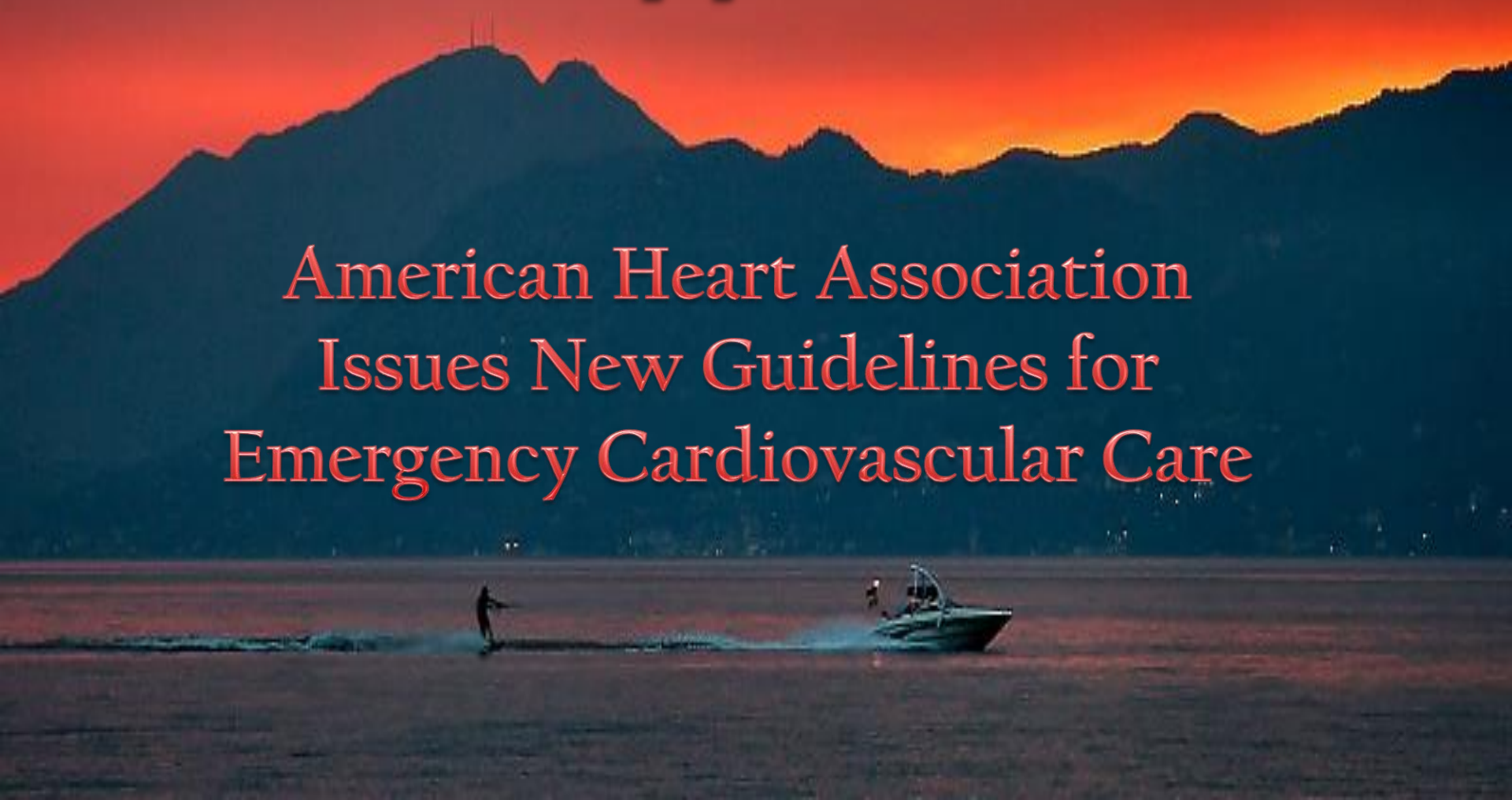


In the name of GOD



Advanced Cardiac Life Support

American Heart Association
Issues New Guidelines for
Emergency Cardiovascular Care



Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart
Association®
Learn and Live™

آبازه های

برگرفته از مجموعه راه کارهای بالینی سال ۲۰۰۵ انجمن قلب آمریکا

مترجمان :

(به ترتیب حروف الفبا)

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Pulseless Arrest



- *4 rhythms* produce pulseless cardiac arrest:
 - Ventricular fibrillation (VF)
 - Rapid ventricular tachycardia (VT)
 - Pulseless electrical activity (PEA)
 - Asystole

Survival from these arrest rhythms requires both basic life support (**BLS**) and advanced cardiovascular life support (**ACLS**).

For victims of *witnessed VF arrest*,
prompt bystander :

1. CPR

2. Early defibrillation

can significantly increase the chance for
survival to hospital discharge.

In comparison, typical ACLS therapies, such as:

- insertion of advanced airways and
- pharmacologic support of the circulation,

have **not** been shown to increase rate of survival to hospital discharge.

IV ACCESS FOR MEDICATION

IV Access for Medications:

- *Central line access* is **not** needed in most resuscitation attempts.
- Drugs typically require **1 to 2 minutes** to reach the central circulation when given via a **peripheral vein** but require less time when given via central venous access.

peripheral venous route:

1. Follow with a 20 ml bolus of IV fluid
2. Elevate the extremity for 10 to 20 seconds to facilitate drug delivery to the central circulation.

Intraosseous (IO) cannulation provides access to a noncollapsible venous plexus, enabling drug delivery *similar* to that achieved by central venous access.

If **IV** and **IO** access cannot be established, some resuscitation drugs may be administered by the ***endotracheal route***

E T route:

- *Lidocaine*
- *Epinephrine*
- *Atropine*
- *Naloxone*
- *Vasopressin*

VALEN

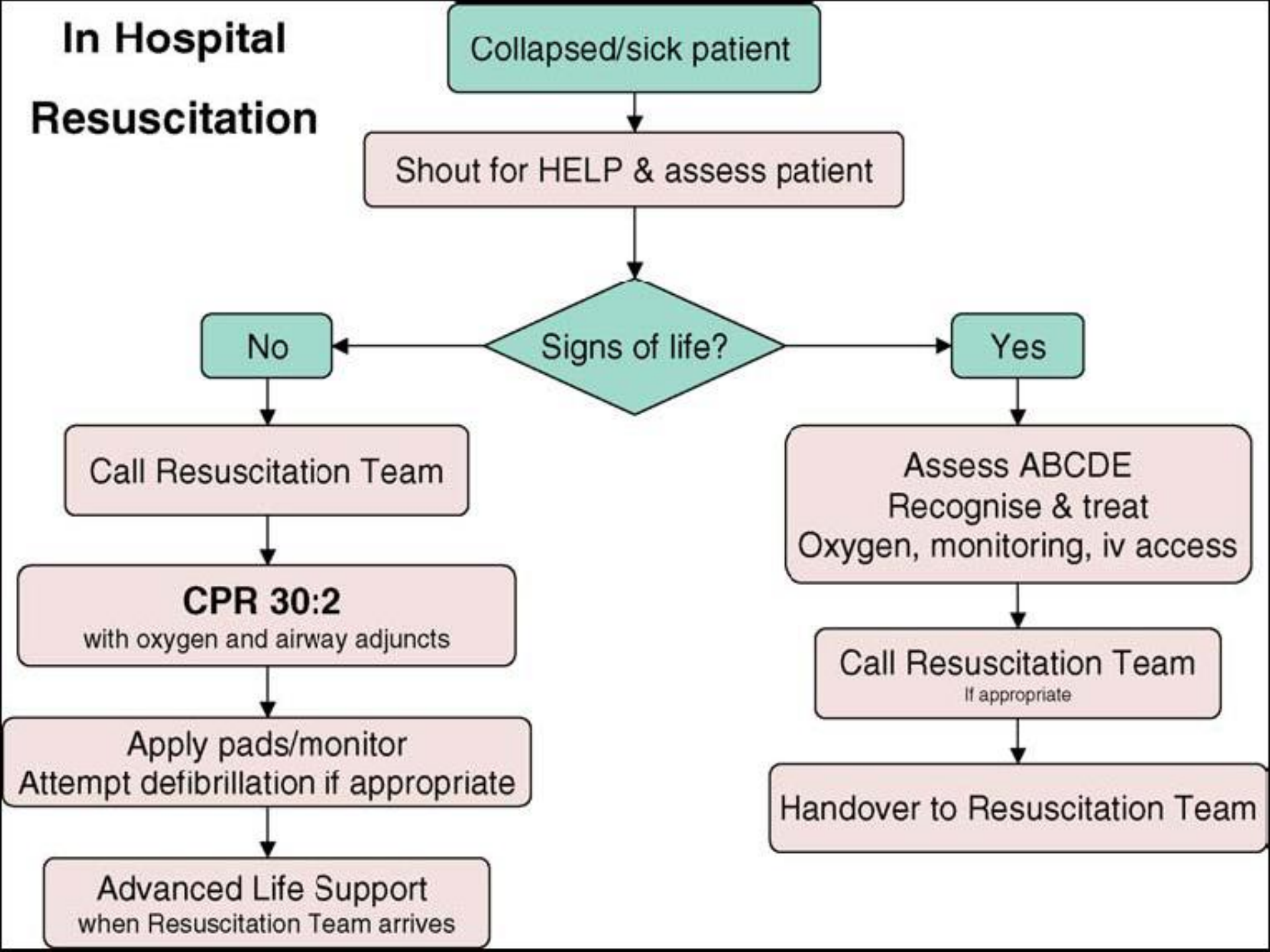
The optimal endotracheal dose of most drugs is **unknown**, but typically the dose given by the endotracheal route is **2** to **2.5 times** the recommended **IV** dose.

Providers should *dilute* the recommended dose in 5 to 10 mL of water or normal saline



Pulseless arrest and your reaction:

In Hospital Resuscitation



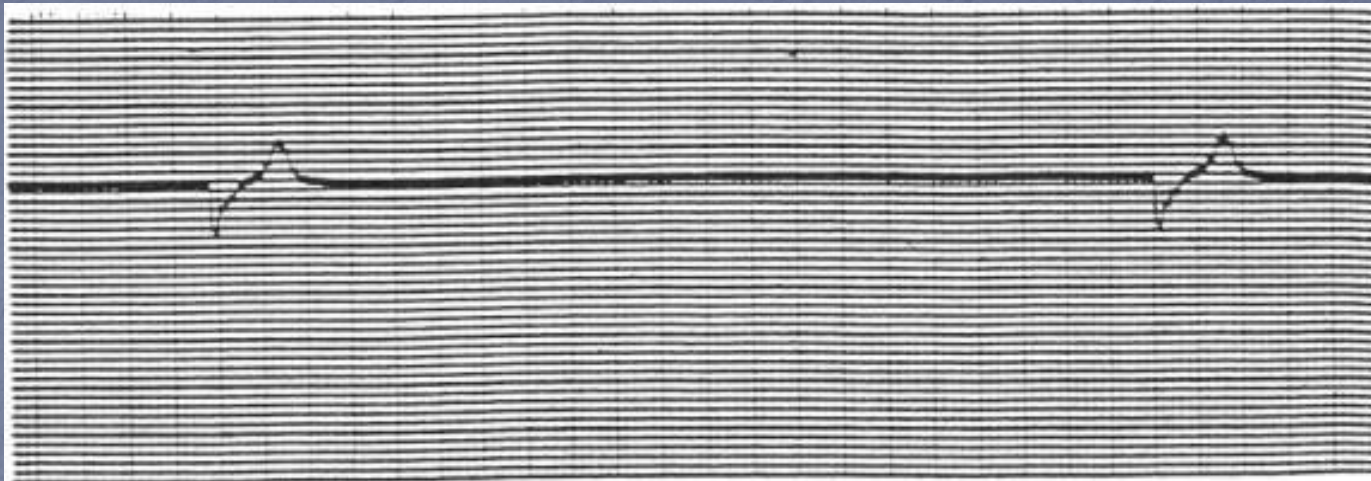
1

PULSELESS ARREST

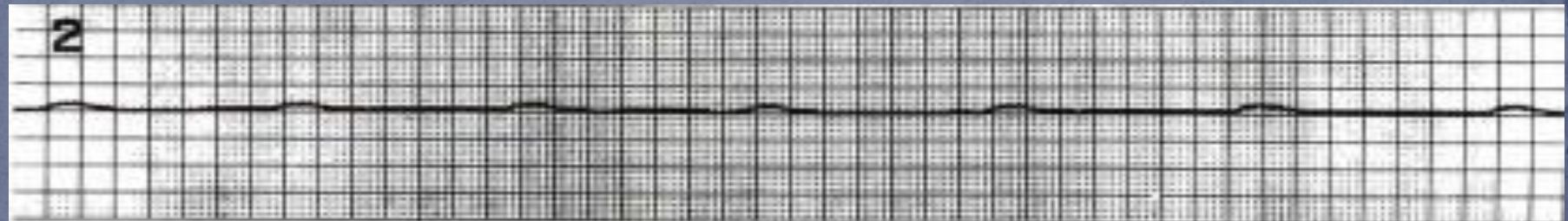
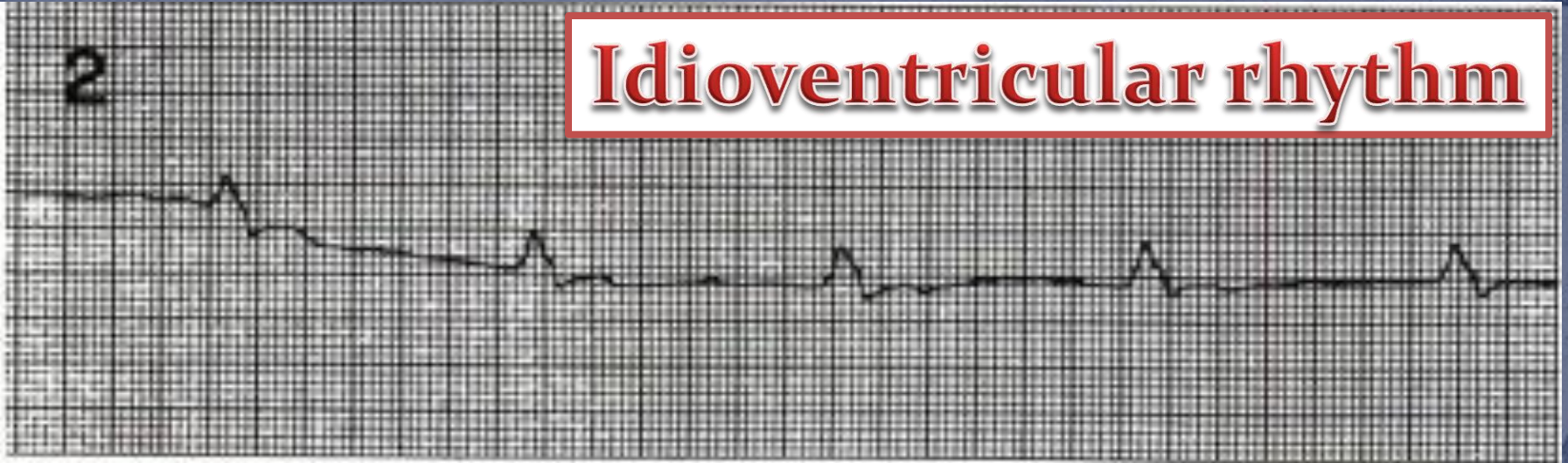
ASYSTOLE / PEA

Asystole

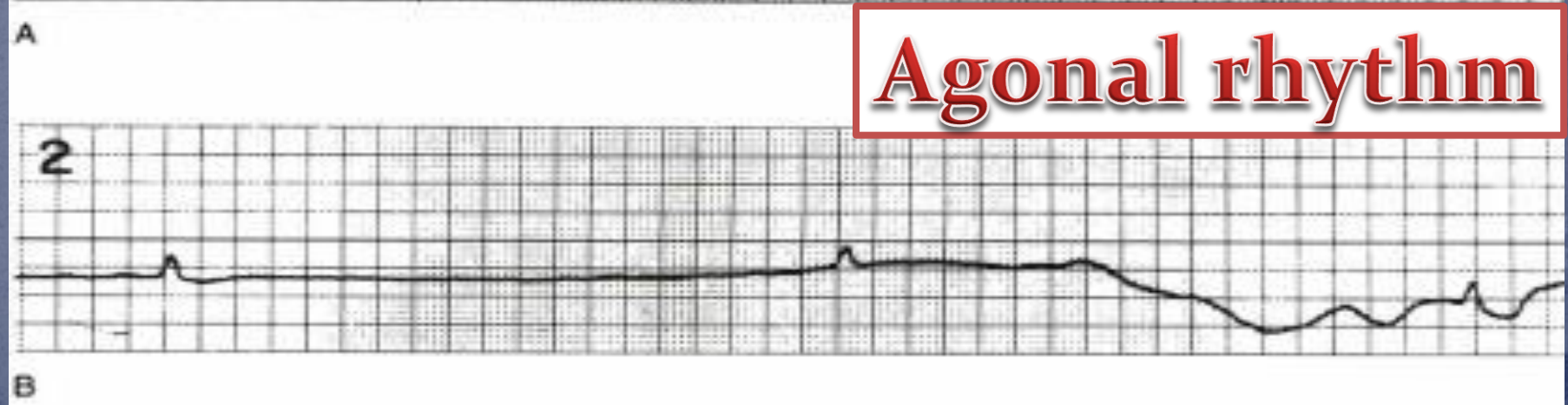
- complete cessation of myocardial electrical activity
- End-stage rhythm
- ◌ Asystole should always be confirmed in at least **two** limb leads
- It may be difficult to distinguish between extremely **fine VF** and **asystole**



Idioventricular rhythm



Agonal rhythm



Pulseless Electrical Activity

- PEA is defined as non-coordinated groups of electrical activity of the heart (other than VT/VF) without a palpable pulse: EMD + pseudo EMD
- **EMD** = Electro Mechanical Dissociation : **no** myocardial **contractions occur**
- **Pseudo-EMD** : myocardial **contractions occur** but no pulse can be palpated

EMD

- **Idioventricular rhythms**
- **Ventricular escape rhythms**
- **Postdefibrillation idioventricular rhythms**
- **Brady-asystolic rhythms**
- **Agonal rhythms**

Pseudo-EMD

- Global myocardial dysfunction
- Papillary muscle and myocardial wall rupture
- Primary supraventricular tachycardia (SVT)
- Hypovolemia, tension pneumothorax, pericardial tamponade, and massive PE

ASYSTOLE/PEA MANAGEMENT

- Patients who have either asystole or PEA will not benefit from **defibrillation** attempts
- A **vasopressor** (epinephrine or vasopressin) may be administered at this time.
- **Epinephrine** can be administered approximately every 3 to 5 minutes during cardiac arrest; one dose of **vasopressin** may be substituted for either the first or second epinephrine dose
- For a patient in asystole or slow PEA, consider **atropine**

Asystole/PEA

10

Resume CPR immediately for 5 cycles

When IV/IO available, give vasopressor

- **Epinephrine 1 mg IV/IO**
Repeat every 3 to 5 min
- or**
- May give 1 dose of **vasopressin 40 U IV/IO** to replace first or second dose of **epinephrine**

Consider **atropine 1 mg IV/IO**

for asystole or slow PEA rate

Repeat every 3 to 5 min (up to 3 doses)

Give 5 cycles of CPR

11

Check rhythm
Shockable rhythm?

Resume CPR immediately for 5 cycles

When IV/IO available, give vasopressor

- **Epinephrine** 1 mg IV/IO
Repeat every 3 to 5 min
or
- May give 1 dose of **vasopressin** 40 U IV/IO to replace first or second dose of **epinephrine**

Consider **atropine** 1 mg IV/IO

for asystole or slow PEA rate

Repeat every 3 to 5 min (up to 3 doses)

11

Check rhythm
Shockable rhythm?

12

- If asystole, go to Box 10
- If electrical activity, check pulse. If no pulse, go to Box 10
- If pulse present, begin postresuscitation care

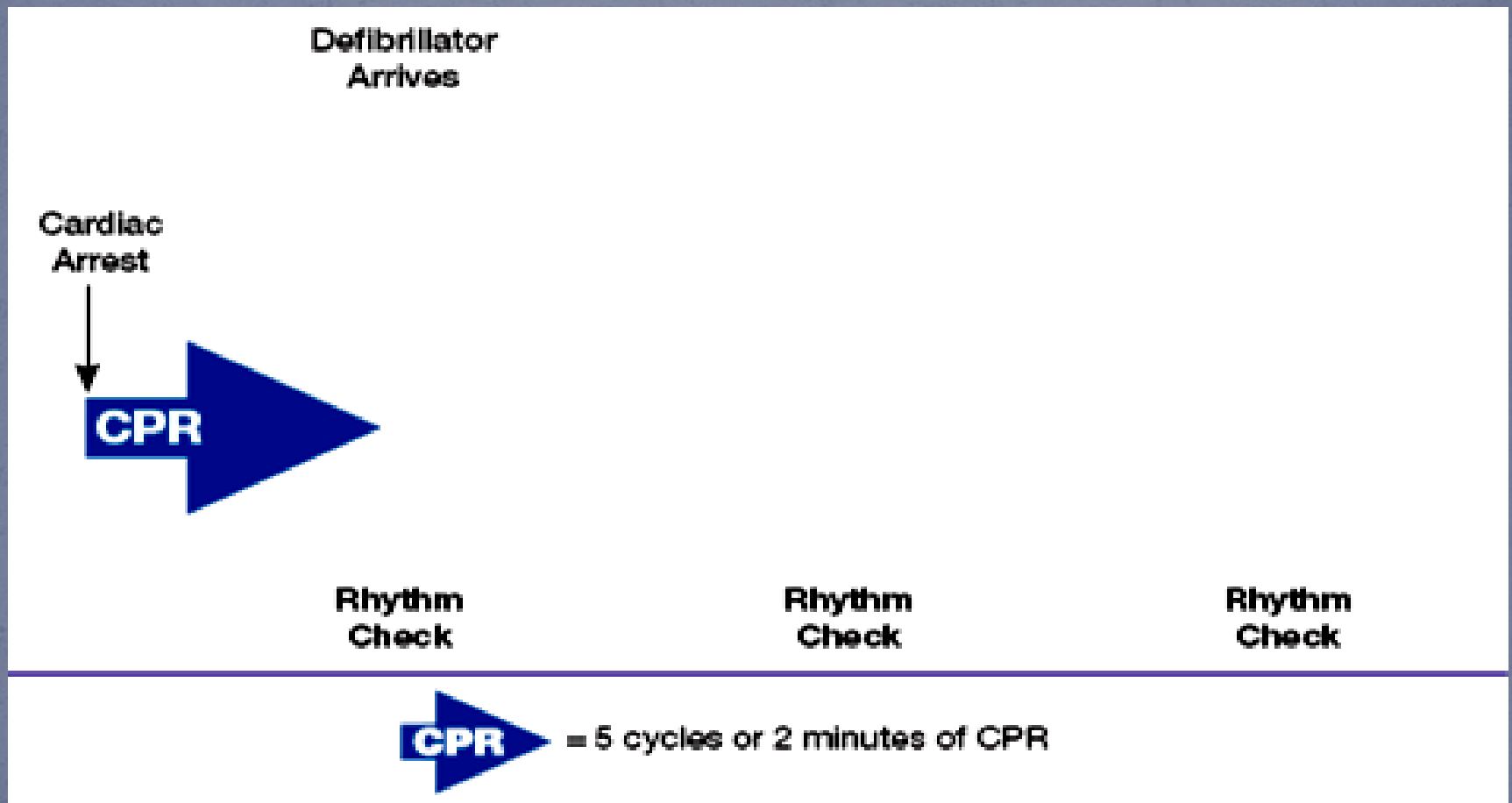
**Not
Shockable**

Shockable

13

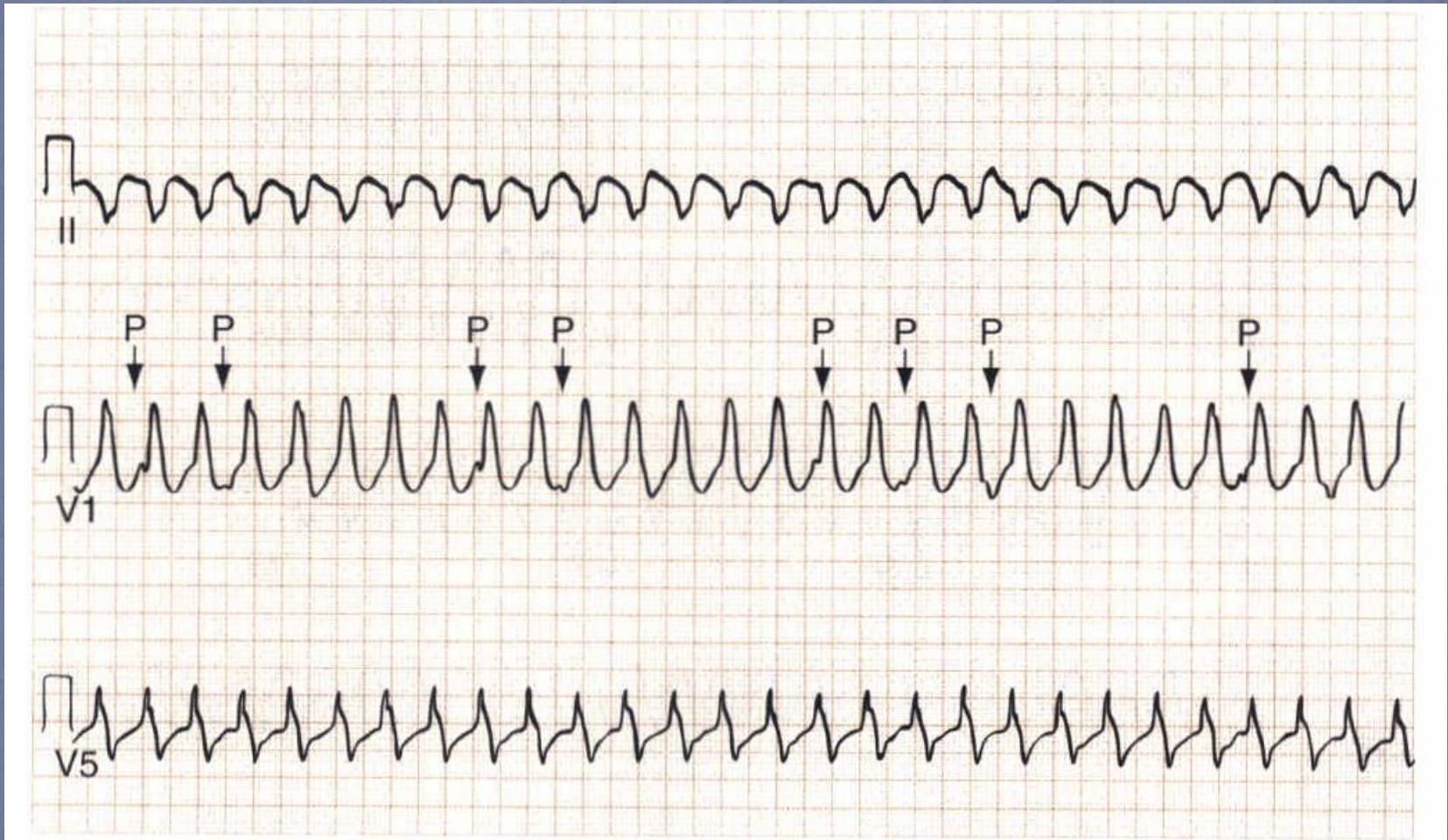
Go to
Box 4

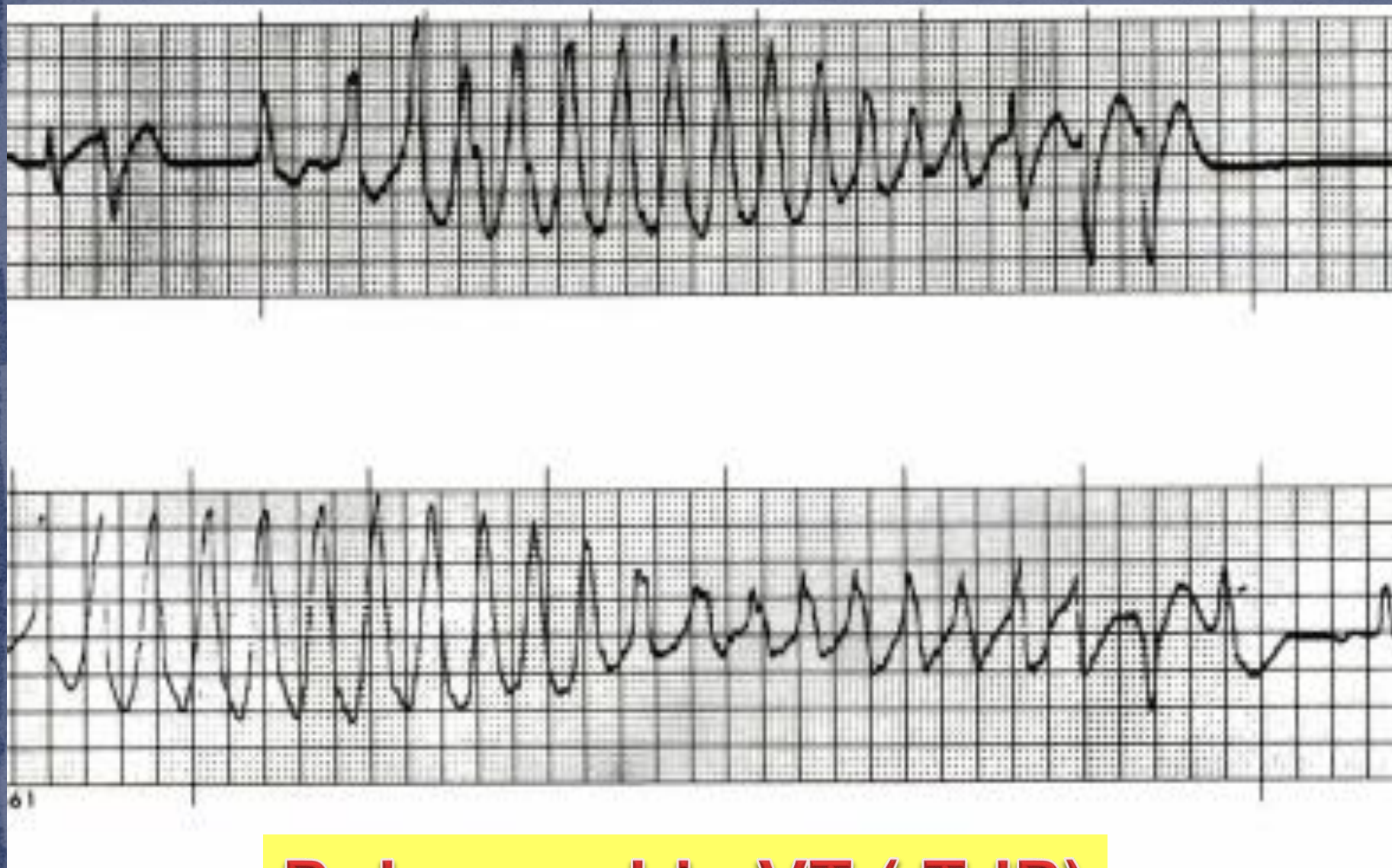
Asystole & PEA





What is this?





Polymorphic VT (TdP)

And this?



1. Ventricular rate is **greater than 200** beats/min.
2. QRS structure displays an **undulating axis**, with the polarity of the complexes appearing to shift about the baseline.
3. Occurrences are often in **short episodes of less than 90 seconds**, although sustained runs can be seen.

VT / VF

VF/VT

Shockable

Continue CPR while defibrillator is charging

Give 1 shock

- Manual biphasic: device specific
(same as first shock or higher dose)

Note: If unknown, use 200 J

- AED: device specific
- Monophasic: 360 J

Resume CPR immediately after the shock

When IV/IO available, give vasopressor during CPR
(before or after the shock)

- **Epinephrine 1 mg IV/IO**
Repeat every 3 to 5 min

or

- May give 1 dose of **vasopressin 40 U IV/IO** to
replace first or second dose of **epinephrine**

Give 5 cycles of CPR*

7

Check rhythm
Shockable rhythm?

No

Shockable

Resume CPR immediately for 5 cycles

When IV/IO available, give vasopressor

- **Epinephrine 1 mg IV/IO**

Repeat every 3 to 5 min

or

- May give 1 dose of **vasopressin 40 U IV/IO** to replace first or second dose of **epinephrine**

Consider **atropine 1 mg IV/IO**

for asystole or slow PEA rate

Repeat every 3 to 5 min (up to 3 doses)

7

Give 5 cycles of CPR

Check rhythm
Shockable rhythm?

No

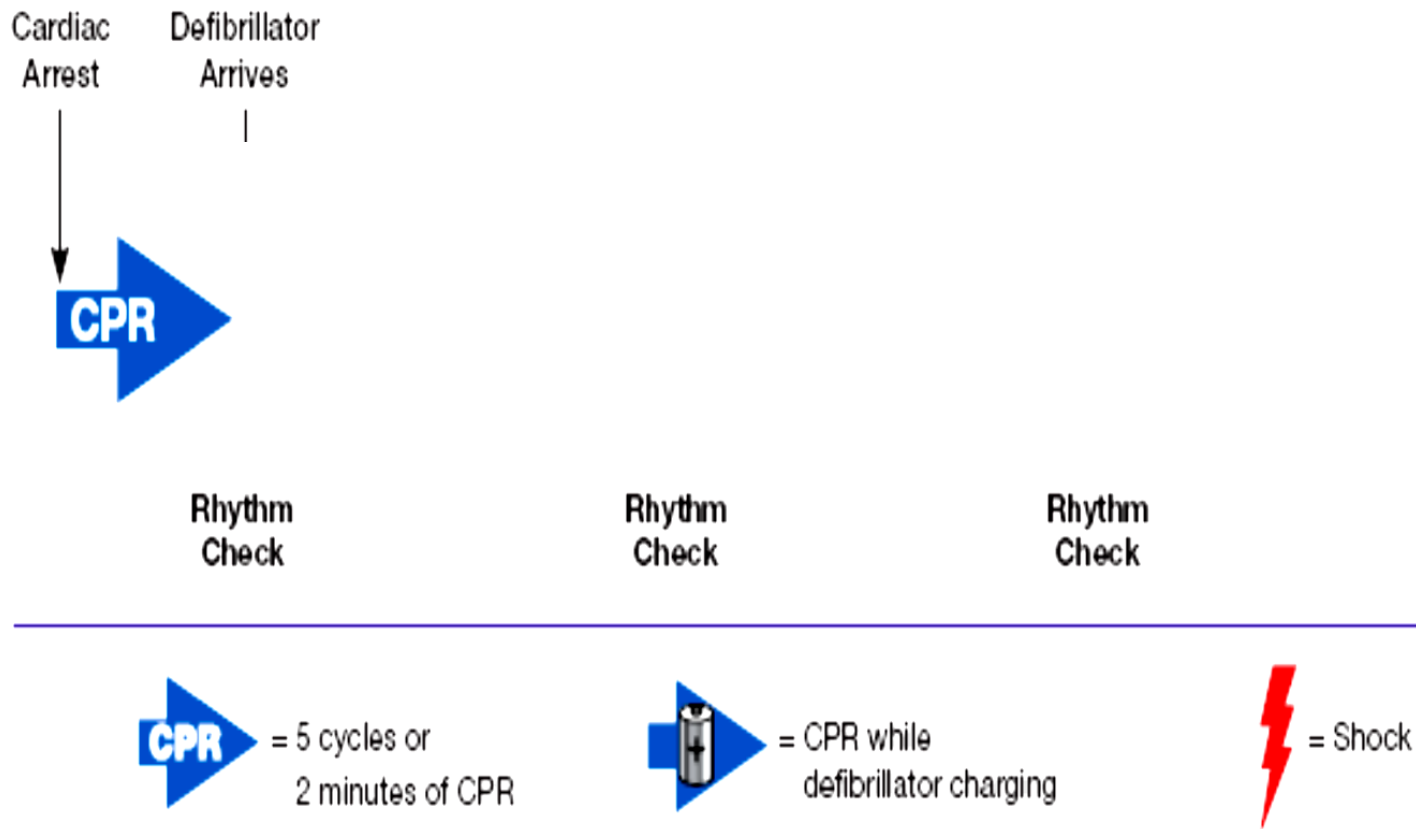
- If asystole, go to Box 10
- If electrical activity, check pulse. If no pulse, go to Box 10
- If pulse present, begin postresuscitation care

Check rhythm
Shockable rhythm?

No

Shockable

VT / VF



During CPR

- **Push hard and fast (100/min)**
 - **Ensure full chest recoil**
 - **Minimize interruptions in chest compressions**
 - One cycle of CPR: 30 compressions then 2 breaths; 5 cycles ≈ 2 min
 - Avoid hyperventilation
 - Secure airway and confirm placement
 - Rotate compressors every 2 minutes with rhythm checks
- ★ After an advanced airway is placed, rescuers no longer deliver "cycles" of CPR. Give continuous chest compressions without pauses for breaths. Give 8 to 10 breaths/minute. Check rhythm every 2 minutes

compressions every 2 minutes

Give 8 to 10 breaths/minute. Check
breathings without pauses for breaths
of CPR. Give continuous chest com-

- 100/min
breathings)

- 100/min (100/min)

1. Hypovolemia
2. Hypoxia
3. Hydrogen Ion
(Acidosis)
4. Hypothermia
5. Hypo/Hyper
Kalemia
6. Hypoglycemia

1. Toxins
2. Tamponad
3. Tension
Pneumothorax
4. Thrombosis
(coronary,
pulmonary)
5. Trauma



NOTICE

- Emphasis on *effective* chest compression
- One universal compression-to-ventilation *30/2*
- Recommendation for *1-second* breaths during all CPR

- Rescuers should change compressors *every 2 min*
- Compression should ideally be *interrupted* only for rhythm check and shock delivery

- Providers *do not attempt a pulse or check the rhythm after* shock delivery
- *Drug* should be delivered during CPR, *as soon as* possible after rhythm check

- Antiarrhythmics: *Amiodarone* is preferred to *lidocaine* , but either is acceptable
- Deliver *1 shock* , then immediate CPR and *NO check pulse*

A close-up photograph of several large, vibrant green leaves. The leaves are characterized by prominent, parallel veins that run across their surface, creating a textured, ribbed appearance. The lighting is bright, highlighting the natural green color and the intricate vein patterns. The leaves are layered, with some in the foreground and others slightly behind, creating a sense of depth.

Medications for Arrest Rhythms

Medications for Arrest Rhythms

1-Epinephrine

2-Atropine

3-Amiodarone

4-Lidocaine

5-Magnesium

Epinephrine

- Alfa and beta receptor
- Dose
- Endo tracheal route dose

Atropine sulfate

reverses cholinergic-mediated

Indication

Dose

Max dose

Endo tracheal route dose

Amiodarone

- Administration of amiodarone
- Dose 5 mg/ kg (300 150)
- maximum dose

Lidocaine

- alternative antiarrhythmic
- has no proven short-term or long-term efficacy in cardiac arrest
- initial dose (1-1.5 mg/kg)
- additional doses (0.5-0.75 mg/kg)
- maximum dose

Magnesium

- When VF/pulseless VT cardiac arrest is associated with torsades de pointes, providers may administer magnesium sulfate at a dose of 1 - 2 g diluted in 10 mL D5W IV/IO push, typically over 5 - 20 minutes

- When torsades is present in the patient *with pulses*, the same 1 - 2 g is mixed in 50 to 100 mL of D5W and given as a loading dose.
- It can be given more slowly (eg, over 5 to 60 minutes IV)



The end