CPR CYCLE AND EMERGENCY DRUG DOSING

BASED ON THE 2024 RECOVER GUIDELINES • DOGS AND CATS

CRASH CART / TREATMENT AREA | LAMINATE AND POST | RHYTHM CHECK <10 SEC AT EVERY CYCLE CHANGE

CYCLES BELOW FOLLOW THE NONSHOCKABLE PATHWAY, asystole and PEA. For VF or pulseless VT see **SHOCKABLE RHYTHM** below.

CYCLE	TIME	DRUG THIS CYCLE	NOTES
1	0:00	**EPINEPHRINE 0.01 mg/kg IV or IO** **Consider ATROPINE 0.04 to 0.054 mg/kg once if high vagal tone is suspected**	Start compressions and the timer at once. Atropine is a SINGLE dose. VF or pulseless VT: DEFIBRILLATE FIRST, no epinephrine before the first shock.
2	2:00	**No drug**	Rhythm check under 10 seconds, then resume immediately. Switch compressor.
3	4:00	**EPINEPHRINE 0.01 mg/kg IV or IO**	Vasopressor every other cycle, which is every 3 to 5 minutes.
4	6:00	**No drug**	Rhythm check. No atropine. The single early dose was the only one.
5	8:00	**EPINEPHRINE 0.01 mg/kg IV or IO**	Vasopressin 0.8 U/kg may replace epinephrine. In REFRACTORY SHOCKABLE rhythms vasopressin is preferred, epinephrine only if vasopressin is unavailable.
6	10:00	**No drug**	Consider sodium bicarbonate only beyond 10 to 15 minutes of arrest.
7	12:00	**EPINEPHRINE 0.01 mg/kg IV or IO**	Reassess reversible causes. See the H and T table below.
8+	Every 4 min	**EPINEPHRINE every other cycle**	Continue until ROSC or the attending veterinarian stops the code.

KEY CODE RULES

NO HIGH DOSE EPINEPHRINE The 2024 RECOVER guidelines removed high dose epinephrine, 0.1 mg/kg, at every point in CPR. Standard dose 0.01 mg/kg only. Do not escalate the dose in a prolonged code.

ATROPINE, ONCE ONLY One dose of 0.04 to 0.054 mg/kg early, for asystole or PEA when high vagal tone is suspected. RECOVER recommends against repeat dosing. Half life is long and higher cumulative doses are associated with worse outcomes in dogs.

SHOCKABLE RHYTHM VF or pulseless VT: defibrillate once, then resume compressions immediately without reassessing. Biphasic first shock 2 J/kg, then DOUBLE to 4 J/kg and hold there. No epinephrine before the first shock.

ETCO2 Target 18 mmHg or higher. A falling value means compressions are failing. A sudden sharp rise suggests ROSC.

REVERSIBLE CAUSES, THE H AND T LIST

CAUSE	CLUE	CAUSE	CLUE
Hypovolemia	Trauma, hemorrhage	**Tension pneumothorax**	Trauma, respiratory arrest
Hypoxia	Airway cause	**Toxins**	Drug given, ingestion
Hypothermia	Cold, post anesthesia	**Thromboembolism**	Cardiac history, cats
Hypoglycemia	Neonatal, diabetic	**Hyperkalemia**	Blocked cat, Addison disease

PRE-CALCULATED CODE DRUG VOLUMES

ALL VALUES IN mL • VERIFY YOUR STOCK CONCENTRATION AGAINST THE VIAL IN YOUR HAND

READ ACROSS BY PATIENT WEIGHT • CONFIRM THE VIAL BEFORE ADMINISTRATION

WEIGHT (kg)	EPINEPHRINE 1 mg/mL | 0.01 mg/kg	ATROPINE 0.1 mL/kg | 0.4 to 0.54 mg/mL SINGLE DOSE	VASOPRESSIN 20 U/mL | 0.8 U/kg shockable: 1st choice	NALOXONE 0.4 mg/mL | 0.04 mg/kg	LIDOCAINE 2% 20 mg/mL | 2 mg/kg DOGS ONLY	DEXTROSE 50% 0.5 mL/kg dilute 1:1	DIPHENHYDRAMINE 50 mg/mL | 1 mg/kg anaphylaxis
2	0.02	**0.2**	0.08	0.20	0.20	1.0	0.04
4	0.04	**0.4**	0.16	0.40	0.40	2.0	0.08
6	0.06	**0.6**	0.24	0.60	0.60	3.0	0.12
8	0.08	**0.8**	0.32	0.80	0.80	4.0	0.16
10	0.10	**1.0**	0.40	1.00	1.00	5.0	0.20
12	0.12	**1.2**	0.48	1.20	1.20	6.0	0.24
15	0.15	**1.5**	0.60	1.50	1.50	7.5	0.30
20	0.20	**2.0**	0.80	2.00	2.00	10.0	0.40
25	0.25	**2.5**	1.00	2.50	2.50	12.5	0.50
30	0.30	**3.0**	1.20	3.00	3.00	15.0	0.60
35	0.35	**3.5**	1.40	3.50	3.50	17.5	0.70
40	0.40	**4.0**	1.60	4.00	4.00	20.0	0.80
50	0.50	**5.0**	2.00	5.00	5.00	25.0	1.00

ATROPINE STOCK US practices commonly stock 0.4 to 0.54 mg/mL. Because the dose range is 0.04 to 0.054 mg/kg, 0.1 mL/kg is acceptable across that range. Confirm the concentration on the vial in your hand.

SMALL PATIENTS Under 10 kg the epinephrine volume is hard to draw accurately. Dilute 1 mL of epinephrine into 9 mL saline to make 0.1 mg/mL, then give TEN TIMES the volume shown above. Label the syringe.

SODIUM BICARBONATE 1 mEq/kg, which is 1 mL/kg of a 1 mEq/mL solution. Only for arrest beyond 10 to 15 minutes.

REFRACTORY VF OR PULSELESS VT Refractory means the rhythm is still VF or pulseless VT after ONE shock, a full 2 minute compression cycle, and a repeat ECG with no pulse. Lidocaine 2 mg/kg IV or IO in DOGS. Amiodarone 5 mg/kg IV or IO in CATS. Do NOT give lidocaine to cats. Consider esmolol 0.5 mg/kg IV or IO over 3 to 5 minutes, then 50 mcg/kg/min CRI.

DEFIBRILLATION, BIPHASIC EXTERNAL

SHOCK	2.5 kg	5 kg	10 kg	20 kg	30 kg	40 kg	50 kg
First shock 2 J/kg	5 J	10 J	20 J	40 J	60 J	80 J	100 J
Shock 2 and after 4 J/kg, hold here	**10 J**	**20 J**	**40 J**	**80 J**	**120 J**	**160 J**	**200 J**

Monophasic external: 4 to 6 J/kg. Internal paddles: biphasic 0.2 to 0.4 J/kg, monophasic 0.5 to 1 J/kg.

IMPORTANT Clinical reference only. Confirm every concentration against the vial in your hand before administration. Doses reflect the 2024 RECOVER consensus guidelines. Reviewed September 2026.

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