CARDIOPULMONARY ARREST (CPA) ALGORITHM

Cats & Dogs

Basic Life Support (BLS)

CHEST COMPRESSIONS

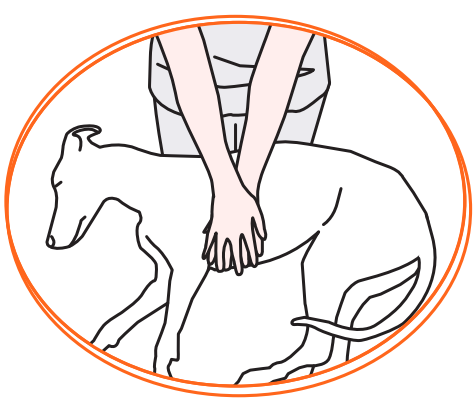
- Allow full chest recoil
- Depth should be 1/3 - 1/2 width of chest
- Rate = 100-120 compressions per minute
- Perform 2-minute cycles without interruption if multiple rescuers present
- Rotate chest compressor q2 minutes if multiple rescuers present

Hand Placement

Cats & small dogs – lateral recumbency, 1-hand circumferential chest compressions or 2-hand technique with hands placed directly over the heart

Most dogs – lateral recumbency, hands placed over widest portion of the chest

Keel chested (deep/narrow chested) dogs – lateral recumbency, hands placed directly over the heart



Barrel-chested – dorsal recumbency, sternally directed compressions with hands placed directly over the xiphoid

Ventilation

Single Rescuer / Non-Intubated

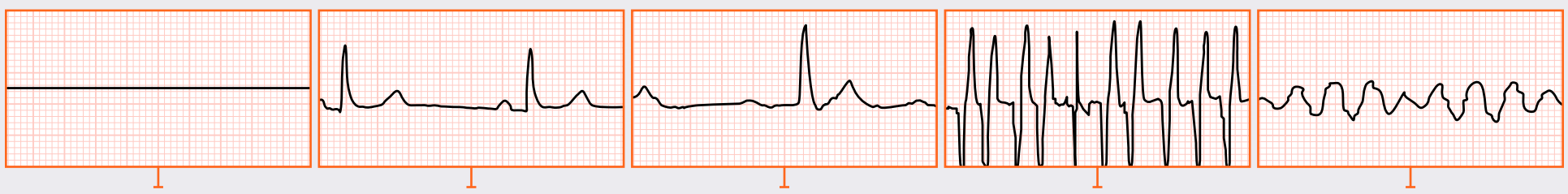
- Hold patient's mouth firmly closed
- Extend neck to align snout with spine
- Make seal over patient's nares with mouth & blow until achieve normal chest excursion
- C:V = 30:2

Multi-Rescuer / Intubated

- Capture patient's airway – endotracheal intubation, laryngeal mask, tracheostomy
- Rate = 10 breaths/minutes
- Inspiratory time = 1 second
- V_T = 10 mL/kg

Advanced Life Support (ALS)

COMMON ARREST RHYTHMS



Asystole
Low-dose epinephrine (1st), atropine if increased in vagal tone (2nd), vasopressin (3rd), high-dose epinephrine after 10 minutes of ALS (3rd)

Unstable bradycardia
Atropine (1st), low-dose epinephrine (2nd)

Pulseless electrical activity (PEA)
Low-dose epinephrine (1st), atropine if increased in vagal tone (2nd), high-dose epinephrine after 10 minutes of ALS (3rd)

Ventricular tachycardia
Lidocaine 2% (1st), amiodarone (2nd)

Ventricular fibrillation
Electrical defibrillation, 1 shock (1st), amiodarone or lidocaine 2% (2nd), magnesium sulfate (3rd)

Drugs

Intravenous (IV) / Intraosseous (IO)

- Epinephrine (1;1000; 1 mg/mL) – low-dose (0.01 mg/kg), high-dose (0.1 mg/kg)
- Atropine (0.54 mg/mL) – 0.04 mg/kg
- Lidocaine 2% (20 mg/mL) – dogs: 2 mg/kg; cats: 0.2 mg/kg
- Amiodarone (50 mg/mL) – 5 mg/kg
- Naloxone (0.4 mg/mL) – 0.04 mg/kg
- Flumazenil (0.1 mg/mL) – 0.01 mg/kg
- Atipamezole (5 mg/mL) – 50 ug/kg
- Magnesium sulfate (4 mEq/mL) – 0.15-0.3 mEq/kg over 5-15 minutes
- Sodium bicarbonate (1 mEq/mL) – 1 mEq/kg after prolonged CPA (>10 minutes)

Intratracheal (IT)

- Use 10-fold increase in the IV dosage for IO administration
- Dilute with saline or sterile water
- Administer via catheter longer than endotracheal tube
- Provide two tidal volume breaths immediately after intratracheal drug administration to facilitate delivery to respiratory membrane
- Amiodarone & $NaHCO_3$ should not be administered via intratracheal route
- Drugs OK for IT route are NAVEL: Naloxone, Atropine, Vasopressin, Epinephrine, Lidocaine

Defibrillation

- External: monophasic: 2-10 J/kg; biphasic: 2-4 J/kg
- Internal: monophasic: 0.2-1 J/kg; biphasic: 0.2-0.4 J/kg

Supplemental Oxygen

- Initially provide 100% F_iO_2 - titrate oxygen supplementation to achieve normoxemia
- F_iO_2 21% (room air) may be considered, especially if oxygen supplementation is not feasible

Fluid Administration

- Place largest gauge / shortest length IV/IO catheter
- Routine use of IV/IO fluids not recommended in euvolemic patients
- Administration of IVF reasonable in patients with pre-existing hypovolemia
- Isotonic crystalloid – dogs: 20 mL/kg; cats: 10 mL/kg; IV/IO over 15 minutes
- Hypertonic saline 7% - 3-4 mL/kg; IV/IO over 15 minutes

Post-resuscitation Care & Monitoring

- Follow Kirby's Rule of 20
- IVF should target normal vital signs, normal mentation, lactate, BP, CVP, S_aO_2, UOP, etc.
- Consider administration of vasopressors / inotropes in patients with persistent hypotension after volume resuscitation post-arrest
- Mechanical ventilation not routinely recommended – provide IPPV for those hypoventilating or at risk of respiratory arrest
- Target P_aCO_2 32-43 mmHg (dogs) and 26-36 mmHg (cats)
- Titrate F_iO_2 to maintain normoxemia
- Mild hypothermia (32-34°C) for 24-48 hours for those remaining comatose after ROSC (will likely require mechanical ventilation)
- Routine corticosteroid administration not recommended – consider supraphysiologic dosing for those who remain hemodynamically unstable despite volume resuscitation & inotrope/vasopressor support
- Seizure prophylaxis – consider anticonvulsants (e.g.: barbiturates, levetiracetam)
- Osmotic agents – mannitol (0.5 g/kg) or hypertonic saline 7% (3-4 mL/kg); IV over 15-30 minutes