Activity**

Any rhythm or electrical activity that fails to generate a palpable pulse

**Pulseless Electrical Activity**

Includes:
- EMD
- Pseudo - EMD
- Idioventricular Rhythms
- Ventricular Escape Rhythms
- Brady - Asystolic Rhythms
- Postdefibrillation Idioventricular Rhythms

**Sinus Rhythm with No Pulse**

**Sinus Tachycardia with Unifocal PVCs and No Pulse**
Bradyasystolic Rhythm

Agonal Rhythm
Pulseless Asystolic Rhythm with Occasional Idioventricular Beat

Asystole / PEA Algorithm

Critical Actions

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Critical Actions

• Perform all steps in the ABCD primary survey, CPR
• Operate monitor
• Recognize PEA
• Direct intubation and assess ventilation
• Direct IV access

Asystole
Confirm Asystole in more than one lead

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

Primary ABCD Survey
Assess rhythm.

Secondary ABCD Survey
CPR

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

Search for & correct reversible causes

Critical Actions

• Administer fluid challenge
• Administer adrenaline (if no specific treatment)

Critical Actions

Access the patient, name the conditions causing PEA and their clues, and determine management

Hypovolemia, “Tablets” (drug OD, accidents)
Hypoxia, Tamponade, cardiac
Hydrogen ion - acidosis, Tension pneumothorax
Hyper-hypokalemia, Thrombosis, coronary (ACS)
Hypothermia, Thrombosis, pulmonary (embolism)
Causes of PEA / Asystole | Treatment
---|---
Toxicological causes: Drug overdoses | Treatment with antidotes, if available
Tension pneumothorax | Needle decompression
Thromboembolism | CPR / Removal of clot / Surgery
Tamponade | Pericardiocentesis
Thrombosis (coronary) | A M I treatment

Causes of PEA / Asystole | Treatment
---|---
Hypovolaemia | Intravenous fluids
Hypoxia | Intact airway system
Ventilation with 100% oxygen
Hypothermia | Gradual rewarming
Hyperkalaemia | Correction of hyperkalaemia
Hydrogen ion | Ventilation
Juicydious use of buffer

Management of PEA

Common Perils and Pitfalls
• Not assessing the patient
• Not considering the different possible causes of PEA
• Only treating with adrenaline
• Not troubleshooting ventilation / intubating the patient
• Not giving a volume infusion
• Defibrillation
• Not performing chest compressions
• Not treating the correctable causes

Immediate good quality CPR
Check rhythm every 2-3 minutes
IV adrenaline 1 mg repeated every 3-5 minutes
Look for reversible causes
Monitor CPR Quality