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PULSELESS ARREST
- Call for help, give CPR
- Give O2, attach monitor/defibrillator

1

VF/VT
- Check rhythm -> SHOCKABLE rhythm?

2

Asystole/PEA
- Resume CPR for 5 cycles
- Options: epinephrine, vasopressin, atropine

9

Shockable
- Check if rhythm is SHOCKABLE?

3

Check if rhythm is SHOCKABLE?
- Give 1 shock, resume CPR immediately
- Options: epinephrine, vasopressin, atropine

4

Check if rhythm is SHOCKABLE?
- Give 1 shock, resume CPR immediately
- If asystole, go to Box 10
- If electrical activity, check pulse. No pulse, go to Box 10
- If pulse present, begin post-resuscitation care

6

Not Shockable
- Continue CPR while defibrillator is charging
- Give 1 shock
- Resume CPR immediately after the shock
- Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
- Consider magnesium
- After 5 cycles CPR, go to Box 5 above

8

Not Shockable
- If shockable, go to Box 13

11

Shockable
- Resume CPR immediately after the shock
- Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
- Consider magnesium
- After 5 cycles CPR, go to Box 5 above

13

During CPR (abbreviated)
- Push hard and fast (100/min)
- Ensure full chest recoil
- Minimize interruptions in chest compressions

7

5 cycles CPR

10

5 cycles CPR

12

14
Full Guidelines for CPR in Pulseless Arrest Algorithm

During CPR
- Push hard and fast (100/min)
- Ensure full chest recoil
- Minimize interruptions in chest compressions
- One cycle of CPR: 30 compressions + 2 breaths; 5 cycles, 2 mins
- Avoid hyperventilation
- Secure airway and confirm placement

** After advanced airway is placed, rescuers no longer deliver cycles of CPR. Give continuous chest compressions without pauses for breaths. Give 8-10 breaths/min. Check rhythm every 2 minutes.

- Rotate compressors every 2 minutes with rhythm checks
- Search for and treat possible contributing factors
  - HYPOVOLEMIA
  - HYPOXIA
  - HYDROGEN ION (ACIDOSIS)
  - HYPO/HYPERKALEMIA
  - HYPOGLYCEMIA
  - HYPOTHERMIA
  - TOXINS
  - CARDIAC TAMponade
  - TENSION PNEUMOTHORAX
  - THROMBOSIS (CORONARY/PULMONARY)
  - TRAUMA
PULSELESS ARREST
- BLS Algorithm: Call for help, give CPR
- Give O2 when available
- Attach monitor/defibrillator when available

1. Check rhythm -> SHOCKABLE rhythm?

2. Not Shockable
   - Asystole/PEA

3. Shockable
   - VF/VT

Glenlarson, Wikimedia Commons
Asystole/PEA

- Resume CPR immediately for 5 cycles
  - Epinephrine, repeat every 3-5 min
  - OR 1 dose of vasopressin
  - OR consider atropine, repeat every 3-5 min

Not shockable

5 cycles CPR

- Check rhythm -> SHOCKABLE rhythm?
- If asystole, go to Box 10
- If electrical activity, check pulse. No pulse, go to Box 10
- If pulse present, begin post-resuscitation care

10

- Resume CPR immediately for 5 cycles
  - Epinephrine, repeat every 3-5 min
  - OR 1 dose of vasopressin
  - OR consider atropine, repeat every 3-5 min

5 cycles CPR

11

- Check rhythm -> SHOCKABLE rhythm?

12

Not Shockable

Shockable

13

Go to Box 4
PULSELESS ARREST
- Call for help, give CPR
- Give O2, attach monitor/defibrillator

1. Check rhythm -> SHOCKABLE rhythm?
   - Shockable
     - VF/VT
     - Give 1 shock, resume CPR immediately
     - Options: epinephrine, vasopressin, atropine
     - 5 cycles CPR
     - Check if rhythm is SHOCKABLE?
     - Shockable
       - Continue CPR while defibrillator is charging
       - Give 1 shock
       - Resume CPR immediately after the shock
         - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
         - Consider magnesium
       - After 5 cycles CPR, go to Box 5 above
     - Not Shockable
       - Asystole/PEA
       - Resume CPR for 5 cycles
       - Options: epinephrine, vasopressin, atropine
       - 5 cycles CPR
       - Check if rhythm is SHOCKABLE?
       - Not Shockable
         - Go to Box 4
       - Shockable
         - If asystole, go to Box 10
         - If electrical activity, check pulse. No pulse, go to Box 10
         - If pulse present, begin post-resuscitation care

2. Not Shockable
   - VF/VT
   - Give O2, attach monitor/defibrillator
   - Check if rhythm is SHOCKABLE?
   - 5 cycles CPR
   - If asystole, go to Box 10
   - If electrical activity, check pulse. No pulse, go to Box 10
   - If pulse present, begin post-resuscitation care

3. VF/VT
   - Give 1 shock, resume CPR immediately
   - Options: epinephrine, vasopressin, atropine
   - 5 cycles CPR
   - Check if rhythm is SHOCKABLE?
   - Not Shockable
     - Continue CPR while defibrillator is charging
     - Give 1 shock
     - Resume CPR immediately after the shock
       - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
       - Consider magnesium
     - After 5 cycles CPR, go to Box 5 above
   - Shockable
     - If asystole, go to Box 10
     - If electrical activity, check pulse. No pulse, go to Box 10
     - If pulse present, begin post-resuscitation care

4. 5 cycles CPR
   - Check if rhythm is SHOCKABLE?
   - Not Shockable
     - Continue CPR while defibrillator is charging
     - Give 1 shock
     - Resume CPR immediately after the shock
       - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
       - Consider magnesium
     - After 5 cycles CPR, go to Box 5 above
   - Shockable
     - If asystole, go to Box 10
     - If electrical activity, check pulse. No pulse, go to Box 10
     - If pulse present, begin post-resuscitation care

5. Check if rhythm is SHOCKABLE?
   - Not Shockable
     - Continue CPR while defibrillator is charging
     - Give 1 shock
     - Resume CPR immediately after the shock
       - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
       - Consider magnesium
     - After 5 cycles CPR, go to Box 5 above
   - Shockable
     - If asystole, go to Box 10
     - If electrical activity, check pulse. No pulse, go to Box 10
     - If pulse present, begin post-resuscitation care

6. 5 cycles CPR
   - Check if rhythm is SHOCKABLE?
   - Not Shockable
     - Continue CPR while defibrillator is charging
     - Give 1 shock
     - Resume CPR immediately after the shock
       - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
       - Consider magnesium
     - After 5 cycles CPR, go to Box 5 above
   - Shockable
     - If asystole, go to Box 10
     - If electrical activity, check pulse. No pulse, go to Box 10
     - If pulse present, begin post-resuscitation care

7. Check if rhythm is SHOCKABLE?
   - Not Shockable
     - Continue CPR while defibrillator is charging
     - Give 1 shock
     - Resume CPR immediately after the shock
       - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
       - Consider magnesium
     - After 5 cycles CPR, go to Box 5 above
   - Shockable
     - If asystole, go to Box 10
     - If electrical activity, check pulse. No pulse, go to Box 10
     - If pulse present, begin post-resuscitation care

8. During CPR
   - Push hard and fast (100/min)
   - Ensure full chest recoil
   - Minimize interruptions in chest compressions
- Continue CPR while defibrillator is charging
- Give 1 shock
- Resume CPR immediately after the shock
  - Epinephrine, repeat every 3-5 min
  - OR 1 dose of vasopressin

5 cycles CPR

- Check rhythm -> SHOCKABLE rhythm?

Shockable

- Continue CPR while defibrillator is charging
- Give 1 shock
- Resume CPR immediately after the shock
  - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
  - Consider magnesium
- After 5 cycles CPR, go to Box 5 above

Not Shockable

- If asystole, go to Box 10
- If electrical activity, check pulse. No pulse, go to Box 10
- If pulse present, begin post-resuscitation care

12
Give 1 shock
- Resume CPR immediately after the shock

Check rhythm -> SHOCKABLE rhythm?

VF/VT

Shockable

5 cycles CPR

- Give 1 shock
- Resume CPR immediately after the shock
Wide Complex Tachycardia

• **DDx:**
  – Ventricular Tachycardia (VT)
  – SVT w/ BBB (often rate dependent)
  – SVT w/ atrioventricular conduction via accessory pathway

• **How to differentiate:**
  – Concordance in leads V1-V6
  – RS >100 ms in the precordial leads
  – AV disassociation

• **When in doubt treat as VT**
V Tach
V Fib
Wide Complex Tachycardia

- **Stable**
  - Amiodarone 150 mg over 10 min or other antiarrhythmic
  - Prepare for synchronized cardioversion
- **Unstable**
  - ABC’s/Call for help/Start CPR
  - Defibrillate: Biphasic 120-200 J (When in doubt pick 200 J), monophasic 360 J
  - Epinephrine 1 mg IV q3-5 min
  - Vasopressin 40 Units IV
  - May try amiodarone or lidocaine after 3 attempts at defibrillation
    - Amiodarone 300 mg, may repeat w/ 150 mg x1
    - Lidocaine 1-1.5 mg/kg, then 0.5-0.75 mg/kg, max is 3 mg/kg
- Continue CPR while defibrillator is charging
- Give 1 shock
- Resume CPR immediately after the shock
  - Epinephrine, repeat every 3-5 min
  - OR 1 dose of vasopressin

5 cycles CPR

- Check rhythm -> SHOCKABLE rhythm?

7 Not Shockable

- If asystole, go to Box 10
- If electrical activity, check pulse. No pulse, go to Box 10
- If pulse present, begin post-resuscitation care

Shockable

- Continue CPR while defibrillator is charging
- Give 1 shock
- Resume CPR immediately after the shock
  - Consider anti-arrhythmics e.g. amiodarone, lidocaine, etc
  - Consider magnesium
- After 5 cycles CPR, go to Box 5 above

12
torsades de pointes
Pulseless Arrest

4 Basic Rhythms

Shockable
  V-fib
  V-Tach
Non-Shockable
  Asystole
  PEA
Shockable Rhythms

• Ventricular Tachycardia
• V-Fib
  – Shock early
  – ABC’s
• Tx of VT/VF
  – Shock- biphasic 200j, monophasic 360j (one x)
  – CPR-IV, ETT
  – Shock
  – CPR-epi/vasopressin
  – Shock
  – CPR-Lido/amiodarone
  – Shock
  – CPR-epi
  – Shock
  – CPR- lido/amio
NON-Shockable

- PEA
- Asystole
- Tx of Asystole & PEA
  - CPR-IV, airway
  - Meds-vasopressin/epi
  - CPR-2 min
  - Meds-epi, atropine*
  - CPR
  - Meds-epi, atro
  - CPR

- *Atropine used in PEA, only for HR < 60
Tachycardia’s
Stable vs. Unstable

• Stable
  – MI
  – 12 lead
  – Narrow complex
  – Wide complex
  – Treat causes
    • H’s and T’s

• Unstable
  – Altered MS
  – CP
  – Hypotension
  – Signs of shock
Contributing Factors
H’s and T’s

• Hypovolemia
• Hypoxia
• Hydrogen ion (acidosis)
• Hypo/hyperkalemia
• Hypoglycemia
• Hypothermia
• Toxins (drugs)
• Tamponade (cardiac)
• Tension PTX
• Thrombosis (coronary or pulmonary)
• Trauma