1. **Cis atracurium is prefferd over atracurium due to advantage of -**

a) >Rapid onset

b) >Short duration of action

c) >No histamine release

d) Less cardiodepressant

Correct Answer - C
No histamine release *[Ref. Morgan's anaesthesia 4/e p. 220, 221, 222]*

- *Cisatracurium is a stereoisomer of Atracurium*
- Unlike atracurium cisatracurium does not produce a consistent dose dependent increase in plasma histamine -Atracurium triggers dose dependent histamine release that becomes significant at dose above 5mg/kg. - The release is dose dependent such that with increasing dose administered at the same rate there is greater propensity for eliciting histamine release.
  The histamine release resulted in:-
  - Flushing
  - Hypotension
  - Reflex tachycardia
- *These effects are transient and the extent of hypotensive effect and reflex tachycardia were rarely of clinical significance.*
  - *Cisatracurium does not cause increase in histamine secretion, does not affect heart rate or blood pressure nor does it produce autonomic effects.*
  Cisatracurium does not cause bronchospasmQ
- *Atracurium use has been associated with bronchospasm and it should be avoided in patients with Asthma.*

- *To date cisatracurium has not been reported to elicit bronchospasm at doses that are clinically prescribed Cisatracurium produces less laudanosineQ*
- *Laudanosine results from Hoffman elimination of Atracurium and cisatracurium*
- *Laudanosine may cause C.N.S. toxicity*
- *Cisatracurium produces less laudanosine*
  Cisatracurium is 4 times as potent as Atracurium and produces less Laudanosine and has longer duration of intubation dose

2. Laudanosine is metabolite of -

a) >Cisatracurium

b) >Atracurium

c) >Pancuronium

d) >Gallamine

Correct Answer - B
Atracurium > Cisatracurium [Ref: *Morgan's Anaesthesia 4/e p. 220, 221, 222]*

- *Laudanosine (tertiary amine) is a metabolite of both Atracurium and its isomer cisatracurium.*
- *Atracurium and its isomer cisatracurium posess a unique characteristic to undergo spontaneous non enzymatic chemical breakdown at physio- logical pH and temperature (Hoffman elimination). Most of the Atracurium and cisatracuriwn is metabolized in this way.*
  - These drugs are so extensively metabolized in this way that their phurmacokinetics is independent of renal and hepatic function.
- *Laudanosine is a breakdown product of the spontaneous non enzymatic organ independent degradation of the drug (Hoffman elimination).*
  -Both Atracurium and cisatracurium undergo Hoffman elimination resulting in laudanosine.
  - "Because of its higher potency cisatracurium produces less laudanosine than Atracurium".
- *Laudanosine may have some potentially toxic systemic effects*
  - It crosses the blood brain barrier and may cause excitement and seizure activity.
  - In C. VS. high plasma concentration, produces hypotension and bradycardia

bradycardia.
-These are probably irrelevant considerations/side effects unless a patient has received an extremely high total dose or has hepatic .failure.
- Laudanosine concentration increases in hepatic failure as it is metabolized by the liver.

3. Which of the following is a controlled delivery device which is used to deliver a fixed concentration of oxygen?

a) Venturi mask

b) Nasal cannula

c) Nasal mask

d) Non breathing mask

Correct Answer - A

Venturi mask is a type of **HAFOEmask** (High Air Flow Oxygen Enrichment Devices).
It is used to deliver a controlled oxygen concentration to a patient.
The patient breathes a fixed concentration of oxygen enriched air because the gas flow is greater than the peak inspiratory flow rate of the patient.
Thus there is minimal dilution from atmospheric air.
The high gas flow flushes expired gas from the mask preventing rebreathing.

Nasal cannula isused when a low-flow of oxygen is indicated.
These do not increase dead space.
Inspiratory oxygen concentration depends on the flow rate. No rebreathing occurs.

Non-rebreathing mask has a one way valve prevents the exhaled air from entering the reservoir bag.
It provides the patient with enriched oxygen during inhalations.

Nasal masks are effective interfaces for non invasive positive pressure ventilation (NIPPV) in most pediatric patients.
It allows better removal of CO2.

4. All of the following are the components of WHO's 19 point Surgical Safety Checklist, EXCEPT:

a) To have an Oximeter

b) Mark the correct site for surgery

c) Give an antibiotic within 60 minutes of making an incision

d) None of the above

Correct Answer - D

WHO's 19 point Surgical Safety Checklist,
prompts the surgical team at crucial moments *to mark the correct site for surgery,*
give an antibiotic within 60 minutes of making an incision,
check the patient for allergies, and count sponges and needles to ensure that none are left in a patient.
It has reduced complications by more than 30%.
The oximeter is a key component of WHO's 19 point Surgical Safety Checklist,
which substantially lowers deaths and complications from surgery.
The oximeter is the only thing on the checklist that must be paid for.
Ref: Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat A-HS, Dellinger EP, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med2009;360:491-9; A pulse oximeter for every operating theatre in India ; BMJ 2013;346:f676.

5. What is the maximum dose of lignocaine which can be given with adrenaline for ocular blocks?

a) 2 mg/kg

b) 3 mg/kg

c) 5 mg/kg

d) 7mg/kg

Correct Answer - D

In the injectable form, maximum dose of lignocaine which can be given alone is 5mg/kg. When combined with epinephrine 1: 200,000, **maximum dose which can be used is 7mg/kg.**

Maximum dose of topical lidocaine is 4.5mg/kg upto 300mg.

6. Which of the following can lower EEG amplitude

a) N_20

b) Ketamine

c) Hypothermia

d) Early hypoxia

Correct Answer - C
C i.e. Hypothermia
- EEG activation (i.e. high frequency & low voltage activity) is seen in (Mn-"Small BBC In English Stimulates No Hypoxic Keets") i.e. Barbiturates *(small dose),* Benzodiazepines *(small dose), Mild* hypercapnia (TCO2), Inhalational agents *(subanesthetic),* Etomidate *(small doses),* sensory stimulation, N_20, Hypoxia *(early),* ketamine.

Here small = small, mild, early or subanesthetic dose.
EEG depression is caused by (Mn- Marked Hypo) i.e. hypothermia, hypocapnia, Propofol and Opioids and all marked (i.e. marked hypoxia (late), marked hypercapnia, large dose of barbiturates, etomidate & inhalational agents (1-2 MAC).

7. Which of the following is not true about xenon anesthesia

a) Non explosive

b) Minimal cardiovascular side effects

c) Slow induction and slow recovery

d) Inhibits Ca^{+} pump and low blood gas solubility

Correct Answer - C
C i.e. Slow induction and recovery

8. At the end of anaesthesia after discontinuation of nitrous oxide and removal of endotracheal tube, $100^{0}/0$ oxygen is administered to the patient to prevent:

a) Diffusion Hypoxia

b) Second gas effect

c) Hyperoxia

d) Bronchospasm

Correct Answer - A
A i.e. Diffusion Hypoxia

- *(Ref : Willer 8/e p656, 3401)*
- On discontinuation of N2O administration, nitrous oxide gas can diffuse from blood to the alveoli, diluting O2 in the lung.
  - Produce an effect called “Diffusional hypoxia”.
- To avoid hypoxia, 100% O2, rather than air should be administered when N2O discontinued.

9. A case of road traffic accident (RTA) came with head injury, BP is 90/60, pulse is 150/min. Which anesthetic agent should be used for induction.

a) Thiopentone

b) Ketamine

c) Halothane

d) Succinylcholine

Correct Answer - A
A i.e. Thiopentone
In head injury, induction is preferably done by *thiopental or propofol (both neuroprotective)Q* and a *rapid onset NMBD (usually rocuronium or mivacurium) following adequate preoxygenation hyperventilation* by mask. A barbiturate (thiopentone) - opioid - N_20-NMBA technique is commonly used or intraoperative maintenance anesthesia. *Ketamine, halothane, succinylcholine can increase ICP and are better avoidedQ,* however, Sch can be used in difficult intubation. Glucose containing or hypotonic crystalloid solutions, sedation without airway control and vasodilators (CCB, hydralazine, nitro-glycerine, nitroprusside) and PEEP are also avoided (or used very cautiously) in head injury.

10. Afferent nerve fibre affected by local anesthesia first

a) Type A

b) Type II - B

c) Type C

d) Type II

Correct Answer - C
C i.e. Type C

11. Centrineuraxial (spinal and epidural) anaesthesia is not contraindicated in -

a) Platelets < 80,000

b) Patient on aspirin

c) Patient on oral anticoagulants

d) Patient on LMH (heparin)

Correct Answer - B
B i.e. Patient on aspirin
- *Centrineuraxial anesthesia is not associated with increased risk with most antiplatelet agents (eg. aspirinQ &* NSAIDs).
Neuroxial block is combined name given to *Spinal, Epidural and Caudal Blocks.* Principal site of action for neuroaxial blok is Nerve root Q.

12. All of the following are induction agents except:
September 2007

a) Thiormtal

b) Halothane

c) Nitrous oxide

d) Propofol

Correct Answer - C
Ans. C: Nitrous oxide
General anaesthesia can be induced by intravenous (IV) injection, or breathing a volatile anaesthetic through a facemask (inhalational induction).
Onset of anaesthesia is faster with IV injection than with inhalation, taking about 10-20 seconds to induce total unconsciousness.
This has the advantage of avoiding the excitatory phase of anaesthesia, and thus reduces complications related to induction of anaesthesia.
An inhalational induction may be chosen by the anesthesiologist where IV access is difficult to obtain, where difficulty maintaining the airway is anticipated, or due to patient preference (e.g. children).
Commonly used IV induction agents include propofol, sodium thiopental, etomidate, and ketamine.
The most commonly-used agent for inhalational induction is sevoflurane because it causes less irritation than other inhaled gases
In order to prolong anaesthesia for the required duration (usually the duration of surgery), anaesthesia must be maintained. Usually this is achieved by allowing the patient to breathe a carefully controlled

achieved by allowing the patient to breathe a carefully controlled mixture of oxygen, nitrous oxide, and a volatile anaesthetic agent or by having a carefully controlled infusion of medication, usually propofol, through an IV.

Induction Characteristics & Dosage Requirements for Currently Available Sedative & Hypnotic Drugs

Drug Name	Induction Dose (mg/kg)	Onset (sec)	Duration (min)
Thiopental	3-6	<30	5-10
Methohexital	1-3	<30	5-10
Propofol	1.5-2.5	15-45	5-10
Midazolam	0.2-0,4	30-90	10-30
Diazepam	0.3-0.6	45-90	15-30
Lorazepam	0.03-0.06	60-120	60-120
Etomidate	0.2-0.3	3-12	3-12
Ketamine	1-2	10-20	10-20

13. EEG in anesthesia is useful in:

a) Depth of general anesthesia

b) Depth of local anesthesia

c) Depth of neuromuscular block

d) Depth of analgesia

Correct Answer - A

Ans. a. Depth of general anesthesia

- EEG in anesthesia is useful in monitoring the depth of anesthesia (GA) with 16-lead.

Uses of EEG in anesthesia

- To assess the sedation and awareness[Q]
- To monitor epileptic activity[Q], and to control antiepileptic drugs infusion, especially in paralyzed patients
- To monitor the changes in conscious levels[Q]
- During cerebrovascular surgery, to confirm the adequacy of cerebral oxygenation[Q]
- Monitoring the depth of anesthesia[Q](GA) with 16-lead

Have look on some new and mportant techniques

Bispectral Index Scale (BIS

- It is based on the principle of EEG[Q]
- It uses 3 EEG electrodes placed on frontal, parietal and temporal lobesQ

BIS is used to monitor

- Intraoperative awareness[Q]
- Depth of anesthesia
- Its value ranges from 0-100 (0: coma;100: awake)
- Target intra-operative BIS: 40-60[Q]

- Target sedation BIS: 60-80[Q]

Entropy

- It is based on the principle of EEG and EMG

14. A patient with hypertension, under control by medication falls under which grade

a) ASA 1

b) ASA 2

c) ASA 3

d) ASA 4

Correct Answer - B
Ans. b. ASA 2

- In a patient with mild systemic disease (no functional limitation), ASA grade is 2. So, ASA grade in hypertensive patient whose BP is controlled, is 2

ASA Grading

Class	Features
P1	A normal healthy patient
P2	A patient with mild systemic disease (no functional limitation)°
P3	A patient with severe systemic disease (some functional limitation)°
P4	A patient with severe systemic disease that is constant threat to life (Functionality incapacitation)°
P5	A moribund patient° who is not expected to survive without operation
	A brain-dead patient whose

P6	A brain dead patient whose organs are being removed for donor purposes
E	If the procedure is an emergency, the physical status is followed by E.

15. Modified Allen's test is for checking the proper arterial supply at the

a) Wrist

b) Arm

c) Elbow

d) Forearm

Correct Answer - A
Ans. a. Wrist

16. Most potent analgesic agent among following

a) Nitrous oxide

b) Nitric oxide

c) CO_2

d) Oxygen

Correct Answer - A

Ans. a. Nitrous oxide

- above options, most potent analgesic agent is Nitrous oxide.
- "Nitrous oxide- 50:50 nitrous oxide and oxygen has revolutionized it as analgesic agent; it has been used as an analgesic agent in obstetric surgeries; dental procedures; in acute trauma; burn dressings and cardiac pain as well."- *Wiley and Churchill-Davidson A Practice of Anesthesia 7/e p536*
- Miller says "Nitrous oxide produce analgesia that is in part because of release of proenkephalin derived family of endogenous opioids

Physical properties of N20

- It is colourless, non-irritating and sweet smelling
- Boiling point is -89°C.
- Critical temperature is 36.5°C° which is a.bove room temperature, therefore it can be kept in liquefied state.
- Stored as liquid in blue color cylindersQ
- 35 times more soluble than nitrogen

Remember: Anesthesia with

No analgesia	Halothane[Q]
Only analgesia	N20[Q]
Profound analgesia	Ketamine[Q]

analgesia	
Best/maximum analgesia	Trilene[Q]

17. Dose of which of the following muscle relaxant has to be calculated on the basis of total body weight of an obese person rather than its ideal weight

a) Atracurium

b) Vecuronium

c) Pancuronium

d) Rocuronium

Correct Answer - A
Ans. a. Atracurium

18. A 4-year-old child was intubated while posted for craniotomy. Suddenly anesthetic machine started showing bellowing. Next management is:

a) Start manual ventilation

b) Do nothing

c) Larger size of endotracheal tube

d) Increase flow rate

Correct Answer - C
Ans. c. Larger size of endotracheal tube
The question is incomplete (not recalled properly).

19. An infant with respiratory distress was intubated. The fastest and accurate method to confirm intubation

a) Capnography

b) Clinically by auscultation

c) Chest radiography

d) Airway pressure measurement

Correct Answer - A

Ans. a. Capnography

- Capnography is the surest confirmatory sign of correct intubationQ
- So, the fastest and accurate method to confirm intubation in the above mentioned infant is capnography

Capnography

- Capnography is the continuous measurement of end tidal carbon dioxide (ETCO,) and its waveform.
- Normal: 32 to 42 mmHe (3 to 4 mmHg less than arterial pCO, which is 35 to 45 mmHg)
- Principle: Infrared light is absorbed by carbon dioxide

Uses of Capnography

- It is the surest confirmatory sign of correct intubation (esophageal intubation will yield ETCO2=0)
- Intraoperative displacement of endotracheal tube° ($ETCO_2$ will become zero)
- Diagnosis of malignant hyperthermie (ETCO, may rise to more than 100 mm Hg)
- For detecting obstructions and disconnections of endotracheal tubes (ETCO, will fall)

Capnography

Uses of Capnography

- Diagnosing pulmonary embolism by air, fat or thrombus (sudden fall of $ETCO_2$ occurs. It may
- become zero if embolus is large enough to block total pulmonary circulation)
- Exhausted sodalime or defective valves of closed circuit will show high $ETCO_2$ values.
- To control level of hypocapnia during hyperventilation in neurosurgery
- Indicator of cardiac output. In cardiac arrest ETCO, is zero.

20. All are true about lidocaine except

a) It acts on sodium channels in both active and inactive state

b) It is most cardiotoxic local anesthetic

c) It is given IV in cardiac arrhythmias

d) Extensive first pass metabolism

Correct Answer - B
Ans. b. It is most cardiotoxic local anesthetic

21. In a pregnant female, there is decreased requirement of the spinal anaesthetic agent because of all of the following except:

a) Exaggerated lumbar lordosis

b) Decreased volume of sub arachnoid space

c) Engorgement of epidural veins

d) Increased sensitivity of the nerves to anaesthetic agent

Correct Answer - A

Ans. a. Exaggerated lumbar lordosis

In a pregnant female, there is decreased requirement of the spinal anaesthetic agent because of decreased volume of sub arachnoid space, engorgement of epidural veins and increased sensitivity of the nerves to anaesthetic agent (but not due to exaggerated lumbar lordosis).

Spinal Anesthesia

- Spinal anesthesia blocks nerve roots as they course through the subarachnoid space.
- The spinal subarachnoid space extends from the foramen magnum to the S2 in adults and S3 in children°.
- Injection of local anesthetic below Ll in adults and L3 in children helps avoid direct trauma to the spinal cord°.
- Spinal anesthesia is also referred to a subarachnoid block or intrathecal injection
- Factors affecting the Level of Spinal Anesthesia

Most important factors	**Other factors**

Baricity of anesthetic solutionQ	Age
Position of the patientQ	CSF volumeQ
During injectionQ	Curvature of the spineQ
Immediately after injectionQ	Drug volumeQ
Drug dosageQ	Intra-abdominal pressureQ
Site of injectionQ	Needle directionQ
	Patient heightQ
	PregnancyQ

- CSF volume inversely correlates with level of anesthesia.
- Increased intra-abdominal pressure or conditions that cause engorgement of the epidural veins, thus decreasing CSF volume, are associated with higher blocks°. This would include conditions such as pregnancyQ, ascites, and large abdominal tumorsQ
- In these clinical situations, higher levels of anesthesia are achieved with a given dose of local anesthetic than would otherwise be expected.
- For spinal anesthesia on a term parturient, the dosage of anesthetic can be reduced by one-third compared with a non-pregnant patientQ.
- Age-related decreases in CSF volume are likely responsible for the higher than expected level, particularly with a hypobaric technique or rapid injection.
- During pregnancy progesterone also increases sensitivity of nerves to local anesthetics thus decreasing the doseQ.

22. An eye surgery was performed using propofol as the intravenous anesthetic agent and succinylcholine as the muscle relaxant. Recovery from anesthesia was uneventful. However, after 8 hours of surgery, patient complained of pain in legs on walking. Which of the following is the most likely reason for this?

a) Propofol

b) Succinylcholine

c) Due to surgery

d) Early mobilization

Correct Answer - B
Ans. b. Succinylcholine
Succinylcholine is a short acting depolarizing muscle relaxant, which causes initial fasciculations during induction. It can
cause muscle soreness and postoperative muscle pain.
Succinylcholine (Scoline, Suxamethonium or Diacetylcholine)
Suxamethonium chloride, a dicholine ester of acetyl choline
A clear, colorless aqueous solution of pH 3.0-5.0 with a shelf life of 2 years
Stored at 4C
spontaneous hydrolysis occurs in alkaline or warm conditions

23. A 20-year old spontaneous breathing patient undergoing incision and drainage under GA, which of the following is the breathing circuit of choice for spontaneous ventilation?

a) Mapleson A

b) Mapleson B

c) Mapleson C

d) Mapleson D

Correct Answer - A
Ans. a. Mapleson A
Mapleson A, also called as McGill circuit, is the circuit of choice for spontaneous ventilation the circuit of choice is Mapleson D.'

24. Which of the following agent is used in day care surgery?

a) Propofol

b) Thiopentone

c) Ketamine

d) Diazepam

Correct Answer - A
Ans. a. Propofol
Any induction agents used in day-case anesthesia should ensure a smooth induction, good immediate recovery and a rapid return to street fitness. Propofol is now used widely as the primary induction agent, which has advantage of rapid recovery and low incidence of post-operative nausea and vomiting.'

Preferable agents in Day Care Anaesthesia

- Mivacurium^{Q} (muscle relaxant of choice, shortest duration of action)
- auccinylcholineQ (for Ultra short period of profound muscle relaxation; Disadvantage: Post-operative myalgia)
- Isoflurane^{Q} (volatile inhalational agent)
- AlfentanyIQ
- Propofol^{Q} (inducing agent of choice)
- Midazolam^{Q} (for initial anaxiolysis and sedation)
- Mnemonic: Manmohan Singh Is A Prime Minister

25. All of the following are methods for improving oxygenation using a ventilator, except:

a) High frequency ventilation

b) Low tidal volume high PEEP

c) Extracorporeal membrane oxygenation (ECMO)

d) Prone ventilation

Correct Answer - A
Ans. a. High frequency ventilation
High frequenqt ventilation is not recommended based on clinical evidence against effcacy of therapy for improving orygenation inARDS

26. The names Brechner and Bethune are associated with which of the following devices?

a) Precordial Doppler

b) Transesophageal echocardiography

c) Plethysmography

d) End tidal capnography

Correct Answer - D
Ans. d. End tidal capnography

27. A patient of head injury is intubated and ventilated. The ideal mode of ventilation in him would be:

a) CMV

b) CPAP

c) AMV

d) SIMV

Correct Answer - A
Ans. a. CMV
Controlled Mechanical Ventilation (CMV)
The ventilator delivers a present number of breathes/min of a preset volume.

28. The appropriate size of LMA for an average adult patient weighing 50 kg is:

a) 2.5

b) 3.0

c) 4.0

d) 5.0

Correct Answer - C
Ans. c. 4.0
The appropriate size of LMAfor an average adult patient weighing 50 kg is 4.0.

29. The plane of surgical anesthesia during ether anesthesia is defined as

a) Loss of consciousness

b) Loss of consciousness to the onset of spontaneous respiration

c) From onset of regular respiration to cessation of spontaneous breathing

d) Absence of reflexes

Correct Answer - C
Ans. c. From onset of regular respiration to cessation of spontaneous breathing
Stage 1:
*** Stage of analgesia.**
* Extends from beginning of anesthetic inhalation to loss of conciousness.
Stage 2:
*** Stage of delirium or excitement.**
* Extends from loss of conciousness to beginning of regular respiration.
*** Features:**
- Presence of roving eye ball (maximum movement of eye).
- Pupil is partially dilated.
- Loss of eyelash reflex -> 1st reflex to be lost.
- No loss of eyelid reflex.
Stage 3:
*** Stage of surgical anesthesia.**
* Extends from **beginning of regular respiration to cessation of spontaneous breathing.**
*** Divided into 4 planes.**

*** Plane 1:**

- From beginning of regular respiration to cessation of eye movement.
- Presence of roving eye ball.
- Loss of eyelid reflex.
- **Plane ends with eye-ball fixation.**
- Normal pupil size.

*** Plane 2:**

- From cessation of eye movement to respiratory paresis.
- Fixed eye ball.
- Loss of corneal reflex.
- Pupil starts dilating (1/2 dilated).
- **Lacrimation present.**

*** Plane 3:**

- From respiratory paresis to respiratory paralysis.
- Pupil 3/4 dilated.
- Swallowing & laryngeal reflexes are lost.
- Lacrimation present

*** Plane 4:**

- Intercostal paralysis.
- Only abdominal respiration.
- Fully dilated pupil.
- Lost carinal (cough reflex) --> Final reflex to be lost.

Note: Lacrimation is present in plane II & III & absent in plane III, IV.

Stage 4:

- **Stage of medullary paralysis.**
- Presence of respiratory arrest & apnea.
- Fully dilated & fixed pupil.
- **Recovery from anesthesia:**

*** Return of reflexes is in opposite sequence.**

- i.e., 1st - Carinal reflex.
- Last - Eyelash reflex.

Note: Cough should come first but **swallowing comes first.**

- Because coughing requires diaphragm & respiratory muscles effort.

30. Which of the following drugs does not affect absorption and secretion of cerebrospinal fluid?

a) Halothane

b) Nitrous oxide

c) Ketamine

d) Thiopentone sodium

Correct Answer - B
Ans. b. Nitrous oxide
. No change in CMRO2 . No effect on GSF production or absorption
. Cerebral vasodilating effects inhibited by hyperventilation
. Expands intradural air .
. Expands venous air emboli

31. Which of the following intravenous anesthetic agents is contraindicated in epileptic patients posted for general anaesthesia

a) Ketamine

b) Thiopentone

c) Propofol

d) Midazolam

Correct Answer - A
Ans. a. Ketamine
Ketamine should be avoided in patients with history of seizures as it further increases ICP and also causes delirium and hallucinations.
Contraindications of Ketamine:
Head injury, intracranial space occupying lesion, eye injury^{Q} (increases ICT, IOT)
Ischemic heart disease, vascular aneurysm and hypertension^{Q} (increases myocardial oxygen demand and hypertension)
Psychiatric diseases and drug addicts° (more incidence of hallucination and emergence reaction)

32. Midazolam causes all except:

a) Anterograde amnesia

b) Retrograde amnesia

c) Causes tachyphylaxis during high dose infusions

d) Decreased cardiovascular effects as compared to propofol

Correct Answer - B
Ans. b. Retrograde amnesia
At the time of peak concentration in plasma, hypnotic doses of benzodiazepines (midazolam) can be expected to cause varying degrees of lightheadedness, lassitude, increased reaction time, motor incoordination, impairment of mental and motor functions, confusion, and anterograde amnesia."
Midazolam:

- It causes anterograde amnesia[Q]
- Tolerance and tachyphylaxis may occur, particularly with longer-term infusions[Q](Shafer A. Complications of sedation with midazolam in the intensive care unit and a comparison with other sedative regimens. Crit Care Med. 1998;26(5): 947-56)
- Benzodiazepine withdrawal syndrome has also been associated with high dose/ long-term midazolam infusions[Q]
- Compared with propofol infusions, midazolam infusions have been associated with a decreased occurrence of hypotension° but a more variable time course for recovery of function after the cessation of the infusion.

33. Suxamethonium is available as a clear, colourless aqueous solution. The shelf-life of suxamethonium is:

a) 6 months

b) 1 year

c) 2 years

d) 3 years

Correct Answer - C
Ans. c. 2 years
Succinylcholine has a shelf life of around 18 months, generally stored at 20-40 C and can be stored upto 2 years.'

34. Which of the following is true about hypothermia during anesthesia?

a) Beneficial to patients

b) Prevented by giving warm fluids

c) Body looses heat mainly by conduction

d) Always occur irrespective of the type of anesthesia

Correct Answer - B

Ans. b. Prevented by giving warm fluids

Hypothermia during anesthesia can be prevented by giving warm fluids.

Hypothermia During Anesthesia

- Mild hypothermia is extremely common during anesthesia and surgery.
- The physiological effects of hypothermia may have significant potential for detrimental effects on patient well-being.
- Major consequences of inadvertent hypothermia include morbid myocardial events, reduced resistance to surgical wound infection, impaired coagulation, delayed recovery, and postoperative shivering.
- Heat loss occurs primarily from the skin of a patient to the environment through several processes, including radiation, conduction and convection, and evaporation.
- Of these, radiation is most significant and accounts for —60% of total heat loss.
- Drug metabolism can be markedly decreased by hypothermia.
- Although hypothermia is generally regarded as deleterious, it can be beneficial in some situations.
- Hypothermia decreases the overall metabolic rate by 8% per °C to

about half the normal rate at 28°C. Oxygen demand drops and those tissues that have high oxygen consumption normally, such as brain and heart, have a proportionally greater reduction of oxygen use. This allows aerobic metabolism to continue through greater periods of compromised oxygen supply, thereby reducing the production of anaerobic byproducts such as superoxide radicals and lactate.

Hypothermia During Anesthesia

- Hypothermia lowers intracranial pressures and cerebral perfusion pressure.
- Warming of fluids can only help to minimize heat loss.
- Warm fluids are probably of benefit only when large amounts are administered for fluid replacement.

35. A woman is posted for elective cholecystectomy. Her preoperative clinical evaluation and airway assessment was normal. In the operating room, she was attached to the monitors and an antibiotic was administered to her. Suddenly she became pulseless and unresponsive. What should be the next step in her management?

a) Check for breathing

b) Call ambulance

c) Start chest compression

d) Give two breaths

Correct Answer - C
Ans. c. Start chest compression

36. Lithium potentiates the action of non-depolarizing muscle relaxants. How many days before administration of the muscle relaxant should lithium be stopped?

a) 1

b) 2

c) 3

d) 4

Correct Answer - B
Ans. b. 2
Lithium should be stopped 48 hours, i.e. 2 day before surgery due to its interaction with anesthetic agents.

37. A patient posted for surgery has raised intracranial tension. Which of the following anesthetics would be preferred in him?

a) Enflurane

b) Sevoflurane

c) Isoflurane

d) Desflurane

Correct Answer - C
Ans. c. Isoflurane

38. Vasopressor of choice in anesthesia for a patient of aortic stenosis, who develops hypotension during surgery:

a) Ephedrine

b) Dopamine

c) Dobutamine

d) Phenylephrine

Correct Answer - D
Ans. d. Phenylephrine
Thenylephrine is the vasopressor of choice to restore coronary perfusion in patients with severe aortic stenosis when under general anesthesia.'
Phenylephrine is the vasopressor of choice for correcting hypotension in parturients with aortic stenosis.' Phenylephrine is preferred over ephedrine as a vasopressor because the former lacks beta adrenergic agonist activity.'

Phenylephrine

- Phenylephrine is the vasopressor of choice to restore coronary perfusion in patients with severe aortic stenosis when under general anesthesia.
- Phenylephrine is the vasopressor of choice for correcting hypotension in parturients with aortic stenosis.

39. Which of the following intravenous anesthetic agent is contraindicated in epileptic patients posted for general anesthesia?

a) Propofo

b) Thiopentone

c) Ketamine

d) Midazolam

Correct Answer - C
Ans. c. Ketamine
Ketamine should be avoided in patients with history of seizures as it further increases ICP and also causes delirium and hallucinations.
Midazolam is a benzodiazepine, which has anti-seizure potential and thus used in treating seizueres.
Both thiopentone and propofol decreases ICP and are neuroprotective.

40. Cause of malignant hyperthermia is?

a) Halothane

b) Isoflurane

c) Thiopentone

d) Suxamethonium

Correct Answer - D
Ans. is 'd > b' i.e., Suxamethonium > Isoflurane
Drugs causing Malignant hvperthermia (MH)
* Succinylcholine
* Enflurane
* Methoxyflurane
* Phenothiazines
* Halothane
* Sevoflurane
* MAO inhibitors
* Lignocaine
* Isoflurane
* Desflurane
* TCA
- Succinylcholine is the most common cause of MH.
- Amongst anaesthetics, halothane is most common cause.
- Combination of Sch and Halothane has a much higher incidence.

41. 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.

42. During rapid induction of anesthesia ?

a) Sellick's maneuver is not required

b) Pre-oxygenation is mandatory

c) Suxamethonium is contraindicated

d) Patient is mechanically ventilated before endotracheal intubation

Correct Answer - B

Ans. is 'b' i.e., Pre-oxygenation is mandatory

- During rapid sequence induction preoxygenation is done for full 3 minutes. Sch is the muscle relaxant of choice for intubation. Sallieck's maneuver is done to prevent aspiration. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.

Rapid sequence anaesthesia

- When anaesthesia is given for emergency surgery, it is called a "rapid sequence anaesthesia". The patients have full stomach because there is no starvation for anaesthesia (it is an emergency surgery) and gastric emptying is delayed due to trauma, acute abdomen. Therefore, the objective of rapid sequence anaesthesia is to secure the airway rapidly and prevent aspiration of gastric contents.
- Procedure of rapid sequence has following steps : -
- Li The patient is preoxygenatedfor full 3 minutes.
- Intravenous induction agent (thiopentone or propofol) is given.
- Sellick's maneuver (cricoid/pressure) is done to prevent aspiration.
- After ensuring the correct position of tube cricoid pressure is released and maintenance anaesthesia (NCO 66%, 0_2% 33%, & inhalational agent) is given. A non-depolarizing blocker is now

added.

- Suxamethenium (succinylcholine) is given as it quickly relaxes the laryngeal muscles so that rapid intubation can be done.
- Not done during rapid sequence anaesthesia : ?

1. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.
2. Premedications are not given.

43. Which of the following combinations can be used for day care surgery?

a) Ramifentanil, midazolam, propofol

b) Fentanyl, midazolam, thiopentone sodium

c) Morphine, midazolam, propofol

d) Morphine, diazepam, ketamine

Correct Answer - A
Ans: A. Ramifentanil, midazolam, propofol
(Ref Miller's-26: -160; Morgan 3/e p173, 884).
Drug combination used for day care surgery:

- Ramifentanyl, midazolam & propofol.
- Ensures smooth induction, good immediate recovery & rapid return to street fitness.
- Propofol - Now used widely as primary induction agent.

Advantage:

- Rapid recovery.
- Low incidence of post-operative nausea & vomiting.

44. A patient presented with a vesicle on shin. Microscopy of Tzanck smear showed giant cells. Causative agent is:

a) Vaccinia virus

b) Varicella zoster

c) Mycobacterium

d) Molluscum contagiosum

Correct Answer - B
Ans: B. Varicella zoster
(Ref Fitzpatrick 7/e p490-493, 1873-1898: Rooks Sie p33.14-33.22; Roxburgh 16/52-54/

- **Vesicles on shin & giant cell on Tzanck smear – Suggest Herpes Zoster.**
- **Tzanck Smear:**
- Cytological examination of skin blisters:

Disorder	Finding
Pemphigus	Acantholytic cells°
Bullous pemphigoid	Predominantly eosinophil°
Chronic bullous disease of childhood	Predominantly neutrophils°
Varicella zoster	Multinucleated giant cells°
Herpes simplex infection	Multinucleated giant cells°
Toxic epidermal necrolysis	Necrotic cells

45. Which anesthetic agent can cause pain on IV adminis-tration?

a) Ketamine

b) Propofol

c) Thiopentone

d) Midazolam

Correct Answer - B
Ans: B. Propofol
(Ref: Miller 6/e p318-320: Morgan 4/e p200-202: Lee 13/e p158-160).
Propofol:

- Oil-based preparation containing soyabean oil, egg lecithin & glycerol.
- As it contains oil – Hence painful injection IV administration.
- Should be preceded or mixed with lignocaine.

46. A patient with history of coronary artery disease presents with pulse rate of 48/min and low BP. Patient has decreased myocardial contractility on Echo. Which of these anesthetic agents is contraindicated?

a) Fentanyl

b) Etomidate

c) Ketamine

d) Dexmedetomidine

Correct Answer - D
Ans: D. Dexmedetomidine
(Ref KDT 7/e p384; Katzung 13/e p I 45, 12/e p445)

- This case patient has bradycardia & hypotension.
- Hence, Dexmedetomidine is contraindicated in hypovolemia, hypotension, heart block and congestive heart failure.

Dexmedetomidine - Side effects:

- Similar to those with clonidine (hypotension, bradycardia & dry mouth).

Contraindications:

- Hypovolemia.
- Hypotension
- Heart block.
- CHF prior to administration.

47. Muscle relaxant that can be used in a patient with high serum bilirubin of 6.0 and serum creatinine of 4.5 mg/ dL?

a) Atracurium

b) Vecuronium

c) Pancuronium

d) Mivacurium

Correct Answer - A
Ans: A. Atracurium
(Ref Goodman Gilman 12/e p264; Morgan =1/e p221; Lee 13/e p191,192)

- Muscle relaxant used in high serum bilirubin (6.0) & serum creutinine (4.5 mg/dL) patient = Atracurium.

Atracurium - Advantages:

- Due to unique metabolism independent of hepatic & renal functions.
- Also ensures quick degradation.

48. Which of these is most commonly used as pre-anesthetic medication?

a) Atropine

b) Promethazine

c) Scopolamine

d) Glycopyrrolate

Correct Answer - D
Ans: D. Glycopyrrolate
(Ref: Miller 7/e p293; KDT 366, 117)

- Glycopyrrolate is most commonly used as pre-anesthetic medication.
- An anlicholinergic drug used for reducing secretions in the mouth, throat, airway, and stomach before surgery.
- Used before and during surgery to block certain reflexes and to protect against certain side effects of some medicines.

49.

A pregnant woman with placenta previa started to bleed as she went into labor. Her blood pressure was 80/50 mm Hg. A lower segment caesarean section was planned in view of acute shock. What type of anesthesia will you plan for this patient?

a) General anesthesia with IV induction by ketamine

b) Spinal anesthesia up to L4 level

c) General anesthesia with IV induction by propofol followed by maintenance with fluranes

d) Sedation and epidural analgesia

Correct Answer - A

Ans: A. General anesthesia with IV induction by ketamine

(Ref Williams 24/e p516; Morgan 4/e p197-199)

- This patient of placenta previa is in labor and has bled into shock.
- She should be delivered by cesarean section under general anesthesia.
- General anesthesia is preferred as it is a more controllable modality and there is a significant risk of hypotension associated with spinal anesthesia.
- Ketamine is the preferred agent in cases of acute shock.
  - Stimulates sympathetic system causing tachycardia and hypertension, so it is intravenous anaesthetic of choice for shock.

50. While performing a lumbar puncture, a snap is felt just before entering into the epidural space. This is due to piercing of which structure?

a) Ligamentum flavum

b) Supraspinous ligament

c) Duramater

d) Posterior longitudinal ligament

Correct Answer - A

Ans: A. Ligamentum flavum

(Ref Grays 40/e p729, Snell's 9/e p705)

- While performing a lumbar puncture, a snap is felt just before entering into the epidural space.
- This is due to piercing of ligamentum flava.

51. What is the most reliable site to measure core temperature during general anesthesia?

a) Pulmonary artery

b) Distal esophagus

c) Rectum

d) Tympanic membrane

Correct Answer - D

Ans: D. Tympanic membrane

(Ref Miller's 7/e p1550)

- Though pulmonary artery is the gold standard site for core temperature measurement, esophagus has similar reliability and is the most commonly used site in the anesthetic practice fior temperature monitoring.

Core-Temperature Monitoring:

Sites for Core Temperature Measurement

Gold standard site for core temperature measurement	Pulmonary artery
Most accurate for brain temperature	Tympanic membrane
Best for brain temperature	Nasopharynx
Best site & most commonly used for core body temperature	Lower end of esophagus

52. What is color of medical oxygen cylinder?

a) Black body with grey shoulder

b) Grey body with black and white shoulder

c) Black body with white shoulder

d) Grey body with black shoulder

Correct Answer - C

Ans: C. Black body with white shoulder

Ref. Anaesthetic Equipments & Procedures, Practical Approach/p37, 38)

- The color of a medical oxygen cylinder is a black body with a white shoulder.

Color Identification of Medical Gas Cylinders

Name of gas	Body	Shoulder	Pin index
Air	Grey°	White & black quarter°	1, 5°
Carbon dioxide (Conc. >7.5%)	Grey°	Grey°	1, 6°
Oxygen	Black	White°	2, 5F
Carbon dioxide (Conc. <7.5%)	Grey°	Grey°	2, 6°
Nitrous oxide	Blue°	Blue°	3, 5°
Cyclopropane	Orange°	Orange°	3, 6°
Entonox (50% 0_2 + N_20)	Blue°	Blue & white quarter°	70
Helium	Brown°	Brown°	?
Mix of oxygen & helium (He <80.5%)	Brown°	White°	2, 4°
Mix of oxygen & helium (He >80.5%)	Brown°	White°	4, 6°

>80.5%)			
Nitrogen	Black°	Black°	1, 4°

53. Induction of inhalational agent is faster.

a) Agent with high blood gas solubility

b) Combined with nitrous oxide

c) Person with increased residual volume

d) Right to left shunt

Correct Answer - B

Answer- B. Combined with nitrous oxide

Induction of inhalational agent is faster, if it is combined with nitrous oxide.

'The blood:gas partition coelficient is the mainfactor that determines the rate of induction and recovery of an inhalation anaesthesic, and the lower the blood: gas partition coefficient, the faster is induction and recovery.

The second gos effect usually refers to nitrous oxide combined with an inhalation agent. Because nitrous oxide is not soluble in blood, its rapid absorption from alveoli causes an abrupt rise in the alveolar concentration of the other inhalation anesthetic leading to faster induction.

54. Effective strategies to decrease the risk of post puncture dural headache are all except:

a) Use of small bore needle

b) Use of atraumatic needle

c) Supplementation of fluids

d) Replacement of stylet prior to removal of needle

Correct Answer - D

Answer- D. Replacement of stylet prior to removal of needle

Patient on antihypertensive medication is not a contraindication for neuraxial block.

Neuraxial Block:

- Patients with platelet <80,000/ml: Relative contraindicatlon
- Marked coagulopathy, blood dyscrasias or full anticoagulant therapy: Absolute contraindication
- Marked skin sepsis and marked spinal deformity: Absolute contraindication

55.

Sensory block for lower segment caesarian section is given at the level of?

a) T4

b) T6

c) T8

d) T10

Correct Answer - A
Answer- A. T4
'Caesarean sections require sensory blockade up to the T4 dermatome level, as this not only blocks the somatic sensations of the Caesarean sections but also eliminates the visceral pain from peritoneal manipulation.
Cesarean sections require sensory blockade up to the T4 dermatome level, as this not only blocks the somatic sensations of the Caesarean sections but also eliminates the visceral pain from peritoneal manipulation.

56. On doing laparoscopic cholecystectomy patient developed wheezing. Which of the following is used in the treatment?

a) N ketamine

b) IV lignocaine

c) Administration of beta agonist

d) Deepen the plane of anesthesia

Correct Answer - D

Answer- D. Deepen the plane of anesthesia

The most common cause of asthmatic attack during surgery is inadequate depth of anesthesia. First, deepen the level of anesthesia and increase FIO2. Remember that the patient is under anesthesia and undergoing surgery. Therefore, medical intervention, such as B-agonist administration, is not the first choice of treatment- Yao and Artusiois Anesthesiology.

57. According to `AHA 2010 Guidelines' which of the following drug is not used in CPCR?

a) Adrenalin

b) Vasopressin

c) Atropine

d) Amiodarone

Correct Answer - C
Answer- C. Atropine
'According to AHA 2020 Guidelines, Atropine is no longer recommended for routine use in the management of pulseless electrical activity (PEA)asystole.'
ACLS- medications for pulses arrest
Atropine: deleted from pulseless arrest algorithm
Epinephrine: dose, interval unchanged
Vasopressin: dose, use unchanged
Amiodarone: dose, indications unchanged
Lidocaine: dose, indications unchanged
Sodium Bicarbonate: routine use not recommended
Calcium: for treatment of cardiac arrest not recommended

58. Tubocurare affects which muscle first?

a) Head and neck

b) Limbs

c) Respiratory muscles

d) Abdominal muscles

Correct Answer - A
Answer- A. Head and neck
Sequence of Muscle Paralysis after giving Tlrbocurare:
Jaw muscles + eyelid muscles and other muscles of head and nech → limbs → intercostals + diaphragm)
abdomen → trunk.
Facial and diaphragm muscles are first to recover, followed in order by legs, arms, shoulder girdle, trunk, larynx,
hands and feet, and pharynx.

59. Which of the following statement is correct regarding difference between adult and child resuscitation?

a) Ventricular dysrhythmias are uncommon in children

b) Infant myocardium more refractory to hypoxia because of congenital heart disease.

c) More ventilation to be given compared to chest compression

d) Dissolved aortic oxygen concentration is more in pre attack state.

Correct Answer - A

Ans: A. Ventricular dysrhythmias are uncommon in children

- Ventricular dysrhythmias are not a common cause of cardiac arrest in children.
- Hypoxia induced bradycardia are more important cause and that is why rescue breaths are more important in pediatric resuscitation.
- The ratio of ventilation to compression in an infant is 3:1 and in children with 2 rescuers is 15:2.

60. A patient who was on ventilator and being ventilated for past few days, suddenly pulls out the endotracheal tube. What is the next step of management?

a) Assess the patient, give bag and mask ventilation and look for spontaneous breathing

b) Start bag and mask ventilation and reintubate

c) Sedate and reintubate

d) Make him sit and do physiotherapy

Correct Answer - A

Ans. a. Assess the patient, give bag and mask ventilation and look for spontaneous breathing

In self-extubation, assess the patient, give bag and mask ventilation and look for spontaneous breathing.

Unplanned Extubation

- Unplanned extubation of mechanically ventilated patients is relatively common
- Self-extubation refers to the patient's action, who deliberately removes the endotracheal tube (MC type of unplanned extubation, typically occur at night)
- Accidental extubation is attributed either to personnel's inappropriate manipulation of the tube during patient care or to a non-purposeful patient's action, e.g. coughing (mostly occur in the morning)

Risk Factors for Unplanned Extubation

Patient factors	Staff factors
Male Delirium Light sedation Difficulty in securing tube (e g. facial swelling, facial burns) Previous unplanned extubation	Junior staff Nurse-to-patient ratio Inadequately secured endotracheal tube and/or checks

61. Tracheal secretions should be suctioned for:

a) 10-15 seconds

b) 60 seconds

c) 30 seconds

d) 3 minutes

Correct Answer - A
Ans. a. 10-15 seconds
(Ref Current DiMMOCIC and Treatment Critical Care 3/e p255)

- Tracheal secretions should he suctioned limiting the time to less than 10-15 seconds. The patient should be preoxygenated with 100% oxygen for at least a minute, and the total suction time should be limited to no more than 10-15 seconds on each attempt.

62. 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 - B:D

Ans:

B. The laryngoscope is held in the right hand introduced from the right side of the patient

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.
- Laryngoscope should be held in the left hand (by both right and left handed people) & blade should be introduced along the right side of the patient's mouth displacing the tongue to the left

63. What is the ratio of chest compressions and breaths when a lone person is giving cardiopulmonary resuscitation?

a) 10:1

b) 15:1

c) 30:1

d) 30:2

Correct Answer - D

Ans: D. 30:2

(Ref AHA 2015 CPR Guidelines "http://eccguidelines.heart.org/ wp-content/uploads/2015/10/2015-AHA¬Guidclinet.-Hilivhtv-En,cgish ficIf.)

- Ratio of chest compressions to rescue breath in all adults (Even with 1 or 2 rescuers) = 30:2.

64. A surgeon decides to operate a patient under epidural anesthesia. 3% Xylocaine with adrenaline is used for administering epidural anesthesia. The patient suddenly develops hypotension after 3 minutes of administration. What is the most likely cause for this?

a) Systemic absorption of the drug

b) Vasovagal effect

c) Allergy to the drug preparation

d) Penetration into the subarachnoid space

Correct Answer - D

Ans: D. Penetration into the subarachnoid space

(Ref: Miller 7/e p1895: Barash 5/e p1478, 2405)

- Penetration of drug into the subarachnoid space shortly causes cardiovascular symptoms like hypotension.
- Systemic absorption of drugs causes neurological symptoms before hypotension.
- Vasovagal shock occurs immediately, i.e. even before the needle for epidural anesthesia is injected.

65. All of the following are true about lumbar puncture except:

a) Level of needle insertion should be L I -L2 vertebral junction

b) The bevel end of needle should face up

c) Needle should be inserted in a slightly cephalad direction

d) Legs should be straightened for CSF pressure measurement

Correct Answer - A

Ans: A. Level of needle insertion should be L I -L2 vertebral junction

(Ref: Harrison 19Ie p443-e2)

- The spinal cord ends at L3 vertebrae in children and L1 in adults.
- With a safe margin, lumbar puncture should be performed at L3-L4 or L4-L5 interspace.
- A useful anatomic guide is a line drawn between the posterior superior iliac crests, which corresponds closely to the level of the L3—L4 interspace.
- The interspace is chosen following gentle palpation to identify the spinous processes at each lumbar level.
- The LP needle (typically 20- to 22-gauge) is inserted in the midline, midway between two spinous processes, and slowly advanced.
- The bevel of the needle should be maintained in a horizontal position, parallel to the direction of the dural fibers and with the flat portion of the bevel pointed upward; this minimizes injury to the fibers as the dura is penetrated.

66. A sevoflurane vaporizer can accurately deliver the dose of an anesthetic agent. It resembles it in which of the following properties?

a) Molecular weight

b) Oil gas partition coefficient

c) Blood gas partition coefficient

d) Vapor pressure

Correct Answer - D

Ans: D. Vapor pressure

- Vapor pressure is directly proportional to temperature.
- Increasing temperature will increase the ratio of gas:liquid molecules, thereby increasing vapor pressure.
- Vapor pressure is independent of atmospheric pressure and is contingent only on the temperature and physical characteristics of the liquid.

67. All are true about rapid sequence induction done in a cardiac patient in emergency except:

a) Inducing agent and neuromuscular relaxant are administered together

b) The patient is pre-oxygenated for 3 minutes before the procedure

c) Cricoid pressure has to be applied till the endotracheal tube has been secured with a cuff

d) Induction should be done with thiopentone sodium and succinylcholine for muscle relaxation

Correct Answer - D

Ans: D. Induction should be done with thiopentone sodium and succinylcholine for muscle relaxation

(Ref Miller 7/e p34, 887)

- Thiopentone induction is contraindicated in cardiac patients because of direct negative inotropic effects on the heart and depressant effects on systemic BR.
- Etomidate is the preferred induction agent in such a patient.

68. Correct sequence of age and MAC required is:

a) Adults > Infants > Neonates

b) Infants > Neonates > Adults

c) Neonates > Adults > Infants

d) Neonates > Infants > Adults

Correct Answer - B

Ans: B. Infants > Neonates > Adults

(Ref Miller 8/e p2764, 7/e p517, 1243; Wylie 7/e p966, 967, 988)

- MAC, the minimum alveolar concentration at I atmosphere that prevents movement in SO% of patients exposed to a surgical incision, decreases with age after I year.
- It is lesser in neonates followed by increase up to I year of age and then gradual decline to values lesser then those in neonates.
- The lower MAC of halothane in neonates compared with infants may be related to immaturity of the central nervous system and attenuation of the pain response due to high levels of plasma peptides (beta-endorphin and beta-lipoprotein).
- The higher MAC in infants compared with older children and adults may be due to an increase in the brain water content.
- Beginning in young adulthood, MAC, the ED mequivalent for inhalational anesthesia, declines linearly with increasing age.

69. Allergy in immediate perioperative period is due to:

a) Opioids

b) LA agents

c) Induction agents

d) Neuromuscular blockers

Correct Answer - D

Ans: D. Neuromuscular blockers

(Ref: Miller 7/e p884)

- Most common cause of perioperative anaphylaxis is muscle relaxants and antibiotics followed by opioids and intravenous anesthesia.

Most Common Drugs Involved in Perioperative Anaphylaxis

Substance	Most commonly associated
Muscle relaxants	Succinylcholine, rocuronium,atracurium°
Natural rubber latex	Latex gloves, tourniquets, Foley catheters
Antibiotics	Penicillin & other beta-lactams°
Hypnotics	Propofol, thiopental°
Colloids	Dextran, gelatin°
Opioids	Morphine, meperidine°
Other substances	Paracetamol, aprotinin,chymopapain, protamine,bupivacaine

70. A 46 years old male patient was given subarachnoid block with bupivacaine (heavy) by the anesthetist. After 10 minutes he was found to have a BP of 72/44 mm Hg and heart rate of 52/min. On checking the level of block it was found to be T6. What is the likely explanation for the bradvcardia?

a) Bezold-Jarisch reflex

b) Bainbridge reflex

c) Block of Cardio-accelerator fibers of synthetic origin

d) Reverse Bainbridge reflex

Correct Answer - A

Ans: A. Bezold-Jarisch reflex

(Ref 8/e p1970, Miller 7/e p409)

- The Bezold-Jarisch reflex involves a variety of cardiovascular and neurological processes which cause hypopnea (excessively shallow breathing or an abnormally low respiratory rate) & bradycardia (abnormally low resting heart rate).
- Possible cause of profound bradycardia and circulatory collapse after spinal anesthesia.
- Cardioprotective reflex.
- Implicated in physiologic response to a range of cardiovascular conditions such as myocardial ischemia or infarction, thrombolysis, or revascularization and syncope.

- Natriuretic peptide receptors stimulated by endogenous ANP or BNP may modulate the Bezold-Jarisch reflex.
- Less pronounced in patients with cardiac hypertrophy or atrial fibrillation

71. A patient is undergoing MRND for laryngeal malignancy; while dissecting the venous tributaries the surgeon elevated the internal jugular vein for ligation. Suddenly the patients EtCO2 dropped from 3g mmHg to 12 mmHg and the patient developed hypotension along with cardiac arrhythmia. Which of the following is most likely cause??

a) Sympathetic overactivity

b) Vagal stimulation

c) Venous air embolism

d) Carotid body stimulation

Correct Answer - C
Ans: C: Venous air embolism
Ref Millers anesthesia &h ed-, pg. 2170.

- Diagnosis standard of care is precordial doppler (left or right parastemal, between 2nd and 3rd ribs) + ETC02 monitoring although this is not the most sensitive test - TEE is most sensitive.
- Pulmonary artery pressure will rise, and CO2 will fall alter VAE.

72. The action of proparacaine starts within?

a) 2 minutes

b) 5 minutes

c) 15 minutes

d) 20 minutes

Correct Answer - A
Ans. A. 2 minutes
Proparacaine and tetracaine are indicated to produce local anesthesia of short duration for ophthalmic procedures including measurement of intraocular pressure (tonometry), removal of foreign bodies and sutures, and conjunctival and corneal scraping in diagnosis and gonioscopy.
Onset of action:
* Proparacaine—Within 20 seconds.
* Tetracaine—Approximately 15 seconds.
Duration of action:
* Proparacaine—15 minutes or longer.
* Tetracaine—10 to 20 minutes; average 15 minutes.

73. Which of the following statements is true or false regarding the CPR technique?
1. Czan be given irrespective of rib fracture.
2. An adult chest compression : breath is 30 : 2 to 15 : 2 even if 2nd rescuer present.
3. In infants ratio change from 30 : 2 to 15 : 2 when 2nd rescuer arrive.
4. Chest compression at rate of 100 - 120 / min on adults and 90 per minute in infants.

a) a is false and b, c, d are true

b) a, b are true & c, d are false

c) a, c, d are true & b is false

d) b, c are true & a, d are false

Correct Answer - A
Ans: A is false & b, c, d are true
CPR technique cannot be given to patients with rib fracture.
In CPR technique, an adult chest compression : breath is 30 : 2 to 15 : 2 even if 2nd rescuer present.
In infants ratio change from 30 : 2 to 15 : 2 when 2nd rescuer arrive.
Chest compression at rate of 100 - 120 / min on adults and 90 per minute in infants.