MEDAVIE HealthEd ÉduSanté

Assisting the ALS Provider

Primary Care Paramedicine

Module: 21

Section: 03

MEDAVIE HealthEd ÉduSanté

ACP scope includes;

Airway Management	• Endotracheal intubation • Surgical airways
Electrical Therapy	• Cardioversion • Pacing
Treatment Options	• Needle decompression
Admin Routes and Pharmacology	• IO • ETT • Multiple medications

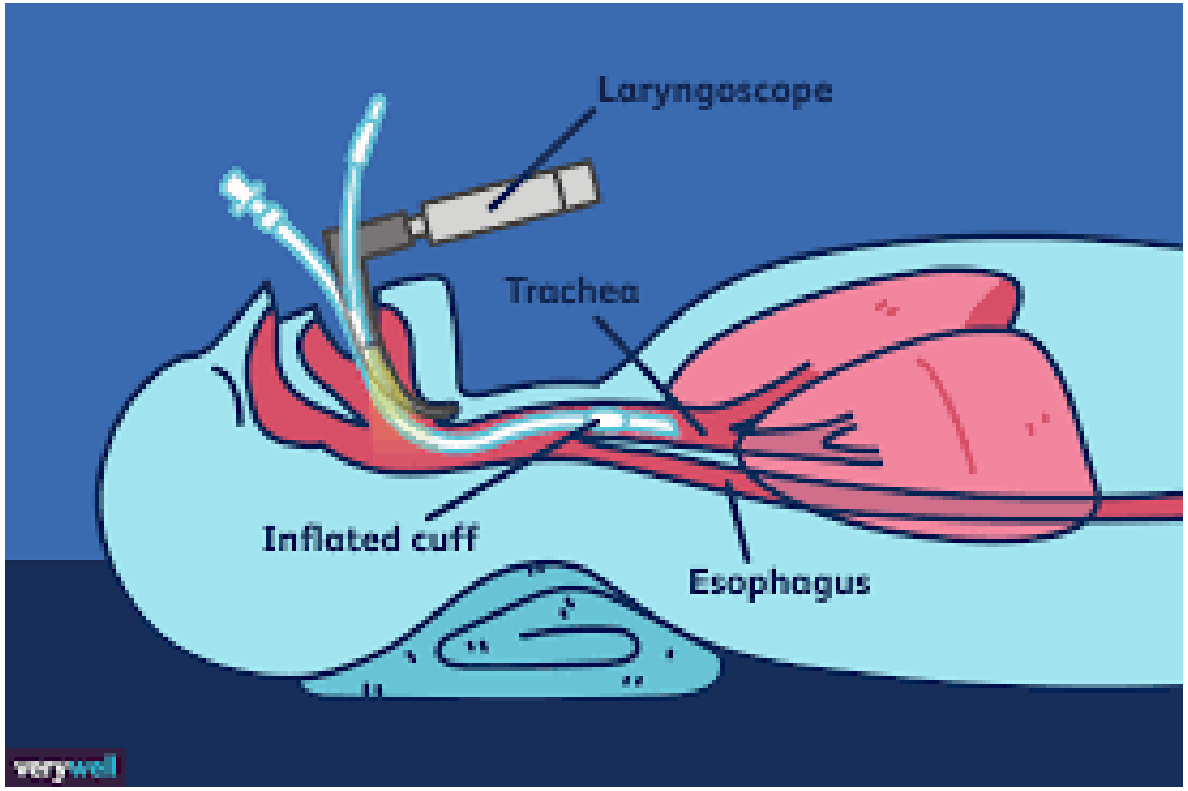
Endotracheal Intubation

- When can it be used
  - Cardiac arrests
  - Respiratory arrests
  - Patients where complete obstruction of the airway is imminent; burns, anaphylaxis
  - Unconscious pt. unable to protect own airway

- Indicated:
  - Obtain an airway
  - Correct an airway
  - Prevent an airway compromise

Equipment

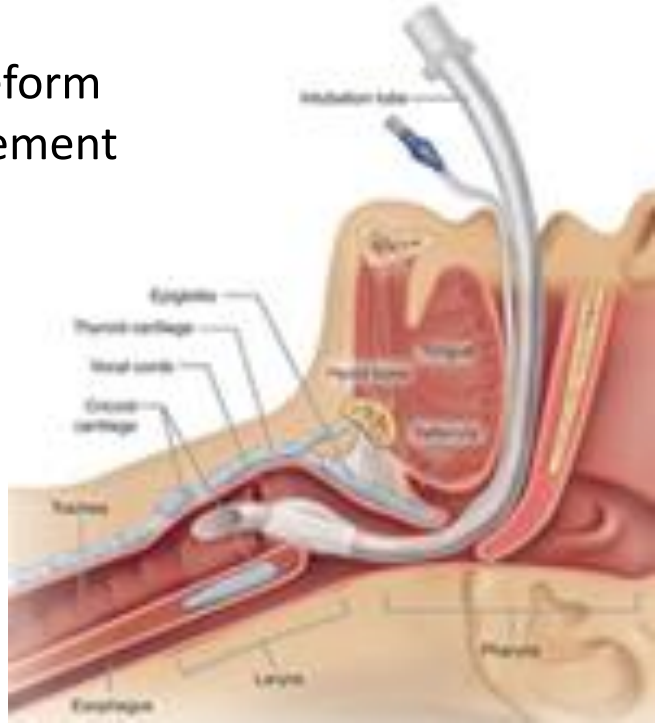
- Macintosh or Miller blade
- Laryngoscope
- 10ml syringe
- Water - soluble lubricant
- ETT
- Stylet
- Securing device
- BVM
- Suction device
- Stethoscope
- Rescue airway



Procedure

- Set up and check all the equipment needed (test ETT, light on laryngoscope, set up BVM)
- Position the patient; sniffing position
- Pre-oxygenate patient with BVM
- Grasp laryngoscope in left hand, insert on the right side of the tongue and advance (pushing tongue to the left side)
- Lift the laryngoscope to visualize the vocal cords, if unable to see apply BURP
- Pass the ETT through the vocal cords
- Withdraw the stylet and inflate cuff
- Connect the BVM and ventilate
- Secure device in place with twill tape

- Verify tube placement via
  - Visualize tube through cords
  - Misting of the tube
  - Chest rise and fall with ventilations
  - Auscultation
    - Breath sounds on both sides of chest
    - Stomach
  - End tidal CO_2 waveform
  - Saturation improvement



Surgical Airway (Surgical Cricothrotomy)

- Indicated:
  - Can’t Ventilate
  - Can’t Intubated

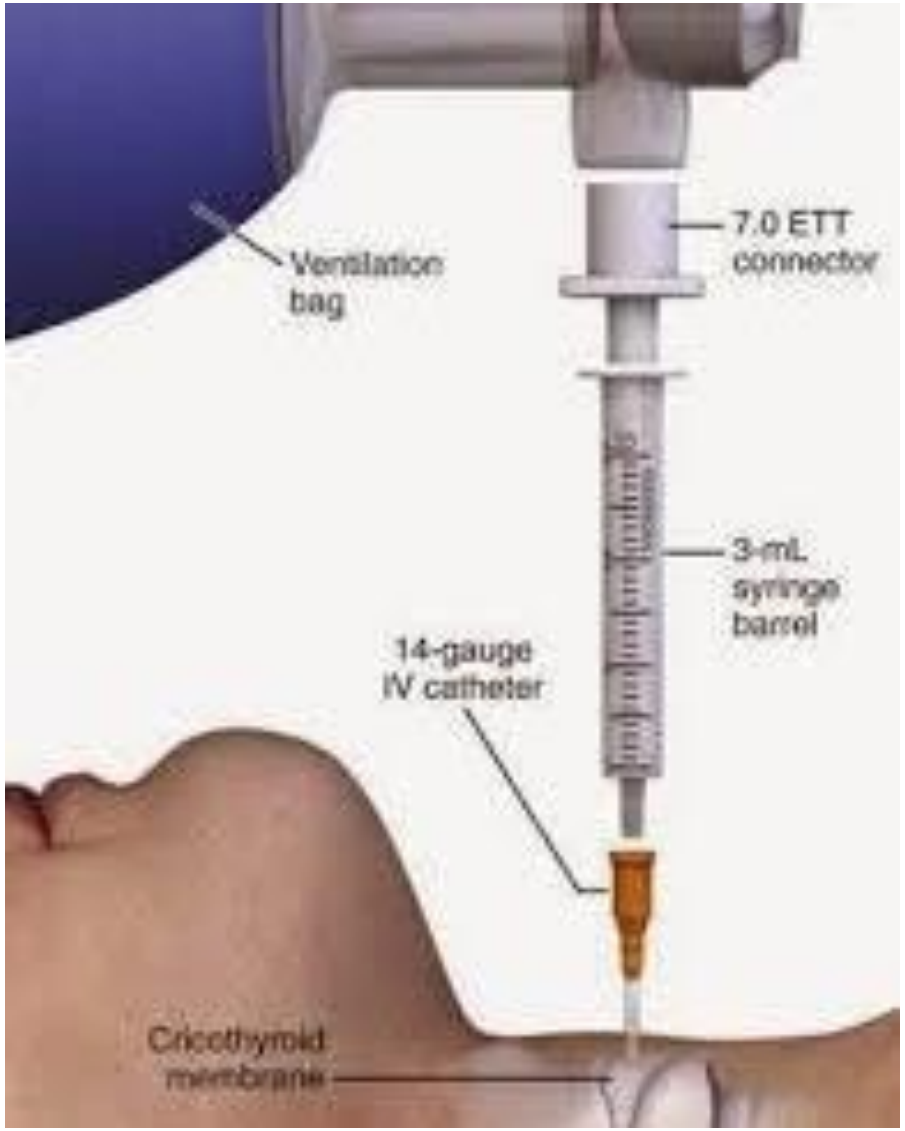
- Equipment;
  - Suction device
  - ETT
  - Gauze
  - Scalpel
  - BVM
  - Stethoscope
  - Iodine

Procedure

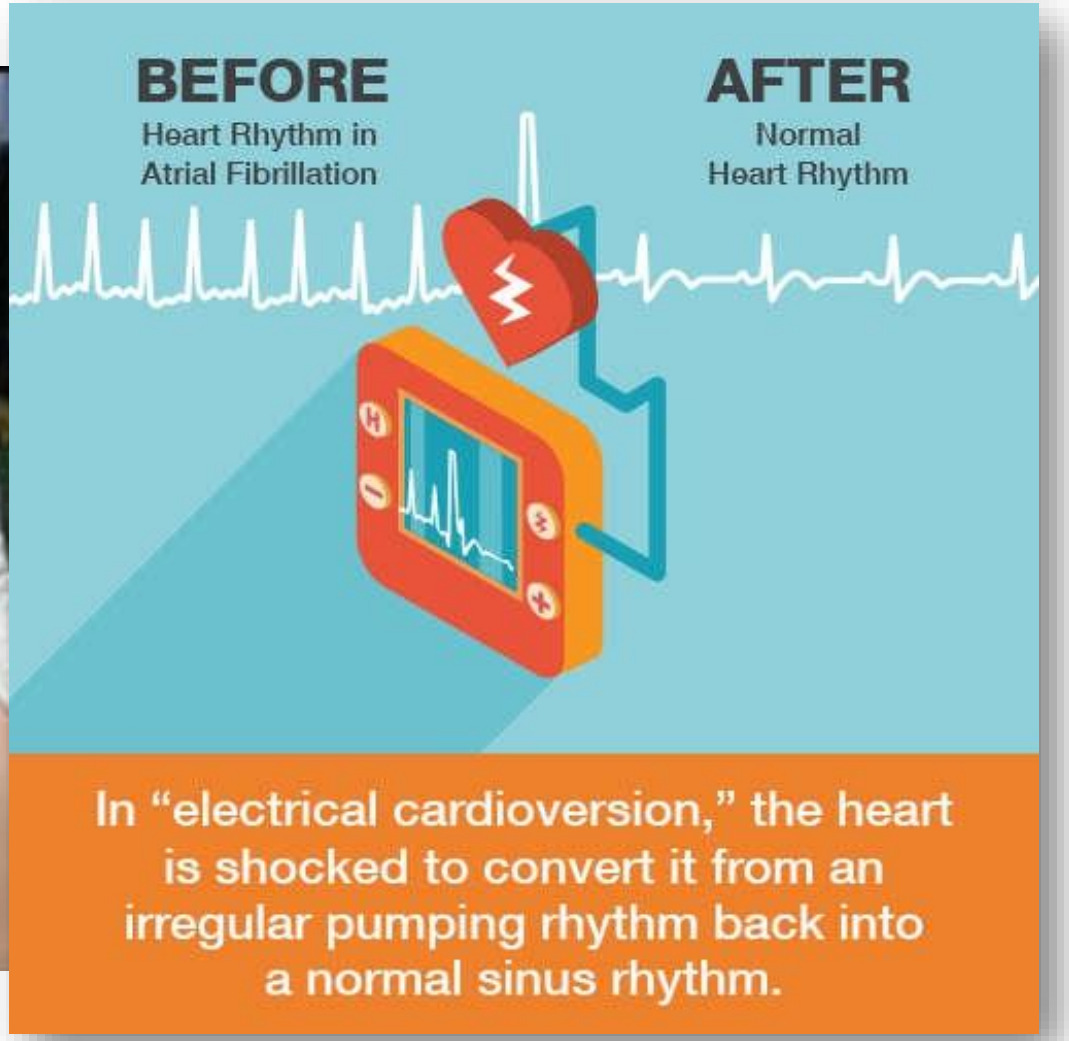
- Universal Precautions
- Place pt. in supine position - with neck in neutral position
- Palpate the cricothyroid membrane (between the thyroid and cricoid cartilages)
- Prep area with iodine wipe
- Stabilize the thyroid cartilage with non-dominant hand
- Use scalpel to make vertical incision through skin; visualize cricothyroid membrane
- Use scalpel to make transverse incision to perforate membrane
- Insert the scalpel handle and rotate 90 degrees or use finger to open the airway
- Insert ETT into the airway
- Inflate cuff of ETT
- Attach BVM and ventilate
- Confirm placement (see ETI confirmation techniques)

What about pediatrics?

- Needle Cricothyroidotomy
  - Age; < 12 years old (due to smaller membrane and close proximity to vasculature)
  - 14 gauge IV catheter, attached to a 3ml syringe with a 7.0 ETT adapter - insert into cricothyroid membrane
  - Attach BVM

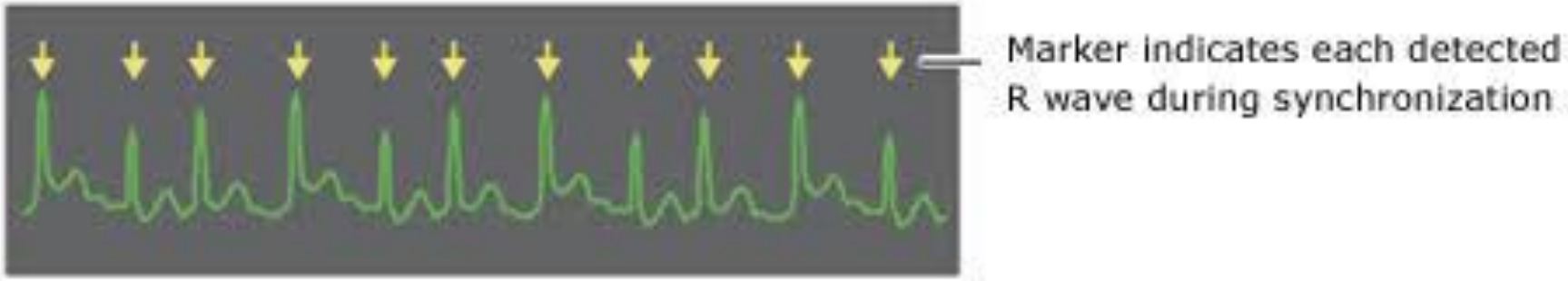


Synchronized Cardioversion

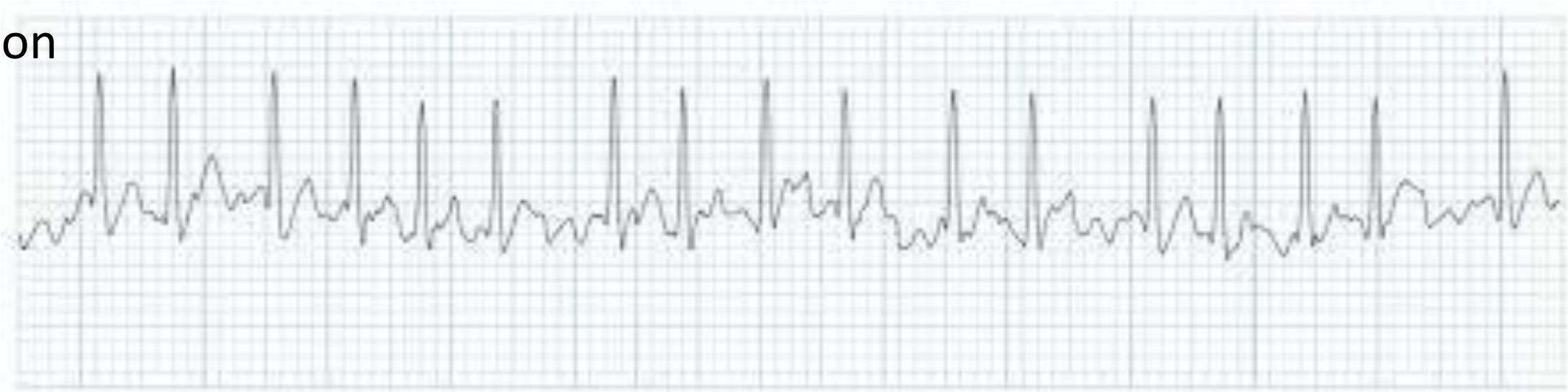


Synchronized Cardioversion

- Intended to completely depolarize the heart, in hopes that the SA node (pacemaker) will take over at its intrinsic rate
- Used to “reset” tachydysrthymias
- Synch - means to mark where the relative refractory period is, so we do not shock them during this period (or it may put person into a VF)



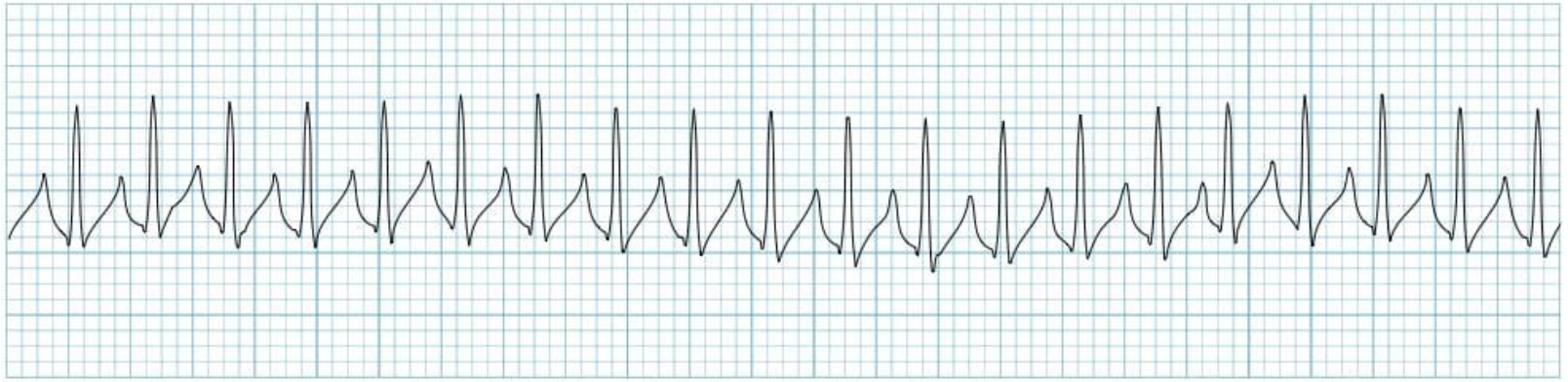
Fibrillation



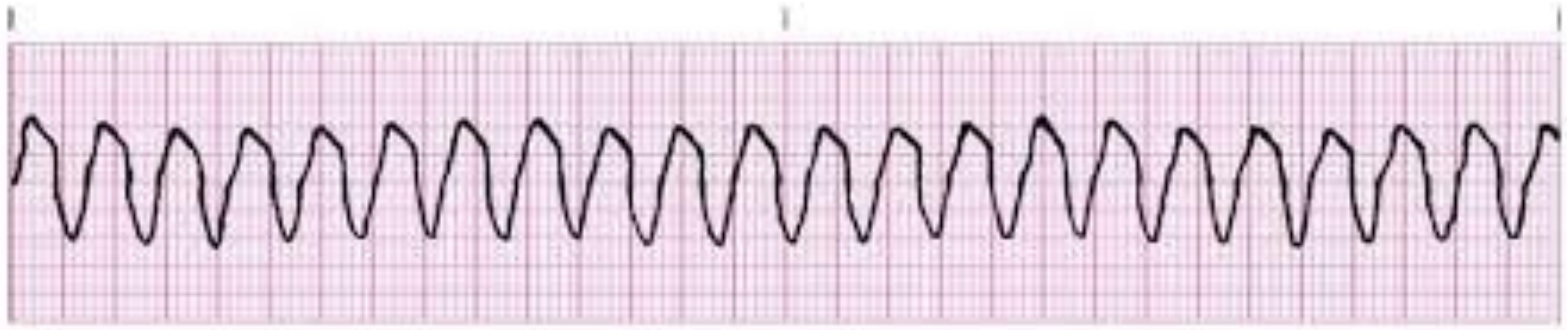
Flutter

Tachycardias

SVT

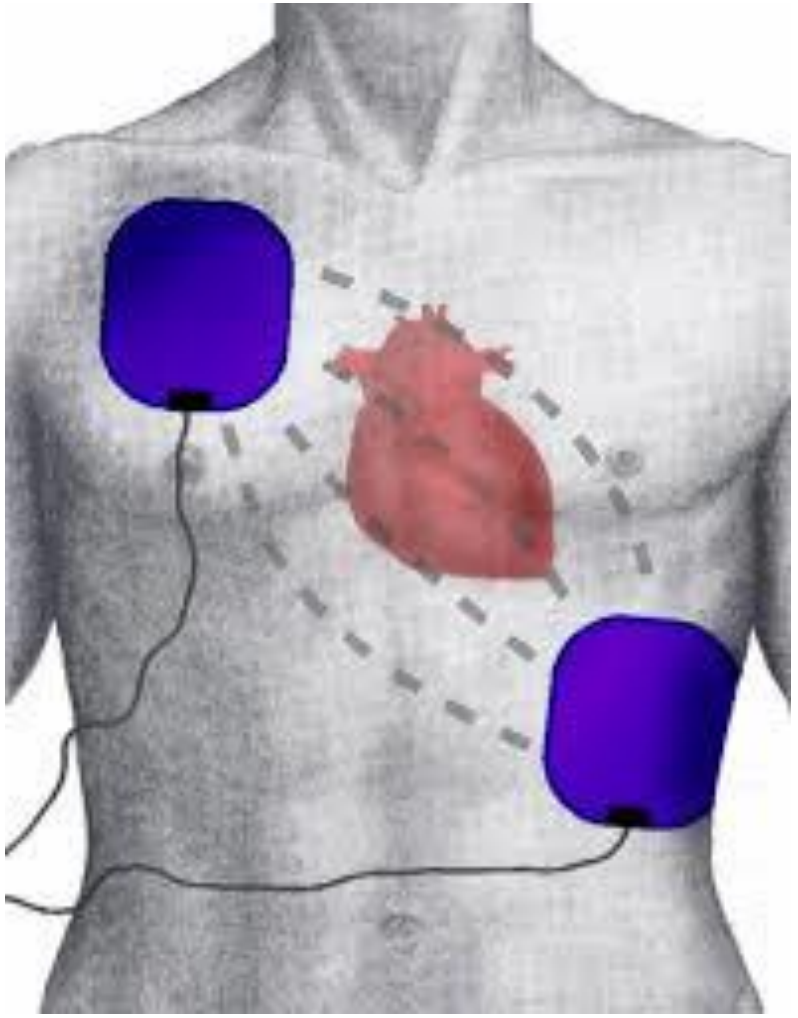


Ventricular tachycardia (with a pulse)



Procedure

- Apply defib. pads to pt.’s chest
- Administer sedation if needed
- Press the Sync button - ensure marker over R wave
- Select appropriate energy joules for pt. (100 J)
- Ensure everyone is clear from pt.
- Charge button
- Press and hold shock button to deliver shock
- Re-assess pt.

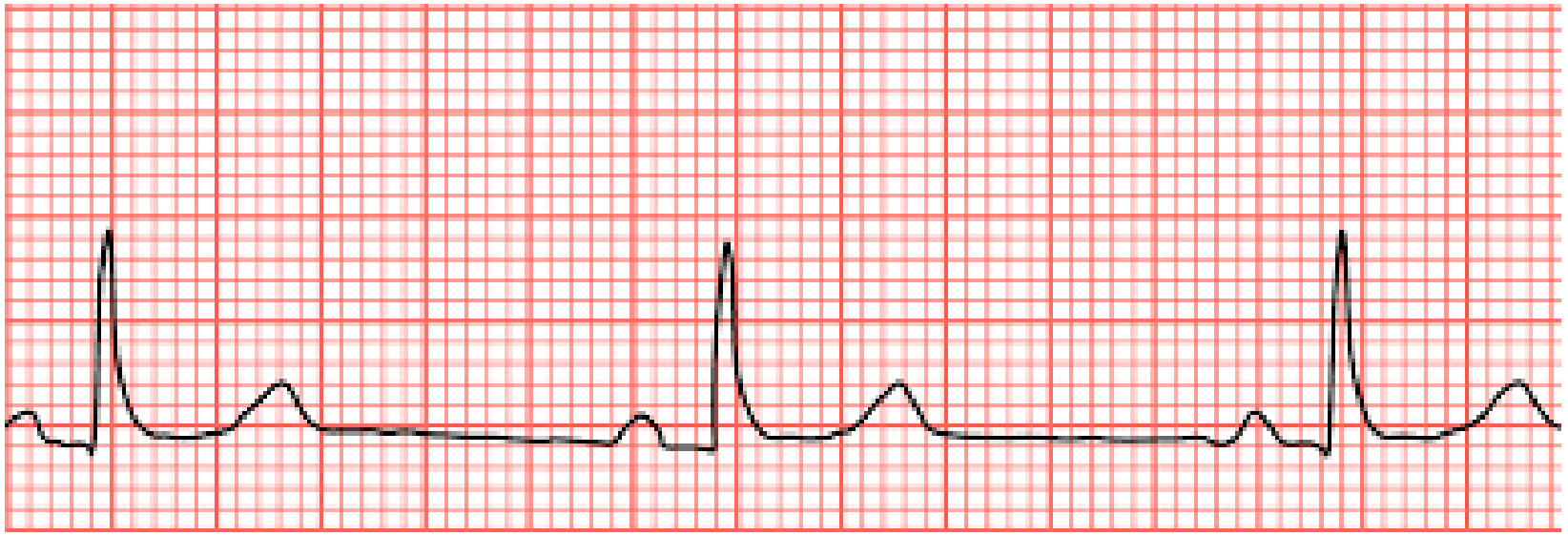


Pacing

- Used for unstable bradycardia's not responding to atropine

OR

- Unstable pt's with 2nd degree type II or 3rd degree AV block



Procedure

- Apply limb leads to pt.
- Apply defib pads to pt.
- Administer sedation/pain management (As Req'd)
- Press Pacer button
- Set Pacer to the desired rate (60 – 70 bpm)
- Adjust / increase the Millvolts until electrical capture completed (presence of a wide QRS complex)
- Determine if mechanical capture has taken place; checking for pulse in pt. to match the monitor
- Check blood pressure to ensure adequate perfusion
- Administer subsequent doses of sedation if required

Intraosseous Access (IO)

- To be used when unable to gain IV access
- Can be inserted into the
  - Proximal tibia
  - Proximal humerus

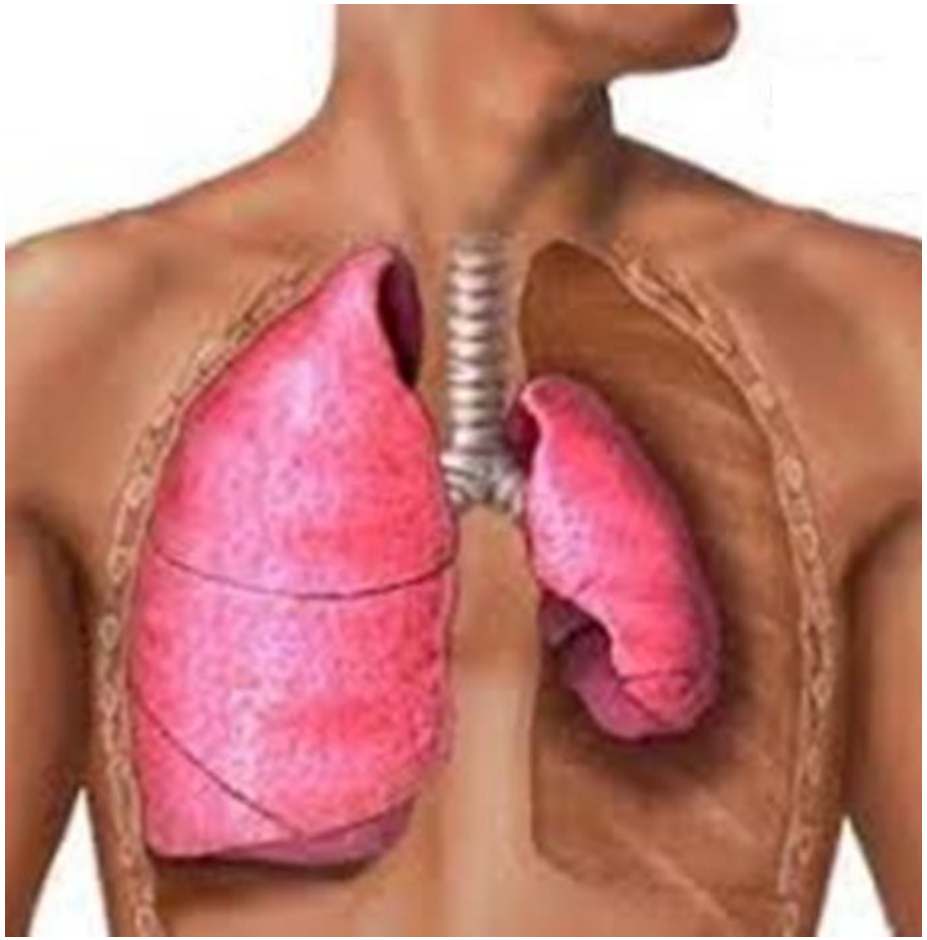
- Contraindictations;
  - Long bone fractures
  - Vascular injury to that extremity
  - Previous IO in that limb (up to 24hrs prior)

Caution - Extravasation is the most common complications - which can lead to compartment syndrome

IO

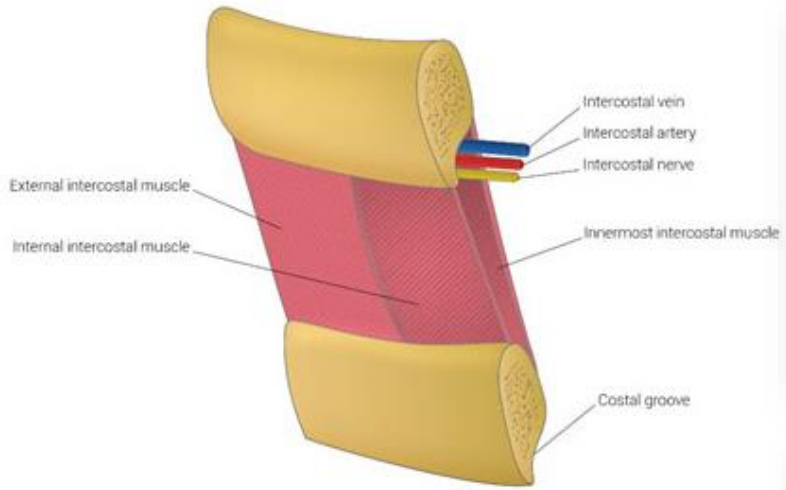
Needle Decompression

- S/S of tension pneumothorax
  - SOB, air hunger
  - chest pain
  - tachycardia
  - hypotension
  - mechanism of injury
  - absent breath sounds
  - JVD
  - tracheal deviation



Procedure

- ID second intercostal space, mid-clavicular on the affected side
- Prep area with iodine pad
- Insert a 14 gauge IV catheter, into the 2nd intercostal, mid-clavicular space
- Puncture parietal pleura
- Remove needle and leave catheter in place
- Secure
- If using a Heimlich valve ensure to keep reassessing to release air build up



Pharmacology

Adenosine

- Class: Antiarrthymic
- Indications: SVT
- Route: IV (large bore IV - closest to the heart as possible)
- Dose:
  - 6mg IV rapid push; repeat dose 12mg IV rapid push

Amiodarone

- Class: Antiarrthymic
- Indications:
  - VF/VT in cardiac arrest (after defib and epi.)
  - VT with a pulse
  - Runs of VT post cardiac arrest
- Route: Given IV/IO
- Dose:
  - Cardiac arrest
    - 300mg IV push, repeat dose 150mg IV after 4min
  - VT with pulse
    - 150mg IV into 100ml bag run over 10 min

Pharmacology

Atropine

- Class: Anticholinergic
- Indications:
  - Symptomatic bradycardia or unstable bradycardia
  - Organophosphate poisoning
- Route: IV/IO
- Dose:
  - Bradycardia 0.5mg every 3-5min
  - Organophosphate 2-4mg repeat every 20min

Calcium Chloride

- Class: Electrolyte
- Indications:
  - Cardiac arrest with suspected hyperkalemia (DKA / renal failure)
  - Suspected hyperkalemia with cardiovascular toxicity (wide QRS, peaked T-wave or hemodynamic instability)
  - Calcium chloride OD with symptomatic bradycardia or hemodynamic instability
  - Respiratory depression after infusing Mag. sulphate
- Route: Given IV/IO
- Dose: 1 g over 3 min repeat in 10 min

Pharmacology

Diazepam

- Class: Benzodiazepine
- Indications:
  - Actively seizing patient (5 mg IV)
  - For sedation after ETI (2.5-5.0 mg IV)
  - Acute alcohol withdrawal with symptoms (5 mg IV) 0min

Dopamine

- Class: Sympathomimetic
- Indications:
  - Shock other than hypovolemic shock
  - Unstable bradycardia
- Route: Given IV/IO
- Dose: 5 mcg/kg/min
  - Max of 20 mcg/kg/min

Pharmacology

Epinephrine

- Class: Sympathomimetic
- Indications:
  - Cardiac arrest 1:10,000 – 1 mg IV/IO
  - Near death anaphylaxis (no reaction to IM epi.) - 1;10,000 - 0.1 mg (1 ml from the 10 ml preload)

Fentanyl

- Class: Narcotic analgesic
- Indications:
  - Moderate to severe pain
  - Severe ischemic chest pain not lessened by nitrates
  - Palliative dyspnea
- Route: Given IM/IN/IV/SQ
- Dose: 25 - 50 mcg (200 mcg max)

Pharmacology

Morphine

- Class: Narcotic analgesic
- Indications:
  - Same uses as fentanyl plus used for procedural sedation (cardioversion or fracture manipulation)
- Route: IV/IO/IM/SQ
- Dose: 2.5 – 5.0 mg (15 mg max)

Sodium Bicarbonate

- Class: Alkalinizing agent
- Indications:
  - Cardiac arrest associated with - hyperkalemia, renal failure, ASA OD, DKA
  - Sodium channel blocker overdose (TCA) with wide complex tachycardia or hemodynamic instability or cardiac arrest
- Route: Given IV/IO
- Dose: 1 mEq/kg initially (0.5 mEq/kg every 10 min)

Pharmacology

Magnesium Sulfate

- Class: Electrolyte, smooth muscle relaxant, antiarrythmic
- Indications:
  - Torsades de pointes (2 g IV push)
  - Severe asthma (2 g in 100ml NS bag over 5 min)
  - Pregnant patient in third trimester with seizures (Eclampsia) (4 g IV in 100ml bag over 30 min)

Midazolam

- Class: Benzodiazepine
- Indications:
  - Tonic-clonic seizures (5mg IN)
  - Sedation for ETI, pacing, cardioversion (1-2mg IV)
  - Chemical restraint for violent pts over 16 y/o (5mg IM or IN)
  - Procedural sedation (see above sedation)