MEDICAL EMERGENCIES IN DENTISTRY

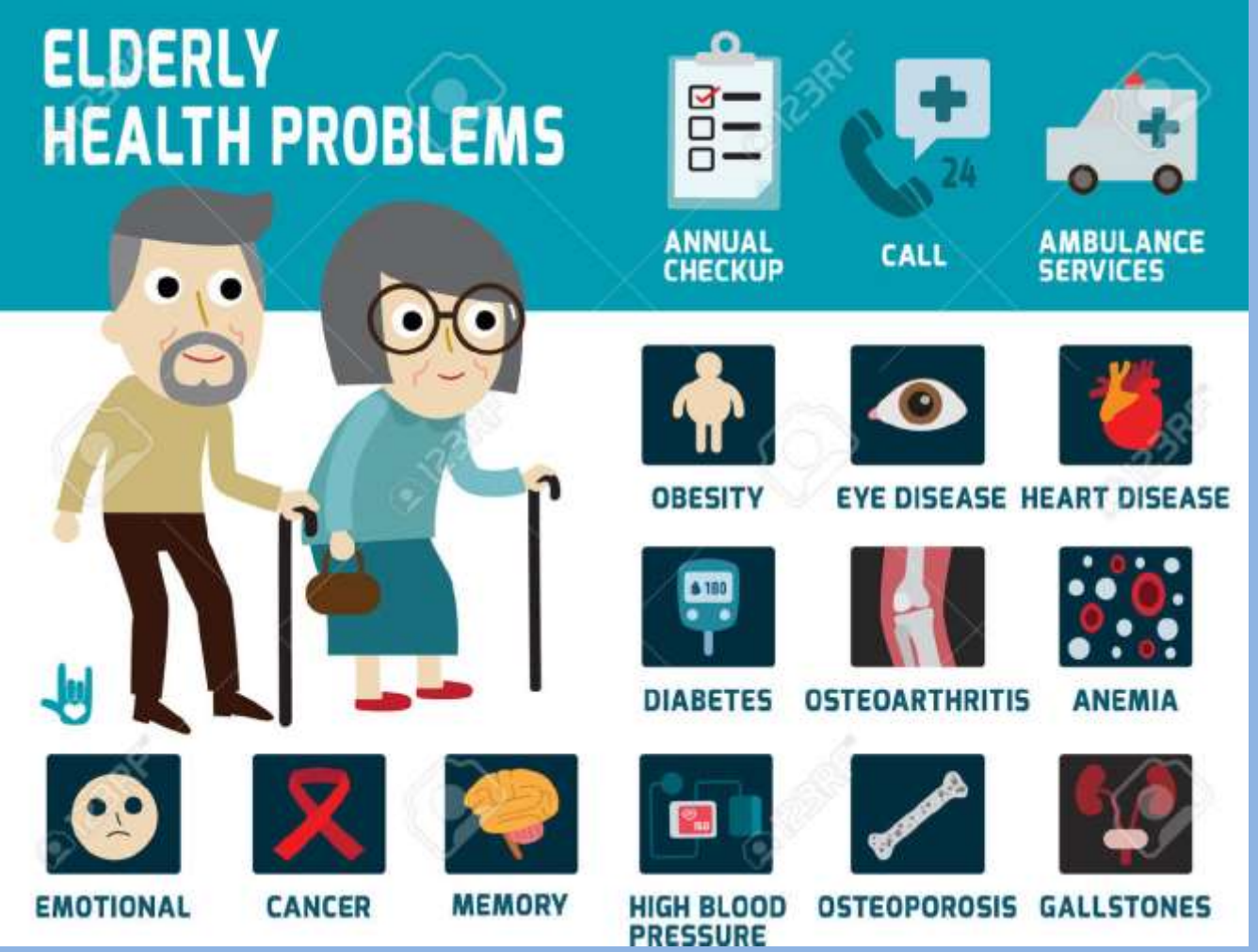
A serious, unexpected and often dangerous situation requiring immediate action


RISKS
AHEAD

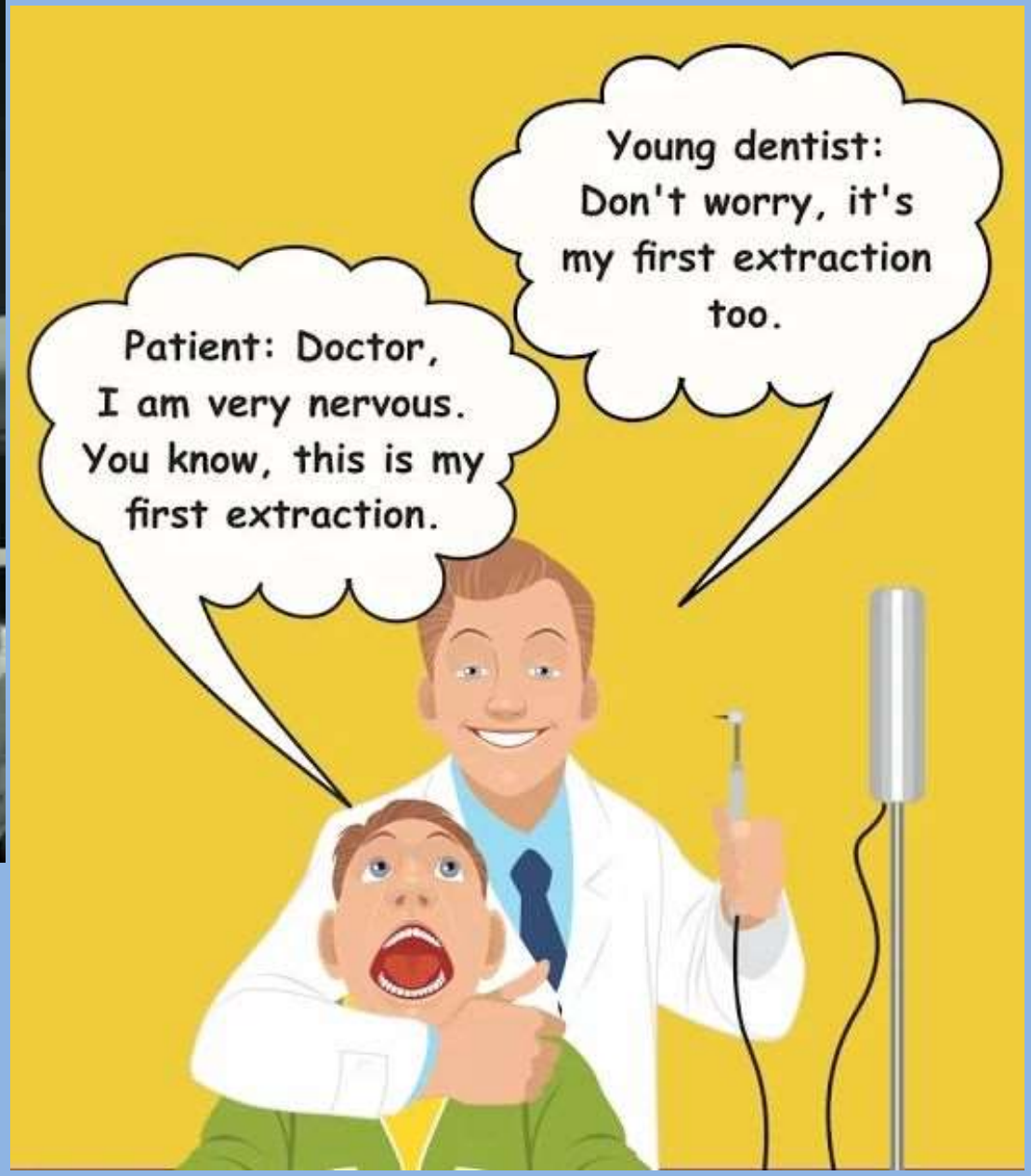
Forewarned, forearmed; to be prepared is half the victory.

(Miguel de Cervantes)


MEDICAL
HISTORY



Drugs in dentistry



STRESS RELATED- PAIN,ANXIETY, FEAR

Goals of physical evaluation:

1. Ability to **physically tolerate** the stress of planned treatment.
2. Ability to **psychologically tolerate** the stress of planned treatment.
3. Need for **treatment modifications** -better tolerance of stress of planned treatment.
4. Whether use of psychosedation is warranted -

    Appropriate sedation technique

    Contraindications to drugs to be used in planned treatment

ANXIETY RECOGNITION

- Increased BP, HR.
- Excessive Sweating, Dilated pupils.
- “White Knuckle “ Syndrome.
- Unnaturally stiff posture.
- Over willingness to cooperate with doctor.

STRESS REDUCTION PROTOCOL :

- Premedicate - evening before / just before surgery.
- Morning appointment schedule.
- Minimize patient waiting time.
- Psychosedation during therapy.
- Adequate pain control during therapy.
- Post op pain and anxiety control.
- Telephone anxious/fearful/medical risk patient on same day that treatment was delivered .

MEDICAL EMERGENCY KIT-ADA Recommendation- Individualized emergency kits as per specific training and special needs

CRITICAL INJECTABLE DRUGS

Lot:
Exp.:

LIGHT SENSITIVE: Keep covered in carton until time of use.
To open - Cut seal along dotted line.

NDC 0641-0376-25

DiphenhydrAMINE HCl Injection, USP

50 mg/mL

HIGH POTENCY

FOR DEEP INTRAMUSCULAR OR SLOW INTRAVENOUS USE

25 x 1 mL Vials

Manufactured by
WEST-WARD
Eatontown, NJ 07724 USA

462-219-01

Each mL contains diphenhydramine hydrochloride 50 mg and benzethonium chloride 100 mcg in Water for Injection. pH 4.0–6.5; sodium hydroxide and/or hydrochloric acid added, if needed, for pH adjustment.

Usual Dosage: See package insert.

PROTECT FROM LIGHT: Keep covered in carton until time of use.

Store at 20°–25°C (68°–77°F) [See USP Controlled Room Temperature].

(01)00364103762555

30 ml.

Rx

CHLORPHENIRAMINE

MALEATE INJ. I.P.

IM / IV Injection

Mfg. in India by:
PAKSONS PHARMACEUTICALS (P) LTD.
(An ISO 9001:2000 Certified Company)
36, Mile Stone, Delhi Rohtak Road,
Sankhol Bahadurgarh-124507 (Hry.)

Each ml. Contains:		
Chlorpheniramine Maleate	I.P.	10 mg.
Phenol (as preservative)	I.P.	0.5%w/v
Water for injection	I.P.	q.s.

Dose: As directed by the Physician

MULTIPLE DOSE VIAL

SCHEDULE 'H' DRUG:
WARNING: To be sold by retail on the prescription of a Registered Medical Practitioner only.

CRITICAL NON-INJECTABLE DRUGS


BDC Medical
Oxygen
Pocket Mask

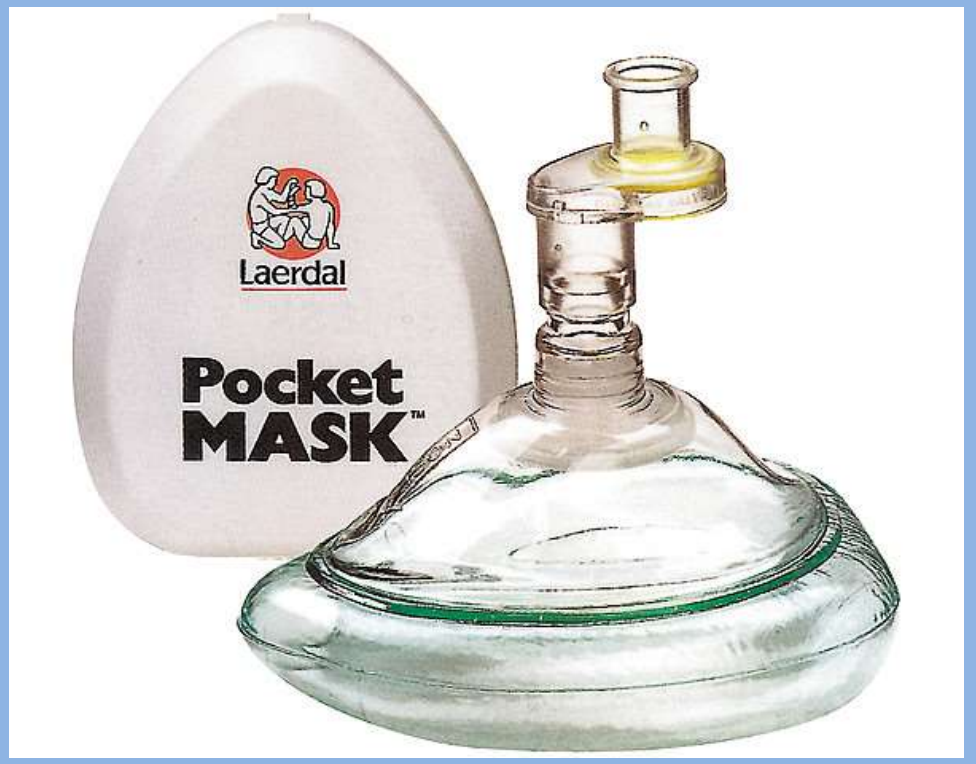

Warning: To prevent loss of potency, keep these tablets in the original container. Close tightly immediately after each use. Keep this and all drugs out of reach of children.
Store up to 25° C (77° F). Protect from moisture.
Usual Dosage: See package insert.
Manufactured by:
Konec, Inc.
Tucson, AZ 85713
For: Glenmark Generics, Inc., USA
750 Corporate Drive
Mahwah, NJ 07430
Questions? 1(888) 721-7115
www.glenmark-generics.com
Rev 03/08
Glenmark
NDC 68462-147-01
NITROGLYCERIN
TABLETS, USP
Rx Only
0.6 mg
(1/100 gr)
100 Sublingual Tablets
3 68462-147-01 6


NDC-43478-410-03
READ ENCLOSED PATIENT INFORMATION BEFORE USING
Nitroglycerin
Lingual Aerosol
400 mcg/spray
Contains approximately 60 sprays for use on or under the tongue
CONTAINER SHOULD BE UPRIGHT WHEN STORED OR USED
4.1 g Net Contents
ROUSES POINT
Nitroglycerin
Lingual Aerosol
400 mcg/spray


15% Free
V-Ken
Glucose-D
A REAL ENERGIZER
ENERGY DRINK


CHEWABLE
16
DISPRIN
DIRECT
Aspirin

CRITICAL EMERGENCY EQUIPMENT


Laerdal
Pocket
MASK™


Lifeline VIEW
Give 30 Compressions
SHOCK


115


SUPREME

NON-CRITICAL SECONDARY EMERGENCY DRUGS AND EQUIPMENT

NDC 65293-416-25

MIDAZOLAM
INJECTION, USP

***5 mg/5 mL**

(1 mg/mL)

For IM or IV Use Only
Contains Benzyl Alcohol

5 mL Vial
25 Vials Rx only

Sterile
*Each mL contains: midazolam hydrochloride equivalent to 1 mg midazolam compounded with 0.8% sodium chloride, 0.01% edetate disodium, with 1% benzyl alcohol as preservative and pH adjusted to 3 to 3.6 with hydrochloric acid and, if necessary, sodium hydroxide.
USUAL DOSAGE: See insert.
Store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].
This container closure is not made with natural rubber latex.

50 mL Single-dose

50% Dextrose
Injection, USP

25 grams/50 mL

(0.5 g/mL)

NDC 0409-6648-02

Rx only

Each mL contains dextrose, hydrous 0.5 grams. May contain NaOH and/or HCl for pH adjustment. 2.53 mOsmol/mL (calc). pH 4.2 (3.2 to 6.5). Sterile, nonpyrogenic. Cleanse stopper with antiseptic. Aseptically add to a suitable solution in I.V. container or use undiluted. Use only if clear and seal is intact and undamaged. Contains no bacteriostat; use promptly; discard unused portion. For intravenous use. Usual dosage: See insert. Store at 20 to 25°C (68 to 77°F). [See USP Controlled Room Temperature.]

RL-3040

Hospira, Inc.
Lake Forest, IL 60045 USA

Hospira

(01) 0 03040 66480 4

Single-dose Vial NDC 0409-4856-15

A-HYDROCORT®

Hydrocortisone Sodium Succinate

for Injection, USP

NOT FOR USE IN PREMATURE INFANTS

100 mg Hydrocortisone Activity/ 2 mL (when mixed)

Rx only

Hospira

RL-2526 (4/08)

FOR IM OR IV USE

Reconstitution: Aseptically add 2 mL Bacteriostatic Water for Injection, USP. Mix until dissolved. Use within 3 days after reconstitution. Store at 20 to 25°C (68 to 77°F). Protect from light. Hospira, Inc., Lake Forest, IL 60045 USA

NDC 63323-652-10 605210

ESMOLOL HYDROCHLORIDE *INJECTION*

100 mg/10 mL

(10 mg/mL)

For Intravenous Use
Rx only

10 mL
Single Dose Vial

Preservative Free
Discard unused portion.
Each mL contains: 10 mg Esmolol Hydrochloride and Water for Injection; buffered with Sodium Acetate Trihydrate and Glacial Acetic Acid, Sodium Hydroxide and/or Hydrochloric Acid added to adjust pH.
Usual Dosage: See Insert.
Store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].
PROTECT FROM FREEZING. Avoid excessive heat.
Avoid contact with alkalies. Do not use if discolored or if a precipitate is present.
This container closure is not made with natural rubber latex.

Fresenius Kabi USA, LLC
Lake Zurich, IL 60047

4021320

LOT/EXP

ATROPINE SULFATE

INJECTION, USP

0.4 mg/mL

NDC 0517-0401-25
25 X 1 mL
SINGLE DOSE VIALS

FOR INTRAVENOUS, INTRAMUSCULAR OR SUBCUTANEOUS US
PRESERVATIVE FREE
Rx Only

Each mL contains: Atropine Sulfate 0.4 mg, Sodium Chloride 9 mg, Water for Injection q.s. pH adjusted with Sulfuric Acid.
WARNING: DISCARD UNUSED PORTION.
Store at 20°-25°C (68°-77°F); excursions permitted to 15°-30°C (59°-86°F) (See USP Controlled Room Temperature).
Directions for Use: See Package Insert.
Rev. 11/05

967


9.0
LATEX FREE

1 mL Single-dose NDC 0409-1215-01

NALOXONE HCl

Injection, USP 0.4 mg/mL

For I.V., I.M., or S.C. use.

Protect from light. ℞ only

RL-0591 (9/04)

Hospira

HOSPIRA, INC., LAKE FOREST, IL 60045 USA

Lot/ Exp.

x Only

Usual Dosage: See Package Insert.

Store at 20° to 25°C (68° to 77°F). [See USP Controlled Room Temperature].

PROTECT FROM LIGHT
DO NOT FREEZE

M. L. No. : G/28/1156

B. No. :

Exp. Dt. :

100000091101

Flumazenil Injection, USP

1 mg/10 mL (0.1 mg/mL)

Sterile

For Intravenous Use Only

10 mL Multi-Dose Vial

EMERGENCY SCENARIO

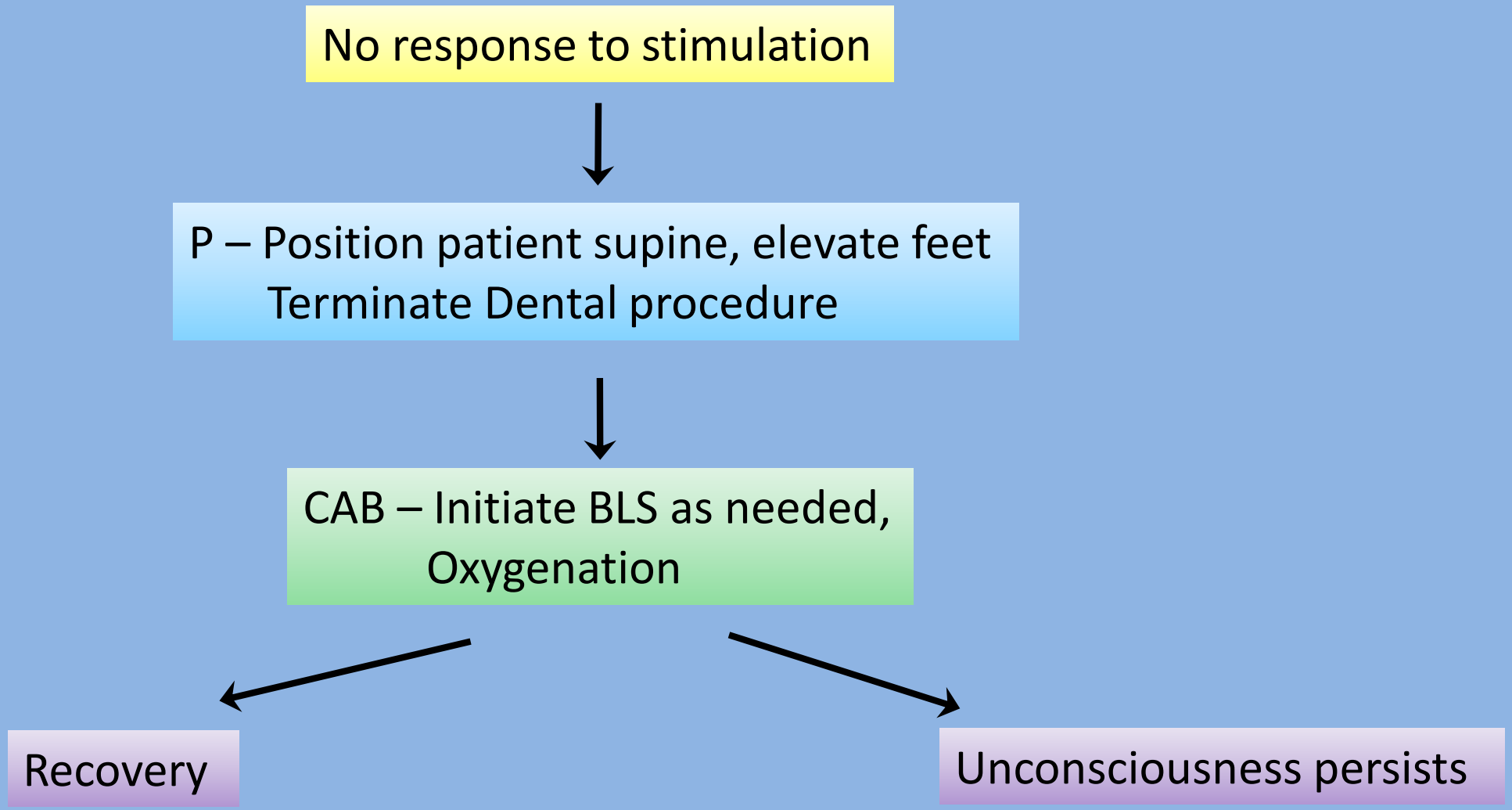
LOSS OF CONSCIOUSNESS

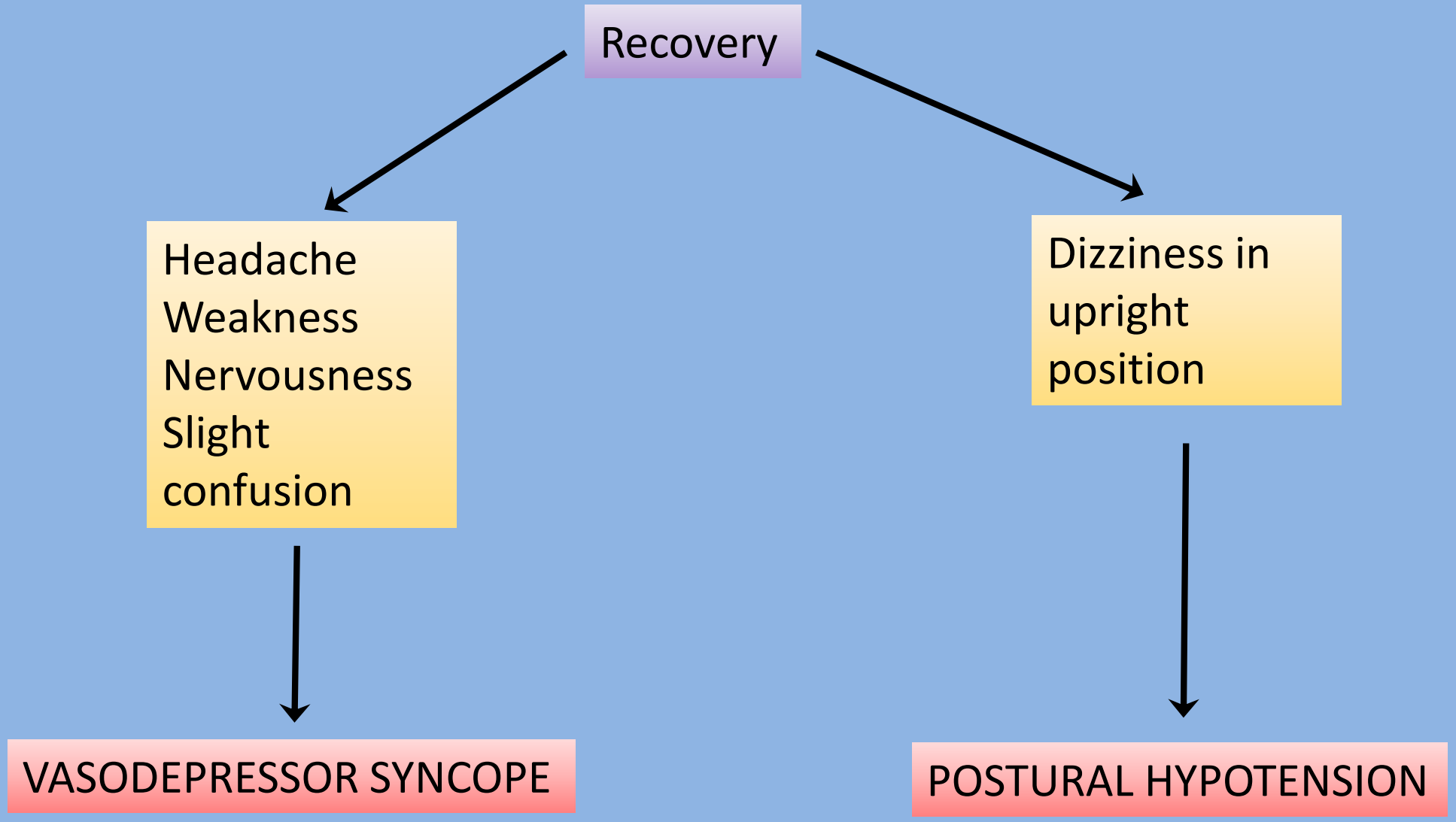
INCREASED LIKELIHOOD OF LOC

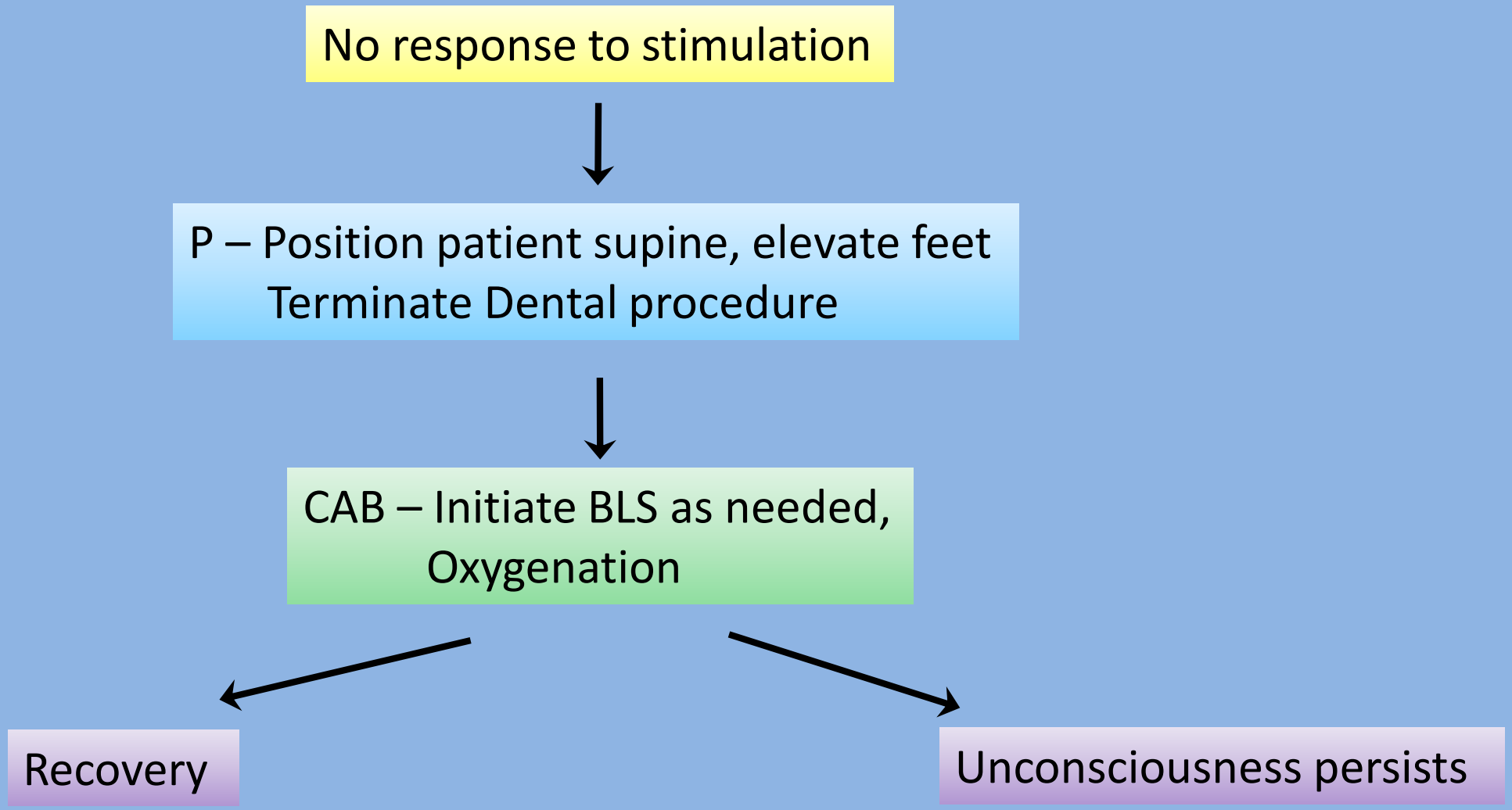
- Stress
- Impaired physical status
- Administration or ingestion of drugs

CAUSES OF LOC

- Decreased cerebral metabolism-inadequate delivery of blood and oxygen to brain
- Direct/Reflex effects on CNS-Cerebrovascular accident, Seizures
- Psychic mechanisms- Vasodepressor Syncope/ Hyperventilation/Emotional disturbances


No response to stimulation
P – Position patient supine, elevate feet
Terminate Dental procedure
CAB – Initiate BLS as needed,
Oxygenation
Recovery
Unconsciousness persists


Recovery
Headache
Weakness
Nervousness
Slight confusion
Dizziness in upright position
VASODEPRESSOR SYNCOPE
POSTURAL HYPOTENSION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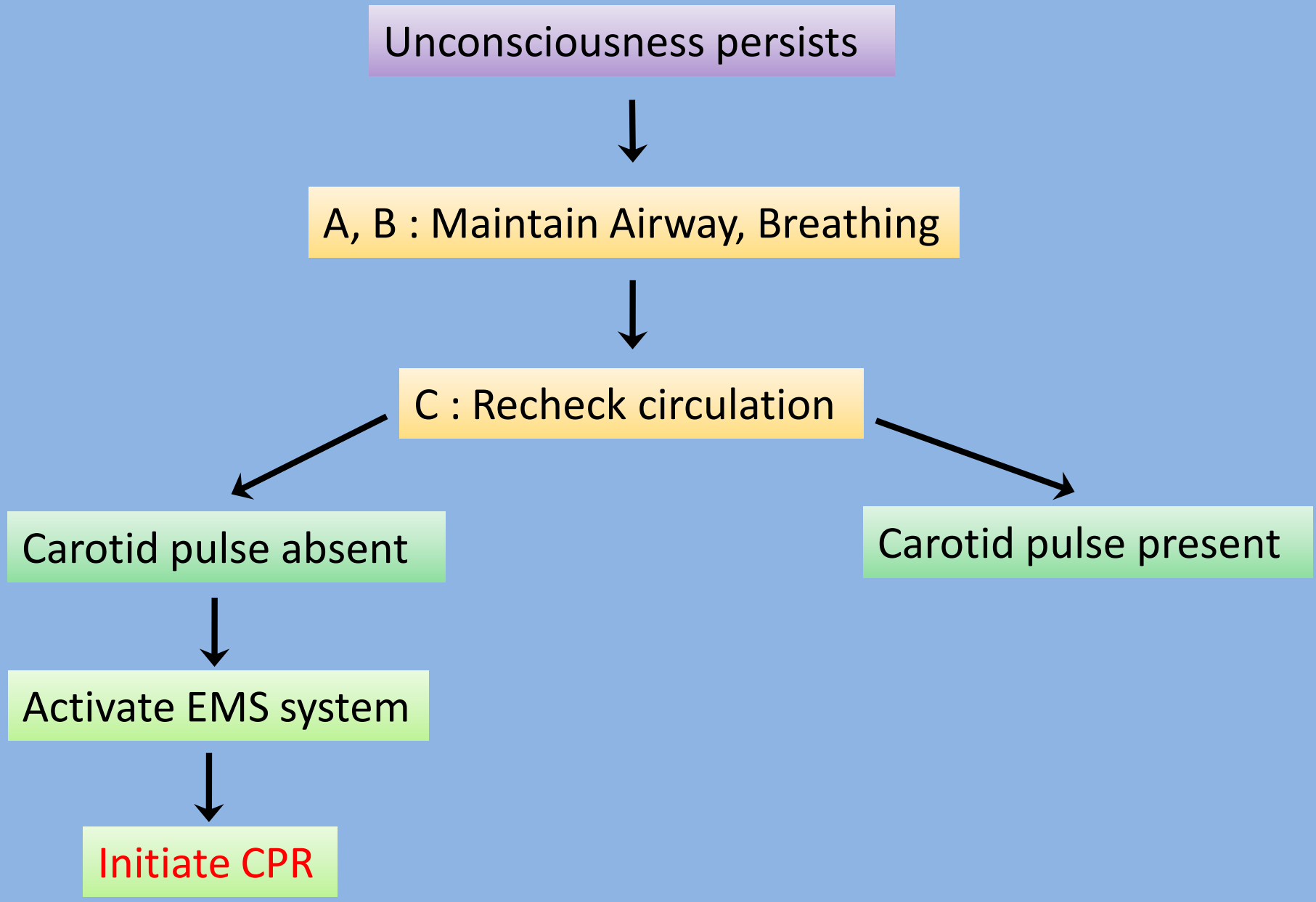
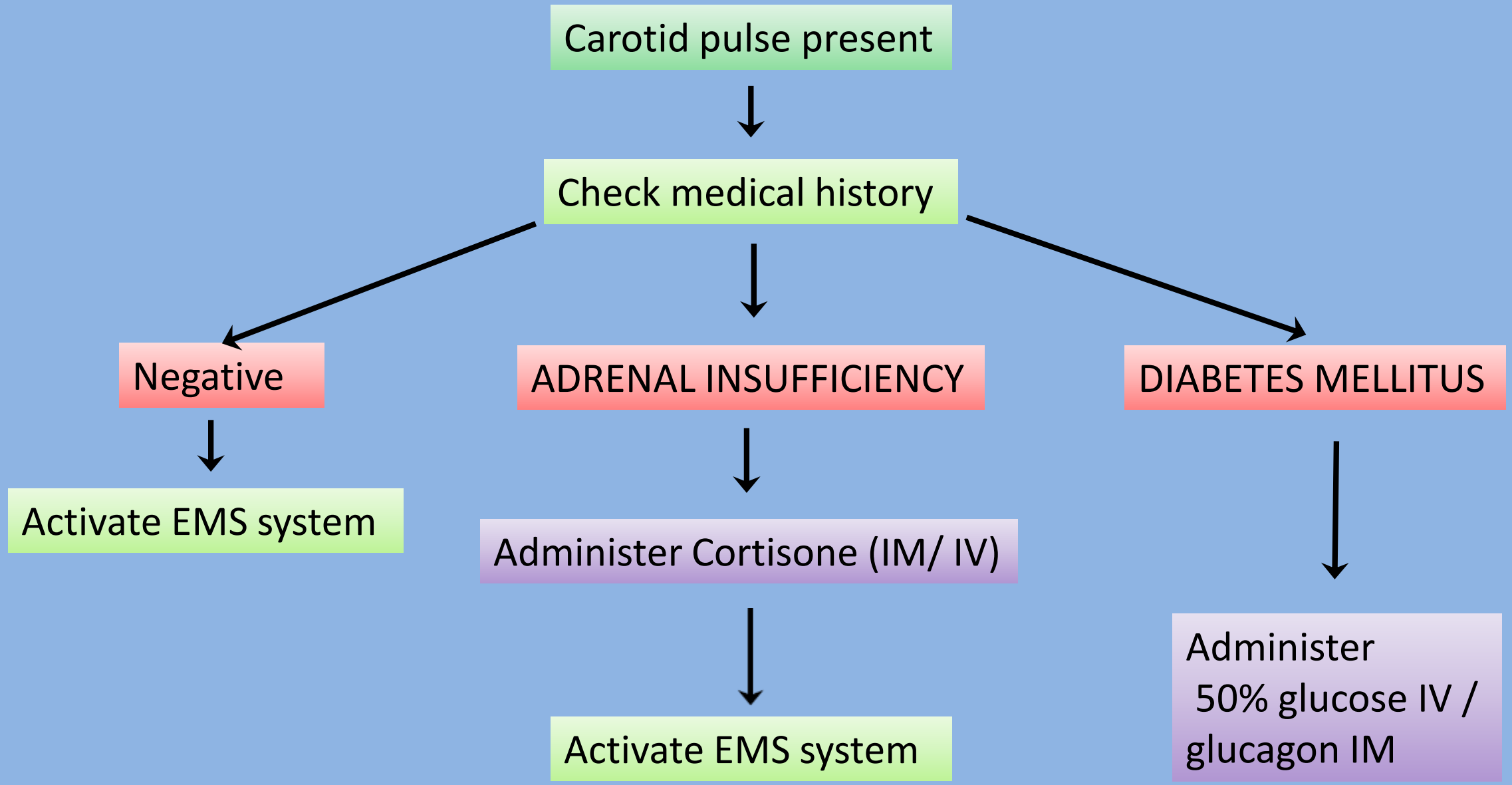
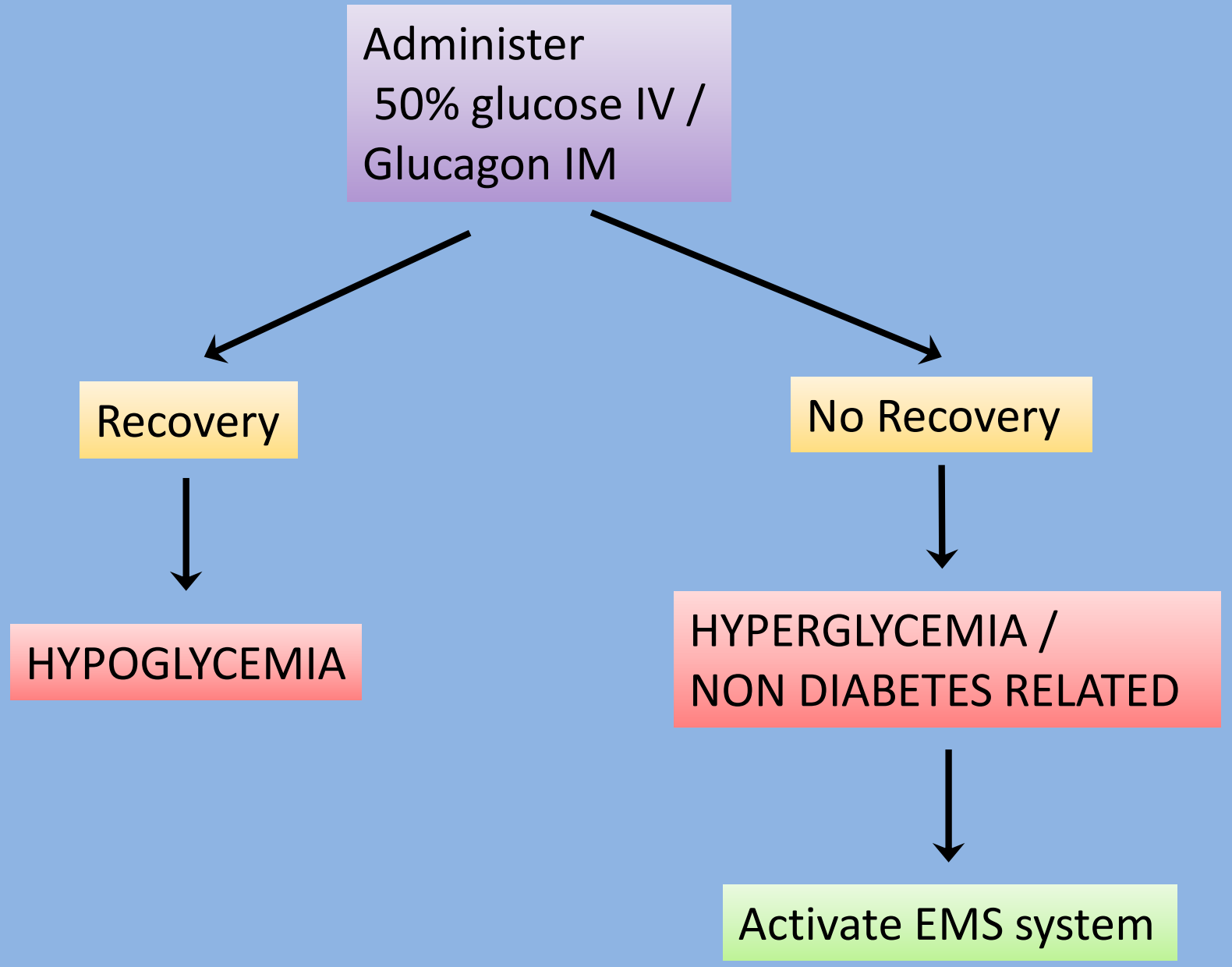
Oxygenation
Recovery
Unconsciousness persists


Unconsciousness persists
A, B : Maintain Airway, Breathing
C : Recheck circulation
Carotid pulse absent
Carotid pulse present
Activate EMS system
Initiate CPR

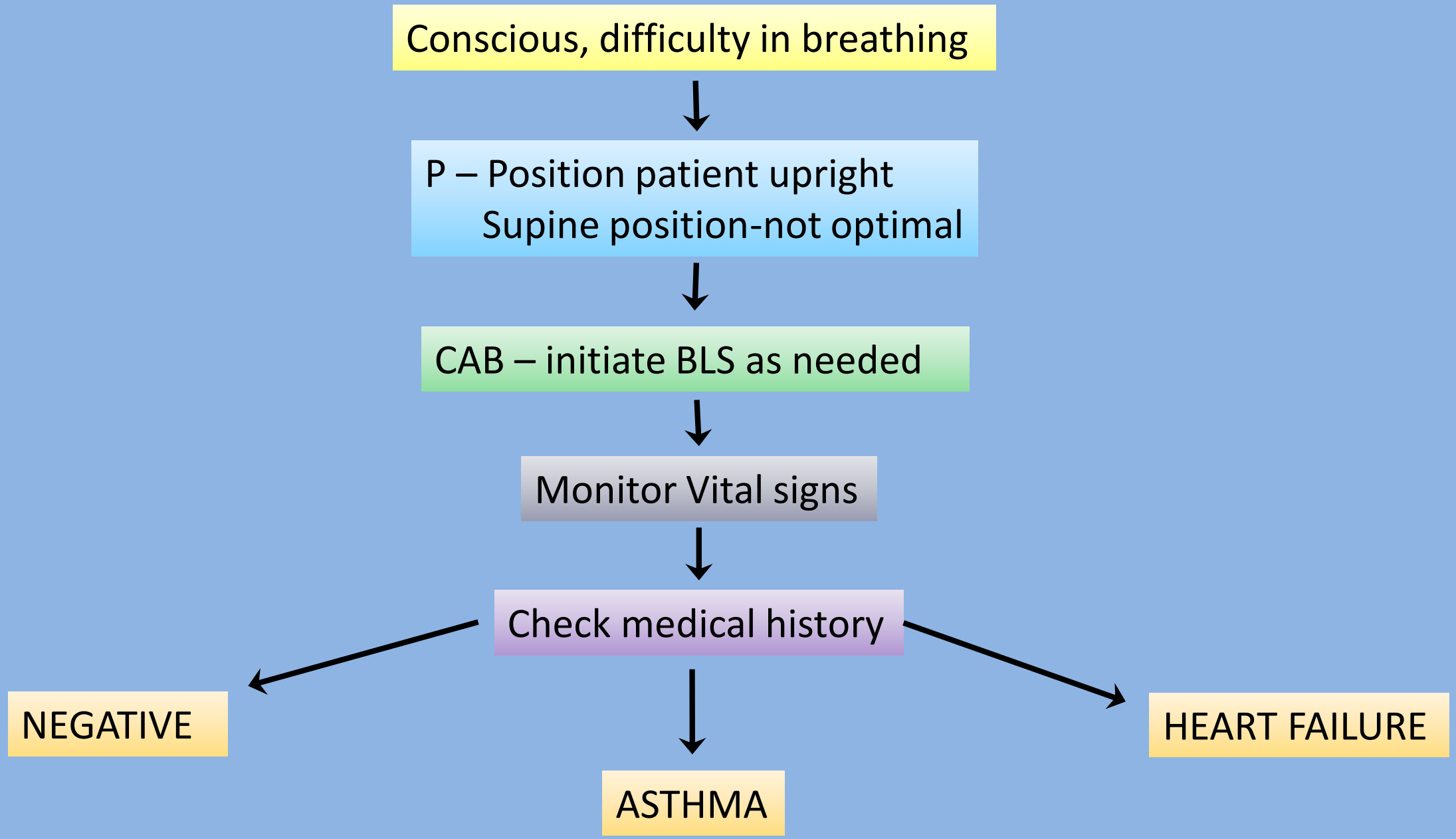

Carotid pulse present
Check medical history
Negative
ADRENAL INSUFFICIENCY
DIABETES MELLITUS
Activate EMS system
Administer Cortisone (IM/ IV)
Activate EMS system
Administer
50% glucose IV /
glucagon IM


Administer
50% glucose IV /
Glucagon IM
Recovery
No Recovery
HYPOGLYCEMIA
HYPERGLYCEMIA /
NON DIABETES RELATED
Activate EMS system

RESPIRATORY DISTRESS

RESPIRATORY DISTRESS

- Hyperventilation
- Asthma
- Foreign Body Airway Obstruction


Conscious, difficulty in breathing
P – Position patient upright
Supine position-not optimal
CAB – initiate BLS as needed
Monitor Vital signs
Check medical history
NEGATIVE
ASTHMA
HEART FAILURE

HYPERVENTILATION

- Ventilation in excess of that to maintain normal PaO2 and PaCo2.
- Increase -frequency and depth
- Exacerbated by stress, anxiety.

Age 20-40 years
Rapid respiratory rate and depth
Acute anxiety
Light-headedness
Peripheral paraesthesia

HYPERVENTILATION

Calm patient

Correct respiratory alkalosis

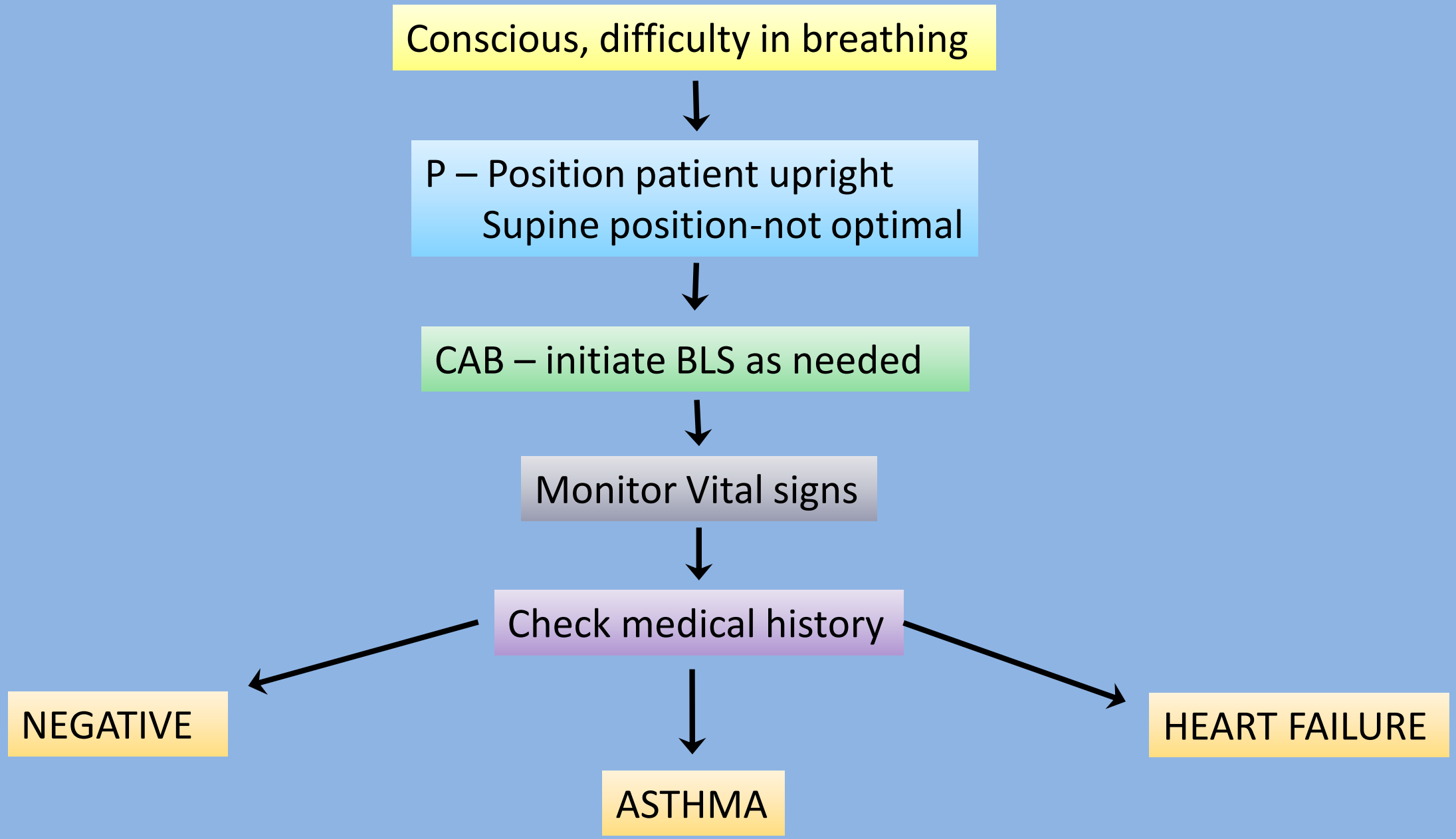
Breathe CO_2 enriched air

Symptoms persist

Administer midazolam IM / IV

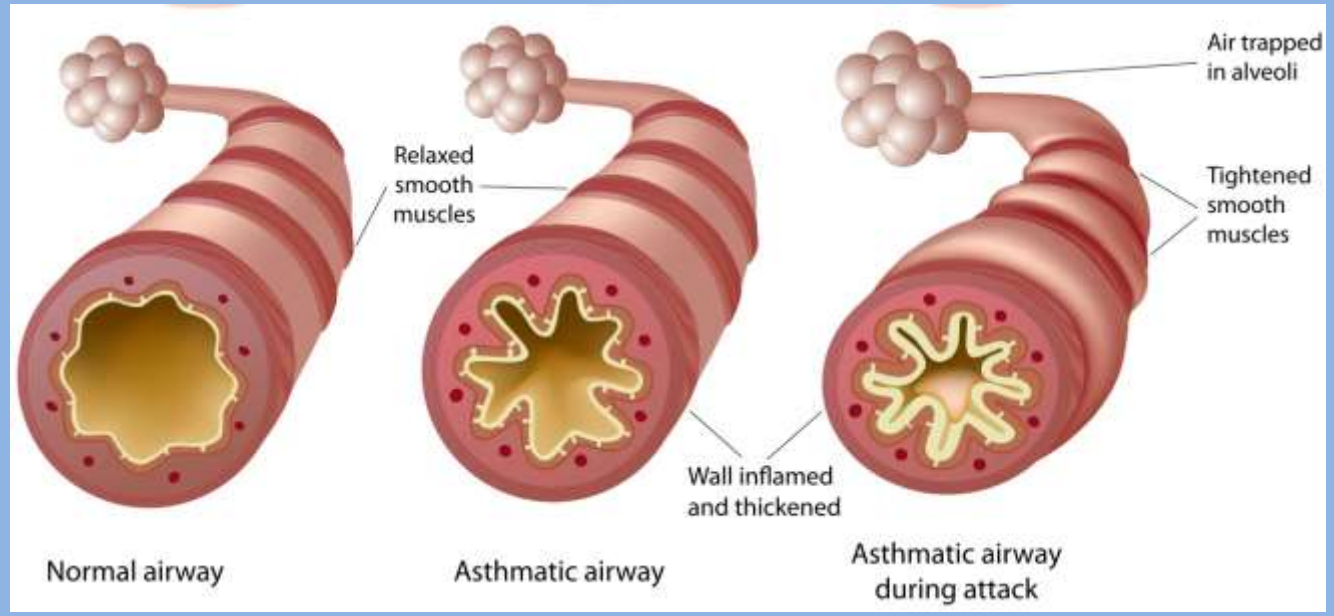
Symptoms relieved


PRAMIREZ the WEEKLY STANDARD
2016© CREATORS.COM
TRUMP is PRESIDENT...
MAINSTREAM MEDIA
@Ramireztoons
michaelpramirez.com


Conscious, difficulty in breathing
P – Position patient upright
Supine position-not optimal
CAB – initiate BLS as needed
Monitor Vital signs
Check medical history
NEGATIVE
ASTHMA
HEART FAILURE

ASTHMA

- Extreme sensitivity of the airways.
- Extrinsic/Intrinsic Asthma.
- Exacerbated by stress.



Wheezing
Increased respiratory effort
Increased anxiety
Sweating
Flushing of face & upper torso

→ **ACUTE ASTHMATIC ATTACK**

↓

Terminate dental procedure;
Calm patient;
Upright Position;
Administer oxygen

↓

Administer inhaled bronchodilator

If symptoms persist ↓

Administer epinephrine IM 0.3 ml of 1:1000

If symptoms persist ↓

Administer hydrocortisone IV

If symptoms persist ↓

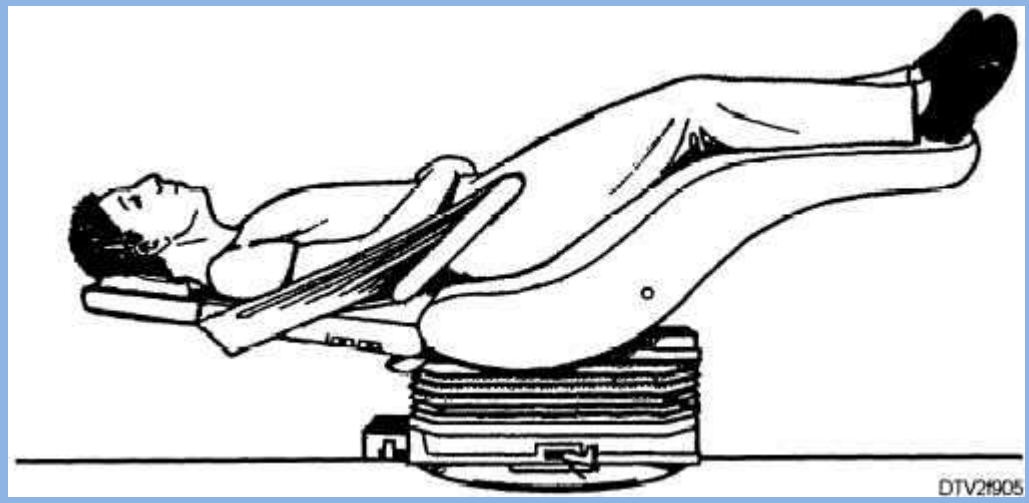
Activate EMS system

FOREIGN BODY AIRWAY OBSTRUCTION

- Actual incidence of aspiration into trachea or lung - low.
- Increased risk - Advent of semisupine/supine dentistry.
- Minimize risks- Rubber dam, Assistant, Suction, Ligatures.
- Signs/symptoms - coughing, choking, wheezing, dyspnea

OBJECT HAS ENTERED TRACHEA

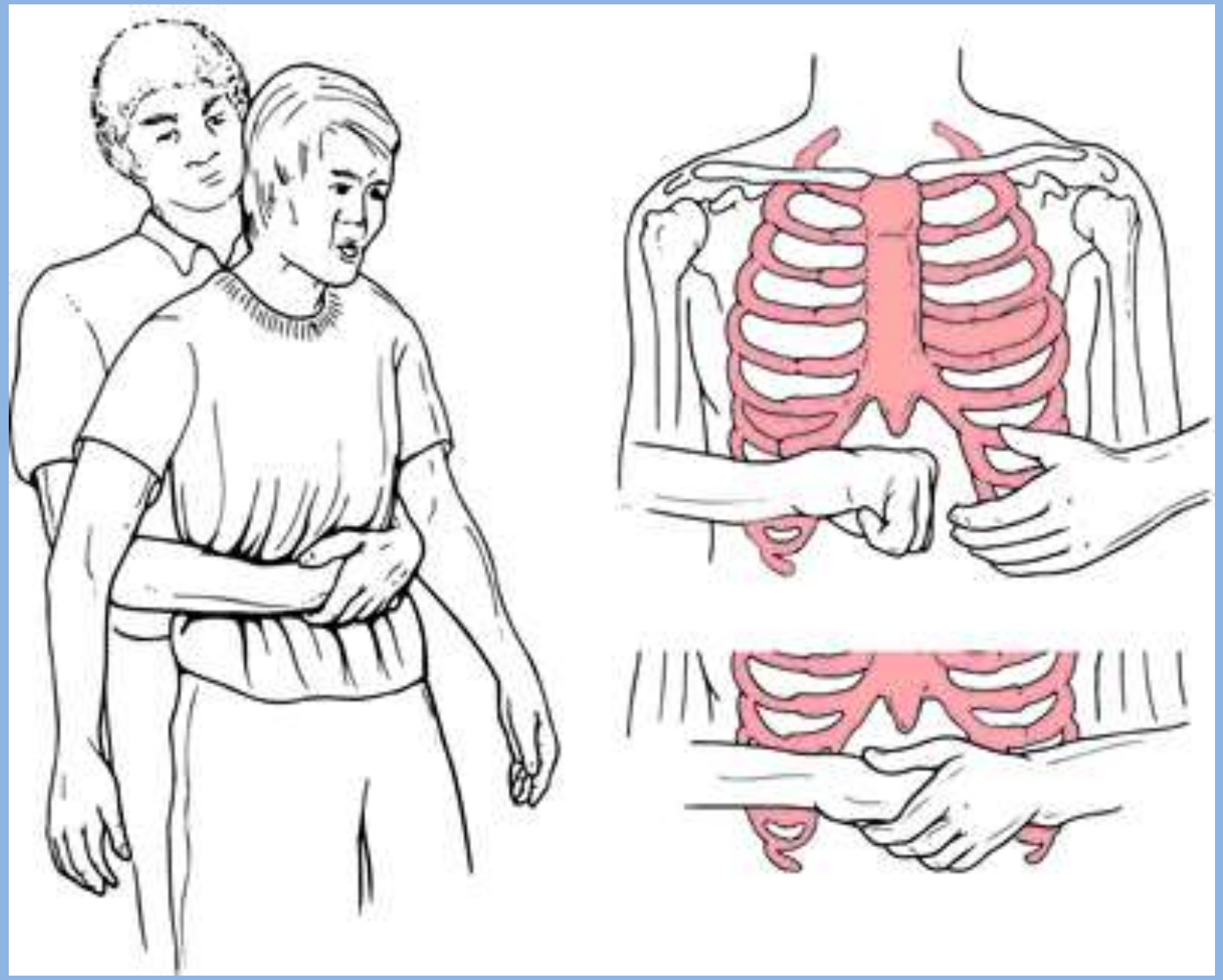
- DO NOT ALLOW PATIENT TO SIT UP.
- Trendelenberg with left lateral decubitis.
- Encourage coughing.
- Do not use hemostats/cotton pliers to retrieve object.
- If suspect swallowing- DO NOT discharge till chest Xray.
- Medical consultation- Bronchoscopy/thoractomy



ACUTE AIRWAY OBSTRUCTION

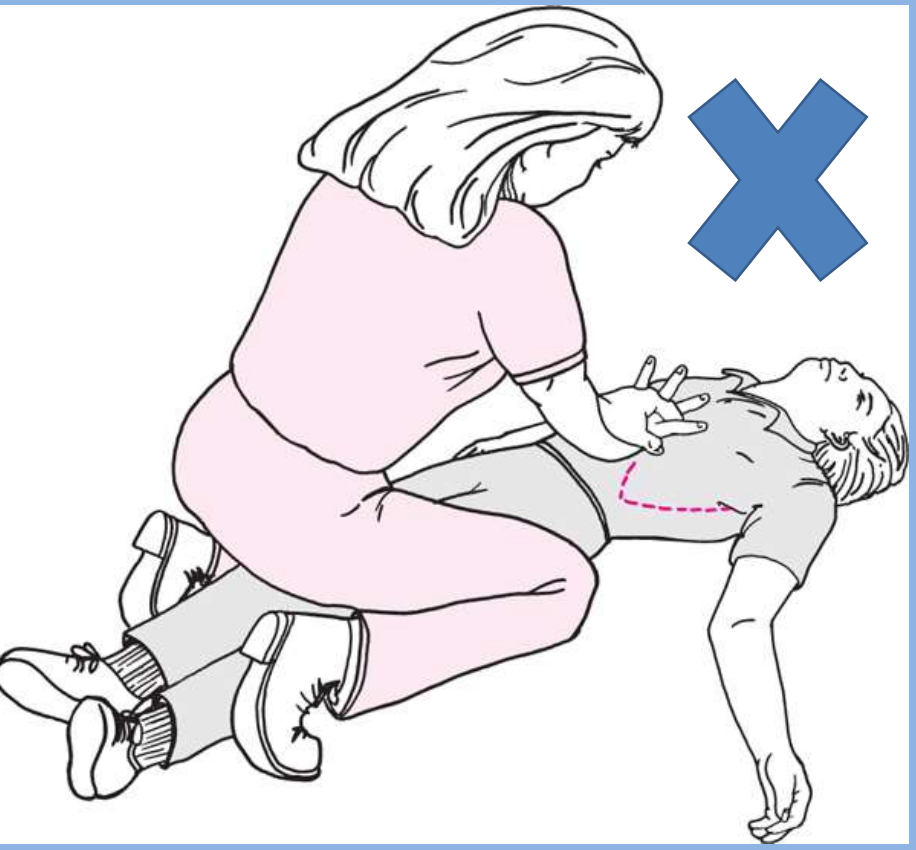
UNIVERSAL SIGN OF CHOKING

Learn the
HEIMLICH MANEUVER
today!!



LOSS OF CONSCIOUSNESS IN CHOKING VICTIM

- Relaxation of larynx muscles.
- Convert complete airway obstruction to partial obstruction.



AHA RECOMMENDATION

-Start Chest Compressions

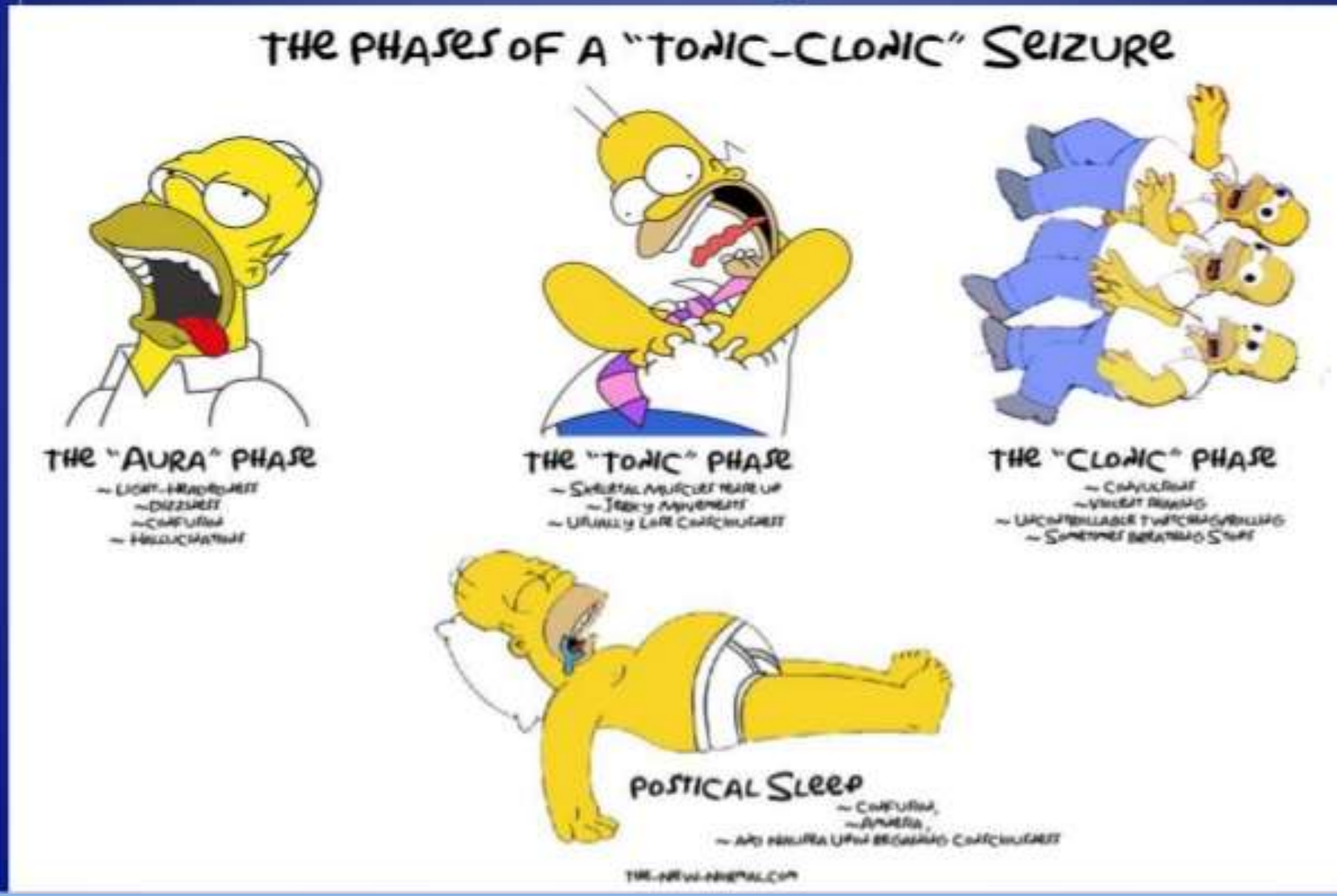
-Try to remove foreign body-

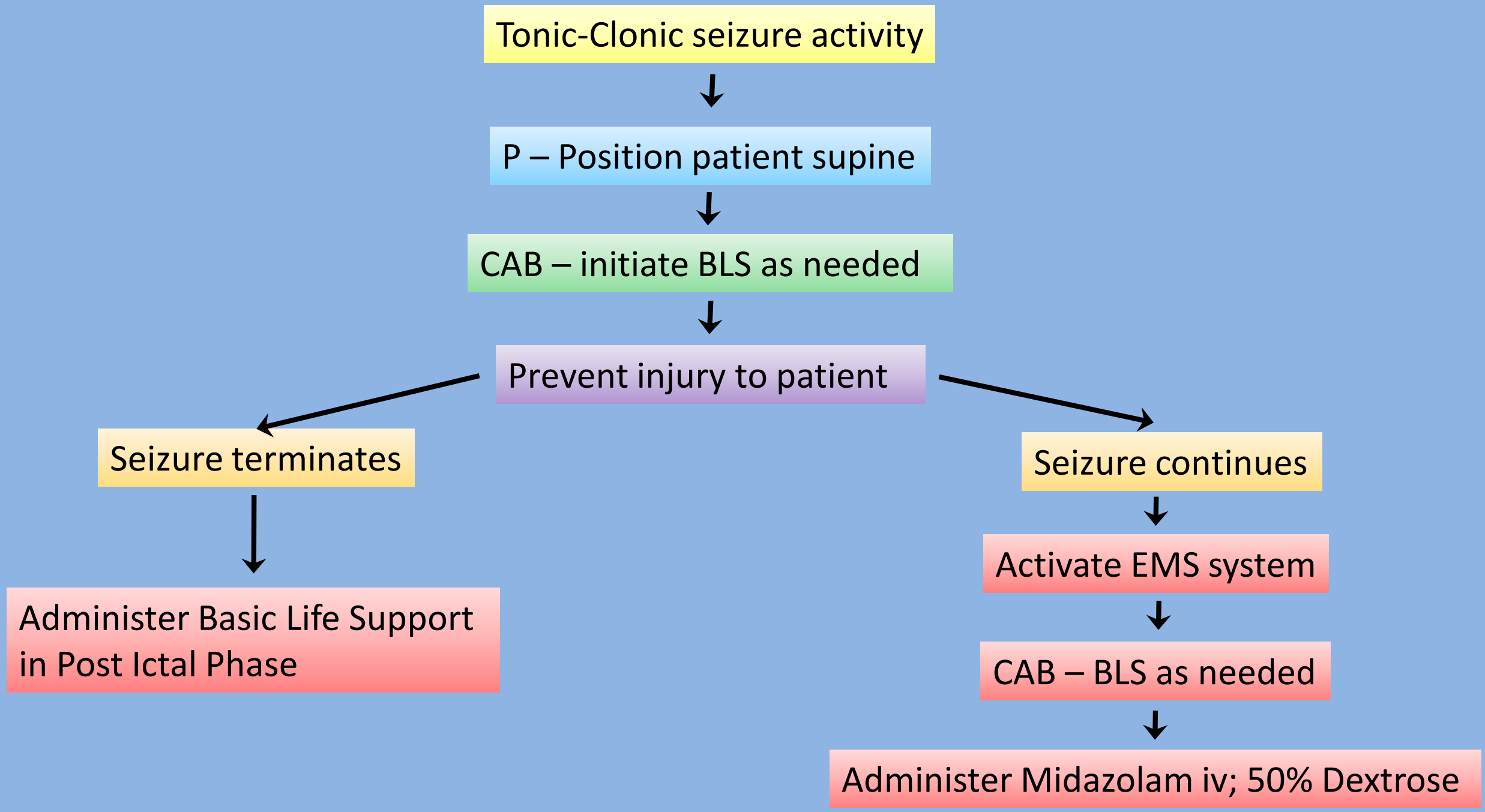
AVOID BLIND FINGER SWEEP

-Proceed to CPR

SEIZURES

TONIC-CLONIC SEIZURE (GRAND-MAL)



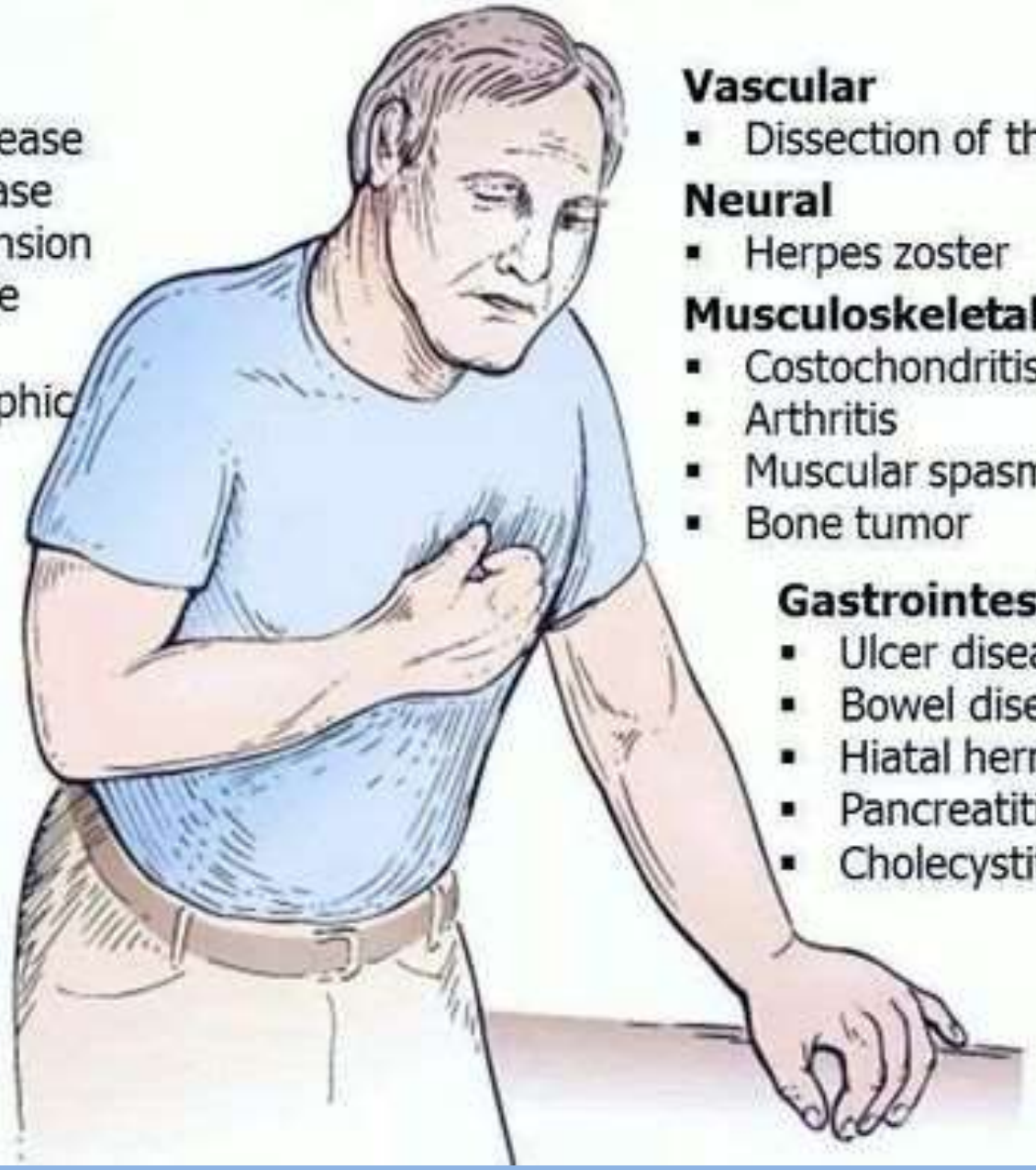

Tonic-Clonic seizure activity
P – Position patient supine
CAB – initiate BLS as needed
Prevent injury to patient
Seizure terminates
Administer Basic Life Support in Post Ictal Phase
Seizure continues
Activate EMS system
CAB – BLS as needed
Administer Midazolam iv; 50% Dextrose

CHEST PAIN

- Frightening experience.

- Immediately invokes thoughts of “ heart attack” in the mind of the victim.

Common Causes of Chest Pain



Cardiac
- Coronary artery disease
- Aortic valvular disease
- Pulmonary hypertension
- Mitral valve prolapse
- Pericarditis
- Idiopathic hypertrophic subaortic stenosis

Pulmonary
- Pulmonary embolism
- Pneumonia
- Pleuritis
- Pneumothorax

Emotional
- Anxiety
- Depression

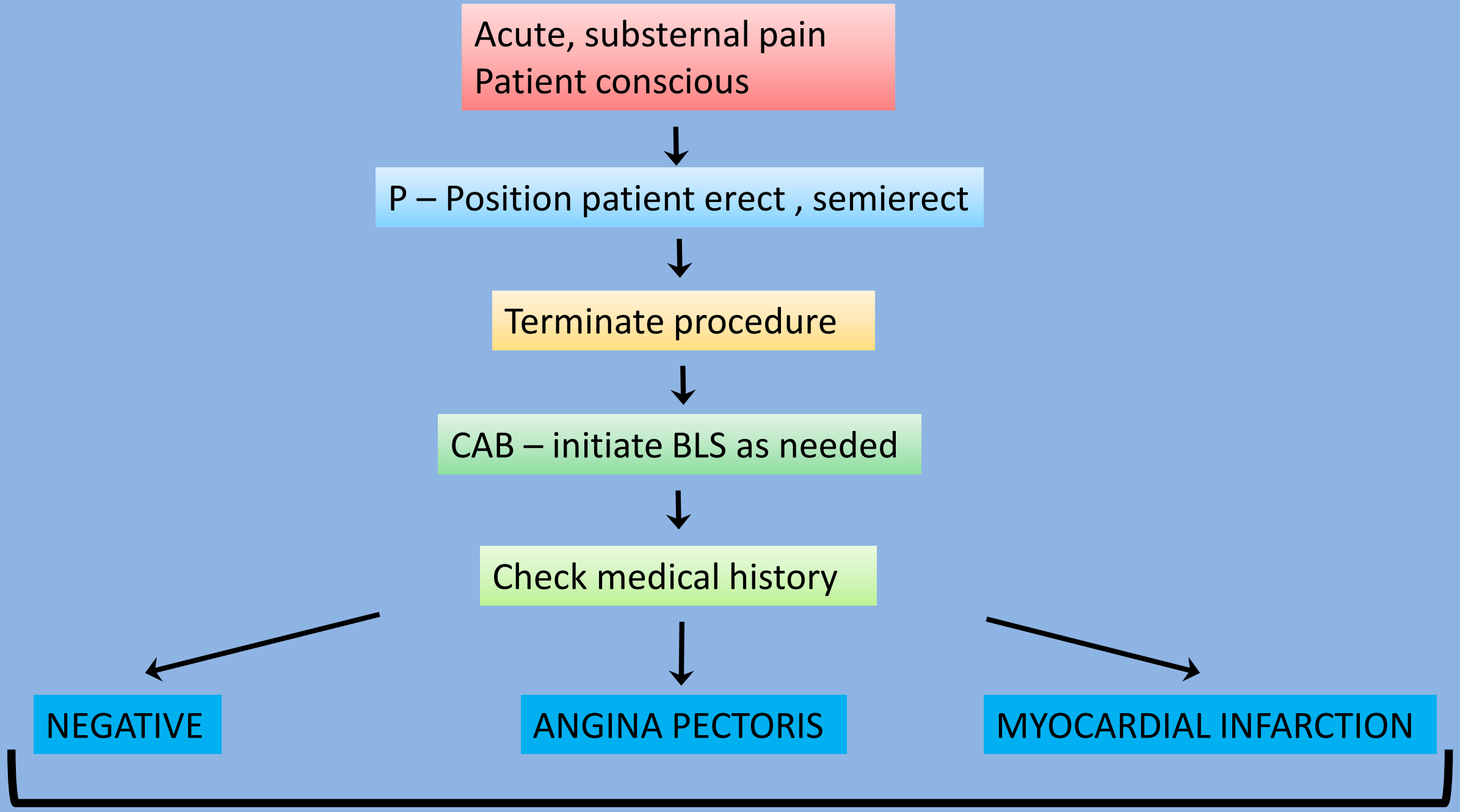
Vascular
- Dissection of the aorta

Neural
- Herpes zoster

Musculoskeletal
- Costochondritis
- Arthritis
- Muscular spasm
- Bone tumor

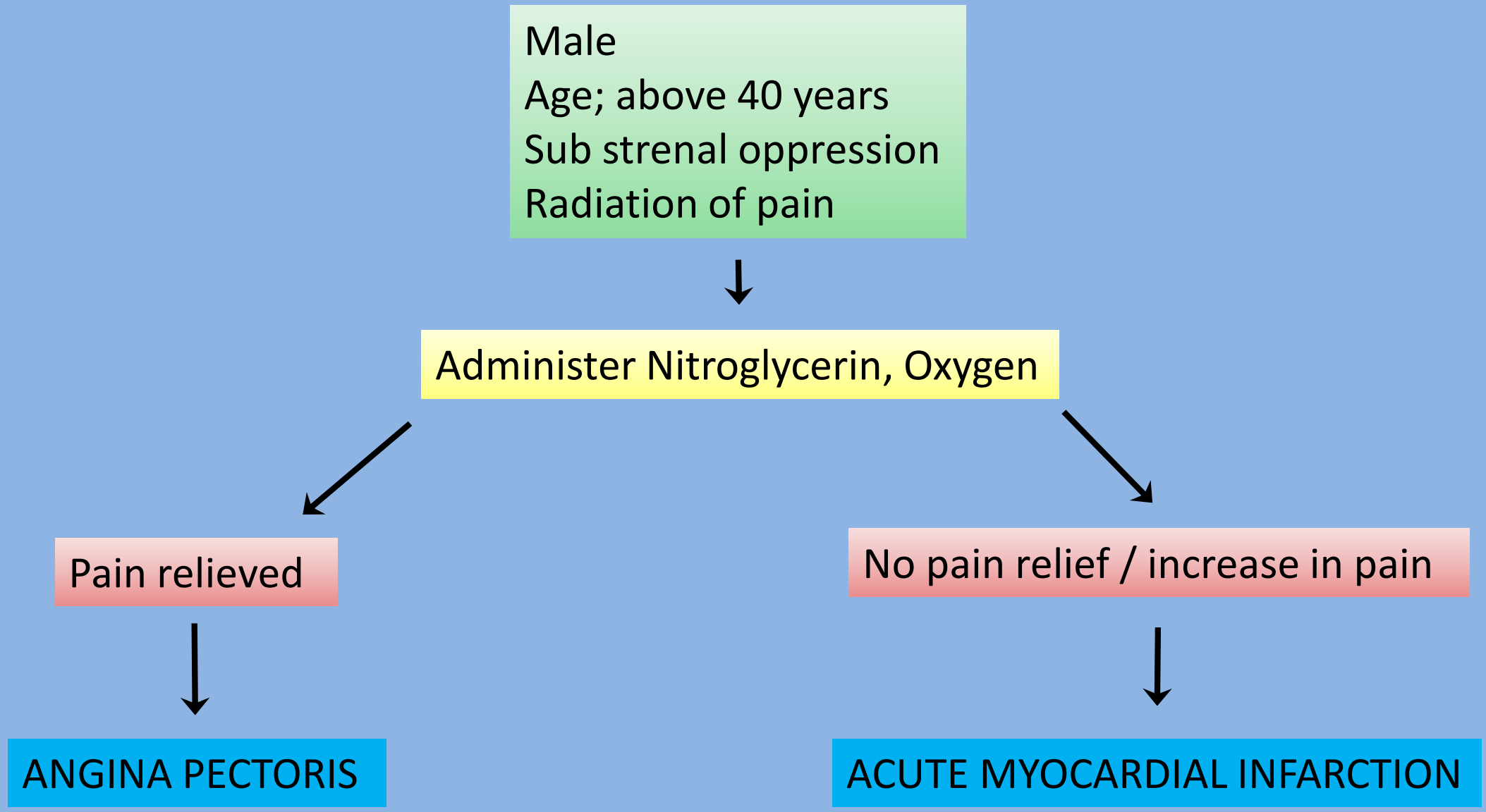
Gastrointestinal
- Ulcer disease
- Bowel disease
- Hiatal hernia
- Pancreatitis
- Cholecystitis

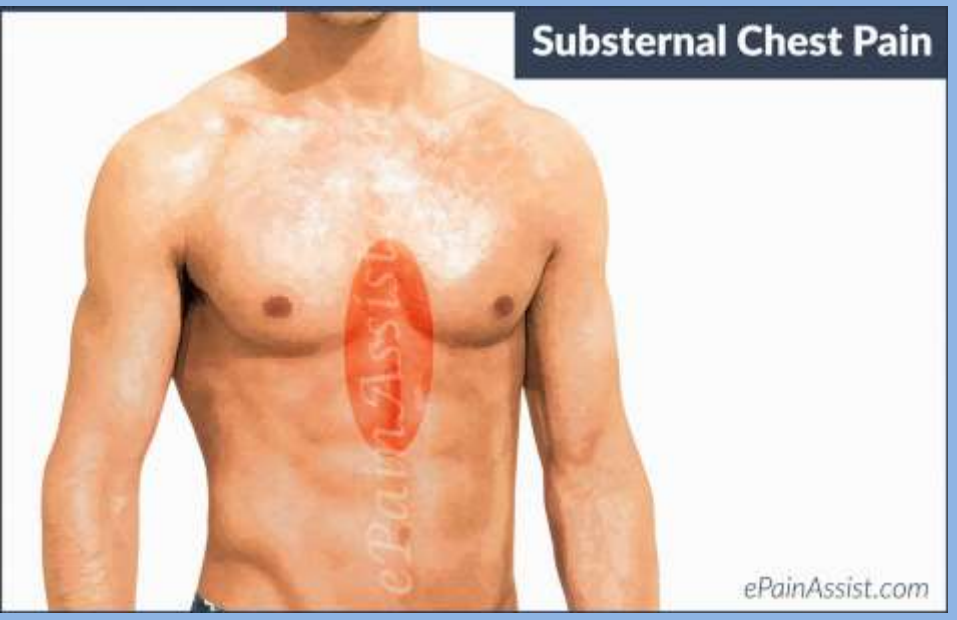
- Hyperventilation
- Angina Pectoris
- Myocardial Infarction


Acute, substernal pain
Patient conscious
P – Position patient erect , semierect
Terminate procedure
CAB – initiate BLS as needed
Check medical history
NEGATIVE
ANGINA PECTORIS
MYOCARDIAL INFARCTION

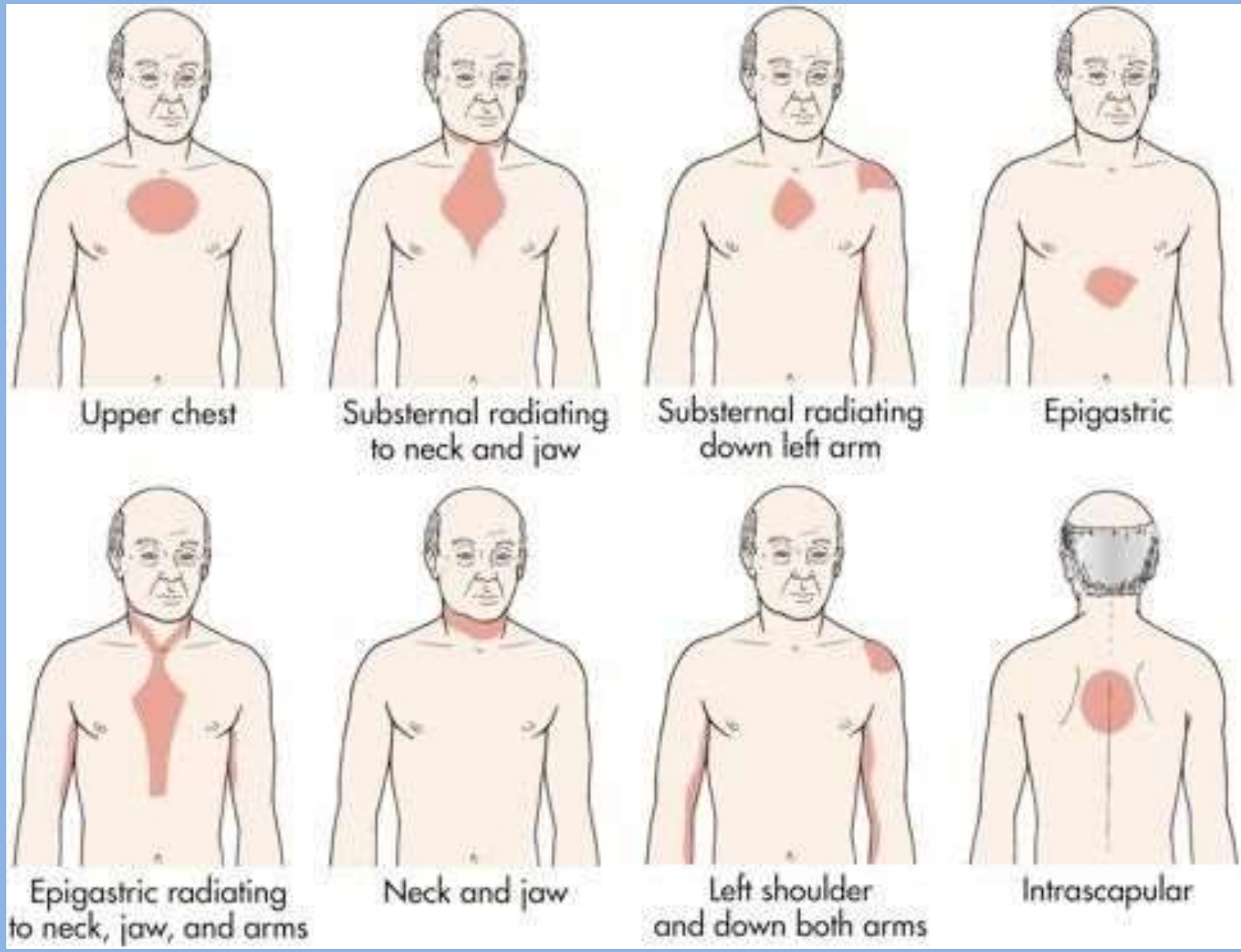
Acute anxiety
Rapid respiratory rate & depth
Light headedness
Peripheral paresthesia
Age: 20-40 years

HYPERVENTILATION


Male
Age; above 40 years
Sub strenal oppression
Radiation of pain
Administer Nitroglycerin, Oxygen
Pain relieved
No pain relief / increase in pain
ANGINA PECTORIS
ACUTE MYOCARDIAL INFARCTION



LEVINE'S SIGN



Activate EMS system

↓

Administer MONA-
Morphine/Oxygen/Nitroglycerine/Aspirin

↓

Monitor vital signs

↓

Administer basic life support

↓

Loss of consciousness

↓

C – check circulation

← Carotid pulse present

↓

Continue A,B

→ Carotid pulse absent

↓

Initiate CPR immediately

REMEMBER

- In order to treat a patient with chest pain for ANGINA, they MUST have a prior history of Angina Pectoris.
- If no history of Angina Pectoris- Presumptive diagnosis of MI.
- ALL instances of 1st time chest pain occurring in a dental setting require IMMEDIATE activation of EMS.

WHEN TO CALL FOR HELP???

- Pain not relieved by 3 nitroglycerin tabs/sprays within 10 minutes.
- Patient has NO history of Angina Pectoris- pain persists beyond 2 min
- Pain is initially reduced by NG, but which subsequently returns.


HOSPITAL
BILL
$

TAKE HOME POINTS

- There is NO medical emergency unique to Dentistry/OMFS.
- When you prepare for an emergency, The emergency ceases to exist!!
- Drug administration is not necessary for the immediate management of medical emergencies (**BLS is always used, as needed, first**)
- Primary management of ALL emergency situations involve BLS.
- When in doubt, DO NOT medicate.


IN CASE OF EMERGENCY
RUN LIKE HELL !

Be Prepared
Be Aware
Be Ready

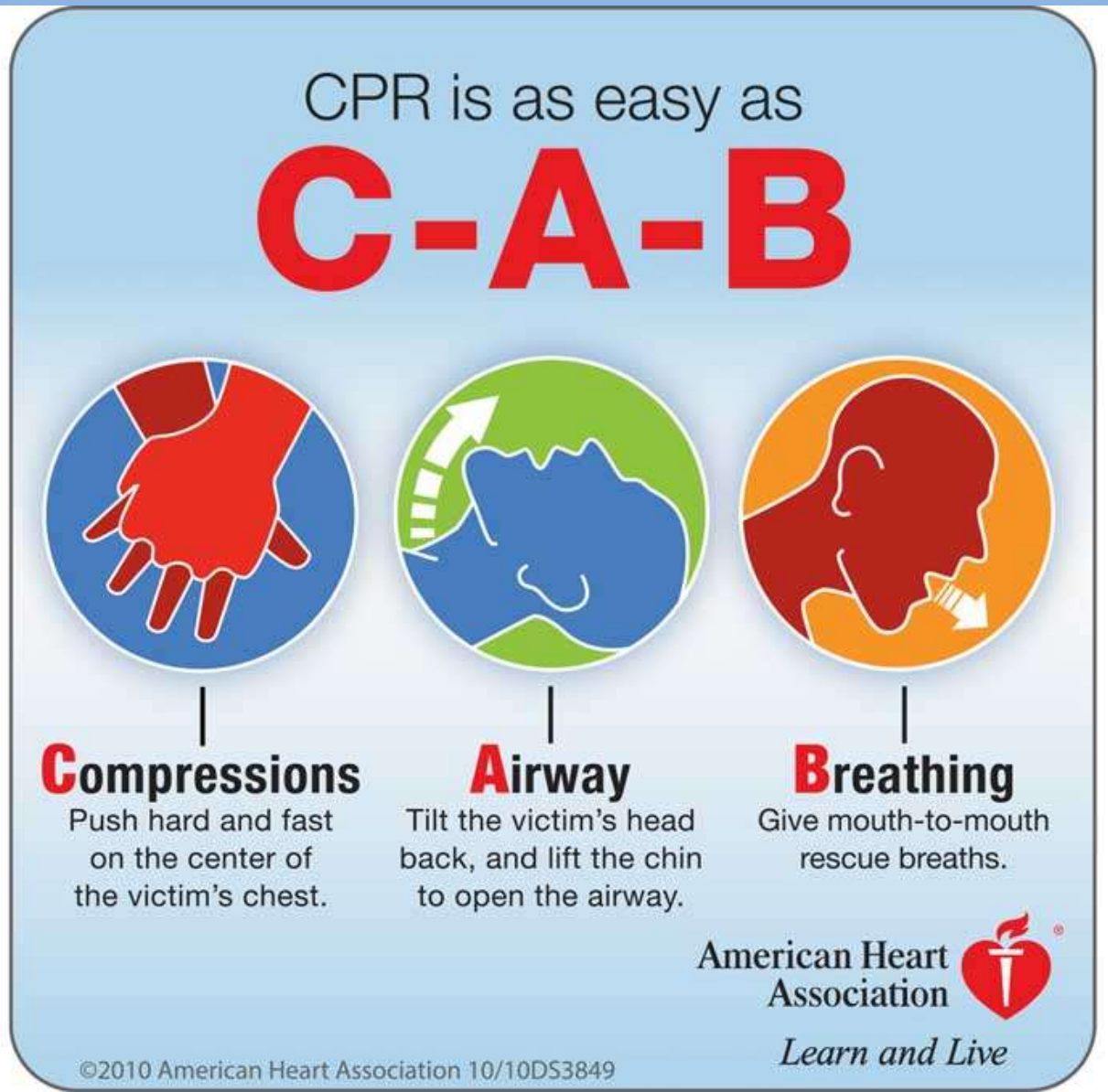

KEEP
CALM
AND
DON'T
PANIC


Basic Life
Support


Early recognition and call for help
- to prevent cardiac arrest
Early CPR
- to buy time
Early Defibrillation
- to restart the heart
Post resuscitation care
- to restore quality of life

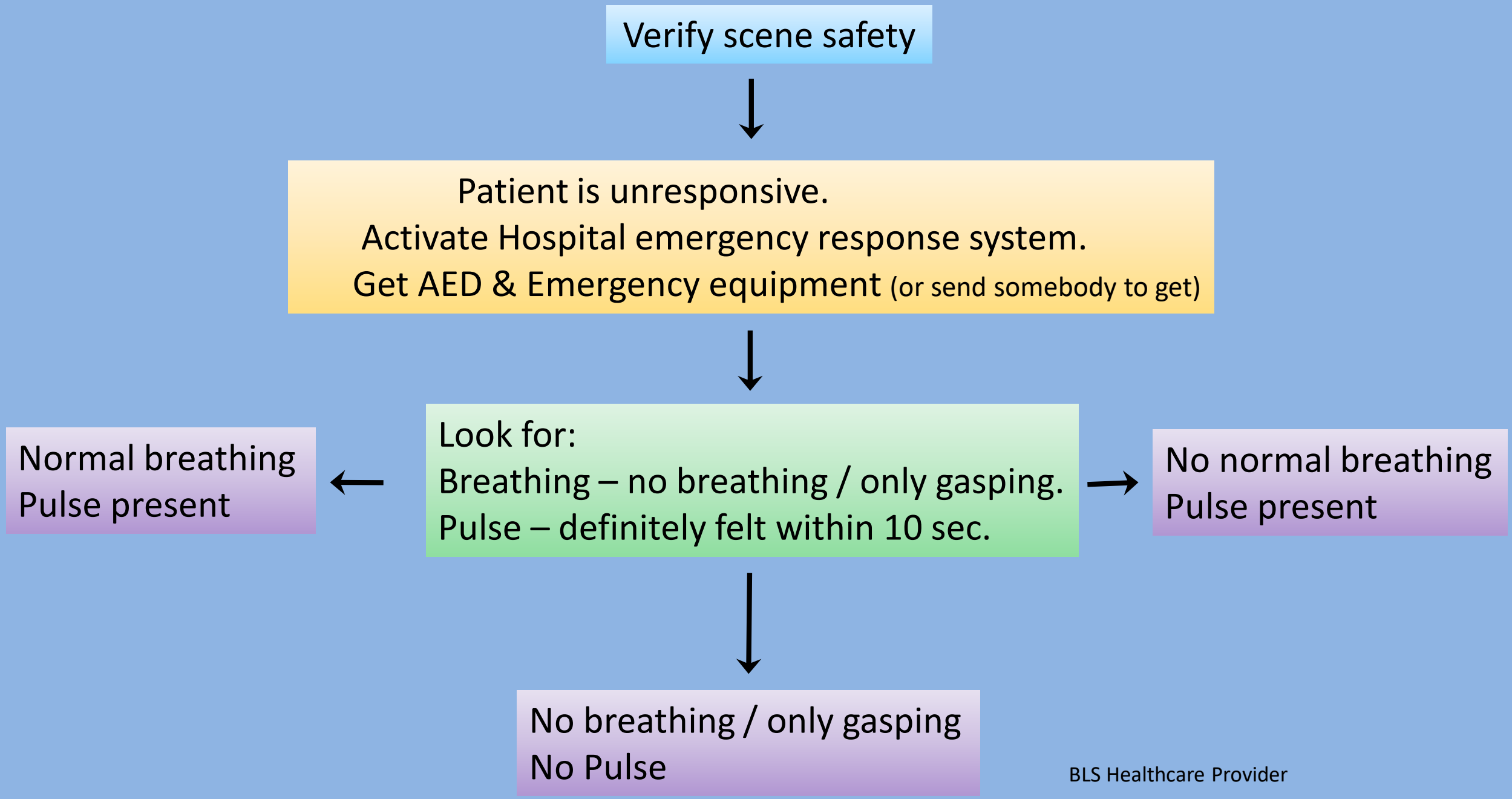
ABC's of CPR

Training Center



WHY THE CHANGE??

- Enough oxygen in blood to supply heart and brain for several minutes after cardiac arrest.
- Chest compressions are **CRITICAL** to circulate and distribute this available oxygen.
- Rescue breaths delay chest compressions-reluctance towards mouth-to-mouth resuscitation.
- Gain of about 30 seconds of faster chest compressions.



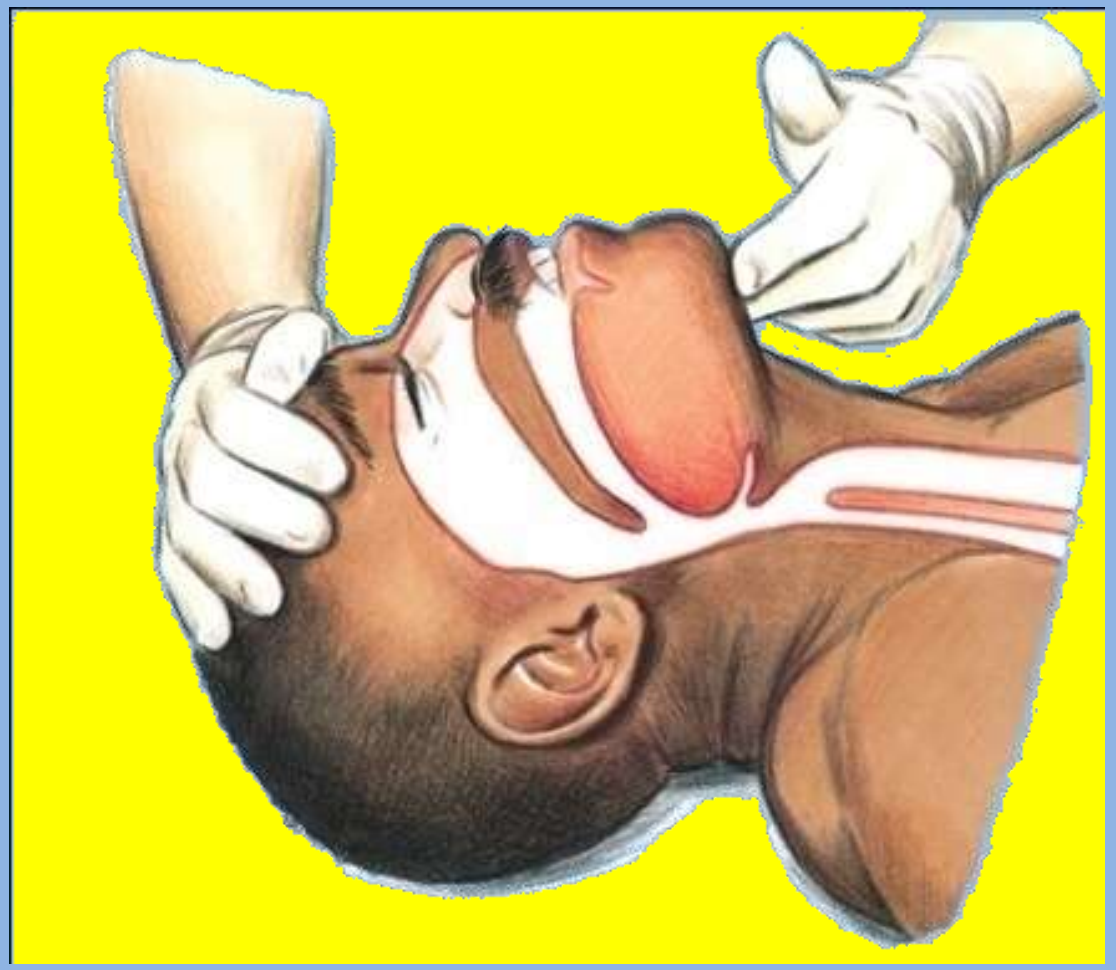
BLS Healthcare Provider

Adult Cardiac Arrest Algorithm – 2015 Update

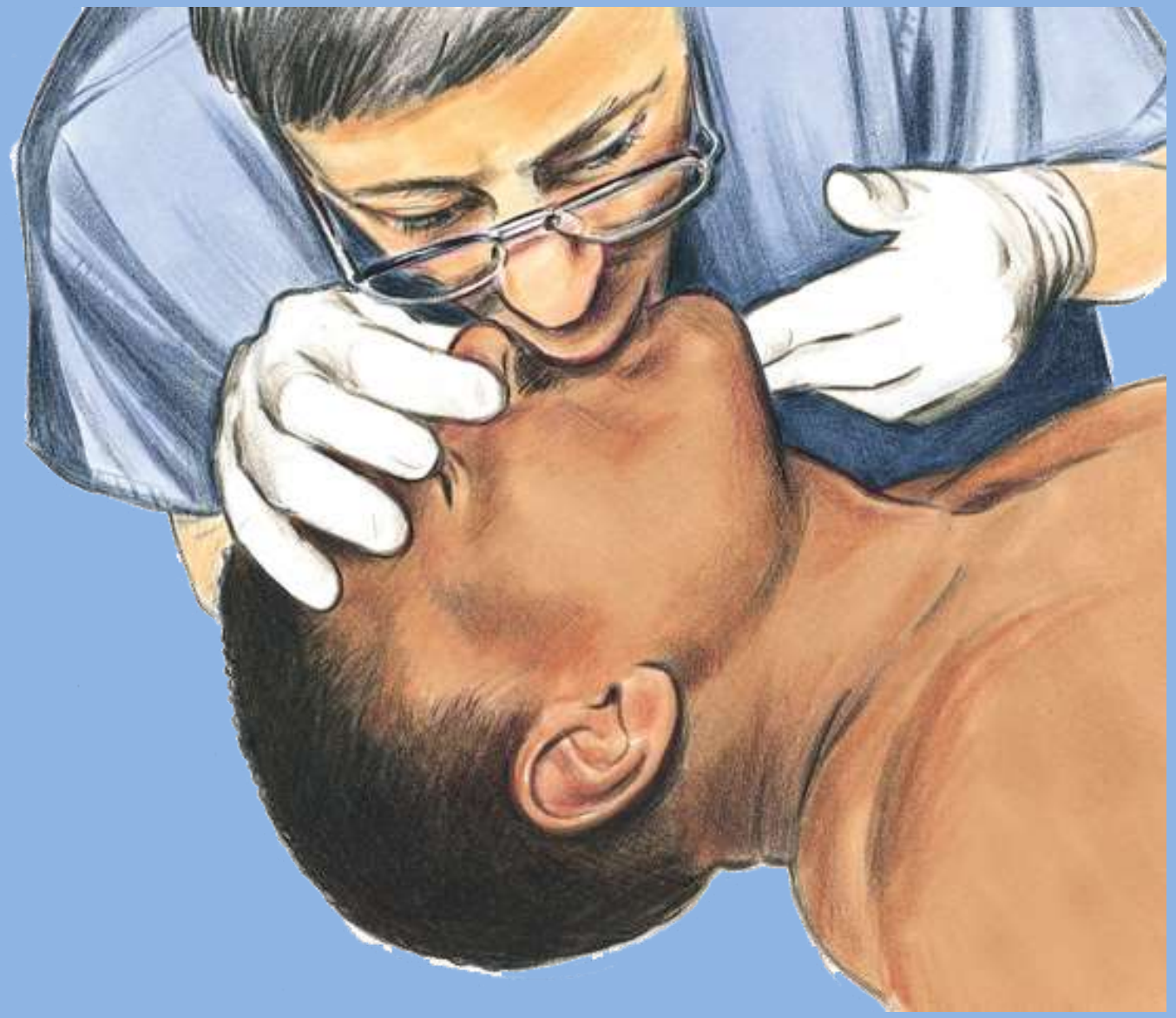
Normal breathing
Pulse present

Monitor till emergency responders arrive

No normal breathing
Pulse present



AIRWAY - OPEN THE AIRWAY
CHIN LIFT HEAD TILT

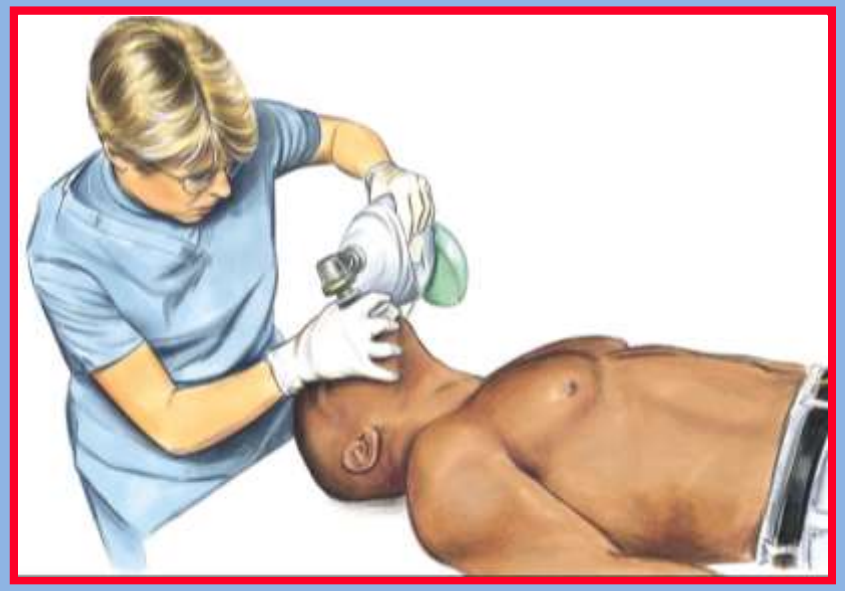


BREATHING: BARRIER DEVICE

- Provide rescue breathing: 1 breath / 5-6 sec ; 10-12 breaths / minute.
- Activate emergency response system if not already done, after 2 minutes.
- Continue rescue breathing, check pulse every 2 minutes.
- If opioid overdose, administer Naloxone (if in protocol)

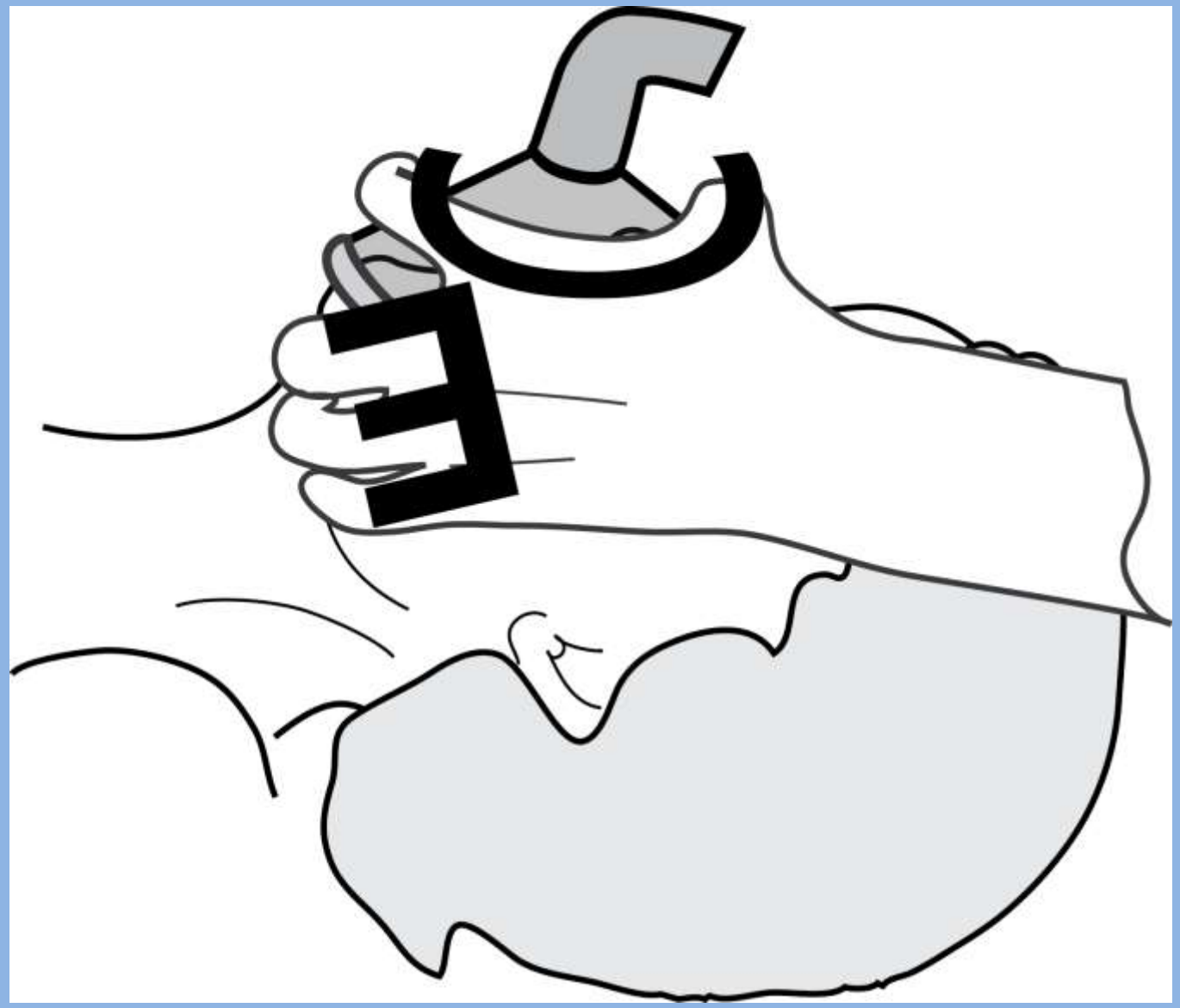
BAG-MASK VENTILATION

Key—ventilation volume: "*enough to produce obvious chest rise*"



1Person : difficult,
less effective

2 Persons :easier,
more effective



No breathing / only gasping
No Pulse

CPR

Begin cycles of 30 compressions & 2 breaths

Use AED as soon as it arrives

↓

AED arrives

↓

Check rhythm
Shockable rhythm?

← Yes, shockable

→ No, not shockable

↓

Give 1 shock.
Resume CPR immediately for about 2 min
(until prompted by AED to allow rhythm check)
Continue until ALS providers take over / victim starts to move.

↓

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(until prompted by AED to allow rhythm check)
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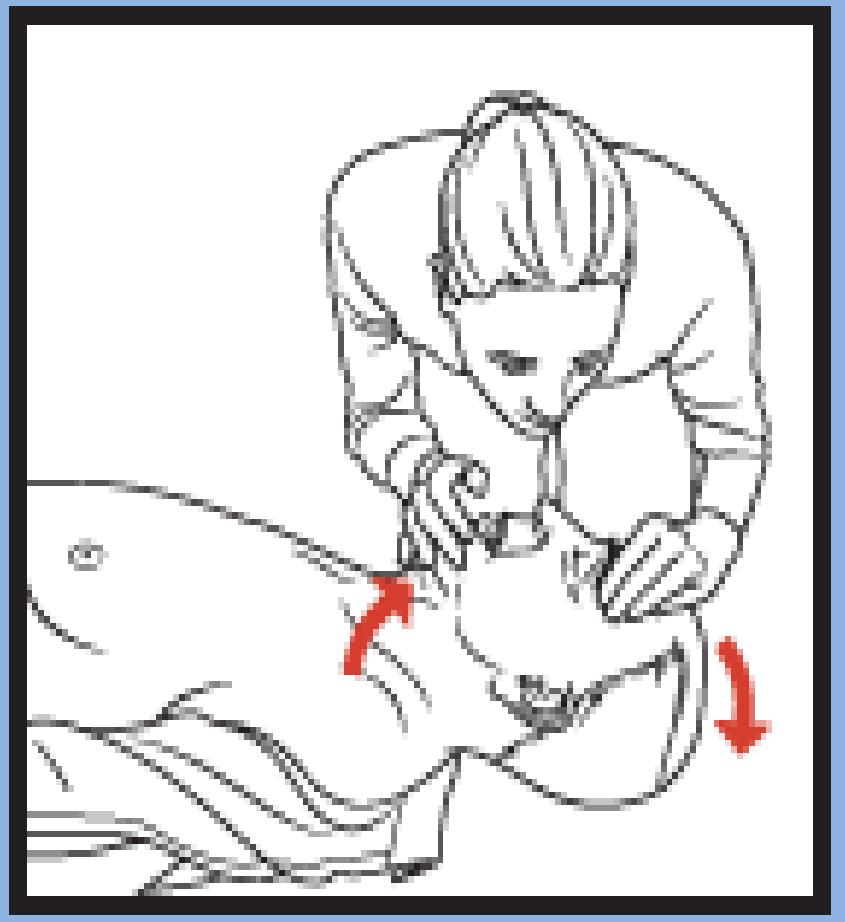
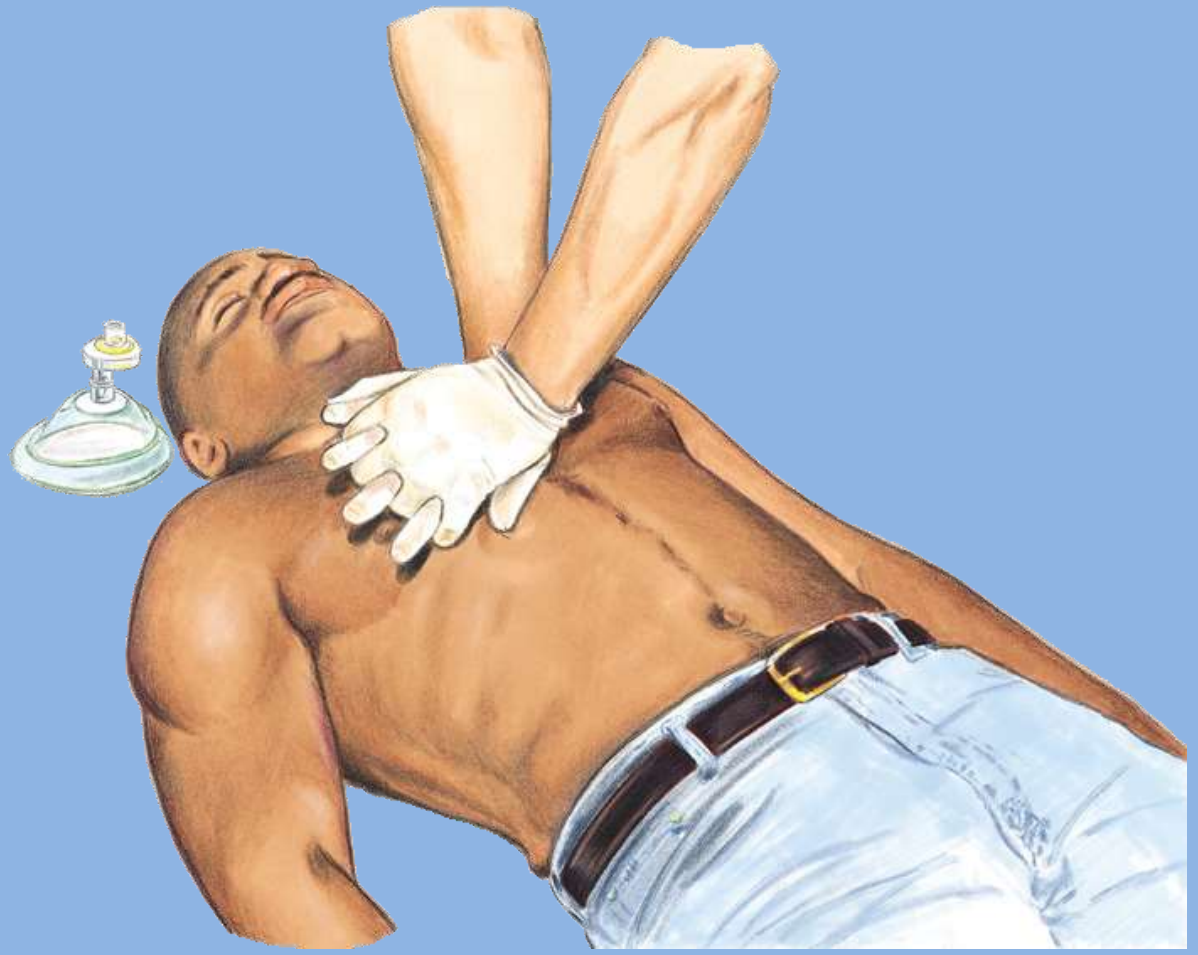
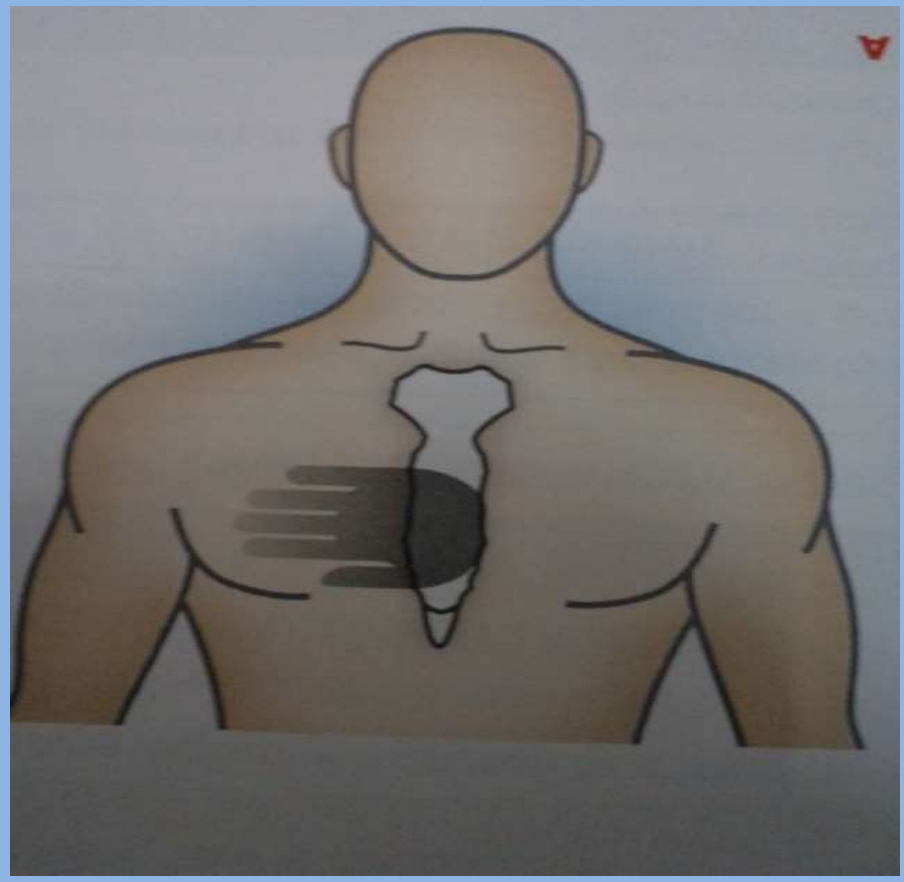
CARDIO PULMONARY RESUSCITATION

30 compressions followed by 2 breaths

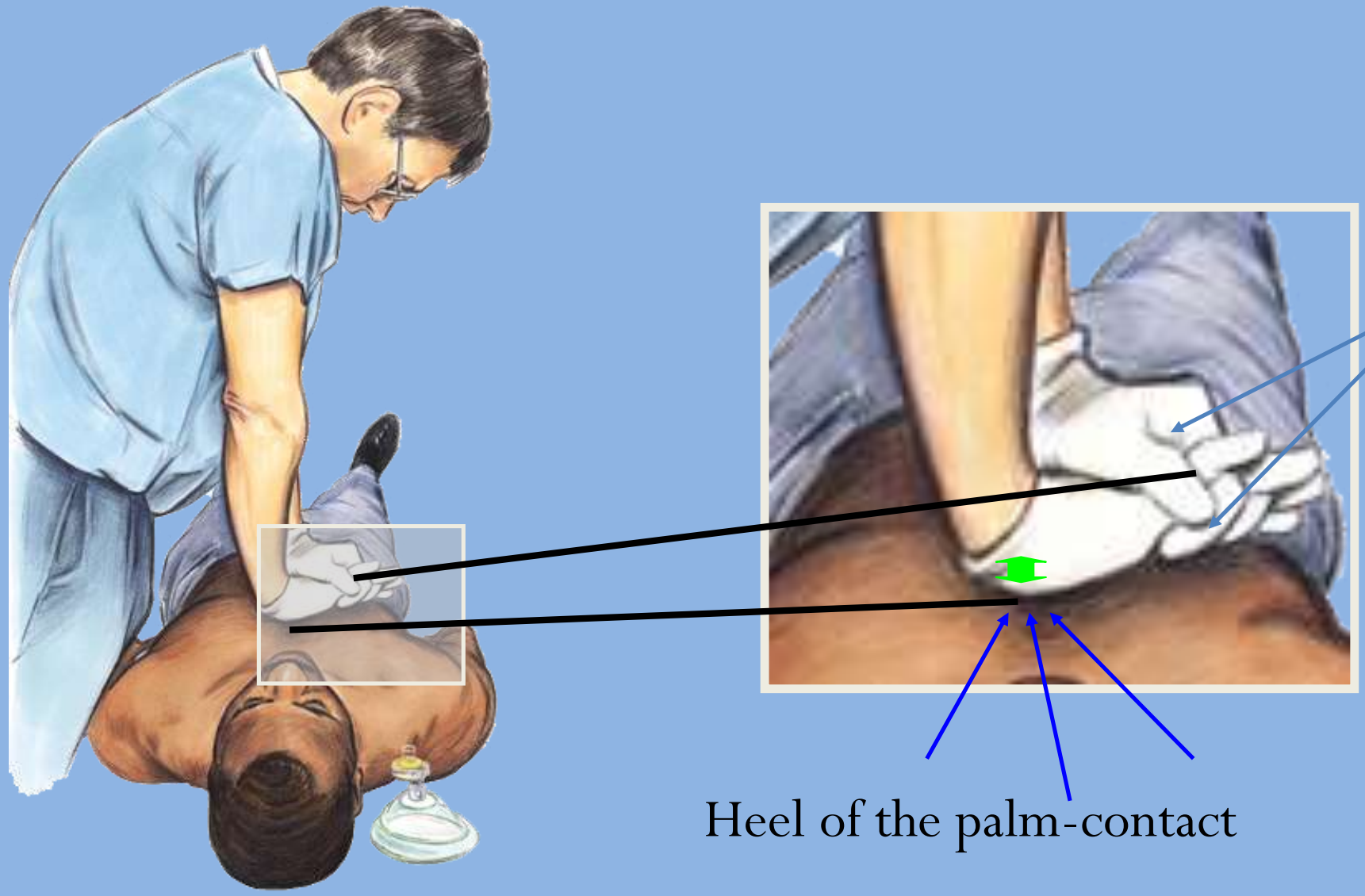


CHEST COMPRESSION : HAND POSITION

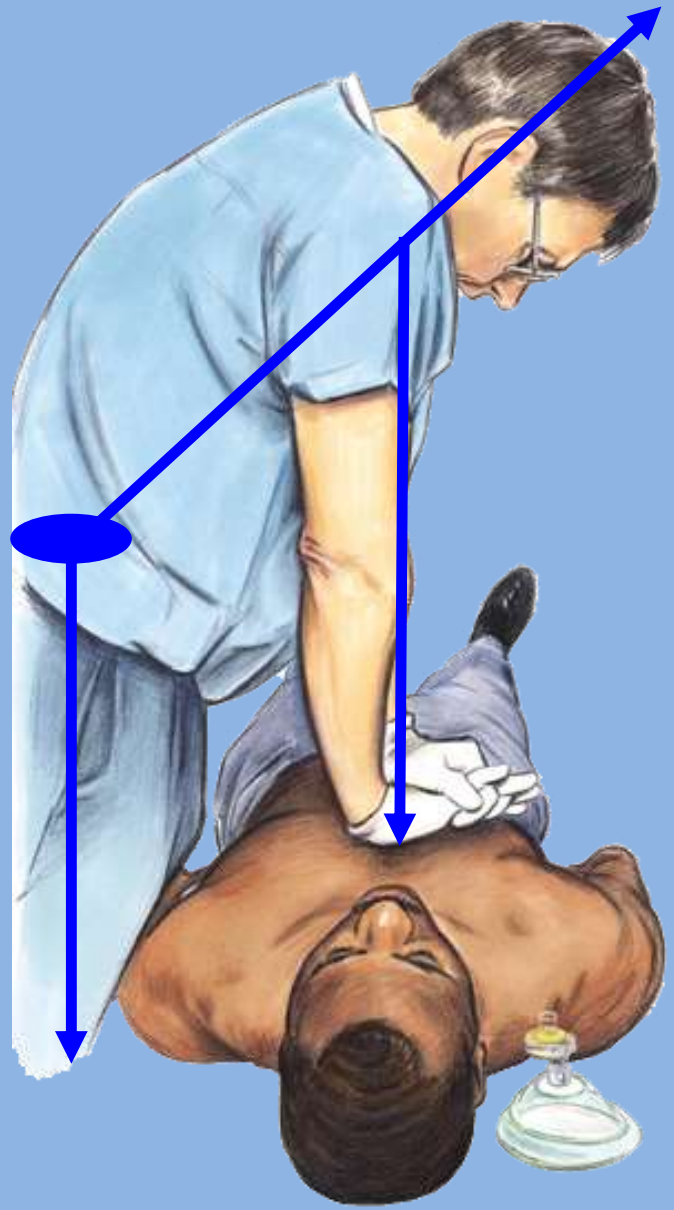


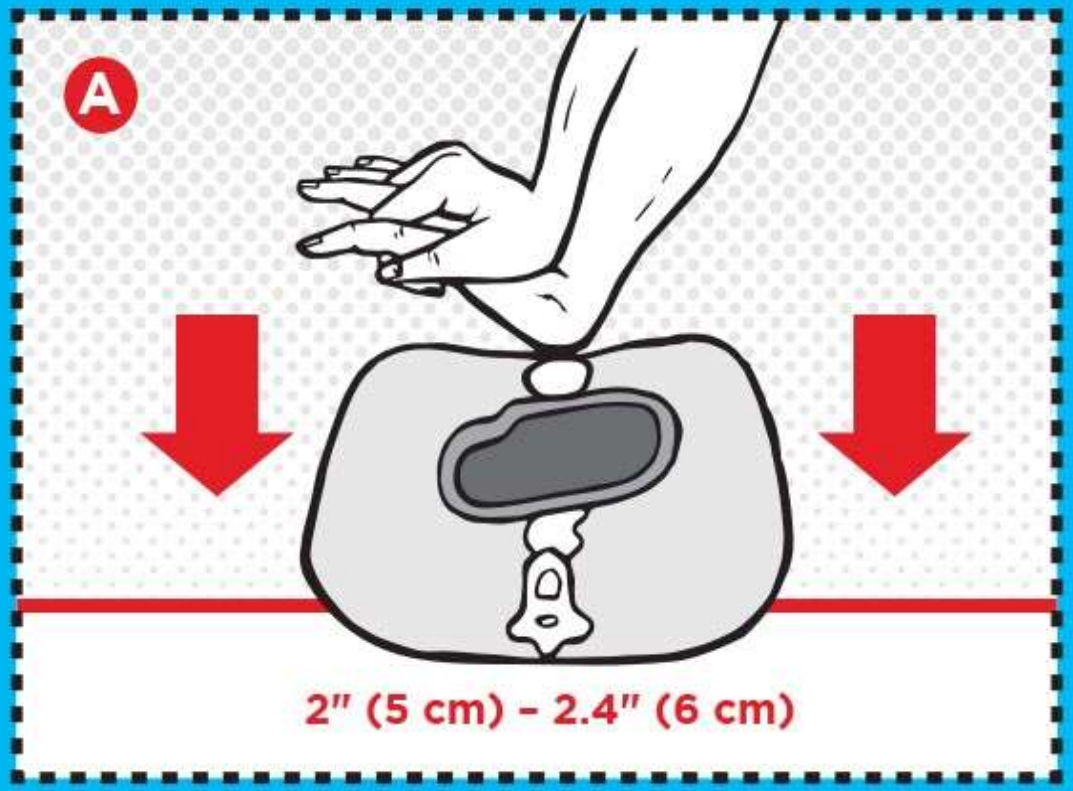


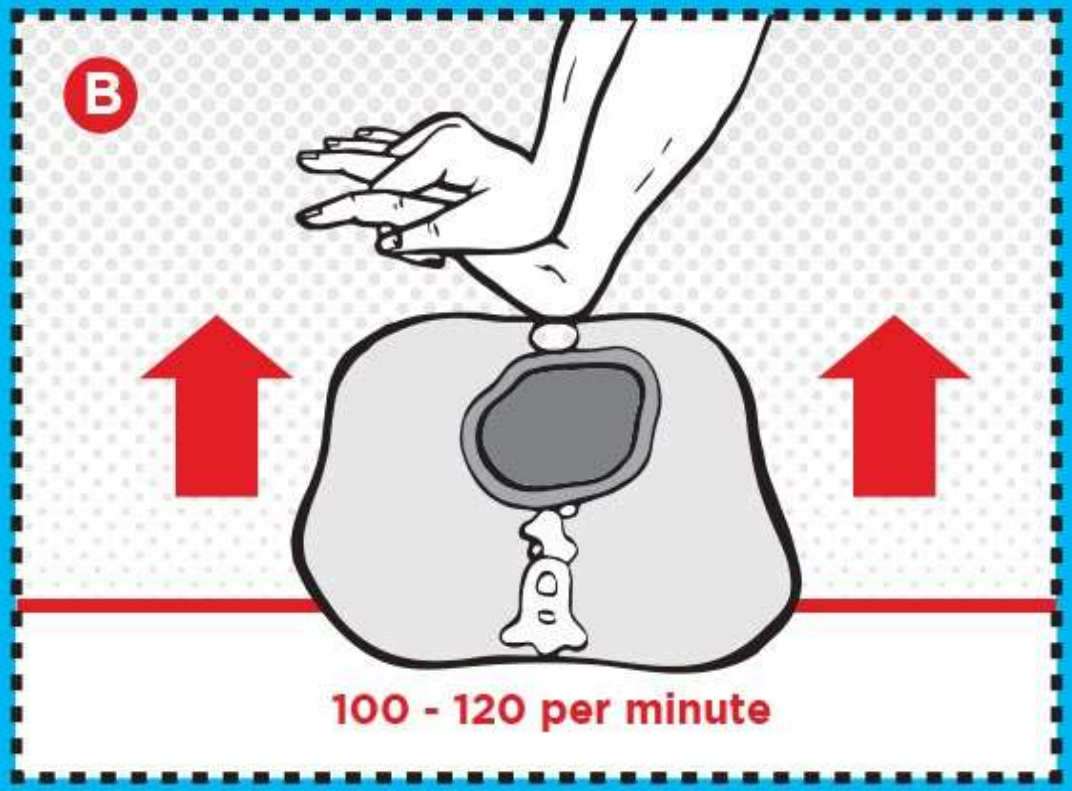
CHEST COMPRESSION



CHEST COMPRESSION







CHEST COMPRESSIONS:

At least 2" (5 cm) and not more than 2.4" (6 cm)

COMPRESSION RATE:

Between 100 and 120 compressions per minute

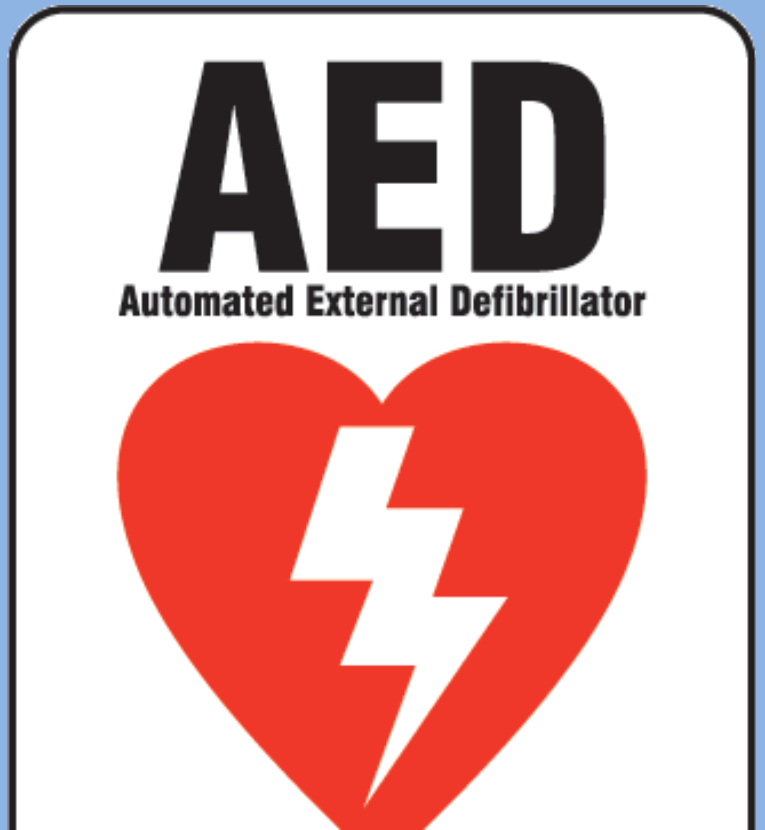
AHA 2015 GUIDELINES FOR CARDIOPULMONARY RESUSCITATION AND EMERGENCY CARDIOVASCULAR CARE

NHCPS.COM

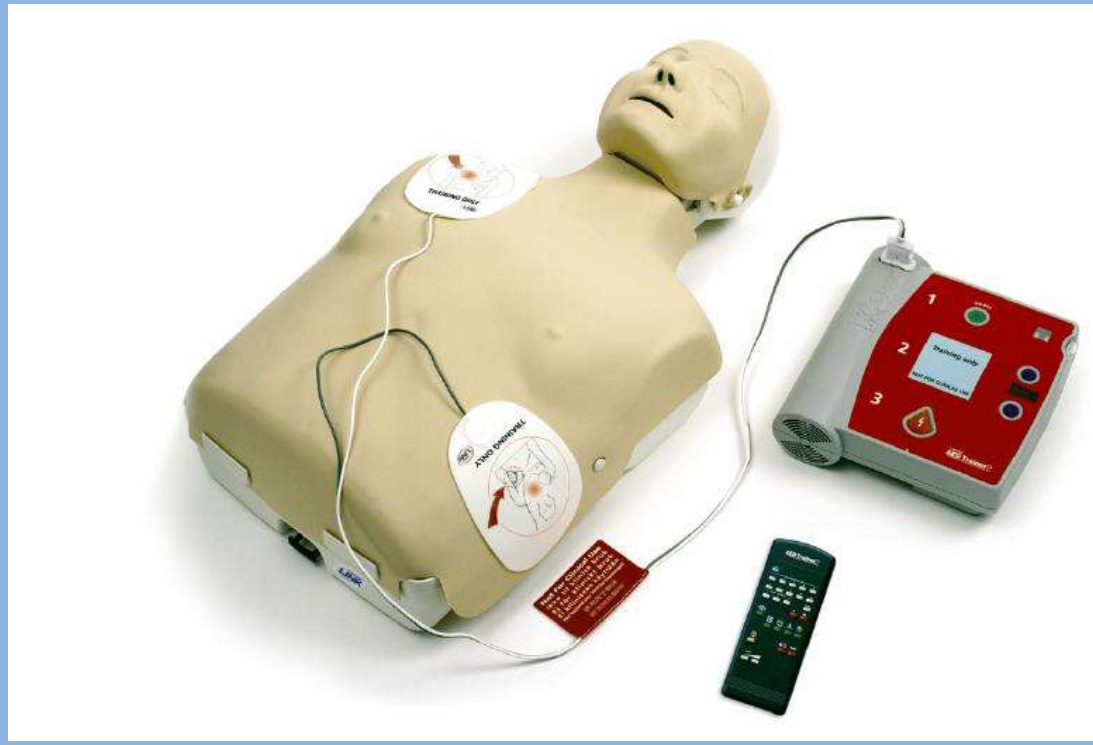
IS CPR ALONE ENOUGH??

Correction of arrhythmias.

CPR – pumps small amount of blood -barely sufficient to keep brain oxygenation.



HOW TO USE AED



- Power on
- Apply pads to victim’s chest; plug pads to AED.
- Continue CPR Without interruption.
- “Clear” as AED Analyzes rhythm- VF, PVT.
- Restart CPR as AED prepares to deliver shock.
- “ Clear “ again as shock is delivered.
- Restart CPR.
- Reassess with AED every 2 minutes until prompted by AED for rhythm check
- Continue till help arrives or victim begins to move.

PULSE CHECK

- Every 5 cycles of CPR
- Every 2 min of CPR

CARDIAC ARREST IN DENTAL OFFICE

"Can effective CPR be performed with victim still in Dental chair?"

YES

- Lower dental chair to allow rescuer to keep elbows straight, shoulder directly over sternum of victim.
- **Under no circumstances should BLS be delayed** or withheld because of inability to move victim to a more suitable location.
- PULSE CHECK- If unsure- start chest compressions- unnecessary CPR is less harmful than not performing.

HANDS ONLY CPR