1. In ophthalmology a patient is allergic to aminoesters. What can be used?

a) Cocaine

b) Procaine

c) Prilocaine

d) Bupivacaine

e) Tetracaine

Correct Answer - C:D
Ans. is'c'i.e., Prilocaine &'d'i.e., Bupivacaine
[Ref: Lee's 13th/e p. 486]

- Prilocaine & bupivacaine are amides (amcinonide). Other three are aminoesters.

2. TRUE statement regarding inhalational anesthesia is/ are?

a) Sevoflurane is the agent of choice for children and asthma patients

b) Sevoflurane should not be used where the gas flow rate is less than 2 L/min

c) Desflurane should not be used for induction in children

d) Isoflurane is more potent than sevoflurane

e) Halothane is the agent of choice for day care surgery

Correct Answer - A:B:C:D

Ans. is'a'i.e., Sevoflurane is the agent of choice for children and asthma patients,'b'i.e., Sevoflurane should not be used where the gas flow rate is less than 2Llmin,'c' i.e., Desflurane should not be used for induction in children & 'd' i.e., Isoflurane is more potent than sevoflurane

[Ref: Ajay Yadav Sth/e p. 70-87; Morgan Sth/e p. 163-70]

- "In June 1995' the Food and Drug Administration (FDAI approved the clinical use of sevoflurane. but with a warning that not sued at fresh gas flows less than 2 l/min because sufficient data had not been presented to establish its safety in that circumstance.
- The FDA was concerned that sevoflurane may cause adverse renal effects at low flows because it is degraded by the strong bases in CO2 absorbents to fluoromethyl-2,2-difluoro-1-(trifluoromethyl) vinyl ether (compound A).

-http://anesthesiologlt,pubs.asahq.org/article.aspx?articleid=2026924

3. If you are asked to collect 4 serial samples from lumbar puncture. What should be done with first sample?

a) Cell counts like differential counts

b) Biochemical tests [protein & glucose etc

c) Bacterial culture and gram staining

d) Mycobacterial & fungal culture and staining

e) None of the above-discard the sample

Correct Answer - A
Ans. is'a'i.e., Cell counts like differential counts
Ref: https://emedicine.medscape.com/article/80773-technique
The classic approach is to send the 4 CSF tubes for the following studies:
1. Tube I - Cell count and differential
2. Tube 2 - Glucose and protein levels
3. Tube 3 - Gram stain, culture and sensitivity (C&S)
4. Tube 4 - Cell count and differential

4. True regarding local anesthatics is/are?

a) Prilocaine is longer acting then bupivacaine

b) Tetracaine is more potent than lignocaine

c) Dibucaine is the longest acting local anesthetic

d) Bupivacaine can produce cardiotoxicity

e) Cocaine can produce hypotension

Correct Answer - B:C:D

Ans. is'b'i.e., Tetracaine is more potent than lignocaine,'c' i.e., Dibucaine is the longest acting local anesthetic & 'd' i.e., Bupivacaine can produce cardiotoxicity

[Ref: Morgan 4th/e p. 266-270, 926; Ajay Yadav 4'h/e p. 118; Essential of anaesthesia 4th/e p. 116; Goodman & Gilman LLth/e p. 375]

- Chloroprocaine is the shortest actingLA.
- Dibucaine is the longest acting. most potent and most toxic LA.
- Procaine & chloroprocaine are least potent LAs.
- BuQivacaind is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity).
- Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Prilocaine and Benzocaine can cause Methemoglobinemia.
- Lignocaine is the most commonly used LA.
- Bupivacaine has the highest local tissue irritancy
- Chloroprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to the presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia.

5. Which of the following anesthetic should not be used in a patient of chronic renal failure?

a) Methoxyflurane

b) Ketamine

c) Pancuronium

d) Succinylcholine

e) Desflurane

Correct Answer - A:B:C

Ans. is 'a' i.e., Methoxyflurane, 'b' i.e., Ketamine &'c' i.e., Pancuronium

[Ref: Morgan 4th/e p. 219]

Muscle relaxants

- Atracurium/cisatracurium are the muscle relaxant of choice as there elimination is not dependent on kidney.
- Mivacurium is an alternative as its elimination is also independent of kidney.
- Gallamine and metocurine are entirely dependent on renal excretion for elimination) Contraindicated in renal disease .
- Pancuronium. pipecuranium, Alcuronium and doxacurium are Primarily dependent on r contraindicated, however neuromuscular function should be closely monitored r.f these agents are used in Patients with abnormal renal function.
- Vecuronium and Rocuronium are primarily excreted in Bile (hepatic elimination) but some amount is eliminated in urine also.
- So, only three non-depolarizing blockers have no elimination through

kidney:- Atracurium, Cisatracurium, Mivacurium

- Succinylcholine (delnlarizing blockerl is also independent of renal excretion for elimination.
- It can be safety used in the Presence of renal failure. provided serum potassium concentration is less than 5 mg/L.

6. In comparison to IJV cannulation, true about subclavian vein cannulation is/are?

a) More chances of pneumothorax

b) More incidence of catheter malposition

c) More infectious complications

d) More safety in ultrasound guided technique

e) All of the above

Correct Answer - A:B

Ans. is'a'i.e., More chances of pneumothorax &'b'i.e., More incidence of catheter malposition

[Ref: https://www.ncb i. nlm.nih. gov/ pmc/ articles/ PMC i 27 09 25 /17]

- Subclavian vein cannulation
- Good external landmarks
- Large radius
- Practical method of central line in cardio-respiratory arrest
- Blind procedure
- Ultrasound not much useful
- Should not be attempted in children < 2 years
- Unable to compress bleeding vessels
- **More common & frequent**: Catheter malposition, Pneumothorax, hemothorax, Pinch-off sy:rdrome.
- **Less common & frequent:** Arterial puncture, Thrombosis, infectious complications.

7. A patient, planned for cesarean section, develops hypotension 8 minutes after the spinal anesthesia. Drugs which can be used to treat this are?

a) Ephedrine

b) Mephenteramine

c) Adrenaline

d) Dopamine

e) Steroids

Correct Answer - A:B:C:D

Ans. is'a'i.e., Ephedrine, 'b' i.e., Mephenteramine, 'c' i.e., Phenylephrine &'d' i.e. Dopamine

[Ref: Miller Vh/e p. 1617]

Managing hypotension induced by spinal anesthesia for caesarean section:

Treatment

- In spite of using all the prophylactic measures,40o/o to 60% of patients will still need treatment for hypotension:-
  i) Fluid loading is superior to no-fluid regimen; however, the incidence of PSH is still high with all fluid loading protocols
  ii) Vasopressors:-
- Phenylephrine(PE) is preferred vasopressor.
- Prevention and treatment of PSH because of faster onset.
- Ephedrine may be more beneficial in patients with bradycardia.
- Norepinephrine infusion was recently investigated as an alternative for prophylaxis of PSH.

- Ondansetron was reported as a prophylactic drug from PSH
- Other sympathomimetic drugs used are mephentermine. metaraminol, methoxamine, dopamine and, angiotensin II
- Atropine should be given for bradycardia

8. Endotracheal intubation is/are assessed by:

a) Mallampati grading

b) ASA physical status grading

c) Thyromental distance

d) Teeth arrangement

e) None

Correct Answer - A:C:D

Ans. A,Mallampati grading C,Thyromental distance & D,Teeth arrangement

Ref: Manipal Surgery 4th/ 1072-73; Ajay Yadav 5th/53' 124; Morgan 5th/ 312-13

- ASA physical status grading is for general health status of patient (not for assessing intubation)

Assessment of Difficult Intubation:

- Mallampati grading: It is done to assess mouth oPening
- Thyromental distance (distance b/w thyroid notch to mental prominence with fully extended neck)
- Mentohyoid distance: normal > 5 cm
- Assessment of TM joint function: Inter incisor gap (mouth opening) should be at least 5 cm (2 fingerbreadth)
- Neck Movement

9. Drug(s) not given as transdermal patch:

a) Fentanyl

b) Diclofenac

c) Morphine

d) Clonidine

e) Buprenorphine

Correct Answer - B:C
Ans.B,Diclofenac & C,Morphine
[Ref: KDT 7th/476

- Transdermal fentanyl (Durogesic) has become available for use in cancer/terminal illness.
- Butrans skin patches contain buprenorphine an opioid pain medication.
- Clonidine transdermal delivery (patch) systems have been available since the 1980

10. True about desflurane:

a) Boiling point is <230C

b) Chemically it is Flourinated methyl ethylether

c) It increases the effect of muscle relaxant

d) Can be given safely to patient susceptible to malignant hyperthermia

e) More potent than isoflurane

Correct Answer - A:B:C

Ans.A,Boiling point is <230C B,Chemically it is Flourinated methyl ethylether C,It increases the effect of muscle relaxant

[Ref Ajey Yadav Sth/ 82; Morgan Sth/170 & 71)

Desflurane:

- Fluorinated methyl ethyl ether
- Boiling point is less than 20C.
- Produces maximum muscle relaxation among the agents.
- 5 times less potent than isoflurane.
- Loss of potency (the MAC of desflurane is 5 times higher than isoflurane)
- Immune mediated hepatitis a rare occurrence.
- has the lowest blood: gas solubility of the potent volatile anesthetics

11. True about tracheostomy:

a) Tracheostomy tube may closed by mucous secretion & crust formation

b) Copious secretion from tube is always due pulmonary infection

c) X-ray chest should be done for confirmation in every case

d) Improper positioning may lead to fatal haemorrhage

e) Displacing of tube after 2 week is medical emergency

Correct Answer - A:D

Ans. A,Tracheostomy tube may closed by mucous secretion & crust formation D,Improper positioning may lead to fatal haemorrhage

Ref Schwartz 9th/ 59- I qhttp:/ /www.nurses.com/ ; p L.Dhingra 6th/ 3 I 6 - 20;Ajay Yadav 5th/48-49; Millo Anaesthaia Zth/232& IBit-72

- Reintubation in the first 36 hours after tracheostomy Is on emergency.
- Tracheostomy tube should not be disturbed For the first 48-72 hr, but thereafter the tube is changed daily & cleaned at regular interval.
- Recent study do not support obtaining a routine post tracheostomy chest X-ray.
- The most dramatic complication is tracheo-innominate artery fistula (TIAF).
- Palpable tube pulsation suggest impending erosion of an artery,
- Tracheal deviation may signal abdomen bleeding

12. Cnrnnonent of Advanced cardiovascular life support (ACLS) in accordance to AHA 2015 guideline:

a) Chest compression 100-150 per minute

b) Chest compression at least 5 cm/2 inch

c) Vasopressors is used to maintain MAP > 70 mmHg in non-responsive to fluids

d) 1 Breath every 8 seconds

e) Vasopressin is used as vasopressor

Correct Answer - B

Ans. B. Chest compression at least 5 cm/2 inch

- Basic life support (BLS), advanced cardiovascular life support (ACLS), and post-cardiac arrest care all describe a set of skills and knowledge applied sequentially during the treatment of patients who have a cardiac arrest.
- ACLS comprises the level of care between BLS and post-cardiac arrest care

Update recommendations for advanced cardiac life support 2015:

- The combined use vasopressin and epinephrine offers no advantage to using standard-dose epinephrine in cardiac arrest.
- Vasopressin has been removed from the Adult Cardiac Arrest Algorithm-2015 update.

Advanced Cardiac Life Support:

- Continuous chest compressions at a rate of lil)/rnin to 120/min, vnthout pauses for ventilation. The provider delivering ventilation

should provide 1 breath every 6 seconds (10 breaths per minute).
- It may be reasonable to avoid and immediate$r correct hypotension (SBp < 90 mm Hg, MAp < 65 mmHg) during post-cardiac arrest care.

13. Anaesthetic agents(s) having epileptogenic potential:

a) Atracurium

b) Etomidate

c) Enflurane

d) Pethidine

e) Propofol

Correct Answer - A:C:D

Ans. (A) Atracurium (C) Enflurane (D) Pethidine

- **Etomidate:** Does not have epileptogenic potential.
- **Enflurane:** At high doses it produces spike and wave pattern in EEG which culminates into frank tonic-clonic seizure.
- **Atracurium:** Its metabolic product laudanosine**(**Laudanosine Toxicity)- seizures precipitated.
- Ketamlne can elicit seizures in patients with an epileptic diathesis.
- **Propofol:** Significant anticonvulsant activity.

14. True about xenon is are:

a) Environment friendly

b) Cheap

c) Low blood solubility

d) Inert

e) Stable

Correct Answer - A:C:D:E

Ans. (A) Environment friendly (C) Low blood solubility (D) Inert (E) Stable

Advantages and disadvantages of xenon (Xe) anesthesia:

Advantages:

- Inert (probably nontoxic with no metabolism).
- Minimal cardiovascular effects.
- Low blood solubilitY.
- Rapid induction and recovery
- Does not trigger malignant hyperthermia
- Environmental friendly.
- Nonexplosive

Disadvantages:

- High cost
- Low potency {MAC=70%)

15. In gas tubing, rate of turbulent flow depends upon :

a) Viscosity of gas

b) Pressure gradient

c) Length of tube

d) Radius of tube

e) Density of gas

Correct Answer - B:E

Ans. (B) Pressure gradient (E) Density of gas

Turbulent

- Turbulent flow is produced if flow rate is very high or if gas passes through bends, constrictions.
- Flow is rough.
- Reynold's number must exceed to 2000 for turbulence.
- Turbulent flow is more depend on density

16. Gas stored in liquid state in cylinders:

a) Nitrogen

b) Helium

c) CO_2

d) Cyclopropane

e) Nitrous oxide

Correct Answer - C:D:E

Ans, (C) CO_2 (D) Cyclopropane (E) Nitrous oxide

- Oxygen, nitrogen, air and helium are stored in cylinders as gases.
- Nitrous oxide, carbon dioxide and cyclopropane are stored in as liquid in equilibrium with saturated vapour.

Colour of Cylinders:

- O2-Black body with white shoulder
- N2O- Blue
- CO2-Grey
- Cyclopropane-orange
- Helium-Brown
- Air-Grey body with black and white shoulders
- Entonox-Blue body with blue and white shoulders (50% O2. + 50% N2O).

17. True about caudal anesthesia in children:

a) Average distance from the skin to the anterior wall of the sacral canal is 21 mm

b) 0.5 mL/kg dose of bupivacaine is sufficient for lumber and sacral dermatomes block

c) Beyond 6-7 years of age, it is difficult to give and is less successful in comparison to younger children

d) 2-3 cm of epidural catheter is advances through epidural space in continuos infusion

e) Distance from the upper border of the sacral hiatus to the dural sac is 30±10.4mm

Correct Answer - A:C:D:E

Ans. (A) Average distance from the skin to the anterior wall of the sacral canal is 21 mm (C) Beyond 6-7 years of age, it is difficult to give and is less successful in comparison to younger children (D) 2-3 cm of epidural catheter is advances through epidural space in continuos infusion (E) Distance from the upper border of the sacral hiatus to the dural sac is 30±10.4mm

Caudal Anesthesia

- Normal length of catheter to be introduced into the epidural space ls 2 to 3 cm, asfor any epidural block.

Dosage prescription scheme:

1. With 0.5 mL/kg, all sacral dermatomes are blocked.
2. With 1.0 ml/kg all sacral and lumbar dermatomes are blocked.
3. With 1 .25 ml/kg, the upper limit of anesthesia is at least midthoracic.

- **Drug used:** The dose of 0.25% bupivacaine ts 0.5-O.75 ml/kg

- Extradural space below sacral hiatus may range from being deep to excessively shallow-its average length ls 10-15 cm.
- Its anatomy is more easily appreciated in infants and chilDren

Indications:

- Use for pattants < 8 years old to provide intraoperative and postoperative analgesia for abdominal and lower extremity surgery.

Technique:

- Advance needle and catheter 2 to 4 mm.

18. Anaesthetic used for induction in pediatric surgery is ?

a) Propofol

b) Thiopentone

c) Ketamine

d) Diazepam

e) Etomidate

Correct Answer - A:B:E

Ans. (A) Propofol (B) Thiopentone (E) Etomidate

Anaesthetics in Pediatric patients:

Induction

Inhalational induction:

- Inhalational agent with mask - Induction method of choice in children.
- Sevoflurane - Induction agent of choice in children.
- Used in N2O +O2 gas mixture.
- Halothane - 2nd Induction agent of choice.

Intravenous induction:

- THiopental/propofol (Outpatient surgery).
- Ketamine - preferred in children with hypovolemia.
- Etomidate - preferred in children with unstable cardiovascular status

19. Atracurium is metabolized by -

a) Conjugation

b) Hoffman degradation

c) Pseudocholineaterase

d) Methylation

e) None

Correct Answer - B

Ans. B. Hoffman degradation

- The unique feature of atracurium is inactivation in plasma by spontaneous non enzymatic degradation (Hofmann elimination).
- Consequently its duration of action is not altered in patients with hepatic/renal insufficiency or hyperdynamic circulation ---> Hence, preferred muscle relaxant for such patients as well as for neonates and the elderly.
- Atracurtum is metabolised to laudanosine that is responsible for seizures.
- Cause histamine release > Hypotension, bronchoconstriction & flushing.

20. Ventilator associated complication(s) is/are ?

a) Barotrauma

b) Subglottic stenosis

c) Pneumoperitoneum

d) Paralytic ileus

e) Increased cardiac output

Correct Answer - A:B:C:D
Ans. (A) Barotrauma (B) Subglottic stenosis (C) Pneumoperitoneum (D) Paralytic ileus
[Ref Essentials of anesthetic emergencies p. 123]
Complications of mechanical ventilator:

- Barotrauma - Cause pneumothorax, pneumomediastinum, bronchopleural fistula, pneumopericardium/cardiac tamponade, Pneumoperitoneum, systemic air embolism and pulmonary embolism.
- Hemodynamic complications
- Nosocomial infections: Pneumonia, UTI
- Acid-base disturbances - Respiratory alkalosis due to CO_2 washout.
- Water retention.
- GIT - Mainly paralytic ileus.

21. Headache following dural puncture, treatment is:

a) ACTH

b) Clonidine

c) Steroids

d) Blood

e) Caffeine

Correct Answer - A:C:E

Ans. (A) ACTH (C) Steroids (E) Caffeine

Ref: Morgan's 4,h/e p. 297, Lee's 13h/e p. 509, 510; www.cochrane.org

Post dural puncture headache:

- Due to CSF leak from a dural defect & decreased ICT.
- Most common complication of spinal anesthesia.
- Typical location is **bifrontal or occipital.**
- Onset
- Usually 12-72hotrs following the procedure.
- Lasts for 7-10 days.

Management:

- Use of small bore needle can prevent pDpH.

Conservative treatment:

- Analgesics (NSAIDs), oral or i.v. fluids.
- **Drugs:** Cosyntropin, caffeine, hydrocortisone, gabapentin, theophylline, sumatriptan, pregabalin and ACTH.

22. Pre-anaesthetic medication is given to ?

a) Reduce anxiety and fear

b) Reduction of secretion of saliva

c) To produce amnesia

d) To prevent undesirable reflexes

e) Prevent vomiting

Correct Answer - A:B:C:D

Ans. (A) Reduce anxiety and fear (B) Reduction of secretion of saliva (C) To produce amnesia (D) To prevent undesirable reflexes

[Rel KDT 6h/e p. 378]

Preanaesthetic medication:

Aims:

1. Relief of anxiety and apprehension preoperatively and to facilitate smooth induction.
2. Amnesia for preoperative and postoperative events.
3. Supplement analgesic action of anaesthetics and potentiate them.
4. Decrease secretions and vagal stimulation (undesirable reflex).
5. Antiemetic effect extending into postoperative period.
6. Decrease acidity and volume of gastric juice so that it is less damaging if aspirated.

23. Methods of regional anaesthesia is/are ?

a) Bier's block

b) Spinal anaesthesia

c) Rapid sequence induction

d) Conscious sedation

e) Surface anaesthesia

Correct Answer - A:B:E

Ans. (A) Bier's block (B) Spinal anaesthesia (E) Surface anaesthesia

[Ref: Morgan 4/e p. 269-270]

Regional anaesthesia (Local anaesthesia):

Methods are:

1. Topical anaesthesia (surface anaesthesia)
2. Infiltration anaesthesia
3. Intravenous regional anaesthesia (Bier's block)
4. Conduction block (either field block or nerve block)
5. Spinal anaesthesia
6. Epiduralanaesthesia

24. If we increase the depth of chest compression in CPR, it causes -

a) Decreased mortality

b) Increased brain perfusion

c) Increased aortic pressure

d) Rib fracture

e) Hemothorax

Correct Answer - A:B:C:D:E

Ans. (A) Decreased mortality (B) Increased brain perfusion (C) Increased aortic pressure (D) Rib fracture (E) Hemothorax

Increasing the depth of chest compression also carry an increased risk of complications like :-

- Rib and / or sternal fracture
- InjurY to diaPhragm or lung
- Pneumothorax, pneumomediastinum, pneumopericardium
- Hemothorax

25. Hypotensive shock refractory to fluid, what is contraindicated ?

a) Ketamine

b) Atropine

c) Fentanyl

d) Thopentone

e) Etomidate

Correct Answer - C:D
Ans. (C) Fentanyl (D) Thopentone
[Ref: Wroerlee textbook of anaesthesia p.54]

- In hypotensive patients, no sedative, hypnotic or opiate should be given.
- Fentanyl is an opiate and thioPentone is a sedative (barbiturate).
- Ketamine increases cardiac output and blood pressure - Intravenous anaesthetic of choice in shock.
- Etomidate produces little cardi-ovascular anil respiratory depression → Agent of choice for cardiovascular surgeries (bypass aneurysms, valve surgery).
- Etomidate is most cardiostable inducing agent.
- If hypotension is due to bradycardia --> Atropine is the drug of choice.

26. Drugs known to trigger malignant hyperthermia -

a) Halothane

b) Succinylcholine

c) Pancuronium

d) Fentanyl

e) Propofol

Correct Answer - A:B

Ans. (A) Halothane (B) Succinylcholine

[Ref Morgan Anaesthesia 5th/e p. 1187-9A; Aiay Yadav p. 13j- 35; Miter p. 1187-89; Lee l3'h/e p. 353; Wylle's Aflaesthesifl Vh/c p. I65-67]

Drugs causing Malignant hyperthermia (MH):

- Succinylcholine
- Halothane
- Isoflurane
- Enflurane
- Sevoflurane
- Desflurane
- Methoxyflurane
- MAO inhibitors
- TCA
- Phenothiazines
- Lignocaine

27. When will you suspect malignant hyperthermia in post appendectomy patient shifted to ICU with high fever & -

a) Hypotonia

b) Seizure

c) Masseter spasm

d) Metabolic acidosis

e) Hypokalemia

Correct Answer - B:C:D

Ans. (B) Seizure (C) Masseter spasm (D) Metabolic acidosis

[Ref: Morgan Anaesthesia 5'h/e p. 1187-90; Ajay Yadav Se/e p. 133-35; Miller Thle p, 1187-89; Lee l3'h/e p. 35i; Wylie's Anesthesia Vh/e p. j65, 367]

Malignant hyperthermia:

- The condition occurs during or immediately after anaesthesia and may be precipitated by potent inhalation agents (enflurane, halothane, isoflurane), or suxamethonium.

Clinical features are: -

- Masseter sPasm → If a patient develops severe masseter spasm after suxamethonium, there is a significant possibility of malignant hyperthermia.
- Tachycardia and arrhythmias
- Rise in end-tidal CO, (first sign)
- Increased temperature & unexpected change in BP.
- Seizures agitation and muscle rigidity

28. Which of the following is/are used in bupivacaine toxicity -

a) $CaC1_2$

b) Bretylium

c) Intralipids

d) Esmolol

e) Epinephrine

Correct Answer - B:C:E

Ans. (B) Bretylium (C) Intralipids (E) Epinephrine

[Re!. Morgan Anaesthesia Sth/e p. 273-74; Ajay yadav 5'h/e p. 144; Miller 6th/e p. 933; Lee l3th/e p. 384; Barash Anaesthesia 6,h/e p. 545]

Management of bupivacaine toxicity

- Ensure adequate oxygenation, whether by face mask or by intubation.
- Anticonvulsants such as benzodiazepines and barbiturates are the drug of choice for seizure control.
- Propofol can also be used.
- Succinylcholine is sometimes also used to terminate the neuromuscular effects of seizures.
- For unresPonsive bupivacaine toxicity, intravenous lipid or cardiopulmonary bypass may be considered.
- For arrhythmias, amiodarone is the DOC. Bretylium and esmolol can also be used.

29. Anaesthesia used for induction is/are -

a) Propofol

b) Thiopentone

c) Ketamine

d) Diazepam

e) Midazolam

Correct Answer - A:B:C:E

Ans. (A) Propofol (B) Thiopentone (C) Ketamine (E) Midazolam

[Ref: Morgan Anaesthesia 5th/e p. 175-82; Ajay Yadav S,h/e p. 92; Lee l3th/e p. 155]

Intravenous inducing agents:

- Thiopentone
- Methohexitone
- Propofol
- Etomidate
- Ketamine
- Benzodiazepines

30. Which of the following criteria is/are used for settingmechanical ventilator for adult in ICU -

a) Age

b) Gender

c) Weight

d) Height

e) Underlying condition of patient

Correct Answer - B:C:D:E

Ans. (B) Gender (C) Weight (D) Height (E) Underlying condition of patient

[Ref: Morgan Anaesthesia 5th /e p. 1288; emedicine.medscape.com]

- Mainly depends on ideal body weight (IBW), which is calculated based on gender and height.
- Women IBW(lbs) = 105 + 5 (Height in inches - 60)
- Men IBW (lbs) = 106 + 6 (Height in inches - 60)
- Settings also depend a types of lung disease, i.e. whether the patient is normal or with restrictive disease or with obstructive lung disease

31. True about endotracheal tube -

a) Non cuffed tube is used in pediatric age group

b) Made of PVC & disposable

c) Can be put either oral or nasal according to different situations

d) Cuffed PVC tubes - low pressure, low volume

e) More tendency to go to right bronchus thereby

Correct Answer - A:B:C:E

Ans. (A) Non cuffed tube is used in pediatric age group (B) Made of PVC & disposable (C) Can be put either oral or nasal according to different situations (E) More tendency to go to right bronchus thereby

[Ref: Morgan Anaesthesia p. 320-25; Ajay Yedav 5'h/e p. 43-46; Lee l3th/e p. 205-09]

Endotracheal tubes are mainly of two types.

Cuffed Endotracheal Tube:

- Cuff Pressure should not exceed 30 cm H2O (22 mm Hg) to prevent ischemic damage to tracheal mucosa.
- Two types, based on cuff pressure and volume.

Low Pressure, High volume : -

- In this cuff has high volume & low pressure.
- Because of low pressure these tubes produce less tracheal injury, therefore suitable for prolonged surgeries.0
- More commonly used than high pressure low volume tube.
- These tubes are made up of polyvinyl chloride

High pressure,low volume:

- Made up of red rubber.

Uncuffed Endotracheal Tube:

- In children (less than l0 years of age) uncuffed tubes should be used and there should be slight teak on inspiratory pressure of 30 cm IIrO

32. True about endotracheal intubation -

a) Head trauma patient presenting with a GCS score 8 or less should be intubated

b) Done in patients with increased risk of aspiration

c) Can be used in patient with full stomach

d) In cervical injury, patient neck is stabilized before intuvation

e) Done in patients who need anaesthesia

Correct Answer - A:B:C:D:E

Ans. (A) Head trauma patient presenting with a GCS score 8 or less should be intubated (B) Done in patients with increased risk of aspiration (C) Can be used in patient with full stomach (D) In cervical injury, patient neck is stabilized before intuvation (E) Done in patients who need anaesthesia

[Ref Lee l3tt'/e p. 208; Miller Vh/ep. /586; CSDT l4th/e p. 814]

- Endotracheal intubation is used to maintain a patent airway in operation theater as well as outside the operation theater : -

Indications for Endotracheal Intubation in the operating room include:

- The need to deliver positive pressure ventilation.
- Protection of respiratory tract from aspiration of gastric contents.
- Surgical procedure involving the head and neck or in non-supine positions that preclude manual airway support.
- Almost all situations involving neuromuscular paralysis.

Some non-operative indications are :

- Tracheobronchial toilet (pulmonary toilet).
- Profound disturbance in consciousness with the inability to protect the airways.

33. Which of the following is/are feature(s) of epidural anaesthesia than spinal anaesthesia -

a) Smaller size of needle is used

b) Drug used is less in concentration

c) Less chance of spinal headache

d) Onset of action is delayed

e) Density of anaesthetic agent is less in epidural than spinal

Correct Answer - B:C:D:E

Ans. (B) Drug used is less in concentration (C) Less chance of spinal headache (D) Onset of action is delayed (E) Density of anaesthetic agent is less in epidural than spinal

[Ref Morgan Anaesthesia p. 959,969; Ajay Yadav 5'h/e p. 162; Miller Vh/e p. 1626]

Epidural anaesthesia:

- Slower onset of action
- Less reliable
- Difficult
- Duration can be prolonged by repeatedly injecting LA by an epidural catheter.
- Can be used for upper abdominal, thoracic & neck surgery as well in addition to surgeries performed by spinal anaesthesia.
- PDPH is unlikely because dura is not pierced -> so, there is no CSF leakage.
- Epidural needles are larger than spinal needles.

34. Which of the following statement(s) is/are correct regarding management of malignant hyperthermia except:

a) Discontinue all anaesthetics immediately

b) Dantrolene is mainstay of therapy for **MH**

c) **Hyperventilation** with 100% oxygen is helpful

d) Sodium bicarbonate is given to correct alkalosis

e) Correct hyperkalemia by giving dextrose & insulin

Correct Answer - D

Ans. D. Sodium bicarbonate is given to correct alkalosis

Malignant Hyperthermia:

- Due to abnormality of type I Ryanodine receptor which is calcium release channel of sarcoplasmic reticulum.
- Genetic disease usually autosomal dominant but can be recessive also.
- Patient with normal CK levels should undergo muscle biopsy studies (where muscle is subjected to triggering factors (like halothane & suxamethonium).

Treatment of MH:

Dantrolene -

- Mainstay of therapy of MH.
- Directly binds to Ryanodine receptor inhibiting calcium release

35. Which of the following is/are true about pre-anaesthetic checkup (PAC):

a) Not necessary in children

b) Used to assess patient condition to tolerate anaesthesia & surgery

c) Can be performed by surgical faculty

d) Relieves anxiety of patient

e) Help in planning anaesthesia technique

Correct Answer - B:D:E

Ans. (B) Used to assess patient condition to tolerate anaesthesia & surgery (D) Relieves anxiety of patient (E) Help in planning anaesthesia technique

- PAC is equally necessary in infant & children (in fact, even more than adults).
- Infants are at a much greater risk of anesthetic morbidity & mortality than older children; risk is generally inversely proportional to age.

Pre-anaesthetic Checkup (PAC): Goals:

- To reduce anxiety & educate the patient about anaesthesia
- To obtain information about patient\ medical history
- To Perform Physical examination
- To determine which tests are required
- To plon anaesthetic technique.
- To obtain informed consent
- To give any preoperative instructions

36. Which of the following statement is/are true regarding intravenous fluid:

a) Ringer lactate is crystalloid of choice for blood loss replacement

b) Colloid is fluid of choice in severe shock

c) 5% Dextrose should be avoided in head injury

d) 0.45% saline contains 154 mEq/L Na+ & 154 mEq/L Ci?

e) Dextrose normal saline (DNS) is hypotonic

Correct Answer - A:B:C

Ans. (A) Ringer lactate is crystalloid of choice for blood loss replacement (B) Colloid is fluid of choice in severe shock (C) 5% Dextrose should be avoided in head injury

[Ref: Morgan Anaesthesia Sth/1163-66; Ajay yadav 5th/12-15; Lee Anaesthesia 1 3th/ 232 - 3 3 ; Miller 7 th/ 2799]

- Colloids are only reserved for severe shock.

Blood glucose control:

- Hyperglycaemia is known to exacerbate cerebral lactic acidosis and consequently aggravates cerebral ischaemia in head injury.
- Therefore glucose solutions should be avoided.

Dextrose:

- Aggregate ischemic neurologic injury
- Hyperglycemia may also constitute a hormonally mediated response to more severe injury.

Ringer lactate:

- Crystalloid of choice for blood loss replacement.

Normal Saline:

- 0.9% NaCl isotonic solution

Dextrose Normal Saline:

- Hypertonic

37. Which of the following is/are true regarding anaesthetic gas:

a) N20- increases efficacy of other inhalational agents

b) Halothane- agent of choice in children

c) Sevoflurane is agent of choice in children

d) Isoflurane- smooth induction

e) None

Correct Answer - A:C

Ans. (A) N20- increases efficacy of other inhalational agents
(C) Sevoflurane is agent of choice in children

Nitrous Oxide:

- Good analgesia
- It is not complete anaesthesia (used as a supplement to anesthesia)
- When given along with other inhalational agent it increases the alveolar concentration of that agent (second gas effect)
- Not a muscle relaxant

Sevoflurane:

- Odour is sweet so induction is smooth
- Faster, pleasant & smooth induction with no significant systemic toxicity makes sevoflurane is the agent of choice for induction in children

38. True about Endotracheal tube:

a) Most common used size for adult male is 8-8. 5

b) Most common used size for adult female is 7-7. **5**

c) PVC tube is reusable by cleaning

d) In children cuffed tube is not used

e) Cuff is for aspiration of secretions

Correct Answer - A:B:D

Ans. (A) Most common used size for adult male is 8-8. 5 (B) Most common used size for adult female is 7-7. 5 (D) In children cuffed tube is not used

[Ref Ajay Yadav 5th/43-46; Lee 13th/209; Miller 7th/Chap10; Morgans clinical anesthesia 5 th/ 321]

- The size of the tracheal tube is normally described as the internal diameter (ID) in millimeters.
- Tracheal tube size of 8 mm (ID) for moles and 7. 5 mm (ID) for females are often used.
- Two types- red rubber (reusable, costlier, non-transParent) & PVC (disposable, cheap, transparent).
- Cuff prevent leakage between the ETT & the trachea- both leakage of gas outwards during IPPV & of gastric contents, blood & mucus into the lungs.
- In children less than 10 years of age uncuffed tube should be used &-there should be slight leak to avoid barotraumas if inspiratory pressure exceeds above 30 cm H2O.

39. True about subarachnoid block (spinal anesthesia):

a) Cannot be used in infant & children

b) Can be given by unskilled doctor

c) May be used when **I.** V access is not possible for intravenous drugs

d) Hypotension is most common side-effect

e) None

Correct Answer - D

Ans. D. Hypotension is most common side-effect

[Ref Ajay Yailav 5th/155-61; Lee 13th/479; Oxford Handbook of Anesthesia 3rd/832]

Subarachnoid block:

- Most commonly used anaesthetic technique
- Adult level is usually L3-4

Indications:

- Orthopaedics surgery general surgery (pelvic & perineal), gynecological & obstetrical surgery' urological surgeries etc.,
- Most commonly drugs used in India are- xylocaine (lignocaine) & Sensoricaine (bupivacaine)
- Hypotension is most common side-effect:
- Managed by preloading & intraoperative fluids vasopressors. For this good i.V access is very imPortant.

40. Indication of CVP line is/are:

a) CVP monitoring in shock patient

b) Prior to major surgery

c) For administering inotropics through CVP line in shock patients

d) In every case of caesarean section

e) For giving blood in patient with severe haemorrhage

Correct Answer - A:B:C:E

Ans. (A) CVP monitoring in shock patient (B) Prior to major surgery (C) For administering inotropics through CVP line in shock patients (E) For giving blood in patient with severe haemorrhage

[Ref Ajay Yadav 5th/59; Morgan's clinical anesthesia 5th/100]

Indication of CVP:

- Major surgeries where large fluctuations in haemodynamics are expected
- Open heart surgeries
- Fluid management in shock
- As venous access in patients with poor peripheral veins
- Parenteral nutrition
- Aspiration of air embolism
- Cardiac pacing

41. A Patient has hypersensitivity to neostigmine. He has to undergo upper abdominal surgery. Muscle relaxant of choice is:

a) Pancuronium

b) Ropacuronium

c) Vecuronium

d) Atracurium

e) Piperacurium

Correct Answer - D

Ans. D. Atracurium

[Ref: Ajay Yadav 5th/116-17; Lee 13th/189-95]

- Atracurium undergo spontaneous degradation in plasma called as Hoffman degradation.
- Atracurium is relaxant of choice if reversal agent is contraindicated.

Other muscle relaxants:

- (mentioned in question) require reversal with neostigmine (but Ne can not use neostigmine due to hypersensitivity), so can not use in this patient

42. Which of the following condition (s) can cause exaggerated hyperkalemia in patients with use of succinylcholine:

a) Burn

b) Spinal cord injury

c) Muscular dystrophy

d) Tetanus

e) Abdominal organ injury

Correct Answer - A:B:C:D

Ans. (A) Burn (B) Spinal cord injury (C) Muscular dystrophy (D) Tetanus

[Ref Ajay Yaday 5th/112-13; Lee 13th/190; KDT 7th/355; Barash Clinical Anesthesia 6th/MR]

Succinylcholine & hyperkalemia:

- In patients with extensive burn & soft tissue injuries.
- Also in tetanus & spinal cord injuries, neurological & muscular disorders (stroke, cerebral palsy & muscular dystrophy).
- After major denervation injuries, spinal cord transection, peripheral denervation, stroke, trauma, extensive burns, and prolonged immobility with disease

43. Which of the following does not increase intracranial pressure:

a) Sodium thiopentone

b) Desflurane

c) Mannitol

d) Sevoflurane

e) Propofol

Correct Answer - A:C:E
Ans. (A) Sodium thiopentone (C) Mannitol (E) Propofol
[Ref Ajay Yadav p.86, 109; Lee /643-45]
Mannitol is used in the treatment of increased intracranial tension.

44. Mechanism of action of general anesthesia is/are:

a) GABA-A receptor

b) GABA-B receptor

c) NMDA receptor

d) Na+ channel blockage

e) None

Correct Answer - A:C

Ans. (A) GABA-A receptor (C) NMDA receptor

[Ref: KDT 7th/372-73; Ajay Yadav 5th/71; Lee 13th/149; Miller 6th/721- 22]

Mechanism of General Anaesthesia:

- The GABA-A receptor gated Cl-channel is the most important of these.
- Many inhalational agents, barbiturates, benzodiazepines e propofol
- Action of glycine in the spinal cord & medulla is augmented by barbiturate, Propofol & many inhalational anaesthetics.
- Inhibition of excitatory type of NMDA type of glutamate receptor: Ketamine & N2O.

45. Which of the following statement is correct regarding mechanism of action of local anaesthesia:

a) Blockage of resting sodium channel more is than activated sodium channel

b) Faster conducting fibers blocked easily

c) Block Na-K ATPase channel

d) Fine touch goes before pain

e) In regional block i.v injection is used

Correct Answer - E

Ans. E. In regional block i.v injection is used

[Ref, Ajay Yadav 5th/138-140, 149; Lee 13th/369-374]

MOA:

- The key target of local anesthetics is the voltage-gated sodium channel.
- The binding is intracellular and is mediated by hydrophobic interactions.
- Local anesthetics block voltage-gated sodium channels and interrupt initiation and propagation of impulses in axons.
- Local anesthetics reversibly inhibit peripheral nerve conduction by blocking voltage gated sodium & potassium channel .
- The affinity of the sodium receptor is higher in open or inactivated states than in the resting state.
- Blockade sequence is-sympathetic> temperature (cold)> pain (prick) >proprioception (Light touch with cotton).

46. All are true regarding Laryngeal Mask Airway except:

a) Big oral tumor is contraindication for its use

b) May be used when intubation with ETT is not possible

c) Can be used in child 's eye surgery

d) May be used in CPR

e) None

Correct Answer - E

Ans. (E) NONE

[Ref Ajay Yadav 5th/42-43; Lee Anaesthesia 13th/206-08; Morgo4 Anesthesia 4th/97; Dorsch Dorsch anesthesia equipment 5th/488; Miller\ anesthesia 6th/ I 6 27]

Advanced cardiac life support (Part of CPR):

- For breathing- Advanced method like endotracheal tube, LMA, combitube or tracheostomy tube.

Laryngeal Mask Airway (LMA):

- As an alternative to intubation where difficult intubation is anticipated
- An elective method for minor surgeries where anesthetist wants to avoid intubation (Like eye surgery in children).
- Contraindication: oropharyngeal mass.
- LMA provides an alternative to ventilation through a face mask or endotracheal tube (ETT).
- LMA has proven particularly helpful as a temporary measure if patients with difficult airways (those who cannot be ventilated or intubated) because of its ease of insertion & relatively high success rate (95-99%).

- C/I for LMA includes: patient with pharyngeal pathology (e.g., abscess), pharyngeal obstruction, full stomach (e.g., pregnancy, hiatal hernia) or low pulmonary compliance

47. Which of the following circuit is preferred in child for spontaneous respiration:

a) Mapleson A

b) Jackson & Rees circuit

c) Mapleson C

d) Mapleson E

e) Mapleson F

Correct Answer - A

Ans. (A) Mapleson A

[Ref Ajay Yadav 5th/35; Dorsch Anesthesia Equipment 5th/213-215; Morgan Anesthesia 5th/ i3; 4th/ 35-37]

Pediatric Breathing Circuits:

Type E Mapleson Circuit:

- It is Ayre's T piece with corrugated tubing.
- It is a pediatric circuit
- As it does not have breathing bag so it is not a complete circuit (It was made complete by attaching a breathing bag by attaching a breathing bagby Jackson & Rees).
- Type E is basically a circuit only for spontaneous respiration (as it does not contain breathing bag) but can be utilized for controlled ventilation by intermittently occluding the end of expiratory limb

48. Weaning is generally done by:

a) SIMV

b) Controlled mode ventilation(CMV)

c) CPAP

d) Pressure controlled Ventilation

e) Assisted controlled Ventilation

Correct Answer - A:C

Ans. A,SIMV & C, CPAP

[Ref Ajay Yadav 5th/239-40; Morgan 5th/1298; Miller anesthesia 6th]

Weaning:

- Means discontinuing the ventilator support.
- Weaning process may vary from Patient to Patient, hospital to hospital (depending on the type of ventilator available) 6 clinician to clinician 4is possible to wean patient in any mode of ventilation except control mode ventilation

Techniques for Weaning:

- The common techniques to wean a patient from the ventilator include SIMV pressure support, or periods of spontaneous breathing alone on a T-piece or on low levels Of CPAP
- Mandatory minute ventilation has also been suggested as an ideal weaning techniques, but experience with it is limited.
- Most often aPPLied approach is that patient from control/assist control mode ventilation is shifted to SIMV & then keep on decreasing the rate of breath delivered by ventilator gradually till it becomes 1 to 2 breath/min

49. A child on immediate postoperative, is complaining of nausea & vomiting after squint surgery. Which of the following drugs may be not used during operation in controlling this symptom:

a) Propofol

b) Ketamine

c) Dexamethasone

d) Ondansetron

e) Palonosetron

Correct Answer - A:C:D

Ans. A,Propofol C, Dexamethasone & D,Ondansetron

[Ref Ajay Yadav Sth/132; Lee Anaesthesia l3th/630]

Strabismus Surgery in Paediatric Patient:

- Key features in relation to strabismus are oculocardiac reflex in response to surgical movement of globe, postoperative nausea & vomiting (PONV) & the association of strabismus with occult myopathies & possibly malignant hyperthermia.
- Antiemesis is improved by use of propofol on induction & maintenance & by the preemptive use of both 5-hydroxy- tryptamine inhibitors & dexamethasone,
- Opioids should be avoided because regular NSAIDS are as effective.
- Topical NSAIDS (Ketorolac 0.5%o o/o, diclofenac l%) have been used with some success.

- The incidence of oculocardiac reflex can be reduced by the use of ketamine at induction & by the use of medial canthal injection of local anaesthetic (lidocaine), which also reduces the need for postoperative analgesia

50. Which of the following fluid used in perioperative period is isotonic:

a) RL

b) DNS

c) 5% Dextrose

d) HES

e) NS

Correct Answer - A:C:D:E

Ans. A,RL C, 5% Dextrose D, HES & E, NS

[Ref Ajay Yadav 5th/12-15; Lee Anaesthesia p.232-33; Morgan 5th/1164]

Ringer Lactate Solution (RL, Hartman solution):

- Lactate is metabolized to bicarbonate in liver
- Ringer lactate is crystalloid of choice for blood loss rePlacement.
- RL is slightly hypotonic.

Normal Saline:

- 0.99% NaCl isotonic solution.
- Preferred over RL for treating: hypochloremic metabolic alkalosis, brain injury (Catin lactate can increase the neuronal injury) & hyponatremia

Dextrose Normal Saline:

- Hypertonic.
- best used as maintenance fluid.

Hydroxyethyl Starch (Colloid):

- **Types:** Hetastarch & Pentastarch