

1. Receptor responsible for malignant hyperthermia is?

a) Nicotinic receptor

b) Ryanodine receptor

c) Muscarinic receptor

d) None

Correct Answer - B

Ryanodine receptor

REF: Morgan 3rde p. 869

This condition is known by a number of names, including malignant hyperthermia (MH), malignant hyperthermia syndrome (MHS), and malignant hyperpyrexia.

Signs and symptoms:

The typical symptoms of malignant hyperthermia are due to a hypercatabolic state, which presents as a very high temperature, an increased heart rate and breathing rate, increased carbon dioxide production, increased oxygen consumption, acidosis, rigid muscles, and rhabdomyolysis. The symptoms usually develop within one hour after exposure to trigger substances, but may even occur several hours later in rare instances.

Causes:

Volatile anesthetic gases halothane, sevoflurane, desflurane

Local anesthetics lidocaine, bupivacaine, mepivacaine

Depolarizing muscle succinylcholine

relaxants

Other
ketamine, barbiturates, nitrous
benzodiazepines

Opiates (morphine, fentanyl),
oxide, propofol, etomidate,

Genetics:

Malignant hyperthermia's inheritance is autosomal dominant. The defect is typically located on the long arm of the nineteenth chromosome (19q13.1) involving the ryanodine receptor.

2. Agent causing malignant hyperthermia is?

a) Succinylcholine

b) 1120

c) Ether

d) Verapamil

Correct Answer - A

Succinylcholine REF: Goodman and Gillman p. 152 11th edition
"Succinylcholine is the most common drug used in anesthesia to cause Malignant Hyperthermia"

MALIGNANT HYPERTHERMIA

Malignant hyperthermia is a potentially life-threatening event triggered by certain anesthetics and neuromuscular blocking agents. Clinical features: contracture, rigidity, and heat production from skeletal muscle resulting in severe hyperthermia, accelerated muscle metabolism, metabolic acidosis, and tachycardia.

Mechanism: Uncontrolled release of Ca^{2+} from the sarcoplasmic reticulum of skeletal muscle is the initiating event. Although the halogenated hydrocarbon anesthetics (e.g., halothane, isoflurane, and sevoflurane) and succinylcholine alone reportedly precipitate the response, most incidents arise from the combination of depolarizing blocking agent and anesthetic. Susceptibility to malignant hyperthermia, an autosomal dominant trait

Treatment: Intravenous administration of dantrolene (DANTRIUM), which blocks Ca^{2+} release and its sequelae in skeletal muscle.

Rapid cooling, inhalation of 100% oxygen, and control of acidosis should be considered adjunct therapy in malignant hyperthermia

3. Pudendal nerve block involves?

a) L1 L2 L3

b) L3 L4 L5

c) S1 S2 S3

d) S2 S3 S4

Correct Answer - D

S2 S3 S4 REF: Morgan 3th ed p. 331, *Essentials of Pain*

Management - Nalini Vadivelu, Richard D. Urman, Roberta L. Hines
Page 428, Grant's atlas of anatomy - Page 270

"Pudendal nerve block involves S2 S3 S4"

The pudendal nerve innervates the lower vagina, perineum, and vulva. Block of this nerve can be used to supplement pain relief during the second stage of labor. The S2-S4 nerves give off branches to the *pudendal nerve* that pass between the piriformis and coccygeal muscles. The nerve is blocked at the pudendal canal, just lateral and inferior to the sacrospinous ligament. A pudendal nerve block does not abolish sensation from anterior and lateral part of perineum and hence a block of ilioinguinal and/or posterior cutaneous nerve of thigh may also be required.

4. Drug used to reverse the effect of d-tubocurarine is:

a) Neostigmine

b) Physostigmine

c) Dantrolene

d) Scoline

Correct Answer - A
Neostigmine

5. Which of the following inhalational agents, is the induction agent of choice in children?

a) Isoflurane

b) Desflurane

c) Sevoflurane

d) Methoxyflurane

Correct Answer - C

Sevoflurane is considered to be the inhalational induction agent of choice in children, since it has a pleasant, faster, and smooth induction with no significant systemic toxicity. Other drugs which can be used in children are a mixture of oxygen and nitrous oxide or halothane.

Ref: Synopsis of Pediatric Emergency Medicine By Gary Robert Fleisher, 4th Edition, Page 34; Textbook of Anesthesia for Postgraduates By T. K. Agasti, Page 799.

6. Anesthetic agent with vasoconstrictor is contraindicated in?

a) Finger block

b) Spinal block

c) Epidural block

d) Regional anesthesia

Correct Answer - A

The use of **vasoconstrictors (epinephrine or adrenaline)** along with a local anesthetic is usually

avoided in case of ring block or finger block as it causes **severe vasoconstriction (direct alpha adrenergic effect)**.

As this vaso-constriction in the end arteries can lead to **gangrene formation**.

Ref: Neural blockade in clinical anesthesia and management of pain, Issue 494 - Page 124, By Michael J. Cousins, Phillip O. Bridenbaugh; Fundamentals of Surgical Practice By Andrew Kingsnorth, Douglas Bowley, Page 147.

7. Which of the following is not a sign of successful stellate ganglion block?

a) Nasal stuffiness

b) Guttman's sign

c) Horner's syndrome

d) Bradycardia

Correct Answer - D

Bradycardia is not an established sign of successful stellate ganglion block.

Ref: Short Textbook of Anesthesia By Ajay Yadav, 2nd Edition, Page 113; Image-Guided Intervention By Matthew A. Mauro, Kieran Murphy, Kenneth Thomson, Christoph L. Zollikofer, 2008, Page 1741; Atlas of Image-Guided Intervention in Regional Anesthesia and Pain Medicine By James P. Rathmell, 2005, Page 115

8. A 25 year old primigravida with history of mitral stenosis and mitral regurgitation is in labour. She prefers a normal vaginal delivery. Which would be the best way to provide analgesia for this lady?

a) Epidural anaesthesia

b) Spinal anaesthesia

c) Inhalational analgesia

d) Intravenous opioids

Correct Answer - A

In pregnant patients with valvular heart disease there is significant stress on the cardiovascular system which leads to decompensation in previously asymptomatic individuals.

During labour there is significant stress and in order to reduce the pain and sympathetic stimulation, epidural anaesthesia is preferred in such cases.

In pregnant patients with mitral stenosis, mitral regurgitation, aortic stenosis or aortic regurgitation epidural anaesthesia is the preferred route during labour.

9. Example of long acting neuromuscular blocker is:

a) Rocuronium

b) Vecuronium

c) Pancuronium

d) Atracurium

Correct Answer - C

LONG-ACTING NEUROMUSCULAR BLOCKERS: Pancuronium is cleared largely by the kidney.

Its hepatic uptake is limited. A small amount (15% to 20%) is deacetylated at the 3-position in the liver,

but this makes a minimal contribution to the total clearance.

Deacetylation also occurs at the 17-position, but to such a small extent that it is clinically irrelevant.

The three known metabolites have been studied individually in anesthetized humans.

The 3-OH metabolite is the most potent of the three, being approximately half as potent as pancuronium,

and is the only one present in detectable concentrations in plasma.

This metabolite has pharmacokinetics and a duration of action similar to those of pancuronium

Ref: Miller's anesthesia-7th ed , Chapter 29.

10. Tizanidine is a central alpha 2 adrenergic agonist.

Assertion: It is indicated in painful muscle spasms of spinal origin.

Reason: Because it inhibits the release of excitatory aminoacids in spinal interneurons.

a) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion

b) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion

c) Assertion is true, but Reason is false

d) Assertion is false, but Reason is true

Correct Answer - A

Tizanidine a recently introduced clonidine congener is a central alpha 2 adrenal agonist which inhibits the release of excitatory amino acids in spinal interneurons.

It also facilitate the inhibitory transmitter glycine.

So it is indicated in painful muscle spasms of spinal origin.

Ref: Essentials of Medical Pharmacology By K D Tripathi, 5th Edition, Page 318.

11. Mechanism of action of theophylline in Bronchial asthma include all of the following Except ?

a) Phosphodiesterase inhibition

b) Adenosine receptor antagonism

c) Increased histone deacetylation

d) Beta-2 receptor stimulation

Correct Answer - D

Ans. is 'd' i.e., Beta-2 receptor stimulation

Proposed mechanisms of action of theophylline

- *Phosphodiesterase inhibition (Non selective)*
- *Adenosine receptor antagonism (A_1 , A_2)*
- *Increased histone Deacetylase activity (↑red efficacy of corticosteroids)*
- *Inhibition of intracellular calcium release*
- *Stimulation of catecholamine release*
- *Inhibition of NF - alpha Beta translocation into the nucleus (nuclear translocation)*
- *Mediator inhibition (Prostaglandins, TNF alpha)*

12. Mendelson's syndrome is

a) Air leak

b) Tracheal rupture during intubation

c) Oesophageal rupture

d) Aspiration of gastric content

Correct Answer - D

D i.e. Aspiration of gastric content

- Mendelson's syndrome is d/t *aspiration of gastric content*

- It is prevented by Sellick's maneuver i.e. *backward pressure on cricoid cartilage*.

**13. Least blood gas partition coefficient
anesthetic agent:**

a) Desflurane

b) Nitrous oxide

c) Halothane

d) Ether

Correct Answer - A
A i.e. Desflurane

14. Stages of anesthesia were established by

a) Ether

b) N2O

c) Halothane

d) Chloroform

Correct Answer - A
A i.e. Ether

15. Repeated use of halothane causes

a) Hepatitis

b) Pancreatitis

c) Encephalitis

d) Meningitis

Correct Answer - A

A i.e. Hepatitis

Halothane causes two types of hepatotoxicity:

Type I Hepatotoxicity:

its mild form with transient elevation of serum transaminases.

Incidence after halothane administration is 20-30%,

2) Type 2 Hepatotoxicity (Halothane hepatitis):

It is severe form and is characterized by centrilobular necrosis.

It is very rare with incidence of approximately 1: 35, (NO,

Mortality rate is 30-70%.

16. Nephrotoxic agent is

a) Methoxy flurone

b) Isoflurone

c) Halothane

d) N₂O

Correct Answer - A
A i.e. Methoxy flurane

17. Inhalational agent of choice in children:

a) Sevoflurane

b) Isoflurane

c) Desflurane

d) Halothane

Correct Answer - A
A. i.e. Sevoflurane

18. In a 2 months old infant undergoing surgery for biliary atresia, you would avoid one of the following anaesthetic

a) Thiopentone

b) Halothane

c) Propofol.

d) Sevoflurane

Correct Answer - B

B i.e. Halothane

Among all these options only *halothane is hepatotoxic* so it should be avoided Lets revise some important facts.

- All coagulation factors with *exception of factor VIII (8) & von wille brand factor* are produced by *liver*
- *Vit K* is necessary for synthesis of *prothrombin (factor II) and factor VII, IX and X*.
- *PT* is normally *11-14 seconds*, measures the activity of *fibrinogen, prothrombin and factors, V, VII, and X*
- All opioids cause spasm of sphincter of oddi & increase biliary pressure
- Halothane hepatitis is more common in middle age, obese, female sex, and a repeated exposure (esp with in 28 days)

19. A five-year old child is scheduled for strabismus (squint) correction. Induction of anesthesia is uneventful. After conjunctival incision as the surgeon grasps the medial rectus, the anaesthesiologist looks at the cardiac monitor.

Why do you think he did that?

a) He wanted to check the depth of anaesthesia

b) He wanted to be sure that the blood pressure did not fall

c) He wanted to see if there was an oculocardiac reflex

d) He wanted to make sure there were no ventricular dysarrhythmias which normally accompany incision

Correct Answer - C

C i.e. Wanted to see if there was an oculocardial reflex

- Traction on extraocular muscles or pressure on eye ball can elicit cardiac dysrhythmias, ranging from bradycardia to sinus arrest. This reflex consists of trigeminal afferent and vagal efferent pathway. It is most common in pediatrics undergoing strabismus surgery.

- It can be evoked in cataract extraction, enucleation and retinal detachment repair also.

It is treated by temporary cessation of surgery until heart rate increases intravenous atropine 10mg/kg.

20. Treatment of malignant Hyperthermia includes:

a) Dantrolene

b) Cooling

c) Deepening plane of inhalational anaesthesia

d) a and b

Correct Answer - D
A.i.e. Dantrolene; B. i.e. Cooling

21. True about adrenaline in CPR :

a) Can be given intratracheally

b) I.V. route better than intracardiac

c) Intracardiac route better than IV

d) a and b

Correct Answer - D

A & B i.e. Can be given intra tracheally & I.V. route is better than intracardiac

Cardiopulmonary Resuscitation (CPR)

- ABCD of CPR are - Airway, Breathing, Circulation & Defibrillation
- *Central (internal jugular or subclavian) venous line is ideal for CPRQ*
- If there is no central line access, then one should attempt to establish *peripheral venous line* either in antecubital or external jugular vein.
- If intravenous cannulation is difficult, an *intraosseous infusion* can provide emergency vascular access in children.
- Some drugs are well absorbed following administration through an *endotracheal tube* (eg. *epinephrine*, atropine, vasopressin, lidocaine but not sodium bicarbonate)
- During *CPR-adrenaline converts fine fibrillation to coarse oneQ*

Basic life support - summary

	Infant (Child (>12month)	Adult
Breathing rate	20 breaths/min	20 breaths/min	10-12 breaths/min
Compression rate	>100/min	100/min	100/min
Compression	<i>Two-Three</i>	Heel of one	<i>Hands</i>

method	<i>fingers</i> or two hands	<i>interlaced</i>
push hard & fast and allow complete recoil	thumbs encircling hands	
Compression-ventilation ratio	5:1	5:1 15 : 2 5 : 1 if tracheal tube is used
Compression depth	Approximately 1/3 - 1/2 of depth of chest	1.5-2 inches
Pulse check	Brachial/Femoral	Carotid
Foreign body obstruction	Back blows & Chest thrusts	Hemlich maneuver

* *CPR in newborn should deliver 90 compressions and 30 ventilation (3:1) per minute.*

22. From which of the following routes absorption of local anaesthetic is maximum?

a) Intercostal

b) Epidural

c) Branchial

d) Caudal

Correct Answer - A

A. i.e. Intercostal

- Systemic absorption is directly proportional to blood supply. *Local Anesthetic is absorbed very rapidly in intercostals block d/t close location of blood vessels around the nerve*. Highest blood level of LA is achieved per volume of drug injected in intercostals block.
- The intercostal nerve (and neurovascular bundle) run along the inferior margin of rib. They can be anaesthetized by intercostal injection of local anaesthetics for pain relief. The site is along the *posterior axillary line* deep to inferior border of one or more ribs.
- Sites of greatest absorption include: intrapleural > intercostals > pudendal > caudal > epidural > brachial > infiltration.

23. Which one of the following is the description used for the term allodynia during pain management?

a) Absence of pain perception

b) Complete lack of pain sensation

c) Unpleasant sensation with or without a stimulus

d) Perception of an ordinarily non-noxious stimulus as severe pain

Correct Answer - D

D i.e. Perception of an ordinarily non-noxious stimulus as severe pain

24. Which of the following drugs produces dissociative anaesthesia:

March 2013 (g)

a) Ketamine

b) Propofol

c) Thiopentone

d) Enflurane

Correct Answer - A
Ans. A i.e. Ketamine

Ketamine

- Is a phencyclidine,
- Causes dissociative anaesthesia,
- Causes
 - Hallucination,
 - Delusion and
 - Illusion
- Causes profound analgesia
- Increases all pressures:
 - Intracranial Tension,
 - Intraocular pressure,
 - BP
- C/I in: Intracerebral mass/hemorrhage etc

**25. Which of the following anaesthetic agent also has anti-emetic property:
*September 2006***

a) Ketamine

b) Thiopentone

c) Propofol

d) Nitrous oxide

Correct Answer - C

Ans. C: Propofol

Anaesthetics with anti-emetic property:

- Midazolam given at the onset of anaesthesia has been shown in to be as effective as ondansetron
- Propofol is versatile; the drug can be given for short or prolonged sedation as well as for general anaesthesia. It is an anti-emetic.

26. Following is true about halothane except?

a) Volatile liquid with sweet odour

b) Sensitises heart to adrenaline

c) Constricts bronchii

d) Causes malignant hyperthermia

Correct Answer - C

Ans. is 'c' i.e., Constricts bronchii

Halothane

- It is a volatile liquid with *sweet odour, nonirritating and noninflammable*.
- It is a *potent anaesthetic with poor analgesic and muscle relaxant properties*.
- *Halothane causes direct depression of myocardial contractility by reducing intracellular Ca.*
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- *It tends to sensitize the heart to arrhythmogenic action of adrenaline* → contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi → inhalation agent of choice in asthmatics (intravenous anaesthetic of choice in asthmatics is ketamine).
- It is a *hepatotoxic drug* and can also cause *malignant hyperthermia* (Succinylcholine accentuate it).
- Recovery is smooth and reasonably quick.
- It causes *postanaesthetic shivering and chills*.
- It inhibits intestinal and uterine contractions → agent of choice for assisting external or internal version during late pregnancy.

- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

27. Longest acting among muscle relaxant is?

a) Doxacurium

b) Rocuronium

c) Vecuronium

d) Atracurium

Correct Answer - A

Ans. is 'a' i.e., Doxacurium

- Among the given options, only doxacurium is long acting.
- See explanation- 4 of session- 3.

28. Shortest acting non depolarizing muscle relaxant is?

a) Mivacurium

b) Doxacuronium

c) Pipecurium

d) Vecuronium

Correct Answer - A

Ans. is 'a' i.e., Mivacurium

- Suxamethonium (succinylcholine) is the shortest acting skeletal muscle relaxant. o Mivacurium is the shortest acting nondepolarizing skeletal muscle relaxant.

29. Standard method to differentiate between endotracheal and esophageal intubation is?

a) End tidal CO₂

b) Chest X-rays

c) Auscultation

d) Partial pressure of O₂

Correct Answer - A
Ans. is 'a' i.e., End tidal CO₂

30. Action of which anesthetic agent is through NMDA receptors?

a) Xenon

b) NO

c) Succinylcholine

d) Etomidate

Correct Answer - A

Ans. is 'a' i.e., Xenon

Xenon

- It exerts anaesthetic action by non competitive blockade of NMDA receptors.
- Xenon has been used as a general anesthetic.
- Xenon interacts with many different receptors and ion channels and like many theoretically

31. Most sensitive method of non invasive monitoring of cardio-vascular ischemia in perioperative period is ?

a) NIBP

b) ECG

c) Pulse oximeter

d) TEE

Correct Answer - D

Ans. is 'd' i.e., TEE

- Two dimensional TEE is the most sensitive method to detect myocardial ischemia and air embolism in peri-operative period.
- Detection of regional wall motion abnormality a rapid and more sensitive indicator of myocardial ischemia than is the ECG
- Decreased systolic wall thickening may be more reliable index for ischemia than endocardial wall motion abnormality alone

32. Which of the following is NOT an amide ?

a) Lignocaine

b) Procaine

c) Mepivacaine

d) Dibucaine

Correct Answer - B
Ans. is 'b' i.e., Procaine

33. Shortest acting skeletal muscle relaxant is ?

a) Suxamethonium

b) Mivacurium

c) Pancuronium

d) Vecuronium

Correct Answer - A

Ans. is 'a' i.e., Suxamethonium

- Suxamethonium (succinylcholine) is the shortest acting skeletal muscle relaxant.
- Mivacurium is the shortest acting nondepolarizing skeletal muscle relaxant.

34. In epidural anaesthesia drug is injected ?

a) Outside the dura

b) Inside the duramater

c) Inside arachnoidmater

d) Inside piamater

Correct Answer - A

Ans. is 'a' i.e., Outside the dura

35. Celiac plexus block all the following is true except ?

a) Relieved pain from gastric malignancy

b) Cause hypotention

c) Can be used to provide anesthesia for intra abdominal surgery

d) Can be given only by retrocrural (classic) approach

Correct Answer - D

Ans. is 'd' i.e., Can be given only by retrocrural (classic) approach

Celiac plexus block can be done by following three approaches

:

- Retrocrural (classic) approach, anterocrural approach and splanchnic nerve block.
- See explanation- 4 of session- 8 of Anaesthesia of All India 2014-15 pattern of this book.

36. For anesthesiology mild systemic disease included in ASA grade

a) 1

b) 2

c) 3

d) 4

Correct Answer - B
Ans. is 'b' i.e., 2

37. All are contraindications of spinal anaesthesia Except

a) Bleeding disorder

b) Raised intracranial tension

c) Hypertension

d) Infection at injection site

Correct Answer - C
Ans. is 'c' i.e., Hypertension

38. Not an intravenous anaesthetic

a) Etomidate

b) Thiopentone

c) Ketamine

d) Cyclopropane

Correct Answer - D
Ans. is 'd' i.e., Cyclopropane

39. Index of potency of general anesthesia ?

a) Minimum alveolar concentration

b) Diffusion coefficient

c) Dead space concentration

d) Alveolar blood concentration

Correct Answer - A

Ans. is 'a' i.e., Minimum alveolar concentration

Minimal alveolar concentration

- It is the lowest concentration of the anaesthetic in pulmonary alveoli needed to produce immobility in response to a painful stimulus (surgical incision) in 50% individuals.
- It is the measure of potency of inhalation GAs

40. What is the modification of the Mapelson E breathing system used in infants?

a) Mapelson A

b) Mapelson B

c) Mapelson C

d) Mapelson F

Correct Answer - D

Ans. is 'd' i.e., Mapelson F

MAPLESON F SYSTEM

- It is a modification of Mapelson E by Jackson Rees and is known as Jackson Rees modification.
- It has a 500 ml bag attached to the expiratory limb. This bag helps in respiratory monitoring or assisting the respiration. It also helps in venting out excess gases.
- It is used in neonates, infants, and paediatric patients less than 20 kg in weight or less than 5 years of age.
- See explanation- 5 of session- 6 of Anaesthesia of All India 2014-15 pattern of this book.

41. Inhalation agent of choice in head injury with raised ICT is ?

a) Isoflurane

b) Enflurane

c) Sevoflurane

d) None

Correct Answer - A

Ans. is 'a' i.e., Isoflurane

Isoflurane

- It is an isomer of enflurane with similar properties but 11/2 times more potent.
- BP falls due to vasodilation, while cardiac output is maintained inhalation anaesthetic of choice in Cardiac surgery (intravenous anaesthetic of choice for cardiac surgery is etomidate).
- It does not sensitize the heart to Adr --> Safe in pheochromocytoma.
- Isoflurane causes minimum increase in ICT Preferred agent in increased ICT.
- It does not provoke seizures —> preferred in neurosurgery.
- Uterine and skeletal muscle relaxant action is similar to halothane — > can be used for assisting version as an alternative to halothane.
- It causes significant respiratory depression.
- Isoflurane is the volatile agent of choice in liver disease as it has least effect on hepatic blood flow.
- It can cause coronary steal phenomenon.
- It can be used for day care surgery (also sevoflurane and desflurane).
- It is also used to produce controlled hypotension, as it causes maximum decrease in systemic vascular resistance.



42. Malignant hyperthermia is caused due to which of the following mechanism?

a) Increased intracellular Na

b) Decreased intracellular chlorine

c) Increased intracellular Ca

d) Increased serum K

Correct Answer - C

Ans. is 'c' i.e., Increased intracellular Ca

43. Maximum histamine is released by ?

a) dTubocurarine

b) Succinylcholine

c) Pancronium

d) Gallamine

Correct Answer - B

Ans. is 'a' i.e., d Tubocurarine

Important facts about muscle relaxants (from Goodman & Gilman)

- Longest acting Neuromuscular blocker Pancuronium (duration of action 120-180 minutes). Note - KDT has mentioned doxacurium as longest acting.
- Shortest and fastest acting neuromuscular blocker Succinylcholine (suxamethonium) - duration of action 5-8 minutes.
- Shortest acting competitive (nondepolarizing) neuromuscular blocker Mivacurium (duration of action 12-18 minutes).
- Fastest acting nondepolarizing blocker Rocuronium (can be used for endotracheal intubation as an alternative to Sch).
- Histamine release is caused by --> D-TC (maximum tendency), succinylcholine, mivacurium, doxacurium, atracurium, tubocurarine can cause bronchoconstriction.
- Virtually no histamine release.---- Pancuronium
- Maximal vagal block and tachycardia is caused by -9 Pancuronium (Previously it was gallamine, but it is not used now).
- Vagal stimulation is caused by —) succinylcholine.
- Maximum ganglion blockade is caused by d-TC
- Ganglion stimulation is caused by Succinylcholine
- Most commonly used muscle relaxant for routine surgery -9

vecuronium.

- Most potent skeletal muscle relaxant --> Doxacurium.
- Least potent skeletal muscle relaxant Succinylcholine (Gallamine was least potent but it is not used now).
- Least potent nondepolarizing muscle relaxant --> Rocuronium.

44. A patient on atracurium develops seizures due to accumulation of ?

a) Didanosine

b) Laudanosine

c) Methylated Atracurium

d) Sulfated Atracurium

Correct Answer - B
Ans. is `b' i.e., Laudanosine

45. The ideal parameters for cardiac massage in cardiopulmonary resuscitation are all except ?

a) Force should depress sternum by 1 1/2 inches

b) Ratio of compression to ventilation should be 15:2

c) Compressions to be given over lower third of sternum

d) Force should depress sternum approximately 1/3 of chest wall diameter

Correct Answer - B

Ans. is 'b,' i.e., Ratio of compression to ventilation should be 15:2

46. Probable indicators of reversal of neuromuscular blockade are all except ?

a) Lift head for 5 seconds

b) Sustain hand grip for 5 seconds

c) Leg lift for 10 seconds

d) Ability to perform sustained tongue depressor test

Correct Answer - C

Ans. is 'c' i.e., Leg lift for 10 seconds

Clinical pointers for the reversal of neuromuscular blockade are:

- Lift head for 5 seconds.
- Lift leg for 5 seconds.
- Sustained hand grip for 5 seconds.
- Ability to perform sustained tongue depressor test.

47. In spinal anaesthesia the drug is deposited between

a) Dura and arachnoid

b) Pia and arachnoid

c) Dura and vertebra

d) Into the cord substance

Correct Answer - B

Ans. is 'b' i.e., Pia and arachnoid matter

Spinal anaesthesia

- In spinal anaesthesia LA is injected into subarachnoid space (space between pia matter and arachnoid matter).
- Structure pierced during SA (from outside in) - Skin - Subcutaneous tissue → Supraspinous & interspinous ligament → Ligamentum flavum → Duramater → Arachnoidmater.
- Site of spinal anaesthesia
- L2_3 or L3_4 intervertebral space in adult (In adult spinal cord ends at lower border of L1 vertebrae).
- L4_5 intervertebral space in children (spinal cord ends at lower border of L3 vertebrae in children).
- Spinal anaesthesia leads to creation of a zone of differential blockade, ie motor fibres are blocked two levels lower and autonomic fibres are blocked two levels higher than the sensory blockade due to different sensitivity of different fibres.

48. Diffusion hypoxia seen during ?

a) Induction of anesthesia

b) Reversal of anesthesia

c) Post operative period

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Reversal of anaesthesia

Second gas effect and diffusion hypoxia

- In initial part of induction, diffusion gradient from alveoli to blood is high and larger quantity of anaesthetic is entering blood.
- If the inhaled *Concentration of anaesthetic is high (eg N₂O)*, Substantial loss of alveolar gas volume will occur and it creates negative intralveolar pressure that leads to removal of more gas from cylinder to alveoli *Concentration effect*.
- If another inhalation agent is (eg Halothane) is being given at the same time, it also will be delivered to lung from the cylinder (due to negative intraalveolar pressure) *Second gas effect*.
- *During recovery* reverse occurs - N₂O having low blood solubility, rapidly diffuses into alveoli and dilutes the alveolar air --> partial pressure of oxygen in alveoli is reduced.
- The resulting hypoxia is known as *diffusion hypoxia*.
- Diffusion hypoxia can be prevented by continuing 100% O₂ inhalation for a few minutes after discontinuing N₂O, instead of straight away switching over to air.

49. Alternative to succinylcholine which muscle relaxant can be used while endotracheal intubation

a) Atracurium

b) Pancuronium

c) Mivacurium

d) Vecuronium

Correct Answer - C
Ans. is 'c' i.e., Mivacurium

50. Following ventilation mode is not used for weaning?

a) Pressure support ventilation (PSV)

b) Synchronized Intermittent Mandatory Ventilation (SIMV)

c) Controlled Mechanical Ventilation (CMV)

d) Assist Control Ventilation (ACV)

Correct Answer - C

Ans. is 'c' i.e., Controlled Mechanical Ventilation (CMV)

51. About lignocaine, all are true except ?

a) It is ester group of local anaesthetic

b) It has antiarrhythmic property

c) Can penetrate through mucous membrane

d) It can precipitate malignant hyperthermia

Correct Answer - A

Ans. is 'a' i.e., It is ester group of local anaesthetic

Lidocaine

- It is the most commonly used local anaesthetic.
- It also has *antiarrhythmic property*.
- Systemic toxicity *is* less than bupivacaine. CNS involvement occurs at much lesser dose than CVS involvement.
- It can precipitate *malignant hyperthermia* --> should not be used in these patients.
- For regional anaesthesia, it is used in different concentrations for different type of anaesthesia *Surface (topical) analgesia : 4%, nerve block : 1 - 2%, Spinal anaesthesia : 5%, Epidural : 1 - 2 %, Beir's block (intravenous regional anaesthesia) : 0.5% and infiltration block : 1 - 2%.*
- *Maximum safe* dose of lidocaine without adrenaline is 300 mg (4.5 mg/kg) and with adrenaline is 500 mg (7 mg/kg).
- Besides local anaesthesia lidocaine is used : -
- To treat ventricular arrhythmias.
- To blunt the cardiovascular response to laryngoscopy and intubation, (i.v. or intrathecal administered lidocaine).

52. Not as used as induction agent among the following is ?

a) Midazolam

b) Etomidate

c) Ketamine

d) Propofol

Correct Answer - A

Ans. is 'a' i.e., Midazolam

- See explanation- 1 of session- 4 of Anaesthesia of CET Nov. 14 of this book.

53. All of the following anesthetics are used in children except

a) Desflurane

b) Sevoflurane

c) Propofol

d) Halothane

Correct Answer - A

Ans. is 'a' i.e., Desflurane

- Inhalational agent with mask is the induction method of choice in children.
- Sevoflurane is the inhalation agent of choice for induction. Sevoflurane is used in N₂O+O₂ gas mixture. Halothane is second choice inhalational agent for induction. Isoflurane and desflurane are not used for induction as they are more pungent and associated with more coughing & laryngospasm.
- Intravenous induction is preferred when induction by mask is contraindicated i.e., in full stomach patients or of child comes in the operation theatre with IV line in situ.
- Thiopental or propofol are commonly used agents. Propofol is particularly suitable for out patient surgery. Ketamine is preferred in children with hypovolemia. Etomidate can be used in child with unstable cardiovascular status as it is most cardio-vascular stable intravenous inducing agent.

54. Gas cylinder with single pin index ?

a) Oxygen

b) Air

c) Nitrogen

d) Entonox

Correct Answer - D
Ans. is'd' i.e., Entonox

55. Halothane causes -

a) Bradycardia

b) Fall in BP

c) Uterine relaxation

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Halothane

- It is a volatile liquid with sweet odour, nonirritating and noninflammable.
- It is a potent anaesthetic with poor analgesic and muscle relaxant properties.
- Halothane causes direct depression of myocardial contractility by reducing intracellular Ca^{+2} .
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- It tends to sensitize the heart to arrhythmogenic action of adrenaline --> contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi -4 inhalation agent of choice in asthmatics (intravenous anaesthetic of choice in asthmatics is ketamine).
- It is a hepatotoxic drug and can also cause malignant hyperthermia (Succinylcholine accentuate it).
- Recovery is smooth and reasonably quick.
- It causes postanaesthetic shivering and chills.
- It inhibits intestinal and uterine contractions -4 agent of choice for assisting external or internal version during late pregnancy.

- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

56. Speed of onset of action of local anaesthetics is indicated by -

a) Minimum alveolar concentration

b) Blood : gas partition coefficient

c) Oil : gas partition coefficient

d) All of the above

Correct Answer - B

Ans. is 'b' i.e., Blood : gas partition coefficient

Minimal alveolar concentration

- It is the lowest concentration of the anaesthetic in pulmonary alveoli needed to produce immobility in response to a painful stimulus (surgical incision) in 50% individuals.
- It is the measure of potency of inhalation GAs.

Blood : gas partition coefficient

- It is the measure of solubility of agent in blood.
- It determines the *speed of onset and recovery*.
- Higher the blood : gas partition coefficient, lesser the speed of induction and recovery → more blood soluble agents have slower induction and recovery.

Oil : gas partition coefficient

- It is the measure of lipid solubility of the agent, and therefore solubility in the fat - rich tissues of the CNS.
- This equates with the potency of individual agents.
- There is a direct relationship between the minimum alveolar concentration (MAC) value of inhaled anaesthetic agents and lipid solubility in terms of the oil/gas partition coefficient.

57. Use of dexmedetomidine ?

a) Prolong action of LA in hypertensive patients

b) Sedative agent for intubated patients

c) Increases bioavailability of regional anaesthetic drug

d) Helps in reducing bispectral index of general anaesthetic drug with low potency

Correct Answer - B

Ans. is 'b' i.e., Sedative agent for intubated patients

Dexmedetomidine

- It is a centrally acting α -2 adrenergic agonist
- It is approved by F.D.A. for short term (<24 hours) continuous IV sedation of adults who are tracheally intubated.
- Its use as an anaesthetic agent is not recommended but it is useful in patients with brain injury and ongoing sedation needs

58. Local Anaesthetic in wound/ulcer management?

a) Prilocaine

b) Chlorprocaine

c) Benzocaine

d) Bupivacaine

Correct Answer - C

Ans. is 'c' i.e., Benzocaine

- For management of wound/ulcer, local anaesthetic with topical anaesthetic action is used.
- Among the given options, only benzocaine has topical action.

59. Most commonly used local anaesthetics ?

a) Dibucaine

b) Bupivacaine

c) Prilocaine

d) Tetracaine

Correct Answer - B

Ans. is 'b' i.e., Bupivacaine

Bupivacaine

- Bupivacaine is *2nd most commonly used* local anaesthetic (after lidocaine).
- Bupivacaine has the highest local tissue irritancy amongst local anaesthetics.
- It is the most cardiotoxic local anaesthetic.
- *Levobupivacaine* (The S(-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Concentrations used for bupivacaine are : - Nerve block : 0.5%, Epidural : 0.25 - 0.5 %, and spinal : 0.5%.
- Maximum safe dose is 2 mg/kg without adrenaline and 3mg/kg with epinephrine

60. Second gas effect is ?

a) Displacement of N₂O by Oxygen

b) Displacement of oxygen by N₂O

c) Facilitation of inhalation of Halothane by N₂O

d) Removal of oxygen by N₂O from alveoli during recovery from general anaesthesia

Correct Answer - C

Ans. is 'c' i.e., Facilitation of inhalation of halothane by N₂O

61. Dibucain number refers to ?

a) Ach cholinestrace activity derangement

b) Potency of muscle relaxants

c) Potency of general anaesthetics

d) None

Correct Answer - A

Ans. is 'a' i.e., Ach cholinestrace activity derangement

- Dibucain number : Dibucain (a local anaesthetic) inhibits 80% of normal pseudocholinesterase and 20% of atypical (non-functional) pseudocholinesterase. Therefore normal dibucain number is 70-80%. Dibucain number is used to measure the activity of atypical pseudocholinesterase.

62. Local anaesthetic with maximum ionized form at physiological pH

a) Lignocaine

b) Etidocaine

c) Bupivacaine

d) Chlorprocaine

Correct Answer - D
Ans. is 'd' i.e., Chlorprocaine

63. All of the following are advantages of LMA except?

a) More reliable than face

b) Prevent aspiration

c) Alternative to Endotracheal intubation

d) Does not require laryngoscope & visualization

Correct Answer - B

Ans. is 'b' i.e., Prevent aspiration

- LMA is intermediate between the face mask and Endotracheal intubation in terms of reliability, invasiveness and facilitation of gas exchange (face mask has minimum and endotracheal intubation has maximum).
- LMA does not prevent aspiration —) should not be used in full stomach patients.
- LMA can be used as an alternative to endotracheal intubation for minor surgeries, where anaesthetist wants to avoid intubation.
- LMA is introduced blindly (without laryngoscopy).

64. Stage of analgesia in anaesthesia is ?

a) Stage-1

b) Stage-2

c) Stage-3

d) Stage-4

Correct Answer - A
Ans. is 'a' i.e., Stage-1

65. Ketamine acts on which receptors

a) GABA

b) Muscarinic

c) 5-HT₄

d) NMDA

Correct Answer - D

Ans. is 'd' i.e., NMDA

- See explanation- 5 of session- 2 of Anaesthesia of All India 2014-15 pattern of this book

66. Succinylcholine causes hyperkalemia in patients with ?

a) Burn

b) Severe infection

c) High velocity trauma

d) All of the above

Correct Answer - D
Ans. is'd' i.e., All of the above

67. Long acting local anaesthetic ?

a) Procaine

b) Lignocaine

c) Prilocaine

d) Dibucaine

Correct Answer - D
Ans. is 'd' i.e., Dibucaine

68. Modern monitors to measure ETCO₂ make use of ?

a) Infrared absorption spectroscopy

b) Ultra violet rays

c) Laser technology

d) Scatter technology

Correct Answer - A

Ans. is 'a' i.e., Infrared absorption spectroscopy

- Measurements of variations in the respiratory cycle of expired carbon di oxide by displayed waveform and by
- absolute numerical values is defined as Capnography and Capnometry respectively.
- Measurement of the exhaled CO₂ at the level of upper airway at the end of expiration (when CO₂ is at its maximum) is referred to as end tidal CO₂ (EtCO₂).
- Modern monitors used to measure EtCO₂ in the exhaled air make use of infrared absorption spectroscopy

69. Machine used noninvasively to monitor an external chest compression during cardio-pulmonary resuscitation is ?

a) Zoll AED - plus automatic external defibrillator

b) Zoll depth synchronizer

c) Zoll strength sensor

d) Zoll pA02 monitor

Correct Answer - A

Ans. is 'a' i.e., Zoll AED - plus automatic external defibrillator

Monitor for chest compressions in cardio pulmonary resuscitation

- A novel monitor for the chest compressions is a device incorporated into the chest compression pad of the ZOLL AED - PLUS automatic external defibrillator.
- The sternal compression pad located between the stick on defibrillating electrodes includes an accelerometer.
- The signal from this device is doubly integrated to produce a measure of compression depth monitored by the device.
- Auditory feedback can be provided to the rescuer if chest compression depth so monitored falls outside the recommended range.
- Such technical aids improve the efficacy of external chest compressions and thus the rescue of patients.

70. Most important factor determining the affect of anaesthetic agent on fetus ?

a) Duration of pregnancy

b) MAC

c) Protein binding

d) Route of anaesthetic

Correct Answer - A

Ans. is 'a' i.e., Duration of pregnancy

- All the given options determine the effect of anaesthetic on fetus. But, duration of pregnancy is the most important.
- Almost all anaesthetic agents can be potentially teratogenic.
- Day 15th to day 60 is the most critical period.

71. Regarding propofol, which one of the following is false?

a) It is used as an intravenous induction agent

b) It causes severe vomiting

c) It is painful on injecting intravenously

d) It has no muscle relaxant property

Correct Answer - B

Ans. is 'b' i.e., It causes severe vomiting

Propofol

- Propofol is a milky white powder that is preservative free; therefore, it must be used within 6 hours. It is an oil based preparation, therefore injection is painful.
- Propofol is the most frequently used intravenous anaesthetic today. —Miller 6the - 318
- It can be used for both induction as well as maintenance.
- It does not possess anticonvulsive action (unlike thiopentone).
- It causes fall in BP and bradycardia.
- Like thiopental it does not possess muscle relaxant action.
- Propofol possess significant antiemetic and antipruritic action. → Miller 6the - 324
- Propofol decreases polymorphonuclear leukocyte chemotaxis but not adherence, phagocytosis and killing (Thiopentone blocks all these) —) increased life threatening infections.
- Propofol is particularly suitable for outpatient surgery.
- Intermittent injection or continuous infusion of propofol is frequently used for total Lv. anaesthesia (TINA) when supplemented by fentanyl.

- It is anaesthetics of choice for intubation in ICU and for patients with malignant hyperthermia.
- Side effects - pain on injection, myoclonus, apnea, L BP and rarely thrombophlebitis.
- Propofol infusion syndrome
 - .. A lethal syndrome, associated with infusion of propofol for 48 hours or longer.
 - 2. Occurs in children and critically ill.
 - 3. It occurs as a result of failure of free fatty acid metabolism and failure of the mitochondrial respiratory chain.
 - 4. Features are - cardiomyopathy with acute cardiac failure, metabolic acidosis, skeletal myopathy, hyperkalemia, hepatomegaly and lipemia

72. Eutectic mixture of local anaesthetic (EMLA) cream is

a) Bupivacaine 2.0% + Prilocaine 2.5%

b) Lidocaine 2.5% + Prilocaine 2.5%

c) Lidocaine 2.5% + Prilocaine 5%

d) Bupivacaine 0.5% + Lidocaine 2.5%

Correct Answer - B

Ans. is 'b' i.e., Lidocaine 2.5% + Prilocaine 2.5%

Eutectic mixture of local anaesthetic (EMLA)

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5% prilocaine.
- It acts slowly and the cream must be held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

73. Which of the following skeletal muscle relaxants undergo Hoffman's elimination ?

a) Atracurium

b) Succinylcholine

c) Mivacurium

d) Vecuronium

Correct Answer - A

Ans. is 'a' i.e., Atracurium

- Atracurium is inactivated by —> 1) Hoffman's elimination, 2) Alkaline ester hydrolysis. o Cisatracurium is inactivated by Hoffman's elimination.

74. Most cardiotoxic local anaesthetic is?

a) Bupivacaine

b) Procaine

c) Prilocaine

d) Dibucaine

Correct Answer - A
Ans. is 'a' i.e., Bupivacaine

75. Percentage of adrenaline with lignocaine for local infiltration is?

a) 1:1000

b) 1:10000

c) 1:100

d) 1:50000

Correct Answer - D

Ans. is 'd' i.e., 1:50000

- The most common concentrations of epinephrine combined with local anaesthetics are 1:50,000 (0.02 mg/ml), 1:100,000 (0.01 mg/ml) and 1:200,000 (0.005 mg/ml).
- The 1:50000 concentration is manufactured in combination with 2% lidocaine.
- The 1:100,000 concentration is manufactured in combination with 2% lidocaine and 4% articaine.
- The 1:200,000 concentration is manufactured in combination with 4% prilocaine, 4% articaine and 0.5% bupivacaine

76. Local anaesthetics act by?

a) Na channel inhibition inside gate

b) Na channel inhibition outside gate

c) K channel inhibition inside gate

d) K channel inhibition outside gate

Correct Answer - A

Ans. is 'a' i.e., Na channel inhibition inside gate

- Local anesthetics act by inhibiting Na⁺ channels from inside.
- Mechanism of action of LA
- *Local anaesthetics block generation and conduction of nerve impulse at all part of neuron where they come in contact, without causing structural damage.*
- Thus not only sensory but motor impulses and autonomic control is also interrupted.
- Mechanism of action
- Normally Na⁺ channel in axonal membrane has following phases :
Recovery
Resting (close) → Active (open) → Inactive (open)
- LAs prolong the inactive state → channel takes longer to recover → refractory period of the fiber is increased.
- LAs first penetrate the axonal membrane to come inside and then their *active species (cationic form) bind to Na⁺ channel from inside.*
- Cationic form (active form) is able to approach its receptor only when the channel is open at the inner face → So resting nerve is resistant to block as Na⁺ channels are not activated and cationic form is not able to approach its receptor.
- So blockade develops rapidly when the nerve is stimulated repeatedly.

- Degree of blockade is frequency dependent greater blockade at higher frequency of stimulation.
- Exposure to higher concentration of Ca²⁺ reduces inactivation of Na⁺ channels and lessens the block.
- Order of blockade of fibres B > C > AS > Aα, (3 & γ (Autonomic > Sensory > Motor). Order of recovery is in reverse order.
- Among sensory afferent order of block is : Temperature (cold before heat) > Pain > touch > deep pressure.
- When applied to tongue, bitter taste is lost first followed by sweet and sour, and salty taste last of all.
- Myelinated nerves are blocked earlier than nonmyelinated.
- Smaller fibres are more sensitive than larger fibres.

77. Thiopentone is contraindicated in ?

a) Acute intermittant porphyria

b) Electro convulsive therapy

c) Sarcoidosis

d) Diabetic patients

Correct Answer - A

Ans. is 'a' i.e., Acute intermittant porphyria

Thiopentone

- It is an ultrashort acting barbiturate.
- It has short duration of action due to rapid redistribution.
- It causes fall in BP due to vasodilatation - Cardiovascular collapse may occur if hypovolemia, shock or sepsis are present.
- It can cause respiratory depression.
- It has anticonvulsant action - agent of choice for neurosurgical procedures.
- It is the agent of choice for cerebral protection. because it decreases ICT, and cerebral metabolic rate.
- Miller 6th/e - 330, 332 .o It is poor analgesic -f painful procedure should not be done.It produces hyperalgesia.
- It has poor muscle relaxant property.
- Extravasation of the solution or inadvertent intrarterial injection produces intense pain - thrombosis and vasoconstriction can cause necrosis and gangrene.
- Treatment of this condition includes.
- Leaving needle insitu
- Brachial block
- Heparin injection to → prevent thrombosis
- Dilution of thiopentol t by injection of saline into the artery.

- Papaverine injection → to relieve spasm.
- Urokinase, streptokinase, vasodilators, steroid and lignocaine can also be used.

Contraindications

Acute intermittant porphyria
or shock.

Respiratory obstruction
equipments.

Status asthmaticus

Cardiovascular instability

No availibility of airway

78. Pre-anaesthetic medication is given to ?

- a) Reduce anxiety and fear
- b) Reduction of secretion of saliva
- c) To prevent undesirable reflexes
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Preanaesthetic medication

- Premedication (Preanaesthetic medication) refers to the use of drugs before anaesthesia to make it more pleasant and safe. The aims are :
 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.

Drugs used in premedication

1. *Sedative - antianxiety* → Diazepam / Lorazepam / Midazolam.
Lorazepam is used most commonly.
Midazolam is used for day care surgery.
2. *Opioids* → Morphine / pethidine
3. *Anticholinergics* → Atropine / Hyoscine / Glycopyrrolate.
4. *Neuroleptics* Haloperidol / chlorpromazine / triflupromazine.

5. H₂ blocker or proton
pump inhibitor

Ranitidine / Famotidine, omeprazole /
Pantoprazole.

6. Antiemetics

→ Metoclopramide / Domperidone /
Ondansetron.

79. True about post-spinal headache are all except

- a) Relieved by lying down position
- b) Frontal or occipital
- c) Can be prevented by using small bore needle
- d) Old age is a risk factor

Correct Answer - D

Ans. is'd' i.e., Old age is a risk factor

Post spinal headache

- Post dural puncture headache is due to CSF leak. Typical location is bifrontal or occipital.
- Headache gets worsen on sitting or upright posture and is relieved by lying down position and abdominal pressure
- pressure → The hallmark of postdural puncture headache i.e., association with body position.
- The onset of headache is usually 12-72 hours following the procedure, however, it may be seen almost immediately. In most cases it lasts for 7-10 days.
- PDPH is believed to result from leakage of CSF from a dural defect and decreased ICP. Loss of CSF at a rate faster than it can be produced causes traction on structure supporting the brain, particularly dura and tentorium. Traction on cranial nerve (particularly 6th nerve) produces diplopia.
- Factors that increase the incidence of PDPH are young age, female sex, Pregnancy, large bore needle and multiple punctures.
- Use of small bore needle can prevent PDPH .
- Initially conservative treatment is given which includes analgesics (NSAIDs), oral or i.v., fluids, Sumatriptan, cosyntropin, caffeine and

recumbent position.

- If conservative treatment fails, epidural blood patch can be used. It involves injecting 15-20 ml of autologous blood into the epidural space which stop leakage of CSF by coagulation and mass effect.

80. IV administration of which anesthetic drug is most painful among the following?

a) Methohexital

b) Ketamine

c) Propofol

d) Etomidate

Correct Answer - C
Ans: c. Propofol

81. Which of the following is the most common method used to know depth of anaesthesia?

a) BIS

b) Oesophageal contractility

c) Depressed responses

d) Hypotension

Correct Answer - A

Ans:A. BIS

Bispectral index:

- 1st scientifically validated & commercially available monitor to check depth of anaesthesia.
 - Utilizes many parameters (EEG signals, eye blinks) to calculate depth score.
- Adequate depth:
- Score of 45-60.
- Fully awake state:
- Score of 100
- Completely silent brain: 0.

82. During laryngoscopy and intubation procedure, all of these are true, except:

- a) A slight pressure may be applied at the cricoid cartilage
- b) The laryngoscope is held in the right hand introduced from the right side of the patient
- c) The neck is flexed with extension at the atlanto-occipital joint
- d) After insertion of laryngoscope, it is levered on the upper incisor to pull up the tongue and visualize the vocal cords

Correct Answer - D

Ans: D. After insertion of laryngoscope, it is levered on the upper incisor to pull up the tongue and visualize the vocal cords

(Ref: Miller 81c, p I 666-7667. 71e p1587).

- The laryngoscope should never be hinged on the teeth to lift up the epiglottis.
- The patient is aligned in a "sniffing" position, i.e. neck (atlanto-axial joint) flexion and face extension (atlanto-occipital joint), at around 35° and 15° respectively

83. Drug of choice for reversal of is neuromuscular blockade by vacuronium-

a) Edrophonium

b) Neostigmine

c) Sugamadex

d) Pyridostigmine

Correct Answer - C

Ans: C. Sugamadex

(Ref: KDT 7h/e p. 355; Basic of Anesthesia e book - 157)

- Sugamadex provides faster reversal of vacuronium - induced neuromuscular blockade compared with neostigmine.
- A modified gamma-cyclodextrin with high affinity towards vacuronium & rocuronium.

84. Current recommendations for minimum preoperative starving period for solid food (NPO for solid food]-

a) 4 hours

b) 6 hours

c) 10 hours

d) Overnight

Correct Answer - B

Ans: B. 6 hours

[Ref: An update report by American society of Anesthesiologist]

- Light meal (Solid food) - 6hrs.
- Heavy meal (Fried foods/meat) - 8hrs.

85. A patient was undergoing surgical procedure under general anaesthesia. Suddenly he developed tachycardia, sweating, hypertension and tachypnea. What is the best immediate step to manage the situation-

a) IV beta-blocker

b) Abandon the surgery

c) Deepen the plane of Anaesthesia

d) Nothing is required

Correct Answer - C

Ans: C. Deepen the plane of Anaesthesia

[Ref: Miller's &/e p. 1253]

- The given patient is showing signs of light anaesthesia and intraoperative awareness.
- Signs of light anaesthesia (intra-operative awareness) are:
 1. Tachycardia
 2. Hypertension
 3. Lacrimation
 4. perspiration (sweating)
 5. Eye movement
 6. Preserved reflexes (coughing)
 7. Movement on painful stimuli
 8. Laryngospasm / Bronchospasm
 9. Tachypnea
 10. p waves on EEG

- It intraoperative clinical signs suggest that a patient is having light anaesthesia intraoperative awareness, anaesthesia should be deepened immediately.

86. Reason of difficult intubation in an obese patient is?

a) Difficult visualization

b) Decreased safe apnea time

c) Lower tidal volume

d) All of the above

Correct Answer - D

Ans. is'd'i.e., All of the above

Reasons for difficult intubation in obese patients

- Increased soft tissue mass
- Increased pressure on diaphragm
- Reduced 'Safe Apnoea Time'

87. Positive end-expiratory pressure causes increase in which respiratory parameter ?

a) Lung compliance

b) FRC

c) Tidal volume

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

[Ref Fundamental of anaesthesia - 7961]

- Positive airway pressure therapy means providing positive pressure during breathing.
It may be :-
 - 1. Positive end-expiratory pressure (PEEP)**
- PEEP is the positive pressure is applied at the end of respiration during mechanical ventilation.
 - 2. Pulmonary effects of PEEP and CPAP**
- Positive pressure in PEEP & CPAP results in : -
Re-expansion (recruitment) and stabilization of partially collapsed lung which causes : -
- Increased FRC, tidal volume & lung compliance.
- Connection of ventilation/perfusion abnormalities → Improved oxygenation.

88. Capnography is used for?

- a) Oxygen saturation of blood
- b) Amount of CO₂ transported in blood
- c) Diagnosing malignant hyperthermia
- d) Myocardial perfusion

Correct Answer - C

Ans. is 'c' i.e., Diagnosing malignant hyperthermia

[Ref: Dorsch & Dorsch 4h/e p. 8901]

Uses of CapnoGRaphy

- It is the surest confirmatory sign of correct intubation in trachea.
- Incorrect position of tube in the esophagus instead of trachea (esophageal intubation) will yield ETCO₂ = 0.
- Diagnosing malignant hyperthermia → ETCO₂ increases significantly (more than 100 mg Hg).

89. What is not true about preoperative modification of drugs?

a) Lithium should be stopped 2-3 days before

b) Low dose aspirin should be stopped 7 days before

c) TCAs can be continued till the date of operation

d) Oral anticoagulants are stopped 4 days before

Correct Answer - B

Ans. is 'b' i.e., Low dose aspirin should be stopped 7 days before

[Ref Ajay Yadav 3'd/e p. 461]

- Antiplatelet drugs like clopidogrel and conventional dose of aspirin should be stopped 7 days prior to surgery.
- But low dose aspirin can be continued till the day of surgery.

90. ASA grading is anesthesia is done for?

a) Mental status

b) Physical status

c) Respiratory status

d) Socio-economic status

Correct Answer - B

Ans. is'b'i.e., Physical status

[ref: Millers anesthesia p. 1144]

- ASA is the simplest and most widely used system for describing patient's physical status to assess the risk factors before anaesthesia.

91. Brain dead patient comes under which category in ASA classification?

a) ASA I

b) ASA 3

c) ASA 4

d) ASA 6

Correct Answer - D

Ans. is'd'i.e., ASA 6

(Ref: Millers anesthesia 8th/e p. 1144)

- Brain dead patient is ASA grade-6.

92. Which of the following prevents aspiration?

a) LMA

b) Oropharyngeal airway

c) Nasopharyngeal airway

d) Proseal LMA

Correct Answer - D

Ans. is 'd' i.e., Proseal LMA [Ref: Understanding Paediatric Anaesthesia Td/e p. 141

- A type of definite airway
- Definite airway is an airway that is adequately secured in trachea and it adequately protect the airway from aspiration.
- ProSeal (PLMA), a modification of Classic LMA, has a gastric drainage tube placed lateral to main airway tube which allows the regurgitated gastric contents to bypass the glottis and prevents the pulmonary aspiration.

93. Shifting patient from assisted ventilation to voluntary ventilation which of the following shows failure?

a) O₂ saturation <80%

b) PEEP <5cms

c) RR <35 mins

d) Tidal volume >5 ml/kg

Correct Answer - A

Ans. is 'a' i.e., O₂ saturation < 80%

- O₂ saturation of >90% is one of the criteria for successful weaning from mechanical ventilation.

94. Tracheostomy reduces dead space by ?

a) By-passing upper airway

b) Increasing V/Q ratio

c) Reducing airflow resistance

d) By all of the above mechanisms

Correct Answer - A

Ans. is'a'i.e., By-passing upper airway

(Ref: Morgan 4tu/e p. 553)

Important effects of tracheostomy on respiratory physiology

1. Tracheostomy decreases dead space as upper airways and nasal cavity are bypassed.
2. Tracheostomy decreases ventilation/perfusion (V/Q) ratio.
3. Tracheostomy reduces the airflow resistance.

95. VAT in mechanical ventilation stands for ?

a) Ventilator associated trauma

b) Ventilator associated treatment

c) Ventilator associated tracheobronchitis

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Ventilator associated tracheobronchitis

(Ref: Nosocomial and Ventilator-Associated Pneumonia p.14)

- VAT (Ventilator associated tracheobronchitis) & VAP (Ventilator associated pneumonia) are nosocomial lower respiratory tract infections common in patients who are on ventilator for long periods of time.

96. Best anesthesia for low forceps delivery ?

a) General anesthesia

b) Epidural block

c) Saddle block

d) Caudal block

Correct Answer - C

Ans. is'c'i.e., Saddle block

(Ref: Chestnut's Obstetric Anesthesia p. 480)

- 'A saddle block performed with the patient in sitting position with hyperbaric local anesthetic solution provides excellent anesthesia for outlet/low forceps delivery.'

97. Site of Topical block of sphenopalatine ganglion is?

a) Above the superior turbinate

b) Posterior to Superior turbinate

c) Posterior to middle turbinate

d) Posterior to inferior turbinate

Correct Answer - C

Ans. is 'c' i.e., Posterior to middle turbinate

Ref: Morgan Anesthesiologist 4h/e. ch. 78; Lee's Synopsis of Anaesthesia

- 13n/e p. 411; Dhingra 4h/e p. 131
- Sphenopalatine ganglion block may be used in the treatment of acute migraine headache, acute cluster headaches, and a variety of facial neuralgias including Sluder's, Vail's and Gradner's syndromes.
- Most of the posterior two-thirds of nasal cavity (both septum and lateral wall) is supplied by branches of sphenopalatine ganglion which can be blocked by placing a pledget of cotton soaked in anaesthetic solution near the sphenopalatine foramen situated at the posterior extremity of middle turbinates.

98. Sequence of CPR is?

a) Basic CPR, ACLS, Defibrillation

b) Basic CPR, Defibrillation, ACLS

c) ACLS, Basic CPR, Defibrillation

d) Defibrillation, ACLS, Basis CPR

Correct Answer - B

Ans. is'b'i.e., Basic CP & Defibrillation, ACLS

- Ref: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations (CoSTR)
- Sequence Is : Basic life support (BLS) → Defibrillation -+ Advanced cardiac life support (ACIS).

99. Cuff pressure in Endotracheal intubation with prolonged ventilation should be less than?

a) 20 mm Hg

b) 30 mm Hg

c) 40 mm Hg

d) 50 mm Hg

Correct Answer - A

Ans. is'a'i.e., 20 mm Hg

Ref.: Miller's Anacs Physiology 7/e Chap. 50

- Cuff pressure 18-22mmHg (25-30 cm H₂O) is recommended.

100. Percentage of Halothane metabolized ?

a) 1%

b) 5%

c) 10%

d) 20%

Correct Answer - D

Ans. is 'd' i.e., 20% [Ref: Essentials of anaesthesiology p. 65]

- Most of the inhaled anaesthetics are eliminated from lung though some metabolism in liver may occur. In terms of extent of hepatic metabolism, the rank of order is methoxyflurane (> 50%) > Halothane (20%) > Ether (10-15%) > enflurane (3-5%) desflurane (< 0.1%) > N₂O (0%). N₂O does not have any metabolism in the body.

101. Heavy smoker for elective hernia repair, smoking should be stopped before how much period?

a) 4 days

b) 10 days

c) 3-4 weeks

d) 6-8 weeks

Correct Answer - D

Ans. is 'd' i.e., 6-8 weeks

Ref: Postgraduate anaesthesia p. 786

- 'Limited prospective data suggest that cessation for at least 6-8 weeks preoperative is necessary to decrease the incidence of pulmonary complication.'

102. The first drug used as local anaesthetic is ?

a) Cocaine

b) Prilocaine

c) Procaine

d) Lidocaine

Correct Answer - A

Ans. is'a' i.e., Cocaine

[Ref: Ajay yadav 4e/e p. 118]

- Cocaine was the first local anaesthetic used by Carl Koller. It was used for anaesthetizing cornea.

103. Maintenance of anaesthesia in 70 yr male for surgery duration 4-6 hrs should ideally include?

a) O₂ + Air + Isoflurane + Pancuronium + Morphine

b) O₂ + Air + Sevoflurane + Pancuronium + Remifentanyl

c) O₂ + Air + Halothane + Vecuronium + Morphine

d) O₂ + Air + Desflurane + Atracurium + Remifentanyl

Correct Answer - D

Ans. is 'd' i.e., O₂ + Air + Desflurane + Atracurium + Remifentanyl

Ref.: Miller's Anesthesiology 7th ed chap. 7

- Table 71-7, Chap. 28; Stoelting's Anesthesia and Co-Existing Disease An/e chap. 251

104. Which of the following should be the ventilator settings for tidal volume in a patient with ARDS?

a) Tidal volume 10-12 ml/kg

b) Tidal volume 8-10 ml/kg

c) Tidal volume 5-7 ml/kg

d) Tidal volume 4 ml/kg

Correct Answer - C

Ans. is'c'i.e., Tidal Volume 5-7 ml/kg

[Ref Miller's Anaesthesiologist 7/e chap. 91; Journal of Thoracic disease 2013 Issue 5 (3)/ p. 323-334]

- "Patients with acute lung injury or acute respiratory distress syndrome should be mechanically ventilated with tidal volumes of 6 mL/kg of ideal body weight.

105. Which of the following drug is used in CPR?

a) Atropine

b) Amiodarone

c) Procainamide

d) Phenylephrine

Correct Answer - B

Ans. is'b'i.e., Amiodarone

[Ref: AHA Guidelines For CPR 6 ECCSC 2010 ; 122:5685-570, Highlights of AHA. Guidelines for CPR & ECC-American Heart Association 2010, Objective Anaesthesia Review Course 3'd/e p. 417, 418.]

- Important drug used in CPR are epinephrine, amiodarone, lidocaine, MgSO₄, sodium bicarbonate and calcium gluconate
- The routine use of Atropine for PEA (pulseless Electrical Activity & asystole) has no therapeutic benefit.
- Hence, Atropine has been removed from the cardiac arrest algorithm