

أَمِيرُ الْمُؤْمِنِينَ عَلِيُّ بْنُ أَبِي تَالِبٍ: إِنَّ هَذَا الْعِلْمَ وَالْأَدَبَ تَمَنُّ نَفْسِكَ فَاجْتَهِدْ فِي تَعَلُّمِهِمَا فَمَا يَزِيدُ مِنْ عِلْمِكَ وَأَدَبِكَ يَزِيدُ فِي تَمَنِّكَ وَقَدْرِكَ
علم و ادب بهای جان توست ، پس در آموختن آن دو کوشا باش
و هرچه بر علم و ادب افزوده گردد قدر و ارزشت بیشتر می شود

بحارالانوار ج ۱ ص ۱۸۰

BLS

(basic life support)



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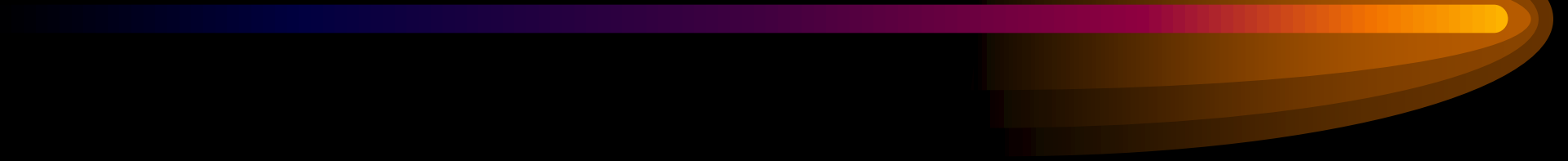
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Learning Objectives





First step ...



First step ...



safety

Safe



- **S**hot for help
- **A**pproach with care
- **F**ree from danger
- **E**valuate A,B,C(C,A,B)

Initial Response

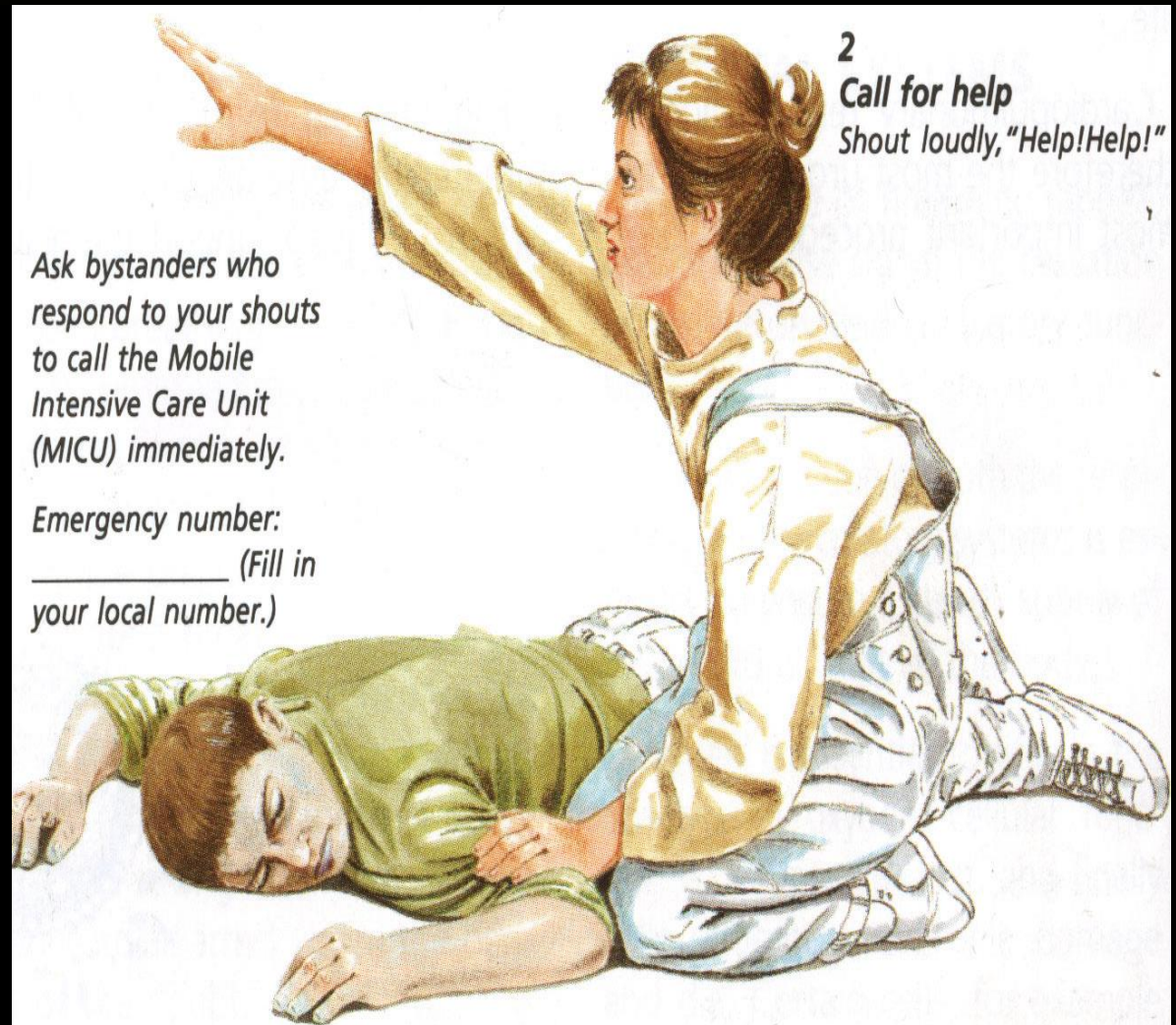
- Assess Responsiveness;
- Shake and shout VS Touch and talk



“Are you OK?”

Initial response (cont...)

- Call EMS
Shout for help
and Defibrillator



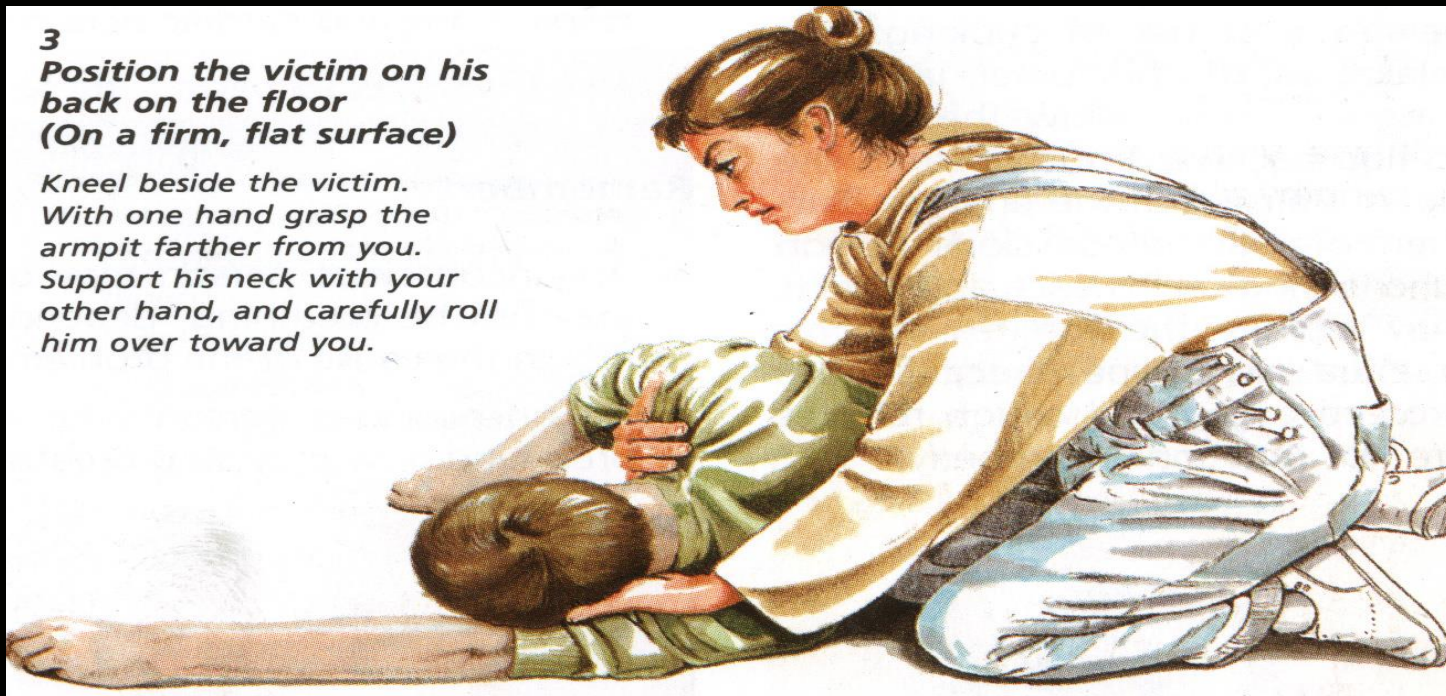
Activate the EMS system

115

- call EMS, get an AED, start CPR & Defibrillation
- Victims of asphyxia (drowning) :
give 5 cycles of CPR (2 min) then call EMS
- 2 or more rescuer....
 - one should begin the CPR
 - second activates the EMS system and AED.

Initial response (cont...)

- Appropriately position the victim and yourself as a rescuer



Basic Life Support

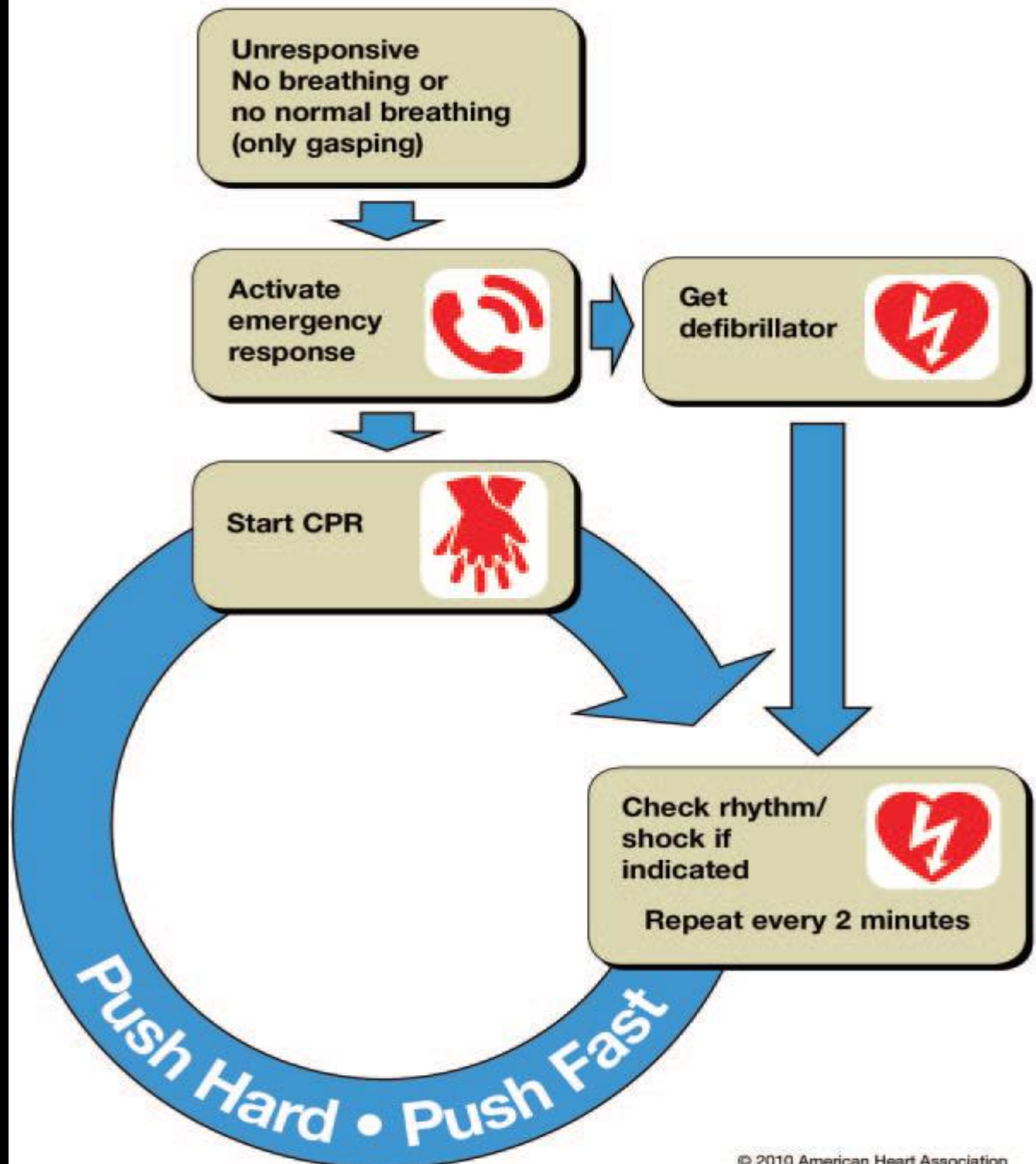


A B C



C A B

Simplified Adult BLS



C

Primary Survey

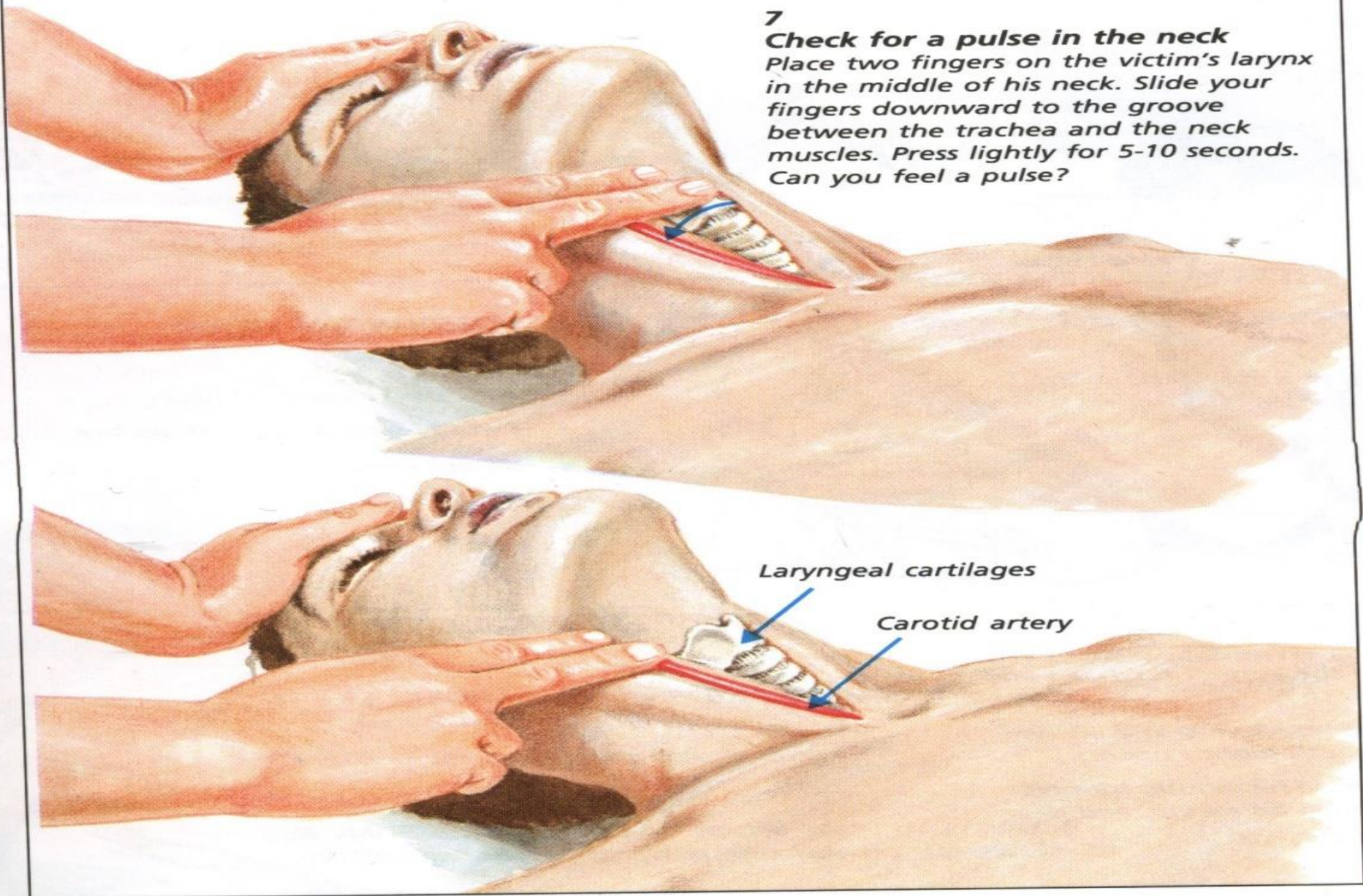
- **Circulation assessment**

Check pulse (10s)

7

Check for a pulse in the neck

Place two fingers on the victim's larynx in the middle of his neck. Slide your fingers downward to the groove between the trachea and the neck muscles. Press lightly for 5-10 seconds. Can you feel a pulse?



C

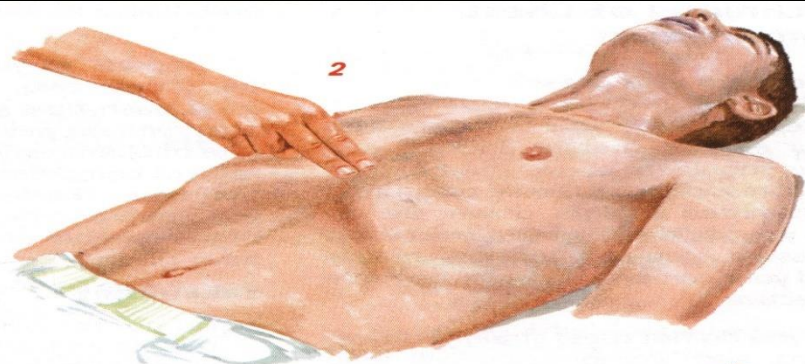
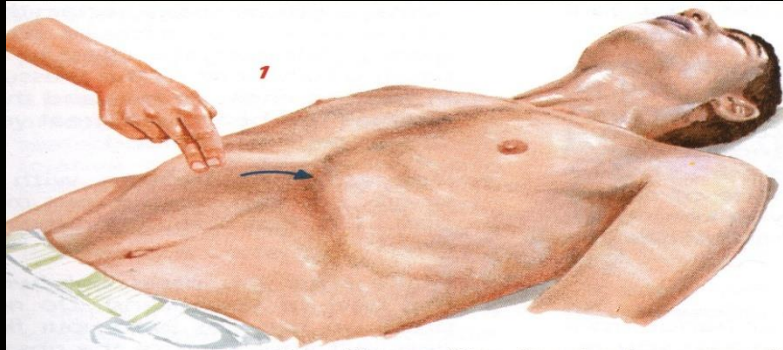
Primary Survey

NO Pulse



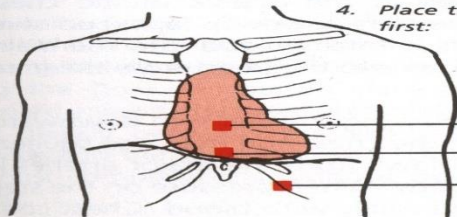
chest compression : (30/2)





Locating the position for chest compressions
 The chest is compressed over the lower half of the sternum, about 3 cm (2 fingerbreadths) above the base of the sternum.

1. Run your fingers along the lower rib margin to the notch in the center of the chest.
2. Mark a point 2 fingerbreadths above the notch.
3. Place the heel of your hand on the sternum next to your two fingers.
4. Place the heel of your other hand on top of the first:



- A. One hand above the other.
- B. With the fingers of both hands intertwined.

— Site of pressure
 — Base of the sternum
 — Rib margin



C

Primary Survey

Do not forget

- *Rate at least 100/min*
- *Push hard (1½-2 inches)*
- *Push fast*
- *Full chest recoil*
- *Without interruption*

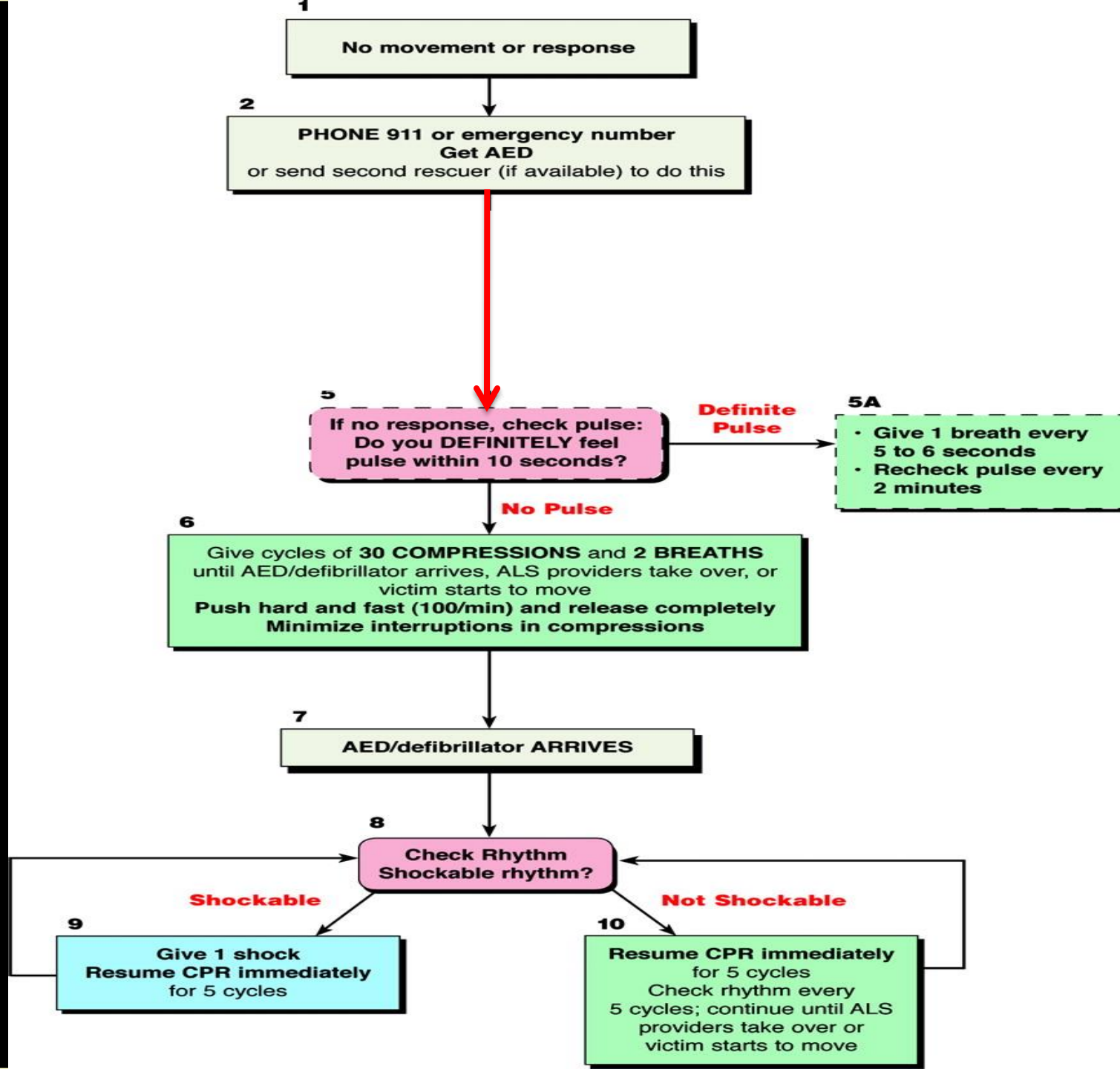
C

Primary Survey

- CPR should be continued until :

An AED arrives

EMS personnel take over CPR.



Primary Survey (BLS)

Airway Assessment



Open the airway :

LR : Head tilt - chin lift

HCP :

1-CS injury(+) : Head tilt - chin lift

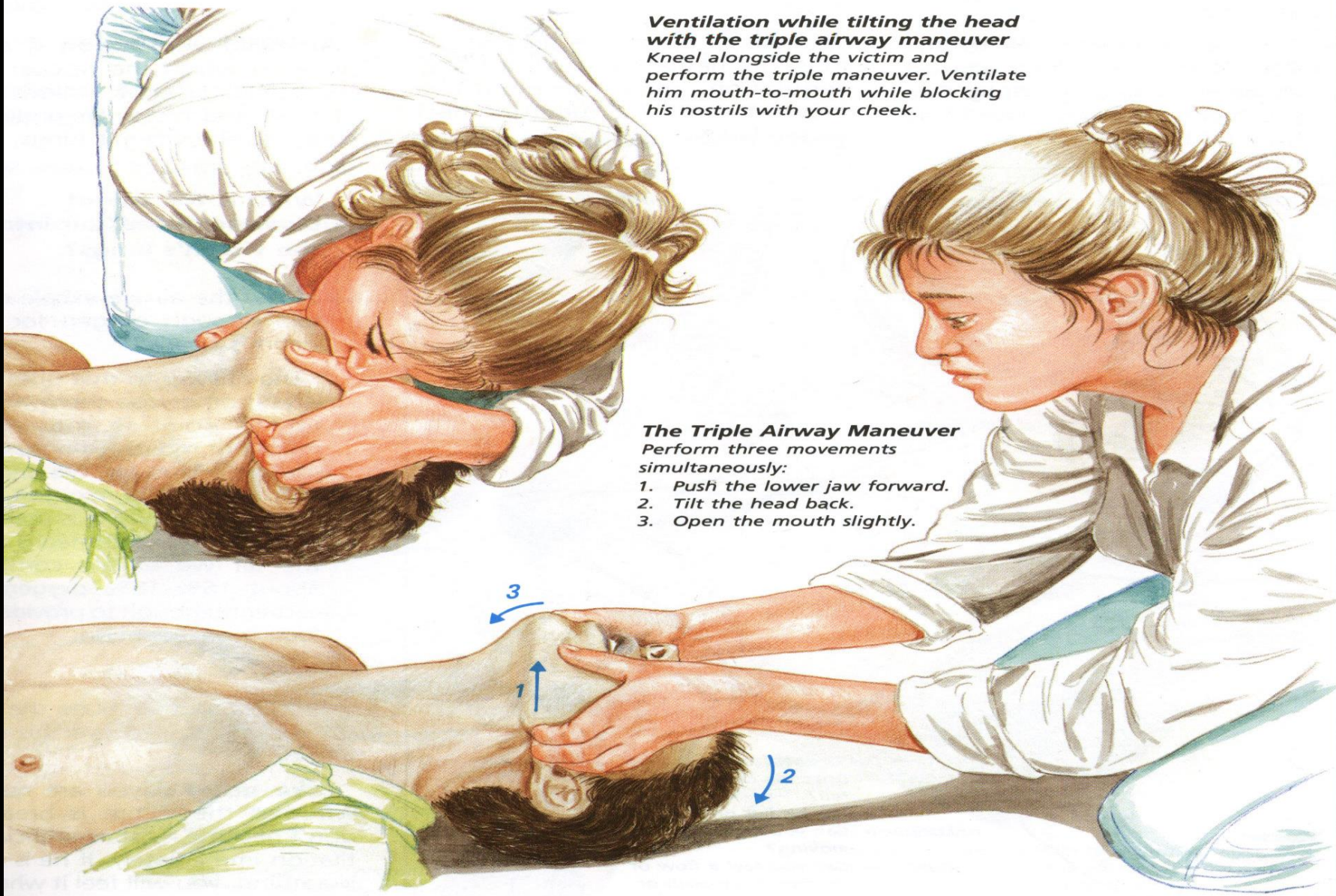
2- CS injury(-) : Jaw thrust



Ventilation while tilting the head with the triple airway maneuver
Kneel alongside the victim and perform the triple maneuver. Ventilate him mouth-to-mouth while blocking his nostrils with your cheek.

The Triple Airway Maneuver
Perform three movements simultaneously:

1. Push the lower jaw forward.
2. Tilt the head back.
3. Open the mouth slightly.



Primary Survey

B

- Breath
if there is no breath, give two rescue breaths



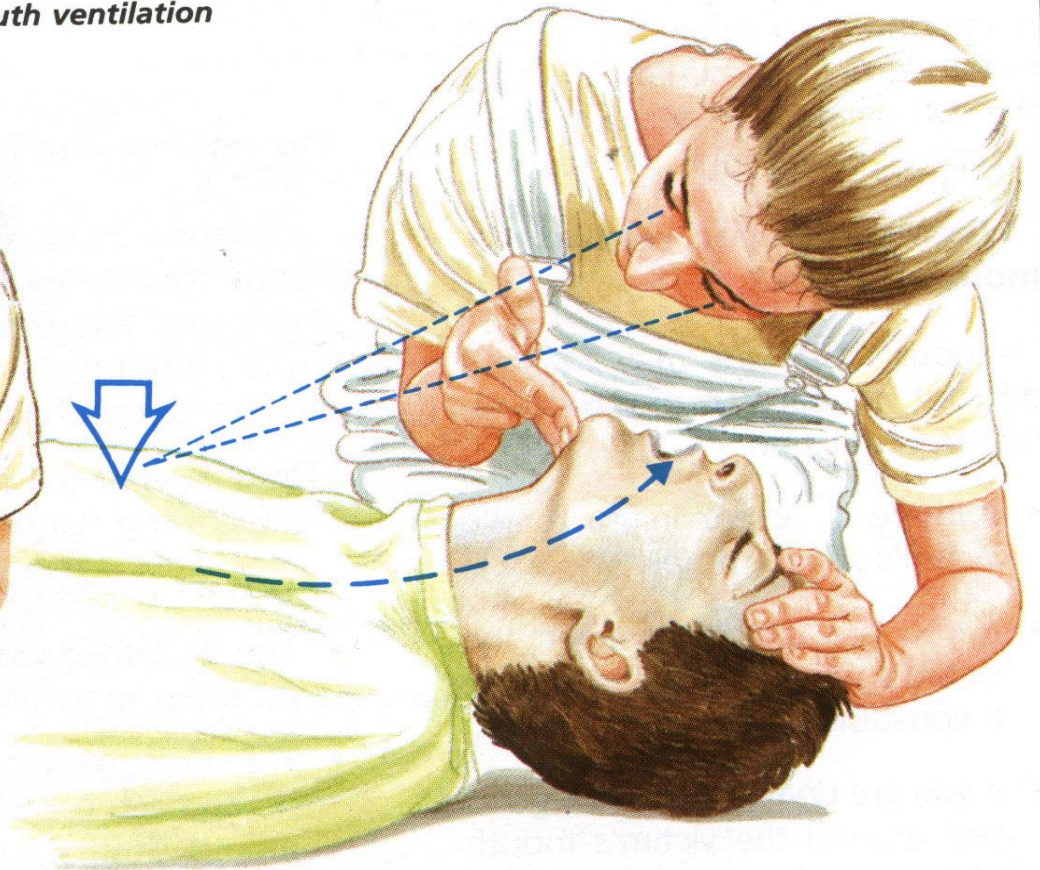
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Mouth-to-mouth ventilation



(A) Ventilation

With the fingers of your hand that is on the victim's forehead, pinch his nostrils closed.

Seal your lips around his mouth and exhale until you see his chest rise.



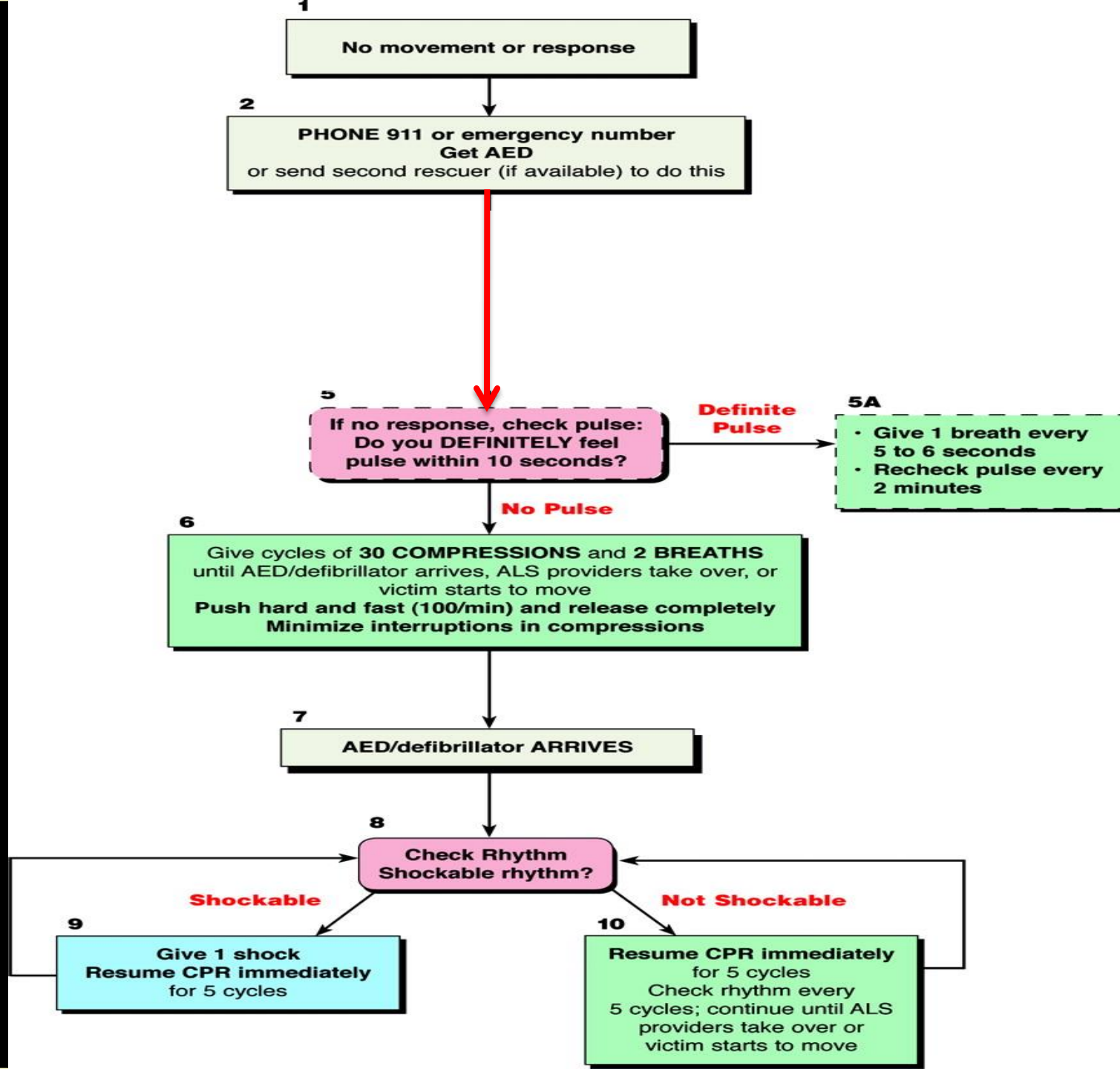
(B) Relaxation

Remove your mouth from his mouth and let go of his nose. Let the air escape from his lungs through his mouth and nose.

Rescue Breaths



- Give 2 rescue breaths
- Each over 1 second
- Enough volume to produce visible chest rise
(6-7 cc/kg ~ 500-600 cc)



Defibrillator

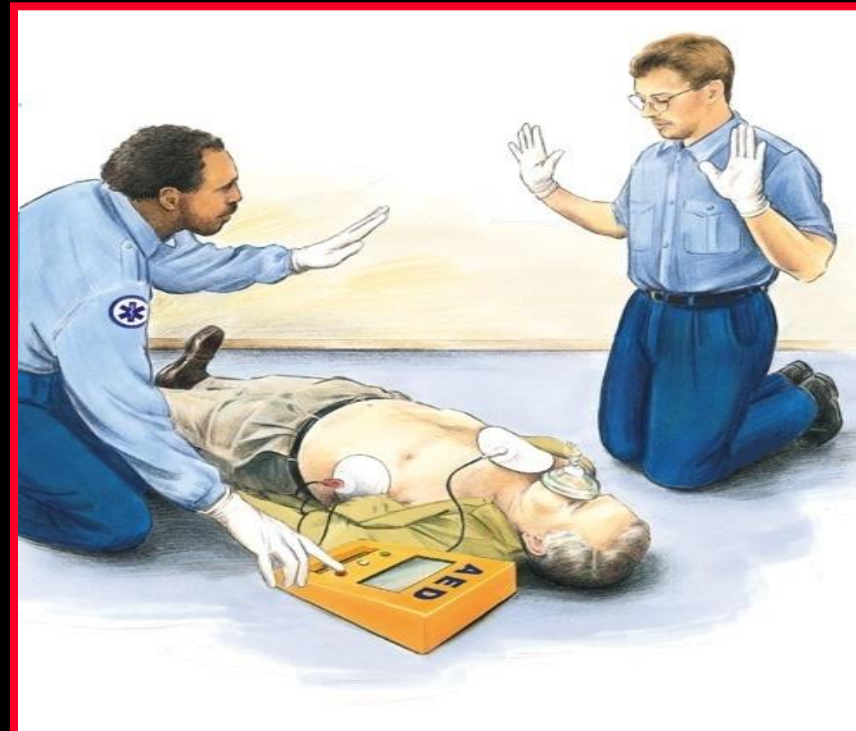


D

Primary Survey

- Defibrillate

Power ON, **Attach** AED electrode pads
(stop chest compression for pad
placement), **Analyze** (“Clear”),
Shock



Remember



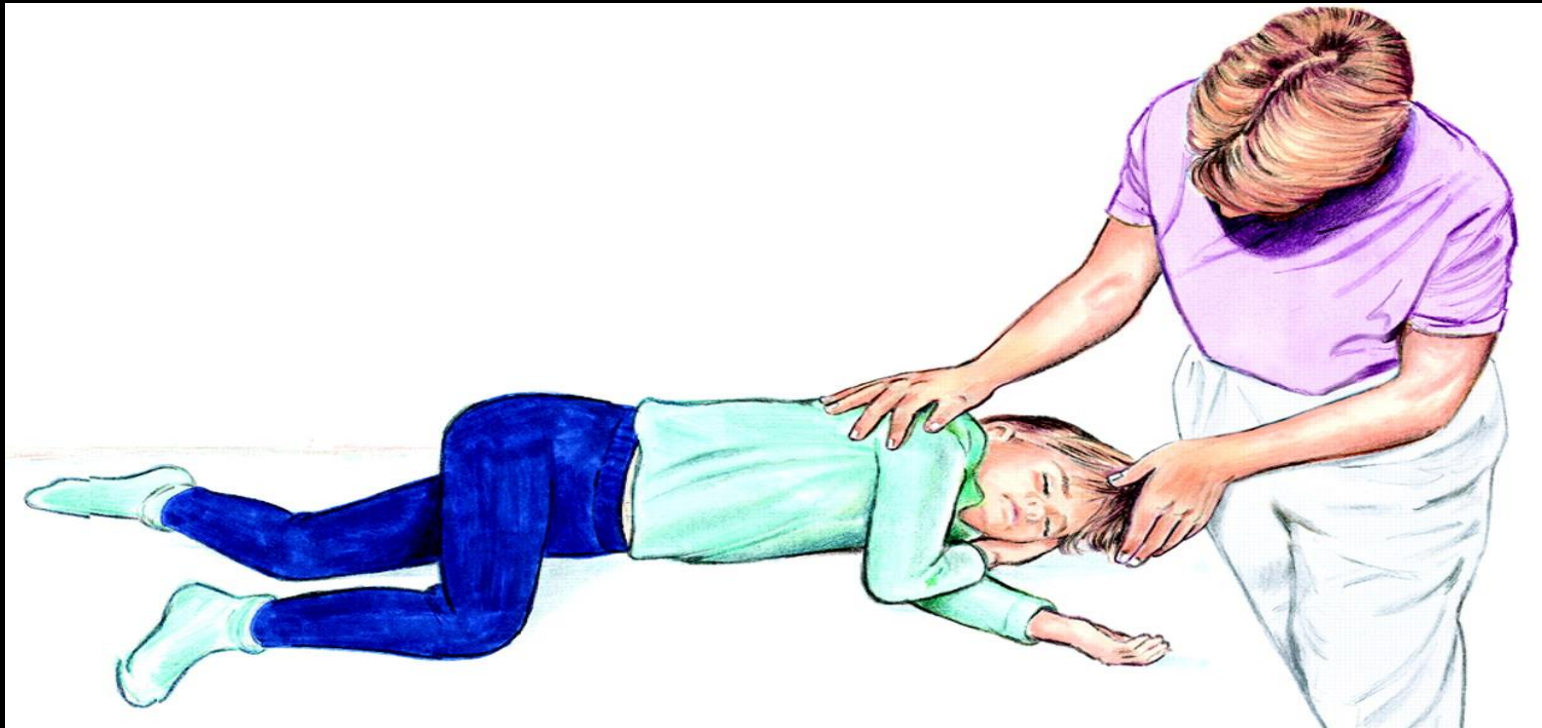
- After the first shock, you must promptly start CPR for 5 cycles (30/2) or 2 min.
- Then check rhythm and do according to BLS protocols

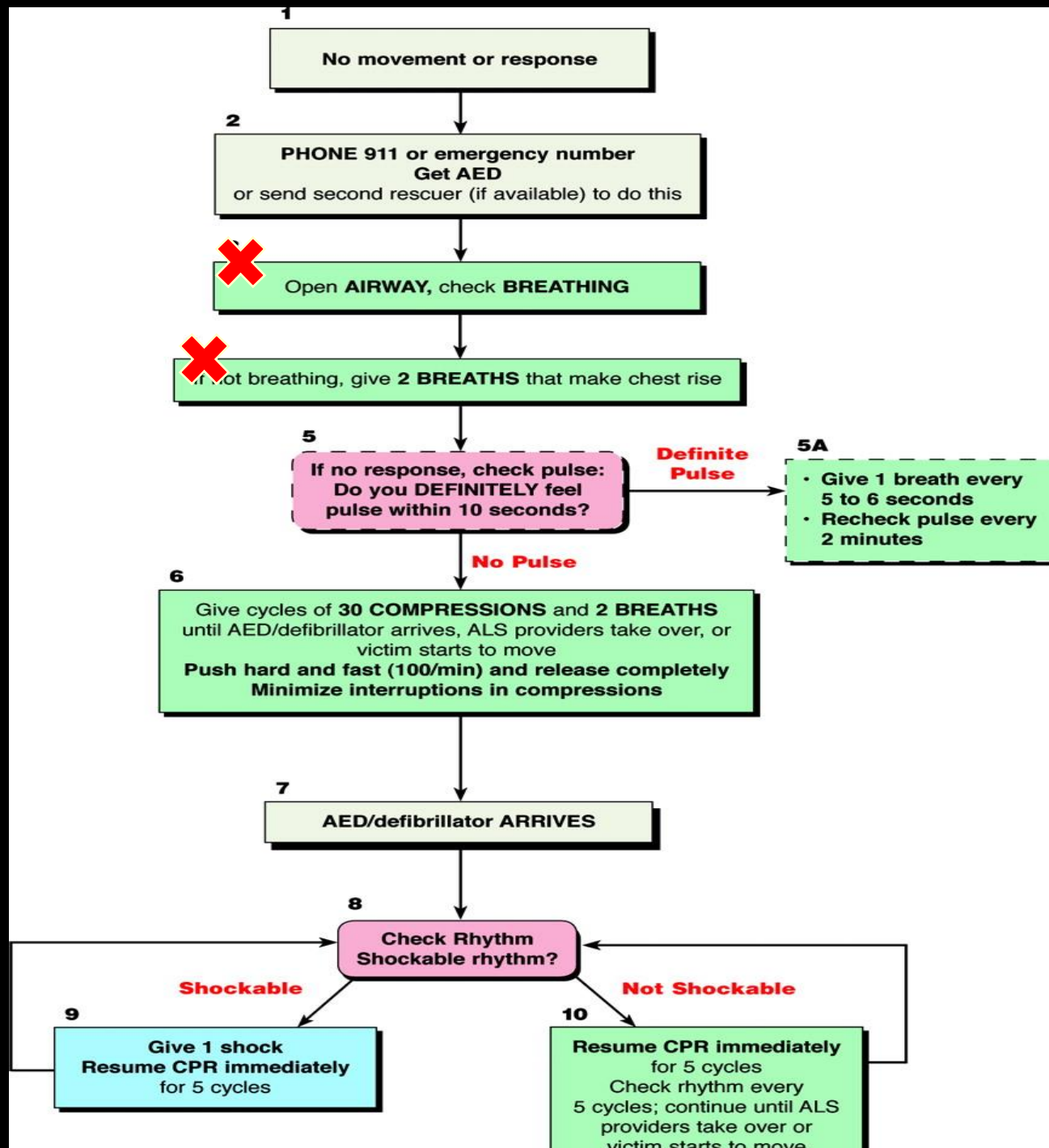
Summary of Basic Life Support

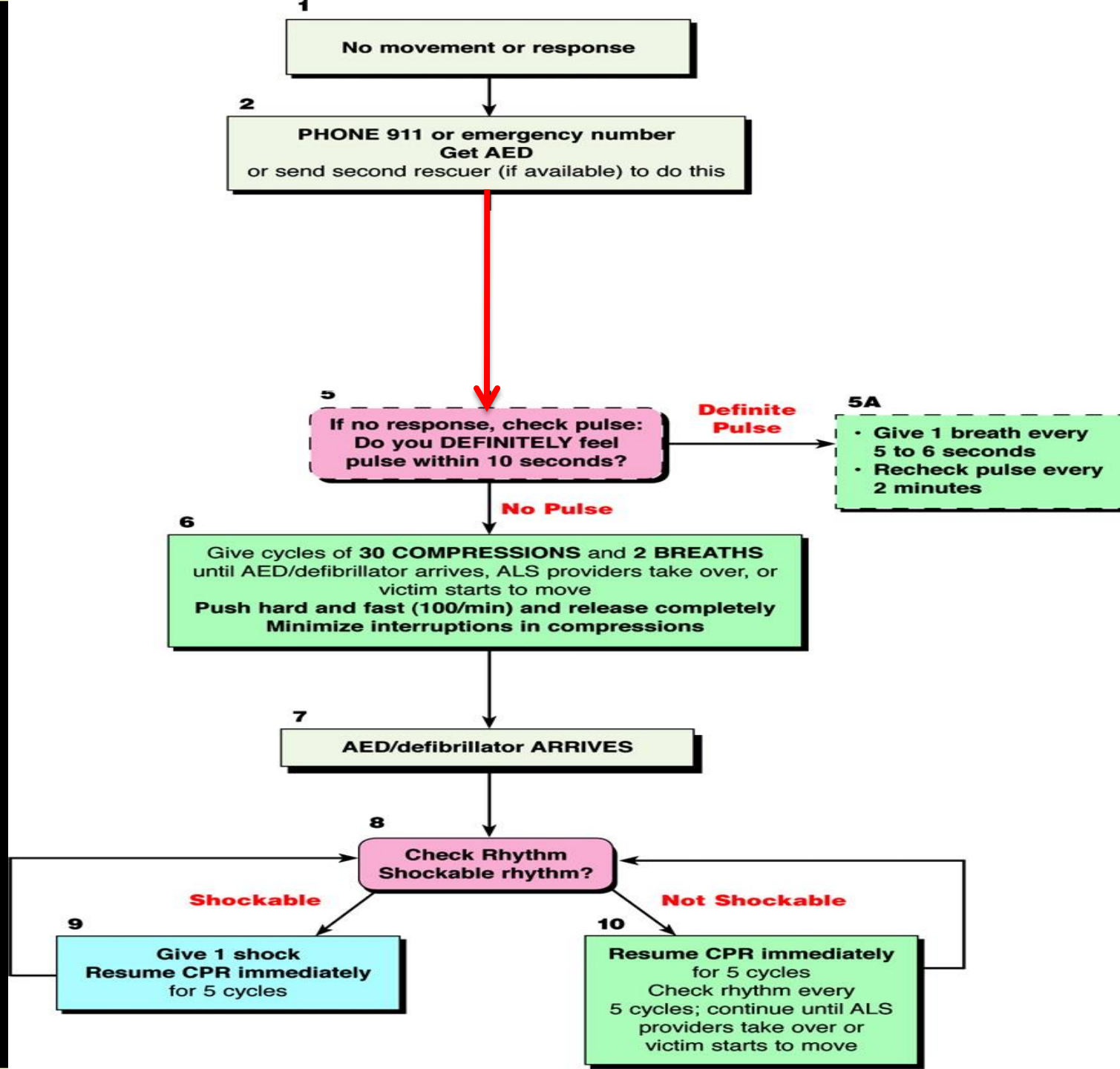
- Check safety
- Check responsiveness
- Activate EMS
- Assess circulation (check pulse for 10 Sec)
- Compress chest (100/min)
- Open the airway
- Check breathing (10 Sec)
- Give two effective breaths (each breath in 1 Sec)
- Attach defibrillator/monitor to assess the rhythm
- Defibrillate

Recovery Position

- If the victim is *breathing* and there is no evidence of trauma: turn him onto the side.





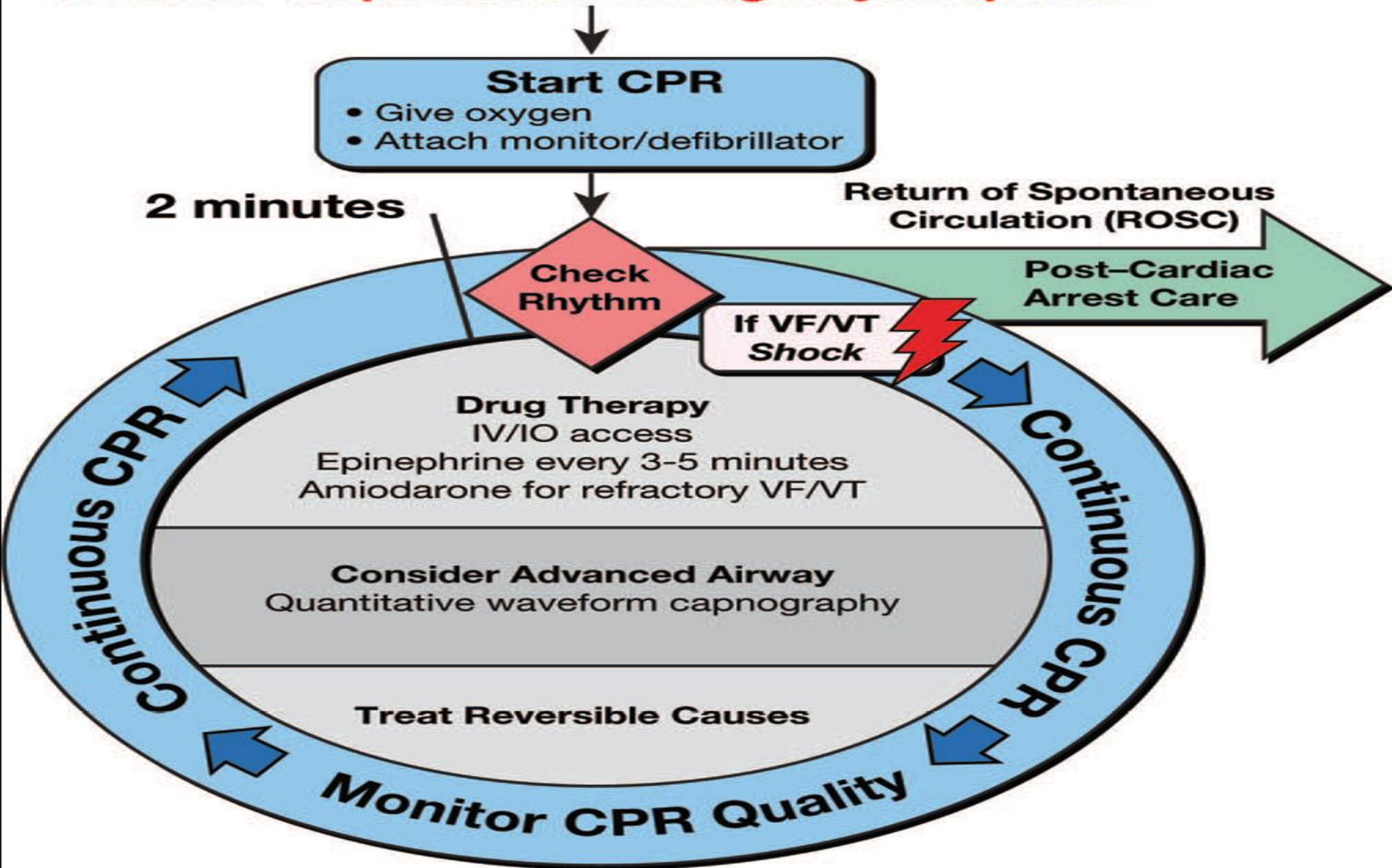


Factors Influencing Survival

- **The rhythm associated with the arrest**
- **Whether the collapse was witnessed**
- **Adequacy of CPR**
- **Age / underlying health of the patient**

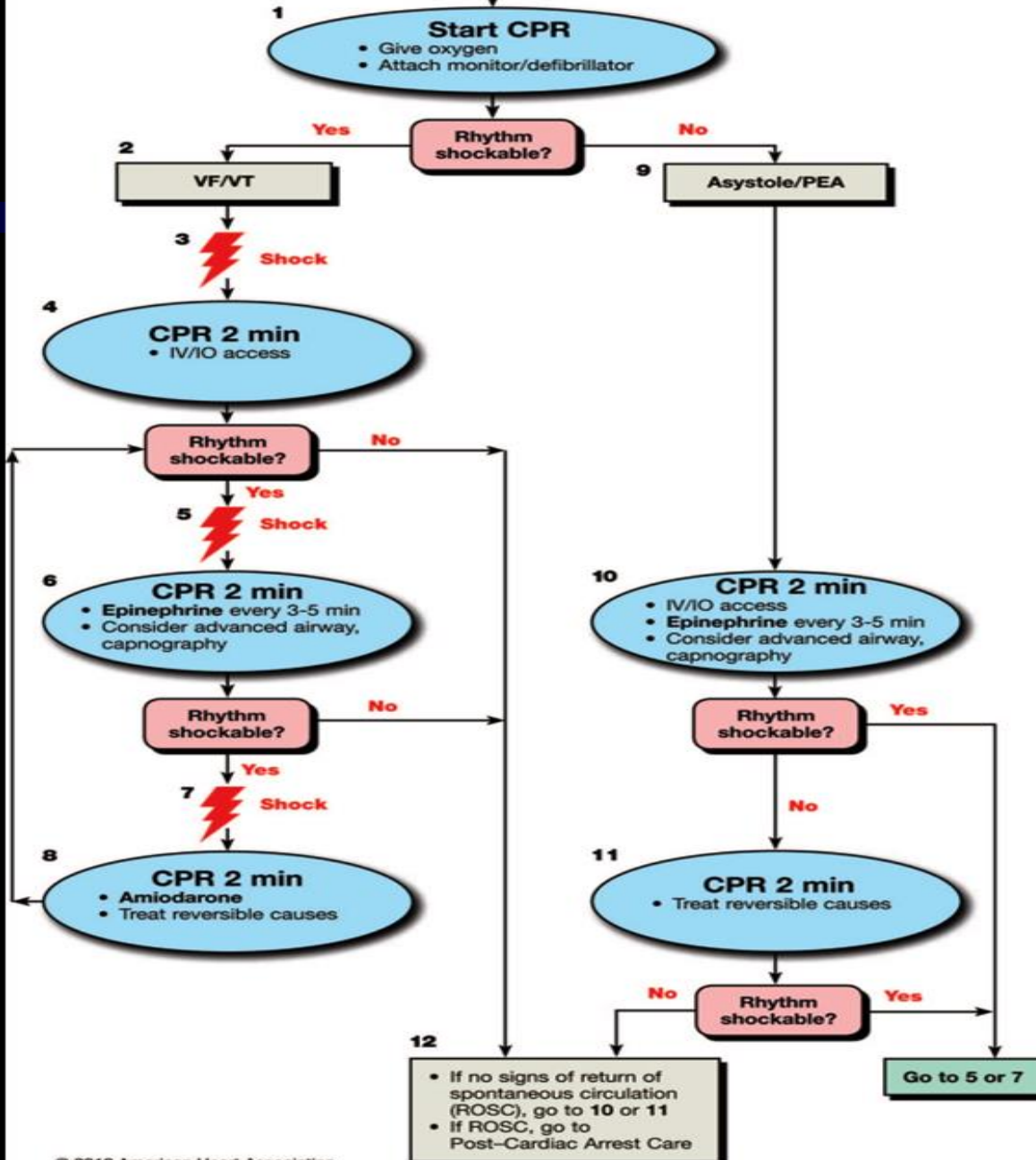
LEARN CPR.ORG

Shout for Help/Activate Emergency Response



Adult Cardiac Arrest

Shout for Help/Activate Emergency Response



CPR Quality

- Push hard (≥ 2 inches [5 cm]) and fast (≥ 100 /min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
 - If $PETCO_2 < 10$ mm Hg, attempt to improve CPR quality
- Intra-arterial pressure
 - If relaxation phase (diastolic) pressure < 20 mm Hg, attempt to improve CPR quality

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥ 40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Shock Energy

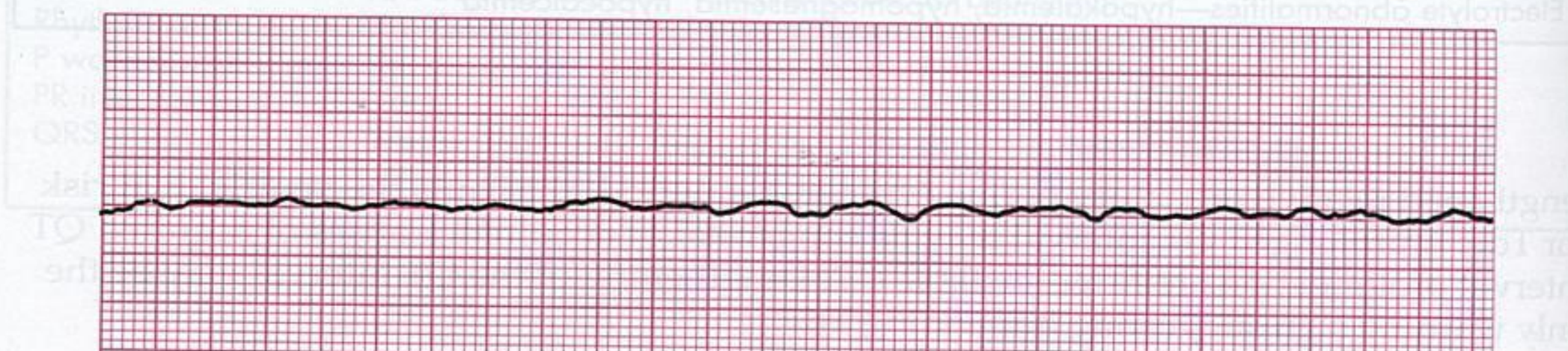
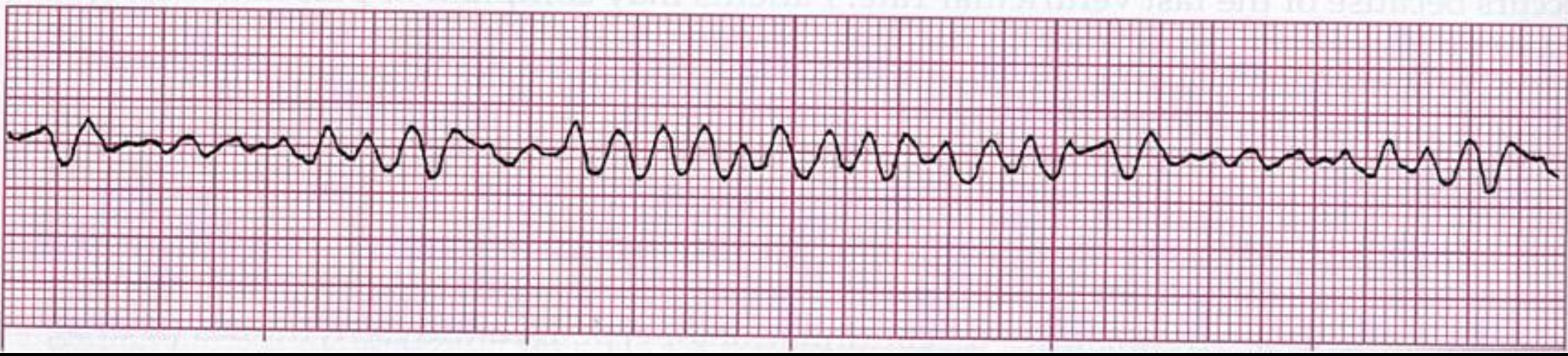
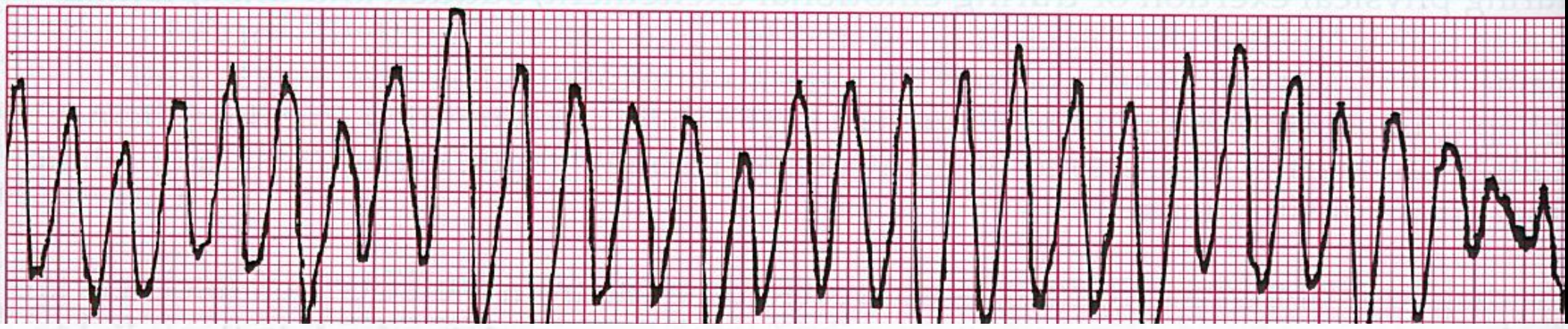
- **Biphasic:** Manufacturer recommendation (120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

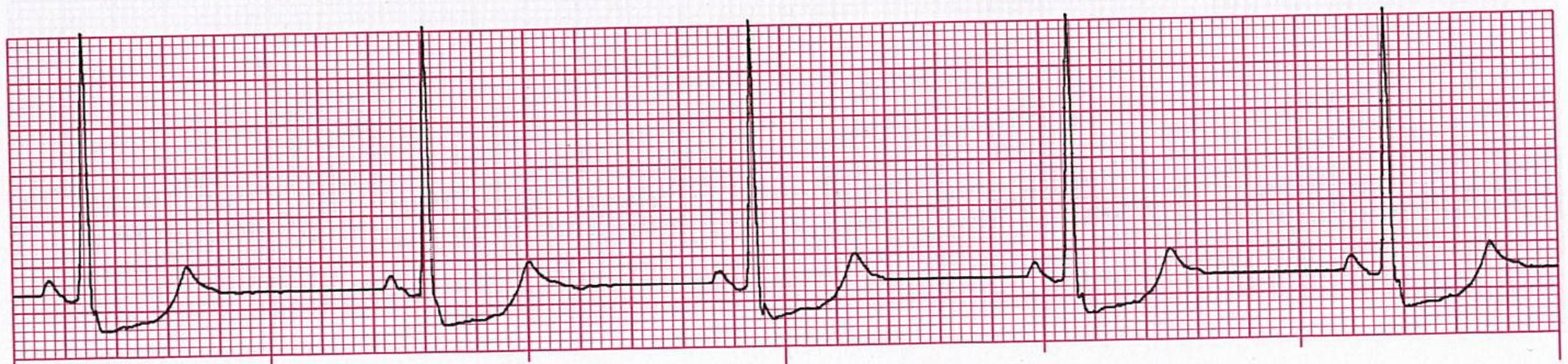
Drug Therapy

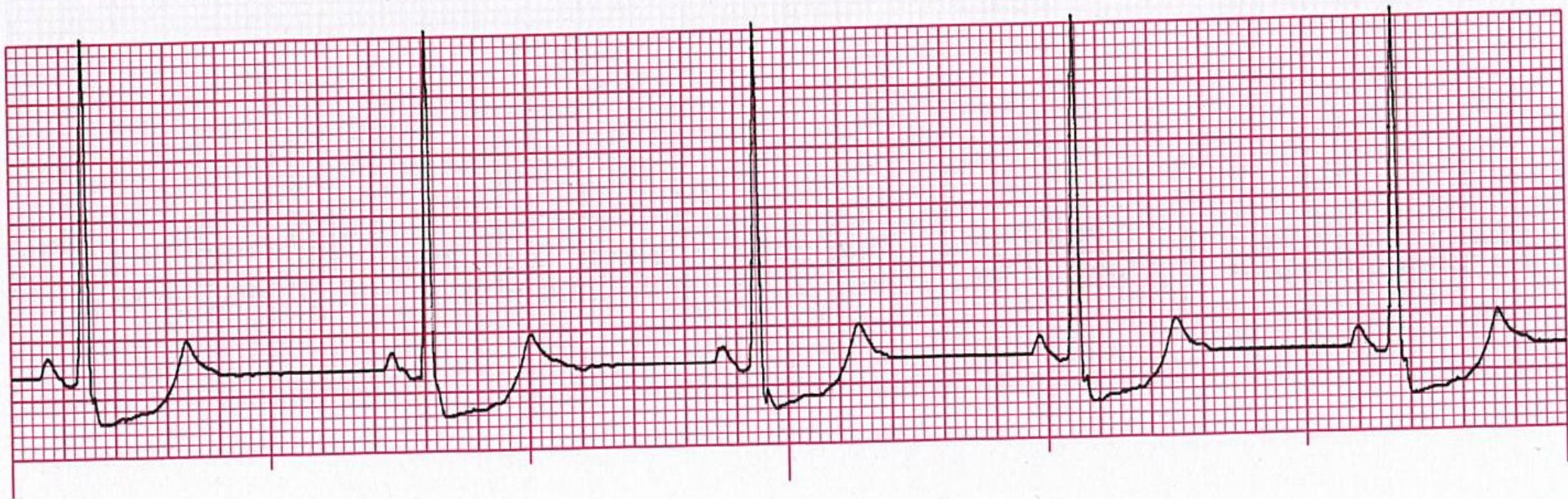
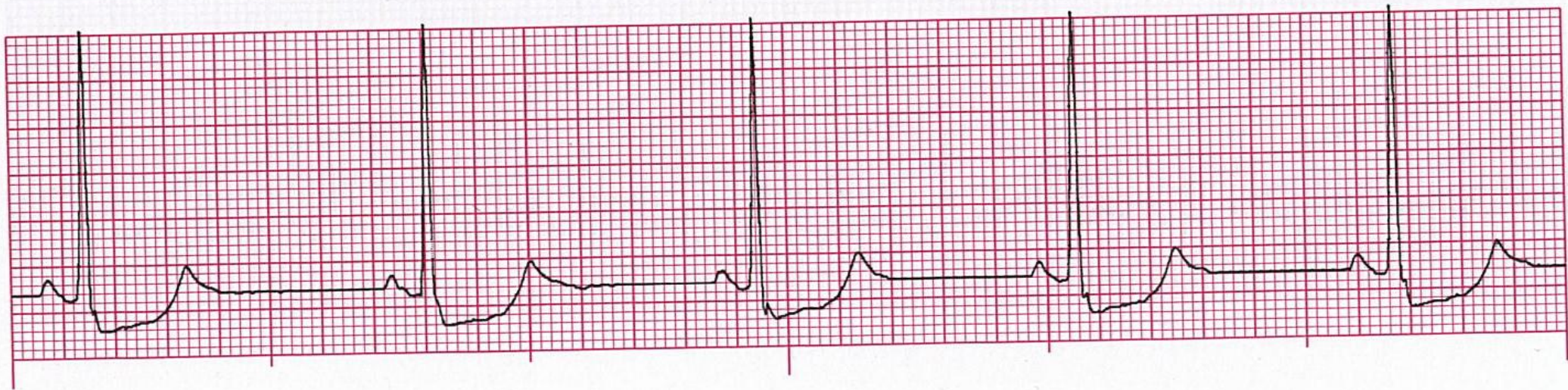
- **Epinephrine IV/IO Dose:** 1 mg every 3-5 minutes
- **Vasopressin IV/IO Dose:** 40 units can replace first or second dose of epinephrine
- **Amiodarone IV/IO Dose:** First dose: 300 mg bolus. Second dose: 150 mg.

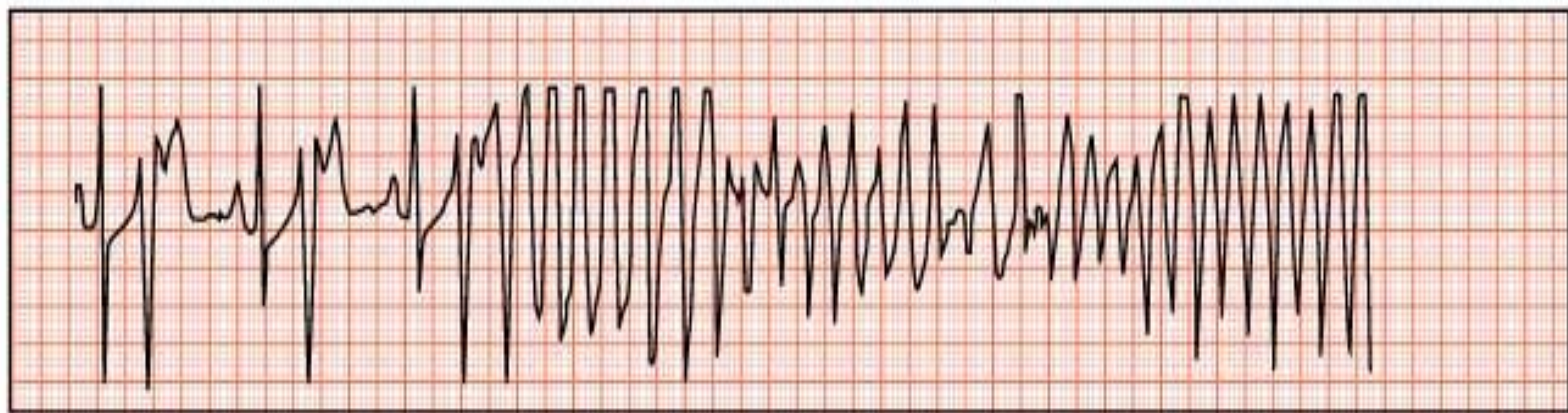
Advanced Airway

- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 8-10 breaths per minute with continuous chest compressions

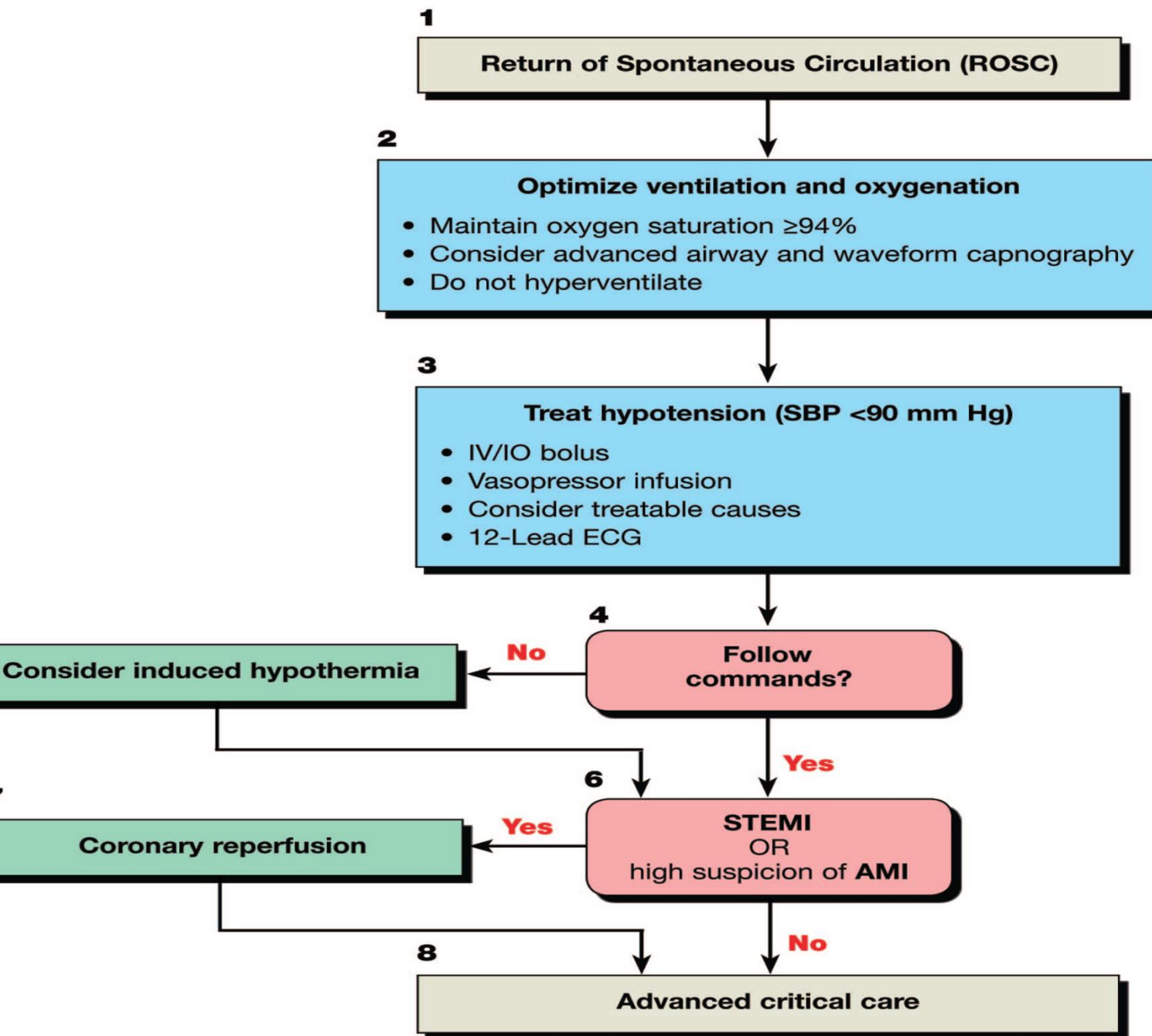








Adult Immediate Post-Cardiac Arrest Care



Doses/Details

Ventilation/Oxygenation

Avoid excessive ventilation. Start at 10-12 breaths/min and titrate to target PETCO₂ of 35-40 mm Hg.

When feasible, titrate FIO₂ to minimum necessary to achieve SpO₂ $\geq 94\%$.

IV Bolus

1-2 L normal saline or lactated Ringer's. If inducing hypothermia, may use 4°C fluid.

Epinephrine IV Infusion:

0.1-0.5 mcg/kg per minute (in 70-kg adult: 7-35 mcg per minute)

Dopamine IV Infusion:

5-10 mcg/kg per minute

Norepinephrine

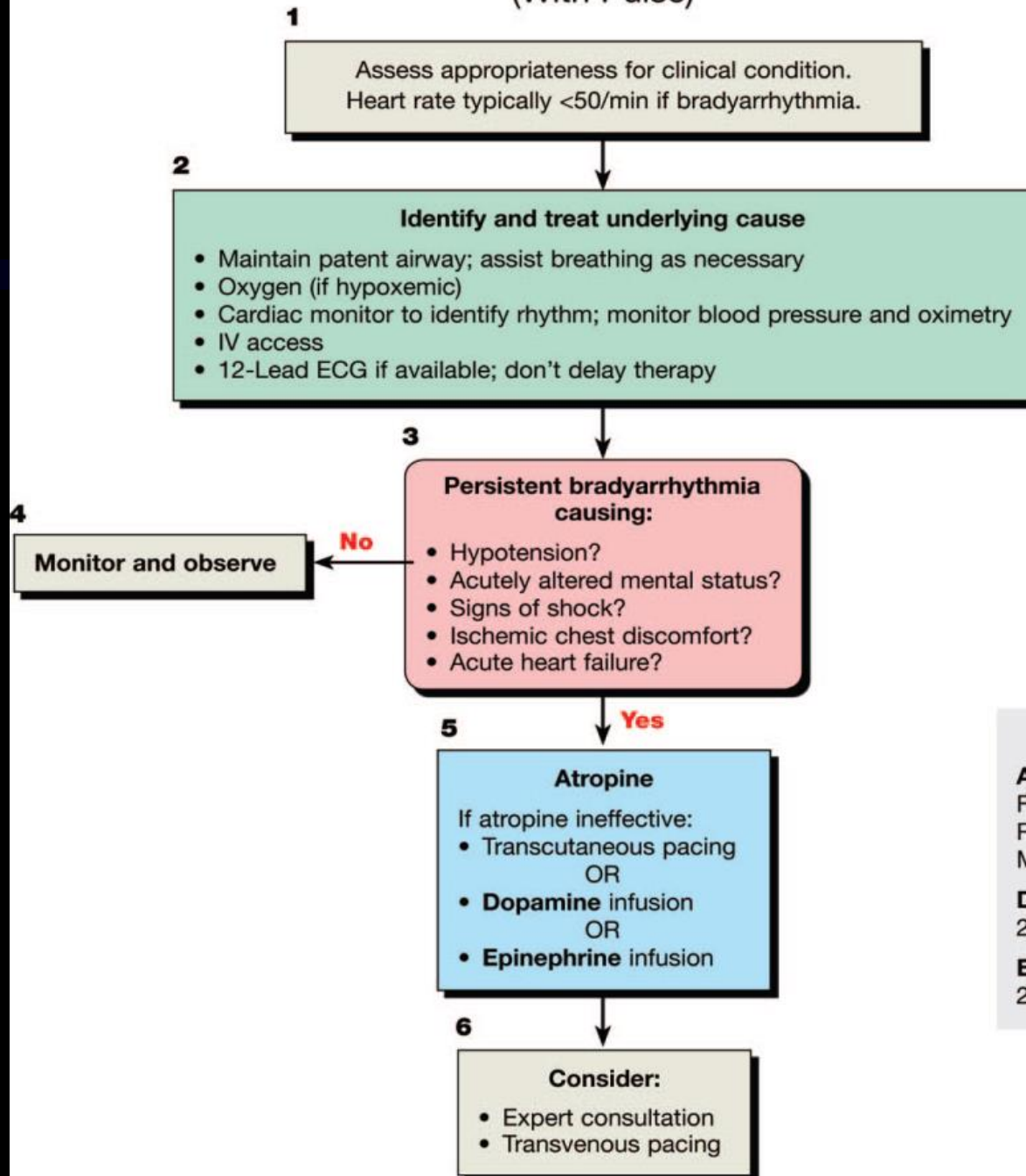
IV Infusion:

0.1-0.5 mcg/kg per minute (in 70-kg adult: 7-35 mcg per minute)

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

Adult Bradycardia (With Pulse)



Doses/Details

Atropine IV Dose:

First dose: 0.5 mg bolus
Repeat every 3-5 minutes
Maximum: 3 mg

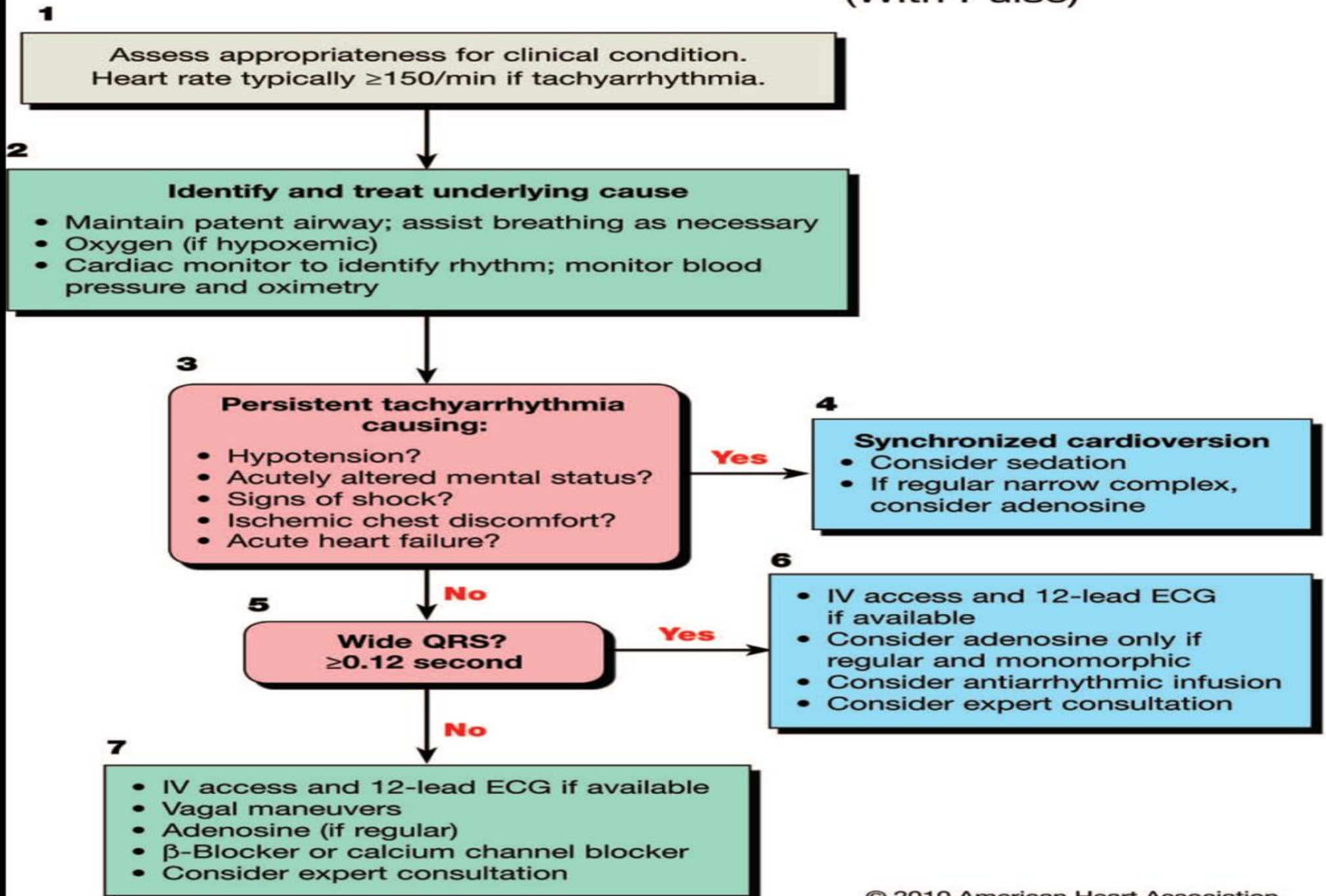
Dopamine IV Infusion:

2-10 mcg/kg per minute

Epinephrine IV Infusion:

2-10 mcg per minute

Adult Tachycardia (With Pulse)



Doses/Details

Synchronized Cardioversion

Initial recommended doses:

- Narrow regular: 50-100 J
- Narrow irregular: 120-200 J biphasic or 200 J monophasic
- Wide regular: 100 J
- Wide irregular: defibrillation dose (NOT synchronized)

Adenosine IV Dose:

First dose: 6 mg rapid IV push; follow with NS flush.

Second dose: 12 mg if required.

Antiarrhythmic Infusions for Stable Wide-QRS Tachycardia

Procainamide IV Dose:

20-50 mg/min until arrhythmia suppressed, hypotension ensues, QRS duration increases >50%, or maximum dose 17 mg/kg given. Maintenance infusion: 1-4 mg/min. Avoid if prolonged QT or CHF.

Amiodarone IV Dose:

First dose: 150 mg over 10 minutes. Repeat as needed if VT recurs. Follow by maintenance infusion of 1 mg/min for first 6 hours.

Sotalol IV Dose:

100 mg (1.5 mg/kg) over 5 minutes. Avoid if prolonged QT.



Thanks for your attention