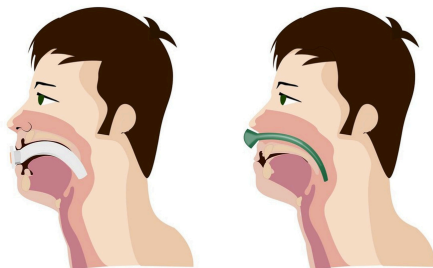
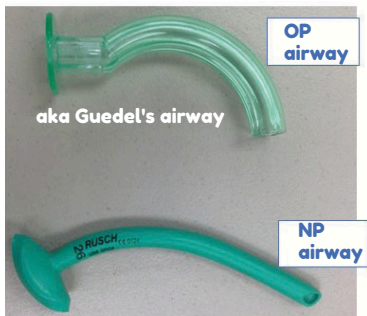




Airway adjuncts

Keeps the airway open by preventing **tongue fall**



Oral airway

Nasal airway

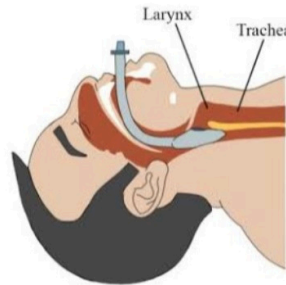
- OP airway can cause **gag reflex** in conscious patients
- Hence NP airway used in conscious patients

Measurement of size

From mouth to angle of mandible

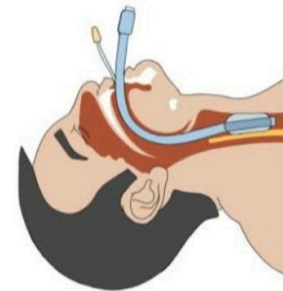


Airway devices



Laryngeal mask airway (aka Supraglottic airway devices)

- **Easier** to insert (used in difficult intubations)
- Blind procedure (no laryngoscopy)
- Increased risk of **aspirations**



Endo-tracheal tube

- **More secure** airway (lower risk of aspirations)
- **Laryngoscope** is needed

Laryngoscope



McIntosh

- Curved blade
- Used in adults



Miller's

- Straight blade
- Used in pediatrics



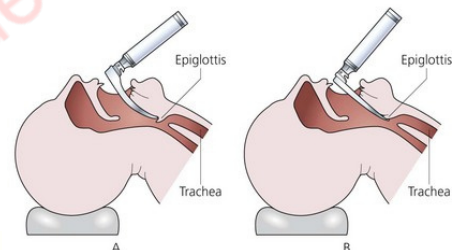
McCoy

- Has a lever



Video Laryngoscopy

- Best for difficult intubations

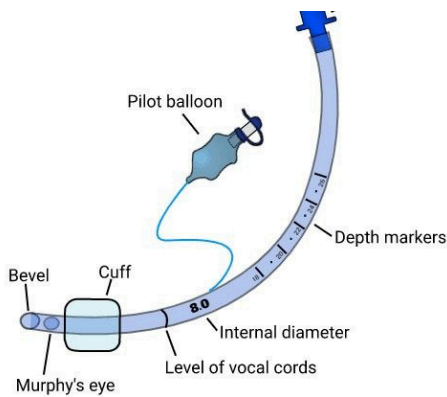


Straight blade for the **larger epiglottis** in pediatric patients



- **Left hand**
- **Right side of mouth**
- **Sweep tongue from right to left**
- **Pressure forward and upward**
- **Upper incisors m/c injured**

Endo-tracheal tube



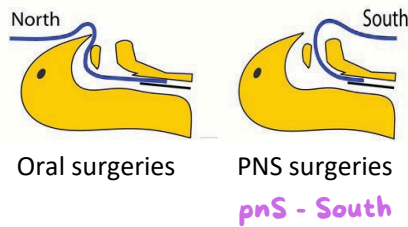
Uncuffed

- Used in **pediatric age group**
- To avoid **sub-glottic stenosis**

To confirm intubation

- ETCO² on **capnography**

Modifications of ET tube



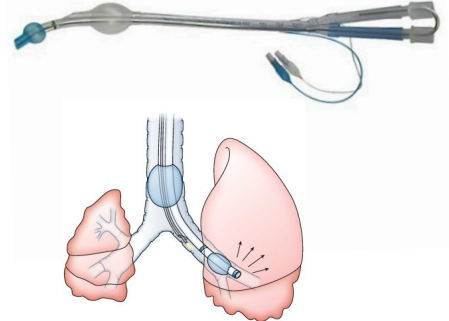
Oral surgeries

PNS surgeries

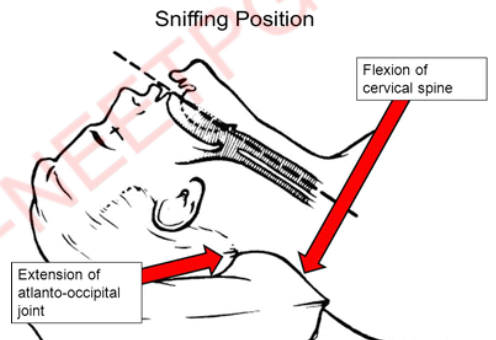
pnS - South

Double lumen ET tube

- 2 cuffs, 2 ports, 2 tubes
- Used for **single lung ventilation**



Position to insert ET tube



- Flexion at C spine
- Extension at A-O joint

Vowels stick



Bougie

Used as **guidewire** to insert ET tube



Intubation stylet

- Flexible and metallic
- Used to **alter the shape** of ET tube

Laryngeal mask airway

First generation LMA

- Only **one tube** for ventilation



LMA classic

Second generation LMA

- Two tubes
- One for **ventilation** and one for **gastric aspiration**



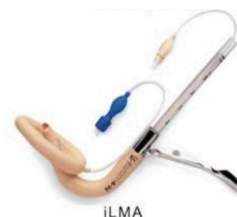
LMA Supreme

LMA Proseal

- **LMA Proseal** is the most commonly used LMA

Intubating LMA

- Can be used to **intubate**



iLMA

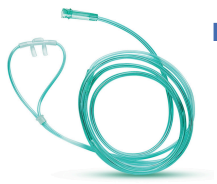
I-Gel LMA

- Takes up **heat** from body and expands to seal



i-gel

Oxygen delivery systems



Nasal prongs

40%

5 L/min



Hudson's mask

60%

10 L/min



Venturi mask

60%

15 L/min

- Fixed O²
- Bernoulli's principle



Non rebreathing mask

85%

15 L/min



High flow nasal cannula

100%

60 L/min

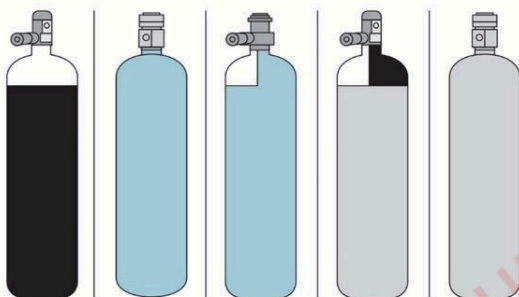


C- PAP (NIV)

100%

No limit

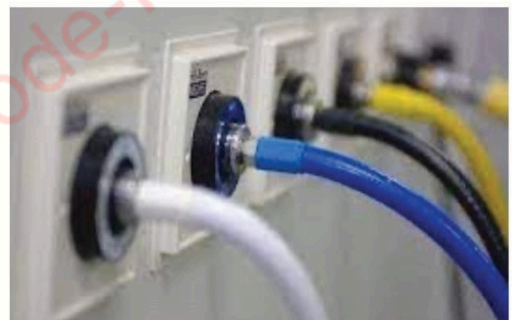
Gas cylinders



- **B/w** is oxygen
- Nitrous oxide - **blue**
- **Blue and white** - N²O with oxygen
- **Mixed** - Air
- **All grey** - CO²

Pressure - **2000** Psi for all (750 for N²O)

Diameter index safety system



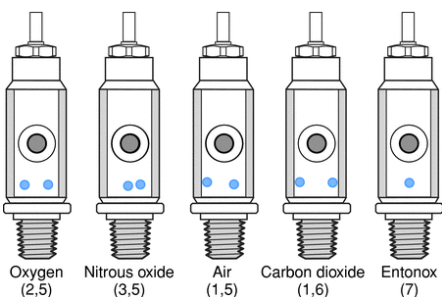
- For pipelines
- Intermediate pressure systems

- **White** - Oxygen
- **Blue** - N²O
- **Black** - Air
- **Yellow** - Vaccum



Yellow vaccum cleaner

Pin index safety system

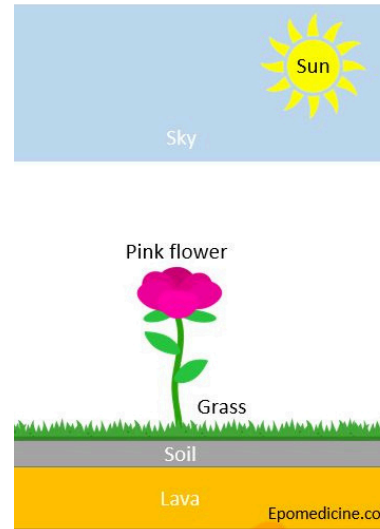


- Air - (1,5)
- O² - **Two** atoms (2,5)
- N²O - **Three** atoms (3,5)
- CO² - (1,6)
- Entonox -1

Needle Gauge



Orange	14	Orangutan - Largest
Gray	16	
White	17	Wait for 1 year
Green	18	Green signal at 18
Pink	20	
Blue	22	
Yellow	24	Yellow - sevoflurane - kids
Violet	26	



- Measured in **gauge**
- Gauge is inversely related to diameter
- Minimum **18 gauge** needle to be used in ATLS - 96ml/min



Foley's and NG tube

Green	14Fr
Orange	16Fr
Red	18Fr
Yellow	20Fr
Purple	22Fr
Blue	24Fr



GORV
from PB

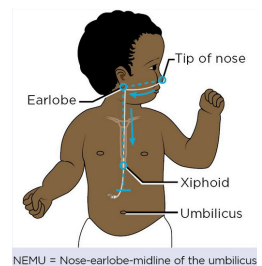
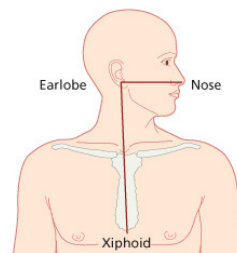
- Measured in **French (Fr)**
- French is directly proportional to diameter
- **External diameter** is considered here
- Females - **14 Fr**
- Males - **16 Fr**

French are extrovert
Female- 14

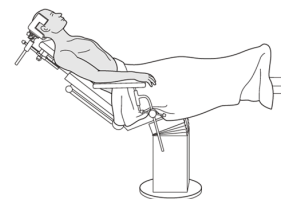


NG tube insertion

- Measure size - **NEX** in adults and **NEMU** in kids



- Fowler's position (aka **beach chair position**)

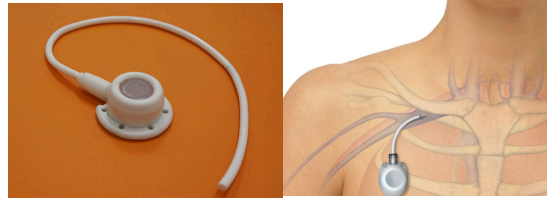


- Fowler's position is also used in various neurosurgeries
- Risk of **air embolism**

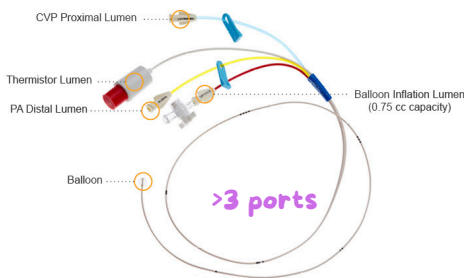
Central Line



Central venous catheter



Chemo port
For chemotherapy



Swan Ganz catheter

- PCWP measurement
- Core temperature can be measured

Temp at lower end of esophagus is m/c used for core body temperature

- **Internal Jugular vein** - Safest
- **Subclavian vein** - Risk of pneumothorax
- **Femoral vein** - Line related sepsis, thrombosis

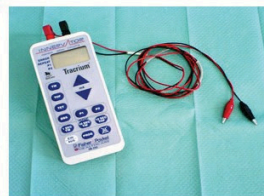
Monitoring of Anesthesia



Bispectral Index

- Intra-op **depth** of anaesthesia measurement
- BIS of **40-60** is ideal

Electromyography



Mc nerve: Ulnar Nerve (adductor pollicis tested)
2nd mc nerve: Facial nerve (orbicularis oculi)
MC stimulus: Train of Four (0.5 sec apart)
Extubation TOF: > 0.9

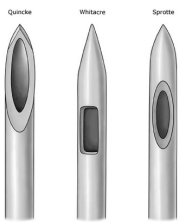
Central Neuraxial Anesthesia

- Skin and subcutaneous tissue
- Supraspinous ligament
- Interspinous ligament
- Ligamentum flavum

Epidural Anesthesia

- Dura mater
- Arachnoid membrane

Spinal Anesthesia



- No wings
- Special tip



Post-dural-puncture Headache

- Onset **12-72hrs** and last for **1-2 weeks**.
- Aggravated by sitting and relieved by lying down.
- Risk factors : **Young, pregnant, female, large needle**
- Prevention by smaller needle
- Mx : **Caffeine** and analgesics
- Refractory : Epidural blood patch
- Early ambulation **doesn't** increase risk of PDPH



- Stripes
- Wings

Tuohy Needle

- Epidural space is a **negative pressure space** (loss of resistance is felt)
- Continuous anesthesia can be given

Post neuraxial shivering

- More with **epidural** than spinal anesthesia
- The most efficient way to prevent is by **avoiding cold epidural** and intravenous fluids.
- **IV Meperidine** is the DOC for it.
- Tramadol is also useful in post anesthesia shivering.

Spinal cord extent

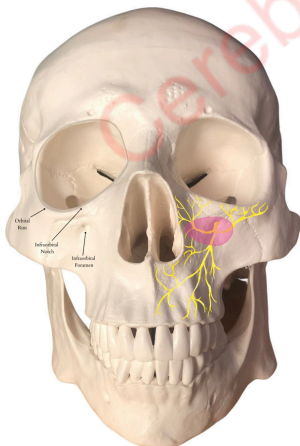
- At birth : **L3** (upper border)
- Adults : **L1** (Lower border)

like collagen in would healing

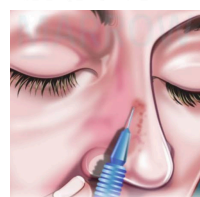
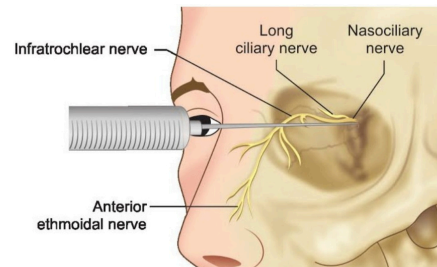
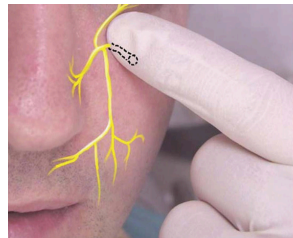
Level at which LP done

- Lumbar Puncture done at **L3-L4** in **adults**
- **Posterior superior Iliac crest** is the landmark
- In **children** at level **L4-L5**

Regional Anesthesia



Infra-Orbital nerve block



Anterior ethmoidal nerve block



Naso - ciliary nerve block

Inhalational Anaesthetics



- | Sevoflurane | Isoflurane | Halothane | Desflurane |
|--|--|--|--|
| <ul style="list-style-type: none">• Sweet smelling• Induction in children• Cardiac surgery• Toxic compound-A (nephrotoxic) | <ul style="list-style-type: none">• Liver transplant• Coronary steal phenomenon | <ul style="list-style-type: none">• All Hepatitis• Only used in asthmatics (bronchodilator) | <ul style="list-style-type: none">• Specialised surgeries• Special TEC-6 vaporiser• Pungent smell (can't be used to induce) |

MAC - Minimum alveolar concentration

- It's ED_{50} for anaesthetics
- Min dose at which there is immobilisation
- **Inversely related to potency** of the inhalational agent
- Desflurane > Isoflurane > Halothane

Hidden potential
Halothane > Isoflurane > Desflurane

Blood/gas coefficient

- Indicates **time needed for induction**
- More BG - More time needed (more in blood)
- Less BG - Less time needed (more in alveoli)
- Xenon has the lowest BG coefficient (quickest induction and recovery)
- Halothane > Isoflurane > Desflurane

Nitrous Oxide

- Minimum potency But used due to its **second gas** and **concentration effect**
- **Second gas effect** : Better uptake of secondary gases because of N_2O
- **Concentration effect** : Gets absorbed in blood quicker and hence more partial pressure O_2 in alveoli
- **Fills empty cavities** : Because it vaporises so easily, it can get **accumulated in body cavities**, hence avoided in closed space surgeries (ear surgeries, pneumothorax)
- **Diffusion hypoxia** : During recovery, rapid elimination causes a **reduction in the partial pressure of oxygen** leading to **hypoxia** (Pre-oxygenation with 100% O_2 needed)
- Maximum incidence of **PONV** with Nitrous oxide

IV Anaesthetics



Propofol

- DOC for **TIVA** (Total IV Anesthesia)
- DOC for - **daycare/specialised** sx
- DOC in porphyria patients
- Contains **egg** (C/I in egg allergy)
- **Painful injection**
- **Anti-emetic** properties



Ketamine

- NMDA antagonist at **Phencyclidine** site
- **Dissociative anesthesia**
- **No pain** after recovery
- DOC in **shock** - \uparrow ICP, \uparrow IOP
- DOC in **asthma**
- Has **addictive** potential (Schedule X)
- Increased **salivation**
- C/I in hypertensive/ glaucoma/ epileptics



Etomidate

- DOC in **cardiac** surgeries
- S/e : Adrenal supression

Heart for my "date"



Thiopentone

- DOC in seizures (**neuroprotective**)
- DOC in **hyperthyroidism**

Cardiac surgery

- Inhalational : Sevoflurane
- IV agent : Etomidate
- NDMR : Vecuronium

Asthma

- Inhalational : Halothane
- IV agent : Ketamine

Neurosurgery

- Inhalational : Desflurane
- IV agent : Thiopentone

Day care anaesthesia

- IV agent : **Propofol**
- Inhalational : **Sevoflurane**
- NDMR : **Rocuronium**

Local Anesthetics

- Na channel blockers (**inactivated** state)
- Lignocaine aka lidocaine is an intermediate acting LA (DOC in **Bier's block**)
- **Cardiotoxic** - Bupivacaine (not used for Bier's block)
- LA toxicity : CNS + CVS effects (DOC : **20% Intra-lipid**)

Muscle Relaxants

Non Depolarising muscle relaxants

- Curare drugs
- **Competitive antagonist** of acetylcholine
- Reversal is via **Neostigmine**
- **Vecuronium** - Most cardio stable
- **Rocuronium** - Day care anaesthesia
- **Atracurium** and **Cis-atracurium** safe in renal and liver failure
- **Pancuronium** - Longest acting

} Reversal by **Sugammadex**

Can cause post op **paralytic ileus** and **urine retention**

Neostigmine

- Used for **reversal** of NDMR
- **Acetylcholine esterase inhibitor** (indirectly acting **cholinergic**)
- Decreased breakdown of acetylcholine at the motor endplate - **more Ach**

Hoffman elimination

- **Atracurium** and **Cis-atracurium**
- Spontaneous **non-enzymatic** degradation
- Safe in **Liver** and **Renal failure**
- By product - **Laudanosine** (Seizures)

Depolarising muscle relaxant

- Succinylcholine (aka **Suxamethonium**)
- It has a **rapid-onset** (30–60secs) and **short duration** of action
- **Rapid hydrolysis** by plasma cholinesterase (aka **pseudocholinesterase**)
- Because of fast onset and recovery, it's the muscle relaxant of choice in **Rapid sequence intubation** (RSI)
- **Increases gastric pressure** and can cause **hyperkalemia** (hence *Rocuronium* is used in RSI now)
- Causes post op **Muscle pain**

Post op **rigidity** due to - **Fentanyl** (opioid)

Malignant Hyperthermia

Genetic predisposition

- Mutation of ryanodine receptor (**Ryr 1 gene**), located on **chr 19**.
- Ryr 1 is responsible for **calcium release** from the **sarcoplasmic reticulum**.
- Mutated Ryr-1 releases **too much calcium** on certain triggers causing spastic contractions

Trigger

- **Inhalational anesthetics**
- **Succinylcholine** (DMR)

Presentation

- **Rigidity** and **muscle spasm** (masseter spasm)
- High **fever** and **sweating**
- Increased metabolism : **EtCO₂ increases** (*step ladder pattern* on capnography)
- Muscle damage : **↑ K⁺** (hyperkalemia)

Management

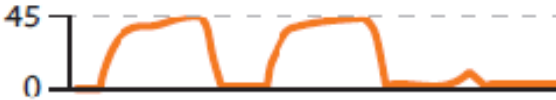
- **Dantrolene Sodium + 100 % O₂**
- Discontinue causative agent
- Electrolyte correction

Capnography

- Surest sign of endotracheal intubation
- Step-ladder pattern - **Malignant hyperthermia**

Sudden loss of waveform

ETT disconnected, dislodged, kinked or obstructed.



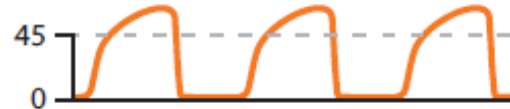
CPR assessment

Attempt to maintain minimum of 10 mmHg



Shark fin pattern (bronchospasm)

COPD, asthma



Hypoventilation



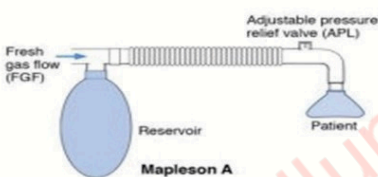
Hyperventilation



Mapleson Circuits

Adults - Mapleson A, D

- A - APL adjacent (**spontaneous**)
- D - APL distant (**controlled**)



Bane's circuit (co-axial)

- Tube within tube
- Modification of type D

Pediatrics - Mapleson E, F

- E - Ayre's T tube
- F - Jackson Reece

Spontaneous ventilation in children

Soda Lime

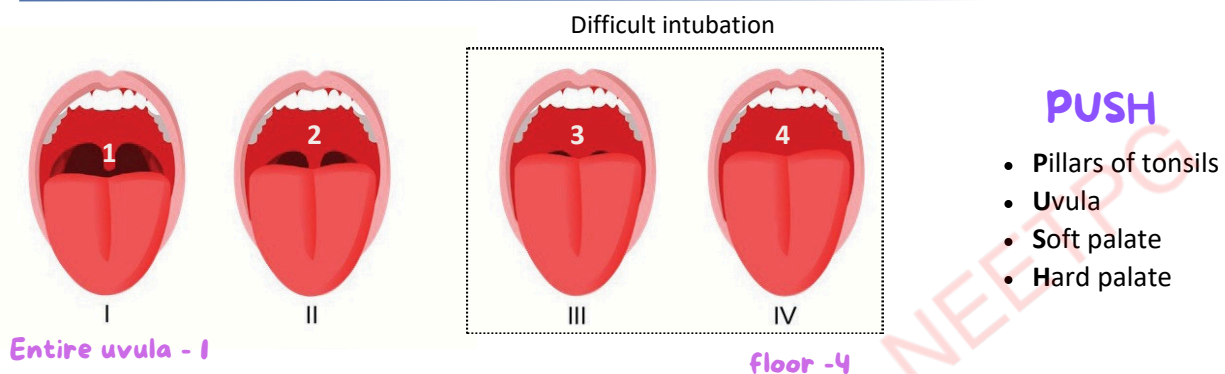
- Active ingredient that absorbs CO_2 is CaOH^2 (80%)
- If NaOH - Soda lime, If BaOH^2 - BARALYME
- Small amount of KOH present.
- End product - CaCO_3 + NaOH (sodium hydroxide is regenerated)

Sevoflurane reacts with soda Lime to produce **Toxic compound -A**

One liners

- Pre-op drug DOC to reduce anxiety : **Midazolam**
- Pre-op drug DOC to reduce secretions : **Glycopyrrolate**
- Pre-op Antibiotic time : **30mins - 1hr** before incision (Cefazolin)
- MC nerve injured intra-op : **Ulnar nerve**
- MC intra-ophthalmic complication : **Corneal abrasion**
- Post op Vision loss mcc : **Ischemic optic neuropathy**
- Max PONV with : **Nitrous Oxide**
- PONV DOC : **Ondansetron (5HT³ inhibitor)**
- MCC of intra-op anaphylaxis: **Antibiotics**

Mallampatti Grading



ASA Grading

- 1 - **Healthy**
- 2 - Mild disease (under control)
- 3 - Disease **not under control**
- 4 - Constant risk of death
- 5 - Won't survive without the procedure
- 6 - Brain dead (organ donation)

- **Well controlled diabetes - ASA 2**
- Diabetes with **HbA1c of 9 - ASA 3**

Pre-op drugs discontinuation

- Clopidogrel : **7 days**
 - Warfarin : **5 days**
 - Aspirin : **3 days**
 - LMWH : **1 day**
 - UFH : **4 hrs**
- 7 - 5 - 3 - 1**
- Lithium : **2 days** (12-24 hrs half life)
 - Anti-depressants : **3 weeks TCA - 3 weeks**
- ACE I / ARB / OHA / Insulin : **Skip morning dose**

Aspirin can be continued in

1. Percutaneous coronary intervention (PCI)
2. Coronary artery disease (CAD)
3. **Stroke** in the past **9 months**

Basic life support

1st step

- Verify scene safety
- Check for responsiveness
- Call the emergency services

2nd step

- Check for breathing
- Check the pulse (Carotid pulse for 10 secs)

3rd step (If no breathing + no pulse)

Start CPR

- 30 :2 (Compression : Breath)
- 100-120 compressions/min
- 5-6 cm depth (1/3 of AP diameter)
- Allow complete recoil

If AED arrives

- Put AED and follow automated instructions
- Continue CPR till ROSC or until AI providers arrive



Recovery position

- When normal pulse and breathing present

Rescue breathing

- When pulse present but no breathing
- **10 breath/min**
- Keep checking pulse every 2 mins

ACLS

1st step

- Start CPR
- Oxygen
- Attach defibrillator

2nd step

- Check if rhythm is shockable or not

Shockable rhythm

- Shock
- Continue CPR for 2 mins
- **Epinephrine** every 3-5 mins
- Shock
- Continue CPR for 2 mins
- Repeat*
- **Amiodarone/Lidocaine** can be used



V fib



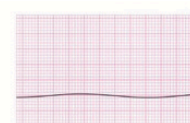
V tach

Non Shockable

- **Epinephrine** ASAP
- Continue CPR for 2 mins
- **Epinephrine** every 3-5 mins
- Continue CPR for 2 mins
- Repeat*



Pulseless electrical activity



Asystole

No role of Amiodarone or Lidocaine here

Mission NEET PG 2.0 – 3rd Batch

Comprehensive
Strategy to Ace
NEET PG 2025

Starting from



25th Nov

Apply coupon code-NEETPG

« Swipe Left for the

Tentative Schedule



Mission NEET PG/INI CET 2.0 - 3rd Batch

Topic	Date	E&D
Pharmacology (Dr. Gobind Rai Garg)	25 th -29 th Nov	
Pathology (Dr. Sparsh Gupta)	30 th Nov-4 th Dec	
Combined E&D (Pharma + Patho)		5 th Dec
Medicine-I (Dr. Dilip Kumar)	6 th Dec - 9 th Dec	

10th - Dec - Break

Medicine-2 (Dr. Dilip Kumar)	11 th Dec - 14 th Dec	15 th Dec
Physiology (Dr. Pooja Nigade)	16 th Dec - 19 th Dec	20 th Dec
BTR E&D (Integrated Subjects) (Dr. Zainab Vora)		21 st Dec
Biochemistry (Dr. Ankur Jain)	22 nd Dec - 25 th Dec	
FMT (Dr. Atul Gupta)	26 th -28 th Dec	
Biochemistry & FMT Combined E&D		29 th Dec

SWIPE LEFT 

Topic	Date	E&D
BTR E&D (FMT+Biochem)		30 th Dec
31th - Dec - Break		
Anatomy (Dr. Shrinkant)	1 st Jan - 5 th Jan	6 th Jan
Microbiology (Dr. Priyanka Sachdev)	7 th Jan - 10 th Jan	11 th Jan
BTR E&D (Anatomy + Microbiology)		12 th Jan
13th - Jan - Break		
Psychiatry (Dr. Praveen Tripathi)	14 th Jan - 15 th Jan	16 th Jan
Ophthalmology (Dr. Gaurav Nagpal)	17 th -20 th Jan	
ENT (Dr. Praneeth)	21 th -24 th Jan	
Combined E&D (Ophtha + ENT)		25 th Jan
BTR E&D (Psy/Oph/ENT) (Dr. Zainab Vora)		26 th Jan
Radiology (Dr. Zainab Vora)	27 th Jan - 28 th Jan	

SWIPE LEFT



Topic	Date	E&D
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Orthopedics (Dr. Apurv Mehra)	29 th Jan - 30 th Jan	
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Combined E&D (Radiology + Orthopedics)		31 st Jan
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Surgery (Dr. Amrit Nasta)	1 st Feb - 4 th Feb	
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5th - Feb - Break

Surgery-2 (Dr. Amrit Nasta)	6 th Feb - 8 th Feb	9 th Feb
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BTR E&D (Surgery/Ortho/Radio) (Dr. Zainab Vora)		10 th Feb
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PSM-1 (Dr. Vivek Jain)	11 th -13 th Feb	
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14th - Feb - Break

PSM (Dr. Vivek Jain)	15 th -17 th Feb	18 th Feb
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Anesthesia (Dr. Jhanvi Bajaj)	19 th -20 th Feb	
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Dermatology (Dr. M.Srinivas)	21 st -22 nd Feb	
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Combined E&D (Anesthesia + Dermatology)		23 th Feb
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Topic	Date	E&D
BTR E&D (PSM/Anes/Derma) (Dr. Zainab Vora)		24 th Feb
Pediatrics (Dr. Anand Bhatia)	25 th Feb - 27 th Feb	28 th Feb
OBG-1 (Dr. Raina Chawla)	1 st Mar - 4 th Mar	
5th - Mar - Break		
OBG-2 (Dr. Raina Chawla)	6 th -7 th Mar	8 th Mar
BTR E&D (Pediatrics/OBG) (Dr. Zainab Vora)		9 th Mar

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2nd - Mar - Break

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