

# Advanced life support cardiac arrest treatment algorithm for hemodialysis

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Hemodialysis patients are a high cardiovascular risk group whose cardiac arrest incidence is about 7-8/100.000 sessions. The cardiac arrest type along with the limitations and specificities of dialysis justify the integration of these factors in the known algorithms.

**Objective:** Integrating the Advanced Life Support standardized algorithm and the hemodialysis contextual factors.

**Methods:** Literature Review of the available evidence. Theoretical analysis of the process. Review of incidents.

**Causes:** Hypotension (respiratory failure +/- cardiac failure), Acute Coronary Syndrome (cardiac failure), Hyperkalemia (cardiac failure)

**RESPONSIVE?**



**NO**

Call for help, Supine, Physiological saline, stop Ultrafiltration, Opening airways: objects?



**BREATHING and CAROTID PULSE?**



**NOT BREATHING, WITH PULSE:**

- Oropharyngeal airway, mask with self-inflating bag, Oxygen or other devices
- 10 ventilations / minute
- Check pulse and breathing every minute



**NOT BREATHING, PULSELESS:**

- Request Defibrillator
- Resuscitation board / on the floor
- 30 chest compressions / 2 ventilations
- ↓ Qb 100ml / minute



- HIGH - QUALITY CPR:**
- ✓ Minimize interruptions in Chest Compressions
  - ✓ Chest Compression Rate of 100 -120 / min
  - ✓ Chest Compression Depth of ≥ 50 mm
  - ✓ Avoid leaning between Compressions
  - ✓ Breath Rate <12 / min and minimal Chest Rise

**Monitoring / assess rhythm / reassess pulse:**

**Pulseless Ventricular Tachycardia / Ventricular Fibrillation**

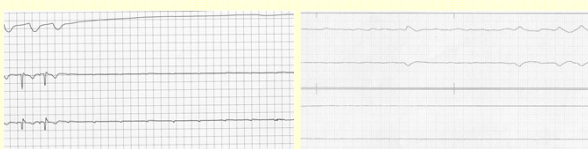
1. Shock: Biphasic: 150-360 J, Monophasic: 360 J
2. 30 chest compressions / 2 ventilations. 2 minutes



- After third shock:
  - 1 mg of **Adrenaline** (after the first compressions). IV
  - 300 mg of **Amiodarone** to 20 ml of 5% Dextrose. IV bolus
  - 1 mg of **Adrenaline** every 3-5 min (alternate loops)

**Pulseless Electrical Activity (PEA) / Asystole**

1. 30 chest compressions / 2 ventilations: 2 minutes



- 1 mg of **Adrenaline** as soon as possible. IV
- 3 mg of **Atropine**. IV single bolus (not routinely, only in Asystole or slow PEA (< 60 beats / min))
- 1 mg of **Adrenaline** every 3-5 min (alternate loops)

Safe and rapid defibrillation : **bypass and remove dialysis fluids lines; disconnection substitution fluid line in online HDF machines**  
Vascular access: **access for hemodialysis**

**Hyperkalaemia:**

- 10 ml of 10% **Calcium Chloride** (6,8 mmol Ca2+). IV. May be repeated
- 50 ml of 8,4% **Sodium Bicarbonate**. IV
- **Fast acting Insulin** 10 units and **Dextrose / Glucose** 50 g. IV
- 500 mcg of **Salbutamol** to 100 ml of 0,9% Saline for 20 min. IV
- **Hemodialysis**

**Conclusion/Application to practice:**

**It provides nursing interventions in order to integrate the hemodialysis inherent factors with life support treatment.**