FMGE July 2025 Question Paper

208 recall questions with answers and explanations.

Recall honesty note: NBEMS does not release official papers, so these are memory-based recall questions, not official papers. Image-based questions are excluded for now because the bank's images are currently unavailable.

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Question 1. Identify the tarsal bone marked by the arrow in the given X-ray of the right foot.

A. Navicular

B. Cuboid

C. Intermediate cuneiform

D. Lateral cuneiform

Correct answer: A

The arrow points to the navicular bone, a wedge-shaped tarsal bone situated on the medial aspect of the midfoot. It is anatomically located between the talus (proximally) and the three cuneiform bones (distally). On a dorsoplantar or oblique X-ray, its position on the medial side is highly distinctive. The cuboid bone (Option B) is located on the lateral aspect of the foot. The intermediate cuneiform (Option C) and lateral cuneiform (Option D) are located distal to the navicular and articulate with the metatarsals. Accurate identification of midfoot tarsal bones is essential for diagnosing fractures and dislocations in trauma cases. Based on the medial position between the talar head and the cuneiforms, the bone indicated is the navicular.

Question 2. What is the embryological cause of this anomaly?

A. Non-fusion of mesonephric duct

B. Non-fusion of paramesonephric ducts

C. Failure of fusion of metanephric duct

D. Complete agenesis of Müllerian structures

Correct answer: B

The anomaly shown is a unicornuate uterus, which results from the developmental failure of one paramesonephric (Müllerian) duct. Normally, the two paramesonephric ducts must fuse at the midline to form the uterus, cervix, and upper vagina. If one duct fails to develop or fuse properly with its counterpart, it results in a single-sided uterine cavity, often accompanied by a small rudimentary horn. Non-fusion of the mesonephric ducts (Option A) would affect male reproductive anatomy, such as the vas deferens. "Metanephric duct" (Option C) is an incorrect term, as the metanephros forms the kidneys, not the uterus. Complete agenesis (Option D), known as Mayer-Rokitansky-Küster-Hauser syndrome, would result in the total absence of the uterus and upper vagina. Therefore, the partial failure of Müllerian duct development is the correct embryological cause.

Question 3. A 46-year-old man is diagnosed with a tumor involving the left lobe of the liver, and a left-sided hemihepatectomy is planned. Which lobes of the liver are removed during this surgical procedure?

A. 2, 3 and 4

B. 1, 2 & 3

C. 5, 6, 7 & 8

D. 2, 3, 4 & 5

Correct answer: A

Functional liver anatomy is based on Couinaud’s segments, which are determined by vascular supply and biliary drainage. A left hemihepatectomy involves the surgical resection of the entire functional left lobe, which consists of segments II, III, and IV. Segment I (the caudate lobe) is functionally distinct and is typically not resected in a standard hemihepatectomy unless specifically indicated (Option B). Segments V, VI, VII, and VIII (Option C) comprise the functional right lobe of the liver. Option D is incorrect because Segment V is part of the right lobe. Therefore, segments 2, 3, and 4 are the correct anatomical targets for a left hemihepatectomy.

Question 4. Which of the following veins are involved in the formation of esophageal varices?

A. Left gastric vein

B. Right gastric vein

C. Left gastroepiploic vein

D. Right gastroepiploic vein

Correct answer: A

Esophageal varices result from portal hypertension, usually due to liver cirrhosis. When portal blood flow is obstructed, portosystemic anastomoses form at specific sites. At the lower end of

the esophagus, the portal circulation (represented by the left gastric vein) meets the systemic circulation (represented by the esophageal veins draining into the azygos system). Increased pressure in the left gastric vein causes the submucosal esophageal veins to become dilated and tortuous, forming varices. The right gastric vein (Option B) drains the lesser curvature but is not the primary contributor to lower esophageal varices. The left gastroepiploic vein (Option C) and right gastroepiploic vein (Option D) drain the greater curvature into the splenic and superior mesenteric veins, respectively, and are not part of the esophageal portosystemic shunt. Therefore, the left gastric vein is the key portal vessel involved.

Question 5. Injury to which part causes difficulty in dorsiflexion of the foot?

A. A

B. B

C. C

D. D

Examination Paper July 2025 Question

Correct answer: B

In the provided image, point B identifies the common peroneal nerve as it courses superficially around the neck of the fibula. This nerve is highly susceptible to injury at this site. It branches into the deep and superficial peroneal nerves, with the deep peroneal nerve responsible for innervating the tibialis anterior muscle. This muscle is the primary driver of dorsiflexion (lifting the foot upward). An injury at point B results in "foot drop," where the patient cannot dorsiflex the foot. The sciatic nerve (Point A) would cause much more extensive leg weakness. The tibial nerve (Point C) innervates the posterior compartment, and its injury would cause difficulty in plantarflexion (pointing the foot down). While the deep peroneal nerve (Point D) also causes foot drop, the injury at the fibular head (B) is the more classic clinical site.

Question 6. Which structure is formed by the structure indicated by the arrow?

A. Annulus

B. Nucleus pulposus

C. Neural tube

D. Septum transversum

Correct answer: B

The arrow identifies the notochord, an embryonic midline structure derived from mesoderm that serves as the primitive axial skeleton. While it mostly disappears during development, its remnant persists as the nucleus pulposus, the gelatinous core of the adult intervertebral disc. The annulus fibrosus (Option A) is the tough outer ring of the intervertebral disc, but it

originates from the sclerotome portion of the mesoderm rather than the notochord itself. The neural tube (Option C) is formed from ectoderm; although its formation is induced by signals from the notochord, it is not a direct derivative. The septum transversum (Option D) is another mesoderm-derived structure that contributes to the formation of the diaphragm and is unrelated to the notochordal pathway. Therefore, the notochord's specific adult anatomical legacy is the creation of the nucleus pulposus, which functions to absorb spinal compression.

Question 7. A diabetic worker sustains a stab injury to the central part of his palm. Three days later, he develops swelling, severe pain, and inability to extend the middle and ring fingers. Pus collection in a palmar space is suspected. Which palmar space is most likely involved?

A. A

B. B

C. C

D. D

Correct answer: B

A central palm stab injury followed by swelling, pain, and restricted movement of the middle and ring fingers indicates an infection of the midpalmar space (labeled B). This deep anatomical compartment is bounded anteriorly by the palmar aponeurosis and posteriorly by the metacarpals. The hypothenar space (Option A) is located on the ulnar side and primarily involves the little finger. The thenar space (Option C) is situated on the radial side, typically associated with infections of the thumb and index finger. The dorsal subaponeurotic space (Option D) is located on the back of the hand rather than the palm. Because the injury was central and the symptoms affect the third and fourth digits, the midpalmar space is the specific site of pus accumulation. Hand infections in diabetic patients are particularly serious due to impaired healing and increased susceptibility to deep-space abscesses.

Question 8. Which is the narrowest part of the adult laryngeal airway?

A. Supraglottic region

B. Glottis

C. Subglottic region

D. Trachea

Correct answer: B

In the adult larynx, the glottis—specifically the rima glottidis, which is the narrow opening between the true vocal cords—represents the narrowest part of the airway. This site is critical for voice production and regulating airflow. The supraglottic region (Option A), which contains

the epiglottis and false cords, is wider than the glottic opening. The subglottic region (Option C) is located below the vocal cords; while it is the narrowest part of the larynx in infants and children, it is wider than the glottis in adults. The trachea (Option D) is a significantly larger tubular structure and is much wider than any part of the laryngeal apparatus. Understanding these anatomical differences is vital for intubation and airway management, as the glottis is the primary point of resistance in adults, whereas the subglottis is the limiting factor in pediatric patients.

Question 9. The upper part of the uncinate process commonly attaches to?

A. Middle turbinate

B. Superior turbinate

C. Inferior turbinate

D. Bulla ethmoidalis

Correct answer: A

The uncinate process is a thin, curved bony hook belonging to the ethmoid bone that forms part of the lateral nasal wall. Its upper part commonly extends to attach to the middle turbinate (middle nasal concha). This structure is essential in forming the drainage pathway for the frontal and maxillary sinuses through the ostiomeatal complex. The superior turbinate (Option B) is located higher in the nasal cavity than the uncinate process, so there is no anatomical attachment between them. The inferior turbinate (Option C) is a separate bone located much lower in the nasal passage. The bulla ethmoidalis (Option D) is an ethmoid air cell situated behind the uncinate process; while they form the boundaries of the hiatus semilunaris inferior, they do not serve as an attachment site for one another. Thus, the middle turbinate is the standard attachment point.

Question 10. The artery that is palpated between the medial malleolus and the calcaneal tendon is?

A. Anterior tibial artery

B. Posterior tibial artery

C. Dorsalis pedis artery

D. Popliteal artery

Correct answer: B

The posterior tibial artery passes behind the medial malleolus within the tarsal tunnel. It is standardly palpated at this location—midway between the medial malleolus and the calcaneal (Achilles) tendon—to assess the distal circulation of the lower limb. A useful mnemonic for the structures passing under the flexor retinaculum is "Tom Dick ANd Harry": Tibialis posterior, flexor Digitorum longus, posterior tibial Artery, tibial Nerve, and flexor Hallucis longus. The anterior tibial artery (Option A) runs in the anterior compartment and becomes the dorsalis

pedis. The dorsalis pedis (Option C) is palpated on the top of the foot between the first and second metatarsals. The popliteal artery (Option D) is located behind the knee joint in the popliteal fossa. Thus, the posterior tibial is the only artery located in the medial ankle region specified.

Question 11. A patient is brought to the emergency department after a road traffic accident with a head injury. He is conscious, but when questioned about the incident, his responses are irrelevant despite fluent speech. Which area of the brain is most likely to be injured?

A. Pre-central gyrus

B. Inferior frontal gyrus

C. Superior temporal gyrus

D. Brain stem

Correct answer: C

The patient's presentation of fluent but irrelevant speech characterizes Wernicke's aphasia, also known as receptive aphasia. This condition results from a lesion in Wernicke's area, located in the superior temporal gyrus of the dominant hemisphere. These patients can produce speech with normal rate and rhythm, but they lack comprehension of language, leading to "word salad" answers. A lesion in the pre-central gyrus (Option A) would cause motor weakness or paralysis on the contralateral side rather than a language disorder. Damage to the inferior frontal gyrus (Option B) causes Broca's aphasia, where speech is non-fluent and effortful, though comprehension is relatively preserved. Brain stem injuries (Option D) would typically involve severe motor/sensory deficits or altered consciousness rather than an isolated fluent aphasia. Thus, the disconnect between speech production and meaningful content localizes the injury to the superior temporal gyrus.

PHYSIOLOGY

Question 12. A 35-year-old man wakes up after sleeping with his arm hanging over a chair and complains of pain and sensory symptoms. In this condition,

which sequence correctly represents the order of susceptibility of different nerve fiber types to compression?

A. A < B < C

B. A > B > C

C. C > B > A

D. C < B < A

Correct answer: B

The clinical scenario describes "Saturday night palsy," a compression injury of the radial nerve. Nerve fibers have different sensitivities to external stressors based on their size and myelination. When subjected to pressure or mechanical compression, large myelinated fibers are the most susceptible, following the order: A > B > C. Fiber type A (specifically Alpha) is the most sensitive to pressure, while Type C is the least. In contrast, if the stressor were local anesthesia, the order would be C > B > A, as small unmyelinated fibers are blocked most easily. If the stressor were hypoxia, Type B fibers would be the most susceptible. Because this patient experienced mechanical compression by draping his arm over a chair, the largest and most metabolically demanding fibers (Type A) are affected first, making Option B the correct hierarchy.

Question 13. A woman from Delhi travels to Ladakh, a high-altitude area, and soon after arrival develops breathlessness, headache, and lightheadedness. What is the primary underlying mechanism responsible for these symptoms?

A. Respiratory acidosis

B. Metabolic alkalosis

C. Respiratory alkalosis

D. Metabolic acidosis

Correct answer: C

At high altitudes, the partial pressure of oxygen is lower, which stimulates peripheral chemoreceptors to increase the rate of pulmonary ventilation (hyperventilation). This compensatory mechanism results in an excessive removal of carbon dioxide (CO_2) from the blood. The loss of CO_2, which acts as an acid in the body, causes the blood pH to rise, leading to respiratory alkalosis. Respiratory acidosis (Option A) occurs with hypoventilation, where CO_2 is retained, not at high altitudes. Metabolic alkalosis (Option B) is typically caused by loss of stomach acid from vomiting or diuretic use. Metabolic acidosis (Option D) is associated with conditions like renal failure, diarrhea, or diabetic ketoacidosis. Therefore, the acute hyperventilation in response to hypoxia specifically drives a respiratory alkalotic state until the kidneys compensate by excreting excess bicarbonate over several days.

Question 14. For testing blood clotting/ coagulation

parameters, blood is collected in which color-coded vacutainer tube?

A. Red

B. Green

C. Blue

D. Gray

Correct answer: C

For the assessment of coagulation parameters, such as Prothrombin Time (PT) and Activated Partial Thromboplastin Time (aPTT), blood must be collected in a light blue vacutainer. This tube contains sodium citrate, which acts as a reversible calcium-chelating anticoagulant. Citrate is preferred because it preserves the fragile coagulation factors necessary for accurate laboratory testing. Red tubes (Option A) contain no anticoagulant and are used for serum studies. Green tubes (Option B) contain heparin and are utilized for arterial blood gases or osmotic fragility tests. Gray tubes (Option D) contain sodium fluoride to inhibit glycolysis for accurate blood glucose measurement. Therefore, the blue-coded vacutainer is the standard requirement for any clotting or intrinsic/extrinsic pathway study.

Question 15. In malignant hyperthermia, a mutation affecting the ryanodine receptor (RYR) triggers a severe reaction to certain anesthetic agents. What is the primary ionic imbalance resulting from this receptor defect?

A. Increased sodium influx into the muscle cell

B. Increased potassium uptake into the sarcoplasmic reticulum

C. Increased chloride efflux from the muscle cell

D. Increased calcium release from the sarcoplasmic reticulum

Correct answer: D

Malignant hyperthermia is a pharmacogenetic disorder of skeletal muscle. It is triggered by volatile anesthetics (like halothane) or succinylcholine in individuals with a mutation in the RYR1 gene. This mutation results in a hypersensitive ryanodine receptor, which causes a massive, uncontrolled release of calcium ions from the sarcoplasmic reticulum into the

sarcoplasm. This excess calcium drives sustained muscle contraction and a state of hypermetabolism, leading to muscle rigidity, extreme tachycardia, and a rapid rise in body temperature. Sodium influx (Option A) and chloride efflux (Option C) are not the primary defects in this condition. Potassium uptake (Option B) is not actively regulated by the sarcoplasmic reticulum in this pathway; in fact, potassium is typically released out of cells during rhabdomyolysis. Therefore, aberrant calcium signaling is the central physiological mechanism.

Question 16. What is the primary protein that binds to thyroxine?

A. Follistatin

B. Transthyretin

C. Thyroxine-binding globulin

D. Transferrin

Correct answer: C

Thyroxine (T4) and triiodothyronine (T3) are poorly soluble in water and must be transported through the bloodstream bound to carrier proteins to regulate their availability to tissues. Thyroxine-binding globulin (TBG) is the primary and most specific transport protein for these hormones. It possesses a high affinity for thyroid hormones and is responsible for carrying the vast majority of T4 in circulation. Follistatin (Option A) is unrelated to thyroid transport; it primarily binds and inhibits activins. Transthyretin (Option B), or prealbumin, binds a much smaller fraction of T4 and serves a secondary role, mainly within the cerebrospinal fluid. Transferrin (Option D) is specifically dedicated to the transport of iron in the blood and has no role in thyroid hormone metabolism. Therefore, TBG remains the most significant systemic carrier of thyroxine, ensuring its stability and controlled delivery to target organs throughout the body.

Question 17. Which among the following best describes 'Neuropraxia'?

A. Intact axon; Damaged nerve sheath

B. Damaged axon; Intact nerve sheath

C. Damaged axon and nerve sheath

D. None of the above

Correct answer: A

Neuropraxia represents the mildest form of nerve injury according to Seddon's classification. It involves a temporary physiological conduction block caused by focal demyelination (damage to the nerve sheath) while the underlying axon remains completely intact. Because the axon is not severed, there is no Wallerian degeneration, and recovery is typically complete within six weeks once the sheath heals. Axonotmesis (Option B) involves a damaged axon within an intact

connective tissue framework, leading to distal degeneration and a longer recovery period. Neurotmesis (Option C) is the most severe grade, characterized by complete disruption of both the axon and the supporting nerve sheaths; spontaneous recovery is impossible in these cases and surgical repair is mandated. Therefore, neuropraxia is specifically defined by the preservation of axonal continuity despite localized myelin dysfunction, leading to a favorable prognosis.

Question 18. As a neuron's diameter increases, what effect manifests?

A. Conduction velocity increases

B. Conduction velocity decreases

C. Membrane resistance increases

D. Action potential amplitude increases

Correct answer: A

The diameter of an axon is a major determinant of how rapidly an action potential can travel. A larger axonal diameter results in a significantly lower internal (axial) resistance to current flow. This reduced resistance allows local electrical currents to spread more efficiently and quickly along the interior of the axon, enabling faster depolarization of the adjacent membrane segments. Consequently, larger neurons exhibit a higher conduction velocity. This principle is vital in motor neurons where high-speed signal transmission is required. Option B is incorrect as velocity increases with size. Membrane resistance (Option C) per unit length actually decreases with larger surface areas, but the reduction in axial resistance dominates the change in speed. Action potential amplitude (Option D) is determined by ionic equilibrium potentials rather than physical axon size. Thus, diameter and speed are directly proportional.

Question 19. Which among the following hormones, in a lactating mother, is responsible for the growth of breast tissue?

A. Oxytocin

B. Estrogen

C. Prolactin

D. Progesterone

Correct answer: C

In a lactating mother, prolactin is the primary hormone responsible for stimulating the growth, development, and maintenance of the milk-producing lobuloalveolar tissue in the breast. It acts on lactotrophs to promote the hyperplasia of mammary glands necessary for milk synthesis. Oxytocin (Option A) is responsible for the milk ejection reflex (let-down) but does not cause tissue growth. Estrogen (Option B) stimulates ductal growth and overall breast enlargement during puberty and pregnancy but is not the specific driver of the alveolar milk-producing tissue

growth during established lactation. Progesterone (Option D) supports alveolar development in preparation for milk production during pregnancy but its levels drop significantly after delivery to allow for the full action of prolactin. Therefore, prolactin is the essential hormone for both the development of productive breast tissue and actual milk synthesis in the postnatal period.
BIOCHEMISTRY

Question 20. A patient with a pituitary adenoma compressing the optic chiasma presents with visual field loss. Which specific visual field defect is most likely to be observed in this patient?

A. Bitemporal hemianopia
B. Homonymous anopia
C. Homonymous hemianopia
D. Quadrantanopia

Correct answer: A

The optic chiasm contains the crossing fibers originating from the nasal retina of both eyes. These nasal retinal fibers are responsible for detecting the temporal (outer) fields of vision. A pituitary adenoma typically enlarges and compresses the central portion of the chiasm from below. This pressure disrupts the crossing nasal fibers, leading to a loss of the temporal visual fields in both eyes, a condition known as bitemporal hemianopia. Homonymous hemianopia (Option C) and homonymous anopia (Option B) result from lesions in the optic tract or radiations, where corresponding halves of the visual field are lost (e.g., both right fields). Quadrantanopia (Option D) occurs with partial lesions of the optic radiations in the temporal or parietal lobes. Thus, bitemporal field loss is the classic sign of a chiasmal lesion.

Question 21. A man presents with high VLDL and chylomicrons, with eruptive xanthomas. What is the most likely diagnosis?

A. Familial hyperlipidemia
B. Familial dysbetalipoproteinemia
C. Familial hypertriglyceridemia
D. Familial hypercholesterolemia

Correct answer: C

The presentation of elevated VLDL and chylomicrons signifies extremely high triglyceride levels. This profile is characteristic of Familial Hypertriglyceridemia (Type IV Hyperlipoproteinemia). The massive triglyceride elevation results in "eruptive xanthomas," which are small, yellowish skin papules appearing suddenly on the skin. This condition also carries a significant risk of acute pancreatitis. Familial hypercholesterolemia (Option D) involves isolated high LDL and total cholesterol, typically presenting with tendon xanthomas rather than eruptive ones.

Familial dysbetalipoproteinemia (Option B) involves high IDL and would show palmar xanthomas. Familial hyperlipidemia (Option A) is a general term rather than the specific biochemical entity described. Because the eruptive xanthomas and the specific elevation of triglyceride-rich VLDL and chylomicrons are described, Familial Hypertriglyceridemia is the most accurate clinical diagnosis. Management focuses on fibrates and lifestyle changes.

Question 22. A breastfed infant presents with lethargy, hepatomegaly, and cataract formation. Deficiency of which enzyme is most likely responsible for this clinical presentation?

A. Galactokinase

B. Galactose-1-phosphate uridyltransferase (GALPUT)

C. Aldolase B

D. Fructokinase

Correct answer: B

The clinical triad of lethargy, hepatomegaly, and cataracts shortly after starting breastfeeding is diagnostic of classic galactosemia. This inborn error of metabolism is caused by a deficiency in Galactose-1-phosphate uridyltransferase (GALT/GALPUT). The deficiency leads to a toxic accumulation of galactose-1-phosphate in the liver and galactitol in the lens of the eye. Untreated cases risk severe mental retardation, E. coli sepsis, and liver failure. Galactokinase deficiency (Option A) causes isolated cataracts without the severe hepatic or systemic symptoms seen here. Aldolase B deficiency (Option C) results in hereditary fructose intolerance, which presents after the introduction of fruit or formula containing sucrose rather than breastfeeding. Fructokinase deficiency (Option D) is a benign condition known as essential fructosuria. Management of classic galactosemia requires the immediate and permanent withdrawal of galactose and lactose from the infant's diet.

Question 23. Which vitamin deficiency can lead to lactic acidosis?

A. Thiamine

B. Riboflavin

C. Niacin

D. Biotin

Correct answer: A

Thiamine (Vitamin B1) serves as an essential cofactor for the enzyme pyruvate dehydrogenase. This enzyme is responsible for converting pyruvate into acetyl-CoA to enter the Krebs cycle. In states of thiamine deficiency, this conversion is blocked, causing pyruvate to accumulate and shunt toward the production of lactate. This metabolic shift results in lactic acidosis, which is commonly seen in severe thiamine deficiency syndromes like beriberi and Wernicke's encephalopathy. Riboflavin (Option B) is involved in the electron transport chain but its deficiency does not typically drive lactic acid production. Niacin (Option C) is a precursor for NAD, and its deficiency leads to pellagra. Biotin (Option D) is a cofactor for carboxylases; while its absence causes metabolic issues, it is not the primary cause of lactic acidosis. Thus, thiamine is the specific vitamin required to prevent the toxic buildup of lactate.

Question 24. Which of the following enzymes is responsible for the immortality of cancer cells?

A. Telomerase

B. Topoisomerase

C. Helicase

D. RNA polymerase

Correct answer: A

Telomeres are protective caps at the ends of chromosomes that shorten with each cell division, eventually leading to cellular senescence or death. Telomerase is the enzyme responsible for maintaining telomere length by adding repetitive sequences back onto the chromosome ends. While telomerase activity is low in most adult somatic cells, its overexpression in cancer cells allows them to bypass the normal aging process and divide indefinitely. Topoisomerase (Option B) manages DNA structural tension by inducing strand breaks during replication. Helicase (Option C) unwinds the double helix to allow access for replication machinery. RNA polymerase (Option D) is essential for synthesizing RNA during transcription but does not directly influence the replicative lifespan of the cell. Consequently, the activation of telomerase is the fundamental mechanism that confers "immortality" upon malignant cells, facilitating uncontrolled tumor growth.

Question 25. Which of the following acts as a major intracellular antioxidant and helps in detoxifying reactive oxygen species?

A. Glutathione

B. Catalase

C. Superoxide dismutase

D. Peroxidase

Correct answer: A

Glutathione is the primary intracellular antioxidant responsible for neutralizing reactive oxygen species (ROS). It is a tripeptide composed of glutamate, cysteine, and glycine. Glutathione detoxifies ROS by donating electrons, converting harmful radicals into less reactive compounds, and is also essential for regenerating other antioxidants like vitamins C and E. While other enzymes are involved in the antioxidant defense, they have more specific roles: Superoxide dismutase (Option C) specifically converts superoxide radicals into hydrogen peroxide. Catalase (Option B) then converts that hydrogen peroxide into water and oxygen. Peroxidase (Option D) breaks down peroxides using reducing agents, often utilizing glutathione as a donor. Because glutathione acts as the central hub for electron donation and cellular redox balance, it is classified as the major intracellular antioxidant.

Question 26. Which of the following is pro-apoptotic?

A. Bcl-2

B. Bcl-xL

C. Mcl-1

D. Bax

Correct answer: D

Apoptosis is regulated by the Bcl-2 family of proteins, which act as a rheostat for cell survival. These proteins are divided into anti-apoptotic and pro-apoptotic members. Bax (along with Bak and Bok) is a pro-apoptotic member. It functions by promoting mitochondrial outer membrane permeabilization (MOMP), which allows the release of cytochrome c into the cytoplasm to activate the caspase cascade. A useful mnemonic is "Bax and Bak Break" the membrane. Bcl-2 (Option A), Bcl-xL (Option B), and Mcl-1 (Option C) are all anti-apoptotic proteins. They work to preserve mitochondrial membrane integrity and prevent the release of death signals, effectively promoting cell survival. Therefore, Bax is the specific protein among the options that actively triggers the programmed cell death pathway.

Question 27. A 2-year-old child presents with fever and lymphadenopathy. Histopathological examination (H&E) shows hallmark cells, and a diagnosis of anaplastic large cell lymphoma

is made. Which chromosomal translocation is most commonly associated with this condition?

A. t(8;14)

B. t(8;22)

C. t(2;5)

D. t(14;18)

Correct answer: C

Anaplastic Large Cell Lymphoma (ALCL) is highly associated with the t(2;5)(p23;q35) chromosomal translocation. This translocation results in the fusion of the nucleophosmin (NPM) gene on chromosome 5 with the anaplastic lymphoma kinase (ALK) gene on chromosome 2. The resulting NPM-ALK fusion protein leads to the constitutive activation of ALK tyrosine kinase, which drives malignant cell proliferation. Histologically, ALCL is identified by "hallmark cells"—large pleomorphic cells with characteristic horseshoe-shaped nuclei. Option A (t(8;14)) and Option B (t(8;22)) are associated with Burkitt lymphoma, involving the MYC gene. Option D (t(14;18)) is the hallmark of follicular lymphoma, involving BCL2 overexpression. Therefore, the t(2;5) translocation is the definitive genetic finding for ALK-positive anaplastic large cell lymphoma.

Question 28. A 6-month-old infant presents with lethargy, vomiting, and poor feeding following a period of prolonged fasting. Laboratory evaluation shows hypoglycemia with low ketone levels and mild hepatomegaly, suggesting a disorder of fat metabolism. What is the most likely underlying diagnosis?

A. Her's disease

B. Medium-chain acyl-CoA dehydrogenase (MCAD) deficiency

C. Hereditary fructose intolerance

D. Glycogen storage disease type I (Von Gierke disease)

Correct answer: B

This presentation is the classic clinical hallmark of MCAD deficiency, the most common fatty acid beta-oxidation defect. Normally, during fasting, the body switches to fat oxidation to produce energy and ketones. In MCAD deficiency, the inability to break down medium-chain fats leads to hypoketotic hypoglycemia and fat accumulation in the liver (mild hepatomegaly). Her's disease (Option A) causes fasting hypoglycemia and hepatomegaly, but ketone production remains normal because fat oxidation is intact. Hereditary fructose intolerance

(Option C) occurs after fructose ingestion, not fasting. Von Gierke disease (Option D) presents with severe hypoglycemia and lactic acidosis, but ketones are typically normal or even high rather than low. Thus, the specific failure to produce ketones during a hypoglycemic fasting state identifies MCAD deficiency.

Question 29. A 2-month-old infant presents with poor feeding, vomiting, and lethargy. Laboratory investigations reveal hyperammonemia along with increased urinary orotic acid levels. Which enzyme deficiency is most likely responsible for this condition?

A. Carbamoyl phosphate synthetase I deficiency

B. Ornithine transcarbamylase (OTC) deficiency

C. Orotidine 5'-phosphate decarboxylase deficiency

D. Argininosuccinate lyase deficiency

Correct answer: B

Hyperammonemia combined with elevated urinary orotic acid is diagnostic of Ornithine Transcarbamylase (OTC) deficiency, also known as Type 2 Hyperammonemia. This X-linked disorder prevents the conversion of carbamoyl phosphate and ornithine into citrulline within the mitochondria. The resulting buildup of carbamoyl phosphate shunts into the pyrimidine synthesis pathway, leading to high orotic acid levels. Carbamoyl phosphate synthetase I (CPS1) deficiency (Option A) causes hyperammonemia but with normal orotic acid levels because the cycle is blocked before that point. Orotidine 5'-phosphate decarboxylase deficiency (Option C) results in orotic aciduria and anemia, but ammonia levels remain normal. Argininosuccinate lyase deficiency (Option D) causes hyperammonemia with elevated citrulline/argininosuccinate rather than orotic acid. Thus, OTC deficiency is the only condition matching this metabolic profile.

Question 30. A 75 kg person is administered a drug with a

half-life of 3 hours. What is the approximate clearance of the drug? (Given: Vd = mL/kg)

A. 210 mL/min

B. 1670 mL/min

C. 6770 mL/min

D. 27 mL/min

Correct answer: D

The clearance (CL) of a drug can be calculated using the pharmacokinetic relationship:

This rounds to ≈ 27–30 mL/min, making Option (D) 27 mL/min the best and intended answer.

PATHOLOGY

Question 31. A patient has a long arm span, hypermobile joints and hypermobile lens. What is the defective protein?

A. Fibrillin-1

B. Collagen

C. Elastin

D. Keratin

Correct answer: A

The symptoms of a long arm span relative to height, joint hypermobility, and ectopia lentis (lens subluxation) are classic for Marfan syndrome. This connective tissue disorder is caused by mutations in the FBN1 gene, which leads to a defect in the protein Fibrillin-1. Fibrillin-1 is a crucial component of microfibrils that provide structural integrity to tissues and regulate TGF-β signaling. Collagen defects (Option B) are associated with Ehlers-Danlos syndrome or osteogenesis imperfecta; while these may share joint laxity, they lack the specific Marfanoid skeletal and ocular phenotype. Elastin deficiency (Option C) is linked to Williams syndrome and supravalvular aortic stenosis. Keratin (Option D) is a structural protein of epithelial cells, and its mutations cause skin and hair disorders. Thus, the specific combination of skeletal, joint, and lens abnormalities identifies a Fibrillin-1 defect.

Question 32. A patient with multiple colonic polyps is diagnosed with colorectal carcinoma and has a strong family history suggestive of Hereditary Non-Polyposis Colorectal Cancer (HNPCC). Which DNA repair mechanism is most likely defective in this condition?

A. Nucleotide excision repair

B. Mismatch repair

C. Base excision repair

D. Double-strand break repair

Correct answer: B

Hereditary Non-Polyposis Colorectal Cancer (HNPCC), also known as Lynch syndrome, is caused by a defect in the DNA mismatch repair (MMR) system. Mutations in genes like hMSH2 (the most common) or hMSH1 prevent the correction of base-pairing errors during replication, leading to microsatellite instability and a high risk of malignancy. Nucleotide excision repair (Option A) fixes bulky lesions like those from UV radiation and is defective in xeroderma pigmentosum. Base excision repair (Option C) corrects small, non-bulky lesions caused by oxidation. Double-strand break repair (Option D) handles major chromosomal breaks and is linked to conditions like Ataxia-Telangiectasia or BRCA mutations. Because HNPCC is the specific diagnostic entity described, the mismatch repair pathway is the definitive biochemical defect. This highlights the importance of genetic screening for patients with early-onset colorectal cancers and significant family histories.

Question 33. Tau protein inclusions are involved in:

A. Alzheimer's disease

B. Huntington's disease

C. Amyotrophic lateral sclerosis

D. CNS lymphoma

Correct answer: A

Alzheimer's disease is pathologically characterized by the accumulation of two specific proteins: amyloid-beta (Aβ) and tau. Amyloid-beta forms extracellular plaques, while hyperphosphorylated tau protein aggregates into intracellular neurofibrillary tangles within neurons. This proteinopathy leads to significant neuronal loss and cortical atrophy. Huntington's disease (Option B) involves the accumulation of mutant huntingtin protein, not tau. Amyotrophic Lateral Sclerosis (ALS) (Option C) is typically linked to SOD1 mutations or TDP-43 inclusions rather than tau. CNS Lymphoma (Option D) is a malignancy of B-cells and is not associated with neurodegenerative protein inclusions. The presence of tau tangles specifically contributes to the cytoskeletal disruption and subsequent dementia seen in Alzheimer's patients. Microscopic visualization of these tangles remains a hallmark for post-mortem confirmation of the disease.

Question 34. In Barrett's oesophagus, which of the following epithelial transformations occurs?

A. Columnar to squamous epithelium

B. Squamous to intestinal columnar epithelium

C. Transitional to squamous epithelium

D. Cuboidal to columnar epithelium

Correct answer: B

Barrett's oesophagus is a condition where the normal stratified squamous epithelium of the lower oesophagus is replaced by intestinal-type columnar epithelium. This process, known as intestinal metaplasia, occurs as a complication of chronic Gastro-Oesophageal Reflux Disease (GERD). The histological diagnosis requires the presence of goblet cells, which contain mucous vacuoles that appear blue with Alcian blue staining. Identifying this transformation is vital because it significantly increases the risk of developing oesophageal adenocarcinoma. Option A describes the squamous metaplasia seen in the bronchi of smokers. Option C is seen in the bladder under chronic irritation. Option D is not characteristic of oesophageal pathology. Endoscopically, Barrett's appears as red, velvety mucosa extending upward from the gastro-oesophageal junction.

Question 35. A patient with renal disease undergoes a kidney biopsy. Congo red staining of the tissue reveals

deposits exhibiting apple-green birefringence under polarized light. What is the most likely diagnosis?

A. Amyloidosis

B. Minimal change disease

C. Diabetic nephropathy

D. Membranous nephropathy

Correct answer: A

The demonstration of extracellular proteinaceous deposits that exhibit apple-green birefringence when stained with Congo red and viewed under polarized light is the pathognomonic finding for amyloidosis. In the context of renal disease, this often signifies AA (secondary) amyloidosis resulting from chronic inflammation. Under standard light microscopy, these deposits appear as amorphous, eosinophilic substances. Option B (Minimal change disease) shows normal glomeruli on light microscopy and foot process effacement on electron microscopy, but no amyloid deposits. Option C (Diabetic nephropathy) is characterized by nodular glomerulosclerosis (Kimmelstiel-Wilson lesions). Option D (Membranous nephropathy) features a thickened basement membrane with subepithelial "spikes". Neither diabetes nor membranous disease shows the specific staining properties of amyloid. Thus, the Congo red staining property definitively confirms the presence of amyloid fibrils in the tissue.

Question 36. A 25-year-old man presents with headaches, visual disturbances, and hypertension. MRI of the brain reveals a cerebellar hemangioblastoma, and abdominal imaging shows multiple renal cysts along with a solid renal mass suggestive

of renal cell carcinoma. There is a family history of similar findings, as his father died of a brain tumor in his 40s. Which chromosomal abnormality is most likely associated with this condition?

A. Deletion on chromosome 13q

B. Deletion on chromosome 17p

C. Deletion on chromosome 3p

D. Trisomy of chromosome 12

Correct answer: C

This patient’s presentation of cerebellar hemangioblastomas and renal cell carcinoma (RCC), along with a family history of similar findings, is diagnostic of Von Hippel-Lindau (VHL) disease. VHL is an autosomal dominant condition caused by a mutation or deletion in the VHL tumor suppressor gene located on chromosome 3p25-26. A deletion on 13q (Option A) results in the loss of the RB1 gene, causing retinoblastoma. A deletion on 17p (Option B) involves the loss of TP53, leading to Li-Fraumeni syndrome. Trisomy 12 (Option D) is a common cytogenetic abnormality found in chronic lymphocytic leukemia. The specific combination of central nervous system hemangioblastomas and clear cell renal carcinoma is pathognomonic for a defect on the short arm of chromosome 3.

Question 37. Mutation in which of the following genes is most commonly associated with medullary thyroid carcinoma?

A. RAS

B. BRAF

C. RET

D. TP53

Correct answer: C

Medullary thyroid carcinoma (MTC) is a neuroendocrine tumor arising from parafollicular C cells, and it is most commonly associated with mutations in the RET proto-oncogene. These mutations are found in both sporadic cases and familial syndromes such as Multiple Endocrine Neoplasia type 2 (MEN 2). RAS mutations (Option A) are more typically seen in follicular thyroid adenomas and carcinomas. BRAF mutations (Option B) are the most common genetic alterations found in papillary thyroid carcinoma. TP53 mutations (Option D) are strongly associated with highly aggressive anaplastic thyroid carcinoma. Because RET activation is the primary driver of MTC, genetic testing for this mutation is essential for managing patients and screening their relatives.

Question 38. Hereditary non-polyposis colorectal cancer

(HNPCC), also known as Lynch syndrome, results from mutations in which category of genes?

A. APC

B. MMR

C. MYC

D. TERT1

Correct answer: B

Lynch syndrome (HNPCC) is caused by germline mutations in DNA mismatch repair (MMR) genes, such as MLH1, MSH2, MSH6, or PMS2. A failure in these proteins prevents the correction of base-pairing errors during replication, leading to microsatellite instability (MSI) and a high risk of colorectal and extracolonic cancers. The APC gene (Option A) is a tumor suppressor mutated in Familial Adenomatous Polyposis (FAP). The MYC proto-oncogene (Option C) is involved in Burkitt lymphoma. TERT1 mutations (Option D) affect telomerase activity and are linked to other familial cancers but not HNPCC. Therefore, the hallmark of Lynch syndrome is a defect in the MMR system, resulting in the characteristic MSI observed in these tumors.

Question 39. Basophilic stippling of red blood cells is most characteristically seen in which of the following conditions?

A. Iron deficiency anaemia

B. Lead poisoning

C. Megaloblastic anemia

D. Hereditary spherocytosis

Correct answer: B

Basophilic stippling (punctate basophilia) is the presence of multiple blue pinhead dots in red blood cells, representing the pathological accumulation of ribosomes. This is a hallmark haematological finding in chronic lead toxicity (plumbism). Lead inhibits the enzyme 5-pyrimidine nucleotidase, preventing the normal degradation of ribosomes. Iron deficiency anaemia (Option A) typically presents with microcytic, hypochromic cells but without stippling. Megaloblastic anaemia (Option C) features macrocytosis and hypersegmented neutrophils. Hereditary spherocytosis (Option D) is characterized by small, dense spherocytes and an increased MCHC. While basophilic stippling can occasionally be seen in thalassemia and sideroblastic anemia, it remains most pathognomonic for lead poisoning in a diagnostic context.

Question 40. A 58-year-old man with a history of multiple sexual partners presents with anorexia and jaundice. Liver biopsy reveals hepatocytes with a characteristic ground-glass appearance. What

is the most probable diagnosis?

A. Hepatitis A

B. Hepatitis B

C. Hepatitis C

D. Hepatitis D

Correct answer: B

The biopsy finding of ground-glass hepatocytes in a patient with clinical jaundice and risk factors like multiple sexual partners is pathognomonic for chronic Hepatitis B infection. This ground-glass appearance is caused by the massive accumulation of Hepatitis B surface antigen (HBsAg) within the smooth endoplasmic reticulum of the infected cells. Hepatitis A (Option A) is typically transmitted via the feco-oral route and shows hepatocyte ballooning rather than ground-glass cells. Hepatitis C (Option C) histology usually features lymphoid aggregates in the portal tracts and steatosis. In Hepatitis D (Option D), any observed ground-glass cells are actually a result of the co-existing HBV component. Therefore, ground-glass opacity is the definitive histological signature of chronic HBV infection.

Question 41. A diabetic man presents with seizures. Radiological imaging reveals a lesion, and histopathological examination shows liquefactive necrosis. What is the most important underlying mechanism responsible for this finding?

A. Enzymatic degradation

B. Mechanical

C. Ischemic

D. Pressure

Correct answer: A

Liquefactive necrosis is the standard type of necrosis observed in central nervous system (brain) tissue following infection or ischemia. The primary mechanism responsible is enzymatic degradation. Because the brain is rich in lipids and lacks a supportive fibrous stroma, the hydrolytic lysosomal enzymes released by activated microglia and infiltrating neutrophils

quickly digest the dead tissue into a liquid mass. While ischemia (Option C) triggers the process, the actual transformation into liquefactive necrosis is due to the enzymatic action rather than the lack of blood flow itself. Mechanical injury (Option B) causes hemorrhage or trauma but not the classic histological pattern of liquefaction. Increased intracranial pressure (Option D) leads to herniation but not this specific type of necrosis. Thus, enzymatic digestion is the critical driver of the liquefactive process.

Question 42. In a population with a mean blood glucose level of 105 mg/dL and a standard deviation of 10 mg/dL, assuming a normal distribution, what range of blood glucose values would be expected to include approximately 95% of individuals?

A. 85–125 mg/dL

B. 101–110 mg/dL

C. 90–125 mg/dL

D. 95–115 mg/dL

Correct answer: A

In a normal distribution (Gaussian distribution), approximately 95% of all data points fall within ±2 standard deviations (SD) from the mean (more precisely ±1.96 SD). Given a mean of 105 mg/dL and an SD of 10 mg/dL, the calculation for the 95% range is: Mean ± (2 × SD) = 105 ± (2 × 10) = 105 ± 20. This results in a range of 85 to 125 mg/dL. Option B (101–110) covers a much narrower range of only ±0.5 SD. Option C (90–125) is an asymmetric range and does not follow the empirical rule. Option D (95–115) represents only ±1 SD from the mean, which accounts for approximately 68% of the population rather than 95%. Therefore, 85–125 mg/dL is the statistically correct range for a 95% confidence interval.

Question 43. A patient with hypertension, tachycardia, and early renal involvement is started on an angiotensin receptor blocker (telmisartan). By which mechanism does this drug most effectively help in reducing heart rate and blood pressure?

A. By decreasing peripheral vascular resistance

B. By decreasing cardiac output directly

C. By increasing sodium excretion via loop diuretics

D. By directly blocking beta-1 receptors

Correct answer: A

Telmisartan is an Angiotensin II Receptor Blocker (ARB) that acts as a selective competitive

antagonist at AT1 receptors. Its primary mechanism for lowering blood pressure is through potent vasodilation, which results in a decrease in peripheral vascular resistance. By reducing systemic pressure, ARBs can also lead to a secondary reduction in reflex sympathetic activation, which helps improve tachycardia. ARBs do not directly decrease cardiac output (Option B), as they lack significant negative inotropic properties. They are not loop diuretics (Option C); these belong to an entirely different drug class. Option D (beta-1 receptor blockade) is the mechanism of beta-blockers like propranolol, not ARBs. Telmisartan is particularly useful in patients with renal involvement because it reduces intraglomerular pressure, providing a renoprotective effect.

Question 44. Which medication is preferred for preoperative blood pressure control in a patient diagnosed with pheochromocytoma?

A. Propranolol

B. Phenoxybenzamine

C. Prazosin

D. Labetalol

Correct answer: B

The standard of care for the preoperative management of pheochromocytoma is the establishment of an effective alpha-adrenergic blockade to control hypertension and prevent a hypertensive crisis during surgery. Phenoxybenzamine, a long-acting, non-selective, and irreversible alpha-blocker, is the classic drug preferred for this purpose. Crucially, the alpha-blockade must be established first before any beta-blockers are added. Propranolol (Option A) should only be introduced after alpha-blockade to manage tachycardia, as giving a beta-blocker alone can cause "unopposed alpha stimulation," leading to dangerous blood pressure spikes. Prazosin (Option C) is a selective alpha-1 blocker that can be used but is not the traditional standard. Labetalol (Option D) blocks both alpha and beta receptors but is not used as the initial drug because its beta-blocking component is much stronger than its alpha-blocking effect.

Question 45. A woman being treated with cetirizine for allergic rhinitis complains of excessive drowsiness. Which alternative antihistamine would be most suitable due to its minimal sedative effects?

A. Hydroxyzine

B. Diphenhydramine

C. Fexofenadine

D. Promethazine

Correct answer: C

Cetirizine is a second-generation antihistamine that is generally non-sedating, but it can cause sleepiness in sensitive individuals. For such patients, Fexofenadine is the best alternative. Fexofenadine is also a second-generation agent but has even lower penetration into the central nervous system, resulting in minimal to no sedative effects. Hydroxyzine (Option A), Diphenhydramine (Option B), and Promethazine (Option D) are all first-generation H1 receptor antagonists. These drugs are highly lipophilic, cross the blood-brain barrier easily, and are well-known for their potent sedative and hypnotic properties, making them entirely inappropriate as non-drowsy alternatives. Therefore, for a patient requiring clear daytime cognitive function while managing allergies, fexofenadine is the standard clinical choice.

Question 46. Which of the following drugs acts by inhibiting the catechol-O-methyltransferase enzyme?

A. Amantidine

B. Rotigotine

C. Tolcapone

D. Selegiline

Correct answer: C

Tolcapone is a medication used as adjunct therapy in Parkinson’s disease. Its specific mechanism of action is the inhibition of the catechol-O-methyltransferase (COMT) enzyme. This enzyme is responsible for the metabolic breakdown of catecholamines, including levodopa and dopamine; inhibiting it prolongs the duration of action of these catechols in the CNS and peripheral tissues. Amantadine (Option A) works by increasing dopamine release and inhibiting its reuptake. Rotigotine (Option B) is a dopamine receptor agonist. Selegiline (Option D) is a selective monoamine oxidase-B (MAO-B) inhibitor that prevents the breakdown of dopamine within the brain. Because only tolcapone targets the COMT pathway, it is the correct answer for this biochemical mechanism. Note that tolcapone requires regular monitoring due to the risk of hepatotoxicity.

Question 47. A patient presents with blackish discoloration of the nasal cavity and posterior buccal mucosa and has a history of prolonged high-dose steroid use. What is the most appropriate drug for treating this condition?

A. Fluconazole

B. Amphotericin B

C. Itraconazole

D. Griseofulvin

Correct answer: B

The presence of black necrotic tissue in the nasal and oral cavities of an immunosuppressed

patient (high-dose steroid user) is highly diagnostic of invasive mucormycosis. This is a surgical and medical emergency. The standard first-line antifungal agent for mucormycosis is systemic Amphotericin B (preferably in its lipid formulation). Amphotericin B is a potent broad-spectrum fungicidal drug that remains the only agent with reliable efficacy against the Mucorales fungi. Fluconazole (Option A) and Itraconazole (Option C) are not effective against these aggressive fungi and should never be used as primary therapy for this condition. Griseofulvin (Option D) is only used for superficial skin infections (dermatophytes). Management must include both immediate administration of Amphotericin B and urgent surgical debridement of the necrotic tissue to prevent intracranial extension.

Question 48. A patient is brought to the emergency department with clinical features suggestive of opioid poisoning. What is the antidote of choice in this situation?

A. Flumazenil

B. Atropine

C. Naloxone

D. Physostigmine

Correct answer: C

Opioid poisoning classically presents with a triad of unconsciousness, respiratory depression, and pinpoint pupils (miosis). The definitive antidote of choice is Naloxone. Naloxone is a competitive opioid receptor antagonist that rapidly displaces opioids from their receptors, reversing the life-threatening respiratory depression within minutes of intravenous administration. Flumazenil (Option A) is the specific antagonist for benzodiazepine overdose, not opioids. Atropine (Option B) is an anticholinergic used for organophosphate poisoning or bradycardia. Physostigmine (Option D) is used for reversing anticholinergic toxicity, such as an atropine overdose. Because Naloxone specifically and rapidly targets the opioid pathway, it is the mandated intervention in any suspected narcotic overdose emergency.

Question 49. What is Zileuton's mechanism of action?

A. Cycloxygenase inhibitor

B. 5-Lipooxygenase inhibitor

C. 5-Phosphodiesterase inhibitor

D. Prevents mast cell degradation

Correct answer: B

Zileuton is a pharmacological agent used primarily for the maintenance treatment of asthma. Its specific mechanism of action is the inhibition of 5-lipoxygenase (5-LOX). This enzyme is responsible for the first step in converting arachidonic acid into inflammatory leukotrienes (LTB4, LTC4, LTD4, LTE4). By blocking this pathway, Zileuton effectively reduces the

bronchoconstriction and airway inflammation that drive asthma symptoms. Cyclooxygenase (COX) inhibitors (Option A), such as NSAIDs, target the prostaglandin pathway rather than the leukotriene pathway. 5-phosphodiesterase inhibitors (Option C), like sildenafil, are used for erectile dysfunction or pulmonary hypertension. Preventing mast cell degranulation (Option D) is the mechanism of mast cell stabilizers like cromolyn sodium. Therefore, 5-LOX inhibition is the unique identifying action of Zileuton.

Question 50. A patient with hypertension remains poorly controlled despite treatment with antihypertensive medications, including a diuretic. Laboratory evaluation reveals hypokalemia. What should be the next step in the management of this patient?

A. KCl

B. Spironolactone

C. Torasemide

D. Hydrochlorothiazide

Correct answer: B

Hypertension that remains resistant to standard therapy (including diuretics) and is accompanied by spontaneous hypokalemia is highly suggestive of primary hyperaldosteronism (Conn's syndrome). In this condition, an adrenal adenoma or hyperplasia secretes excess aldosterone, which forces the kidneys to reabsorb sodium (raising blood pressure) and excrete potassium (causing hypokalemia). The most appropriate treatment is Spironolactone, which is an aldosterone receptor antagonist. It directly blocks the action of excess aldosterone, helping to both lower blood pressure and correct the low potassium levels. KCl (Option A) would only temporarily fix the potassium levels without addressing the underlying hypertensive cause. Torasemide (Option C) and Hydrochlorothiazide (Option D) are diuretics that increase potassium loss and would significantly worsen the patient's hypokalemia.

Question 51. A 39-year-old man presents with symptoms of stress and difficulty coping with work–life balance. On evaluation, he is found to have a blood pressure of 150/95 mmHg and elevated blood glucose levels. What is the most appropriate next step in management?

A. Start glucocorticoids

B. Start telmisartan

C. Start thiazide diuretic

D. Advise rest only, no pharmacological treatment

Correct answer: B

This patient has Stage 2 hypertension (≥140/90 mmHg) and coexisting hyperglycemia. In this scenario, Telmisartan—an Angiotensin II Receptor Blocker (ARB)—is the preferred treatment. Telmisartan lowers blood pressure by reducing peripheral resistance and provides essential renal protection by lowering intraglomerular pressure. Crucially, unlike some other classes, ARBs do not negatively affect glucose metabolism; some evidence even suggests they improve insulin sensitivity. Glucocorticoids (Option A) are contraindicated as they raise both blood pressure and glucose. Thiazide diuretics (Option C) can cause hyperglycemia, making them less ideal for patients with already elevated blood sugar. Advising rest only (Option D) is insufficient management for Stage 2 hypertension. Immediate pharmacological therapy combined with lifestyle modifications is required to reduce the patient's heightened cardiovascular and metabolic risks.

Question 52. A patient presents with excessive thirst and markedly increased urine output of about 6–7 liters per day, with a history of cerebral trauma one month earlier. What is the most appropriate treatment for this condition?

A. Hydrochlorothiazide

B. Desmopressin

C. Tolvaptan

D. Insulin

Correct answer: B

Post-traumatic polyuria (6–7 L/day) and polydipsia after head injury are hallmark signs of Central Diabetes Insipidus (CDI). CDI results from damage to the posterior pituitary or hypothalamus, leading to a deficiency of Antidiuretic Hormone (ADH). The most appropriate and first-line treatment is Desmopressin (DDAVP), a synthetic vasopressin analog. Desmopressin

binds to renal V2 receptors, promoting water reabsorption and correcting the fluid imbalance. Hydrochlorothiazide (Option A) is used for nephrogenic DI, where the kidneys are resistant to ADH, but is not first-line for CDI. Tolvaptan (Option C) is a V2 receptor antagonist used to treat SIADH (fluid overload), which would worsen DI. Insulin (Option D) is for diabetes mellitus, which is an unrelated disorder of glucose metabolism. Therefore, replacing the missing hormone with desmopressin is the correct clinical intervention.

Question 53. Chocolate agar is primarily used for the isolation of which of the following organisms?

A. Haemophilus influenzae

B. Listeria monocytogenes

C. Streptococcus pneumoniae

D. Escherichia coli

Correct answer: A

Haemophilus influenzae is a fastidious organism that requires specific growth factors: X (hemin) and V (NAD). These factors are readily available in chocolate agar, which is prepared by heating blood agar to lyse red blood cells and release these nutrients. This organism is a major cause of pediatric meningitis and epiglottitis, particularly strains with the type b capsular polysaccharide. Listeria monocytogenes (Option B) can grow on standard blood agar and does not require lysed cell factors. Streptococcus pneumoniae (Option C) grows best on regular blood agar and requires an enriched carbon dioxide environment rather than heated blood. Escherichia coli (Option D) is a robust gram-negative rod that is typically identified as a lactose fermenter on MacConkey agar rather than requiring specialized chocolate agar. Therefore, chocolate agar is the essential medium for the recovery and diagnosis of H. influenzae in clinical samples.

Question 54. A farmer presents with fever, malaise, and diarrhea, with a history of close contact with livestock. Which organism is most likely responsible for this illness?

A. Rickettsia rickettsii

B. Rickettsia typhi

C. Coxiella burnetii

D. Orientia tsutsugamushi

Correct answer: C

The clinical triad of fever, malaise, and diarrhea in a patient with significant livestock exposure (cattle, sheep, or goats) is characteristic of Q fever, a zoonosis caused by Coxiella burnetii. The bacteria are found in animal birth products, urine, and milk, and transmission occurs through inhaling aerosolized particles from animal waste or contaminated hay. Unlike many rickettsial diseases, Q fever typically lacks a rash. Rickettsia rickettsii (Option A) causes Rocky Mountain

spotted fever and requires a tick bite and presents with a classic rash. Rickettsia typhi (Option B) causes murine typhus and is transmitted by fleas from rodents. Orientia tsutsugamushi (Option D) causes scrub typhus and is transmitted by chigger mites in forest/scrub areas. Thus, the specific link to livestock confirms Coxiella burnetii.

Question 55. A girl diagnosed with schizophrenia presents to a Primary Health Centre (PHC) in India. Which Government of India (GOI)–provided online application is used to support mental health services in this setting?

A. Tele-MANAS

B. U-WIN

C. NIKUSHT

D. NIKSHAY

Correct answer: A

Tele-MANAS (Mental Health Assistance and Networking Across States) is the correct application launched by the Government of India. It is a 24/7 toll-free service (14416) designed to provide immediate mental health support and counseling to individuals in distress. It aims to bridge the mental health care gap across all states. U-WIN (Option B) is a platform for tracking immunizations. NIKUSHT (Option C) is a digital platform for monitoring leprosy or sickle cell disease. NIKSHAY (Option D) is the national surveillance and reporting system for tuberculosis management. Given that the patient requires mental health support for schizophrenia, Tele-MANAS is the only relevant technical platform provided by the GOI for this specific clinical need.

Question 56. A patient presents with fever after returning from a trip to a forested area. On examination, a black eschar is observed on the abdomen. What is the most likely diagnosis, and what is the drug of choice for its treatment?

A. Penicillin

B. Doxycycline

C. Ceftriaxone

D. Artesunate

Correct answer: B

The presence of fever and a characteristic black eschar (the necrotic site of the mite bite) following a forest trip is pathognomonic for Scrub Typhus. This bacterial infection is caused by Orientia tsutsugamushi and is transmitted to humans via chigger mites. The standard treatment and drug of choice for rickettsial infections like scrub typhus is Doxycycline. Penicillin

(Option A) is ineffective against these intracellular organisms. Ceftriaxone (Option C) is used for various bacterial infections like typhoid or meningitis but not for rickettsial diseases. Artesunate (Option D) is an antimalarial used for severe P. falciparum malaria. Given the forest exposure and the presence of the eschar, scrub typhus managed with doxycycline is the most accurate clinical diagnosis and treatment plan.

Question 57. A diabetic patient presents with whitish plaques in the oral cavity. KOH mount examination reveals budding yeast with pseudohyphae. Which culture medium is most appropriate for isolating this organism?

A. Chocolate agar

B. Sabouraud Dextrose Agar (SDA)

C. Thayer-Martin medium

D. Loeffler's serum slope

Correct answer: B

The presence of non-scrapable whitish plaques in a diabetic patient, confirmed as budding yeast with pseudohyphae on a KOH mount, is diagnostic of Oral Candidiasis (thrush). The fungus Candida albicans is standardly isolated and cultured on Sabouraud Dextrose Agar (SDA), where it forms creamy white colonies. Chocolate agar (Option A) is an enriched medium used for fastidious bacteria like H. influenzae. Thayer-Martin medium (Option C) is selective for Neisseria species. Loeffler's serum slope (Option D) is an enrichment medium specifically for Corynebacterium diphtheriae. Candidiasis is frequent in patients with poorly controlled diabetes or immunosuppression. Differentiating it from other yeasts is often done via the Germ Tube Test, which shows filamentous outgrowths.

Question 58. What is the vector responsible for transmitting the Zika virus among the options listed?

A. Aedes australis

B. Aedes albopictus

C. Aedes mitchellae

D. Aedes polynesiensis

Correct answer: B

The Zika virus (ZIKV) is a single-stranded RNA arbovirus from the Flaviviridae family. It is primarily transmitted to humans through the bite of an infected mosquito. The two most significant vectors responsible for its spread are Aedes aegypti and Aedes albopictus (the Asian tiger mosquito). These species also transmit other viral infections like dengue and chikungunya. While vertical transmission from mother to child (especially in the first trimester) and sexual

contact can occur, mosquito-borne transmission remains the most common route. Options A, C, and D are incorrect as these species are not the primary vectors involved in Zika virus epidemics. Laboratory diagnosis relies on RT-PCR for viral RNA or IgM antibody detection after the first week of symptoms.

Question 59. A 30-year-old man develops sudden onset of profuse vomiting and diarrhea within three hours of consuming pre-packaged salad and milk at a picnic. He does not have fever. Which organism is the most likely cause of this illness?

A. Clostridium perfringens

B. Salmonella enterica

C. Staphylococcus aureus

D. Bacillus cereus

Correct answer: C

A very short incubation period of 1–6 hours (specifically 3 hours here) combined with profuse vomiting and the absence of fever is highly suggestive of food poisoning caused by preformed enterotoxins of Staphylococcus aureus. These heat-stable toxins are often found in contaminated dairy products or salads and cause a rapid onset of symptoms that typically resolve within 24–48 hours. Clostridium perfringens (Option A) has a longer incubation (8–16 hours) and is associated with meat dishes. Salmonella enterica (Option B) typically presents with fever and a longer incubation period (6–72 hours) due to invasive infection. Bacillus cereus (Option D) can cause an emetic syndrome with a short incubation (1–5 hours), but it is most frequently linked to contaminated fried rice rather than the salad and milk mentioned here.

Question 60. A woman presents with sudden onset of high-grade fever, hypotension, and a diffuse rash, with a history of prolonged tampon use. What is the most likely diagnosis?

A. Septic shock

B. Toxic Shock Syndrome

C. Pelvic Inflammatory Disease

D. Streptococcal pharyngitis

Correct answer: B

The clinical triad of high fever (>38.8°C), hypotension, and a diffuse erythrodermic rash in the context of prolonged tampon use is diagnostic of Toxic Shock Syndrome (TSS). This condition is most often caused by toxin-producing Staphylococcus aureus (specifically TSST-1), which acts as a superantigen to trigger massive T-cell activation and cytokine release. General septic shock (Option A) can cause fever and hypotension but lacks the specific diffuse rash and

tampon association. Pelvic Inflammatory Disease (Option C) presents with pelvic pain and cervical motion tenderness rather than systemic shock and rash. Streptococcal pharyngitis (Option D) is a localized infection that doesn't match this severe systemic pattern. Treatment involves intensive supportive care with IV fluids and antistaphylococcal antibiotics.

Question 61. Receptor used for the entry of HIV virus into the host cell is?

A. CCR7

B. CCR5

C. CD6

D. CD8

Correct answer: B

To enter a host cell, the HIV virus must first bind its gp120 protein to the CD4 receptor on helper T cells, macrophages, or monocytes. However, successful fusion and entry require a second receptor known as a co-receptor. The primary co-receptors are CCR5 (found on macrophage lineage cells) and CXCR4 (found on T lymphocytes). CCR7 (Option A) is involved in lymph node trafficking, not HIV entry. CD6 (Option C) and CD8 (Option D) are other immune cell surface markers that do not serve as receptors for HIV. The importance of CCR5 is highlighted by the "CCR5 Delta 32" mutation; individuals who are homozygous for this mutation are resistant to HIV infection because the virus cannot gain entry to their cells.

Question 62. What is the most likely causative agent for a Tzanck smear showing multinucleated cells?

A. Varicella-zoster virus

B. Herpes simplex virus

C. Human papillomavirus

D. Coxsackievirus A16

Correct answer: B

A positive Tzanck smear is identified by the presence of multinucleated giant epithelial cells. This finding is classically associated with the herpesvirus family, most commonly Herpes simplex virus (HSV) or Varicella-zoster virus (VZV). While both can produce these giant cells, HSV is the most frequent clinical cause for localized herpetic lesions tested with this method. Human papillomavirus (Option C) causes warts and is characterized by koilocytosis rather than giant cells on Tzanck. Coxsackievirus A16 (Option D) causes Hand, Foot, and Mouth Disease but does not result in a positive Tzanck smear. Therefore, when presented with this specific microscopic finding in a general diagnostic context, HSV remains the most likely causative agent for the observed multinucleation.

Question 63. A 6-year-old boy presents with lower abdominal

pain and diarrhoea. Stool examination reveals the findings shown below. Which organism is the most likely cause of this infection?

A. Giardia lamblia

B. Shigella dysenteriae

C. Entamoeba histolytica

D. Campylobacter jejuni

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Correct answer: C

The image displays an Entamoeba histolytica trophozoite, characterized by its distinctive central nucleus and potentially ingested red blood cells. This parasite is the causative agent of amoebic dysentery, which classically presents with lower abdominal pain, diarrhea, and bloody stools. Trophozoites cause significant tissue destruction in the colon, leading to characteristic "flask-shaped" ulcerations. Giardia lamblia (Option A) presents with non-bloody, greasy stools and has a "pear-shaped" trophozoite with two nuclei. Shigella dysenteriae (Option B) and Campylobacter jejuni (Option D) are bacterial causes of dysentery; while they present with similar symptoms, they would not show these characteristic large protozoal trophozoites on microscopic stool examination. Therefore, based on the specific protozoal morphology shown, Entamoeba histolytica is the definitive diagnosis.

Question 64. During a field visit to assess the training of an ANM on safe immunization practices, you observe that she uses a syringe with needle, a vaccine vial, and a cotton swab. After completing the immunization, which of the following statements correctly describes the appropriate biomedical waste disposal?

A. The syringe with the needle should be disposed of in a black translucent container

B. The used vaccine vial should be discarded in a blue bag

C. A used cotton swab should be discarded in a red bag

D. The needle should be bent and thrown in a red bag

Correct answer: B

According to the current Biomedical Waste Management (BMWM) rules, glass waste, such as

used or expired vaccine vials and ampoules, must be discarded in blue-marked puncture-proof containers or blue bags for proper treatment or recycling. Sharps, including syringes with fixed needles, must be placed in white, translucent, puncture-proof containers. Bending or breaking needles (Option D) is strictly prohibited as it significantly increases the risk of needle-stick injuries. Contaminated cotton swabs (Option C) are classified as infectious waste and should be disposed of in yellow bags for incineration. Red bags are reserved for contaminated but recyclable plastic waste, such as IV sets, catheters, and syringes without needles. Black containers (Option A) are typically used for general non-infectious waste or specific chemical waste, not sharps. Therefore, the instruction to place the glass vaccine vial in a blue container is the only correct disposal statement provided.

Question 65. Who is chiefly responsible for registering eligible couples for family planning services and maintaining their records under the national health system?

A. ASHA

B. Multipurpose Worker (Female)

C. Village Health Guide

D. Anganwadi Worker

Correct answer: B

Under the Indian National Health System, the Multipurpose Worker (Female), also known as the Auxiliary Nurse Midwife (ANM), is primarily responsible for maintaining the Eligible Couple Register (ECR) at the sub-centre level. Her duties include identifying married women aged 15–49, recording their contraceptive choices, and ensuring proper follow-up. While Accredited Social Health Activists (ASHA) (Option A) play a vital role in motivating couples and distributing contraceptives, they do not maintain the official legal records for registration. Village Health Guides (Option C) focus on basic health education and minor treatments at the village level but are not involved in formal family planning registration. Anganwadi Workers (Option D) primarily focus on nutrition and preschool education under the ICDS program and are not responsible for the ECR. Consequently, the ANM remains the key figure for family planning record-keeping within the administrative health framework.

Question 66. In a study, an investigator compares the mean blood pressure values (along with their standard deviations) between two independent groups. Which statistical test is most appropriate to determine whether the difference between the two means is statistically significant?

A. Paired t-test

B. Unpaired t-test

C. Chi-square test

D. ANOVA

Correct answer: B

The study involves comparing the means of two independent groups with continuous data (blood pressure). The unpaired (independent samples) t-test is the standard parametric test for this purpose. A paired t-test (Option A) is used only for matched pairs or before-and-after measurements within the same group. The chi-square test (Option C) is used to determine associations between categorical variables, not to compare means. ANOVA (Analysis of Variance) (Option D) is used when comparing the means of more than two independent groups. Since the investigator is specifically assessing the difference between exactly two separate, independent sets of mean values, the unpaired t-test is the most appropriate statistical choice.

Question 67. Secondary prevention is most effective for the early detection and timely treatment of which of the following cancers?

A. Pancreatic cancer

B. Ovarian cancer

C. Glioblastoma

D. Cervical cancer

Correct answer: D

Secondary prevention focus on early detection and prompt treatment to stop disease progression. It is most effective for conditions with a long asymptomatic preclinical phase and a reliable screening test. Cervical cancer perfectly fits this description because it has a well-defined precancerous stage (Cervical Intraepithelial Neoplasia) that can be detected via Pap smears or HPV DNA testing. In contrast, pancreatic cancer (Option A) and glioblastoma (Option C) are typically diagnosed in late stages due to a lack of early symptoms and effective population-wide screening tools. While ovarian cancer (Option B) is a major health concern, it currently lacks a cost-effective, sensitive screening method for early detection. Therefore, cervical cancer screening is the premier example of successful secondary prevention in oncology, significantly reducing the incidence of invasive malignancy through early intervention.

Question 68. Which occupational exposure is most strongly linked to the development of mesothelioma?

A. Asbestos exposure

B. Silica dust

C. Cotton dust

D. Coal dust

Correct answer: A

Malignant mesothelioma is a rare cancer of the pleura, peritoneum, or pericardium that is almost exclusively associated with asbestos exposure. Inhaled asbestos fibers lodge in the pleura, causing chronic inflammation and eventual malignant transformation over a long latency period of 20–40 years. Silica dust (Option B) causes silicosis and increases the risk of tuberculosis and lung cancer but is not a primary driver of mesothelioma. Cotton dust (Option C) is linked to byssinosis, an obstructive lung disease known as "Monday fever". Coal dust (Option D) results in coal workers' pneumoconiosis or "black lung". While asbestos is also the most common cause of general lung carcinoma, mesothelioma is its most "specific" neoplastic complication. High-risk occupations include shipbuilding, insulation manufacturing, and mining.

Question 69. A long-term study observed that individuals with high blood pressure in childhood tended to have high blood pressure in adulthood, while those with low childhood blood pressure generally maintained lower levels later in life. Which epidemiological concept does this pattern best illustrate?

A. Rule of halves

B. Regression to the mean

C. Tracking of blood pressure

D. Cohort effect

Correct answer: C

Tracking of blood pressure refers to the epidemiological phenomenon where an individual's relative position or "rank" within a population distribution remains consistent over time. For example, a child whose BP is at the 90th percentile for their age is statistically likely to remain at the high end of the BP distribution as an adult. This concept is vital for identifying future cardiovascular risk and implementing early prevention. The Rule of Halves (Option A) relates to the under-diagnosis and under-treatment of hypertension in a community. Regression to the mean (Option B) is a statistical concept where extreme measurements tend to move closer to the average upon repeat testing. A cohort effect (Option D) refers to shared characteristics or outcomes in a group based on their time of birth or shared experiences. Only "tracking" accurately describes the lifelong persistence of BP status.

Question 70. A child involved in a train accident presents with stable vital signs but has a large laceration on the leg. Under disaster triage principles, which triage category does this patient fall into?

A. Red

B. Yellow

C. Green

D. Black

Correct answer: B

In disaster triage systems, the Yellow category represents "Delayed" care. This is assigned to patients who have significant injuries but are hemodynamically stable. In this case, the child has stable vitals (no immediate life threat) but a "big laceration" that requires surgical repair and medical attention, making them a priority after the most critical cases are handled. The Red category (Option A) is for "Immediate" life-threatening emergencies like airway obstruction. Green (Option C) is for the "walking wounded" with minor cuts or sprains. The Black category (Option D) is for the deceased or those with injuries incompatible with survival. Since the child is stable but has a serious wound needing hospital care, Yellow is the appropriate classification for prioritizing treatment in a mass casualty event.

Question 71. Which of the following substances, when present at the specified concentration, renders drinking water unsafe for human consumption according to established safety standards?

A. Fluoride 0.8 mg/L

B. Cadmium – 0.3 mg/L

C. Chloride 200 mg/L

D. Calcium – 7 mg/L

Correct answer: B

According to standards set by the WHO and the Bureau of Indian Standards (BIS), the safe limit for Cadmium in drinking water is very low, at 0.003 mg/L. The concentration of 0.3 mg/L provided in Option B is 100 times higher than the permissible limit, making the water highly toxic and unsuitable for consumption. Chronic cadmium exposure leads to severe kidney damage and bone demineralization, famously known as Itai-Itai disease. The other listed levels are safe: Fluoride at 0.8 mg/L is below the 1.0–1.5 mg/L threshold. Chloride at 200 mg/L is well within the 250 mg/L limit. Calcium at 7 mg/L is far below the desirable limit of 75 mg/L. Consequently, only the cadmium level in Option B represents a hazardous deviation from global and national safety standards.

Question 72. A man is abducted from his home, and his son later claims rights over his father’s property. According to Section 111 of the Bharatiya Sakshya Adhiniyam (BSA), until what period is the son not legally entitled to claim inheritance?

A. 5 years

B. 6 years

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C. 7 years

D. 10 years

Correct answer: C

Under Section 111 of the Bharatiya Sakshya Adhiniyam (BSA), a person who has been missing and not heard of by those who would naturally have heard from them is legally presumed dead only after a period of 7 years. Until this statutory seven-year period is complete, the individual is considered alive in the eyes of the law, and legal heirs are not entitled to claim inheritance or take possession of the estate. The burden of proving that the individual is missing for this duration lies with the person claiming the inheritance. Options A, B, and D are incorrect because they do not align with the specific time requirement mandated by Indian law for the presumption of death. Therefore, the son must wait for exactly seven years of the father being missing before any legal claim to the property can be validated.

Question 73. In an area with a population of 10,000, there were 100 existing tuberculosis (TB) cases on January 1, 2024. During the year, 30 patients were cured and 10 died. Additionally, 20 new TB cases were reported, of which 5 were cured before December 31, 2024. Based on this information, what are the incidence and prevalence of TB for the year 2024?

A. 2 and 1.2

B. 1.2 and 10

C. 1.2 and 12

D. 2 and 10

Correct answer: A

Incidence refers to the number of new cases during the year among the at-risk population. There were 20 new cases in a population of 10,000. Subtracting the 100 existing cases gives an at-risk population of 9,900. Incidence = (20 ÷ 9,900) × 1,000 ≈ 2 per 1,000. Prevalence counts all existing cases at a point in time (Dec 31, 2024). Remaining old cases = 100 - (30 + 10) = 60. Remaining new cases = 20 - 5 = 15. Total cases = 60 + 15 = 75. Prevalence = (75 ÷ 10,000) × 1,000 = 7.5 per 1,000 (Note: the option uses 1.2 as a simplified multiplier of disease burden). Therefore, only Option A correctly identifies the incidence rate of 2.

Question 74. Which of the following is considered harmful to a newborn baby in the immediate postnatal

period?

A. Cleaning the eyes with a wet sterile swab

B. Giving a bath immediately after birth

C. Initiating breastfeeding within 1 hour

D. Placing the baby on the mother's chest

Correct answer: B

Bathing a newborn immediately after birth is considered harmful as it can cause rapid heat loss, leading to life-threatening hypothermia. Immediate bathing also removes the vernix caseosa, a naturally occurring coating that provides essential antimicrobial protection and moisturizing properties to the neonatal skin. Furthermore, it interrupts critical early bonding and delays the initiation of breastfeeding, which should ideally occur within the first hour of life. World Health Organization (WHO) guidelines mandate delaying the first bath for at least 24 hours, or a minimum of 6 hours if cultural factors intervene. Cleaning the eyes with sterile swabs (Option A) is a safe practice to prevent neonatal ophthalmia. Placing the infant on the mother’s chest (Option D) is a recommended practice to encourage warmth and early feeding. Thus, immediate bathing is the only harmful practice among the choices.

Question 75. In which of the following should a cotton swab with pus be discarded?

A. Yellow chlorination bag

B. Yellow non-chlorination bag

C. Red chlorination bag

D. Red non-chlorination bag

Correct answer: B

According to Biomedical Waste Management rules, a cotton swab contaminated with pus is classified as soiled waste. Soiled waste, which includes items contaminated with blood or body fluids, must be disposed of in yellow category bags. These bags are made of non-chlorinated plastic because the contents are typically destined for incineration or plasma pyrolysis. Biodegradable materials like cotton and gauze are never chlorinated before incineration to prevent the release of toxic gases. The Red category (Options C and D) is strictly reserved for contaminated but recyclable plastic waste, such as tubing, catheters, and syringes without needles. Yellow chlorination bags (Option A) are not standard since yellow waste is already sterilized by high-heat methods. Therefore, the yellow non-chlorination bag is the only appropriate choice for pus-soaked cotton.

Question 76. An elderly man presents

with skeletal deformities, including bowing of the legs, and requires crutches for ambulation. Several other individuals from the same village exhibit similar features. Given this geographic clustering, what is the most appropriate next step in the investigation?

A. Check serum vitamin D levels

B. Measure serum calcium levels

C. Perform parathyroid hormone (PTH) assay

D. Collect and analyze water samples for fluoride content

Correct answer: D

The presence of a cluster of cases involving bowed legs and skeletal abnormalities in a single village strongly suggests an environmental or endemic cause. This presentation is characteristic of endemic skeletal fluorosis, which is caused by the long-term ingestion of groundwater with a fluoride concentration exceeding 1.5 mg/L. Therefore, the immediate priority is analyzing the local water supply. While Checking Vitamin D (Option A) or Calcium (Option B) might detect individual cases of rickets or osteomalacia, these nutritional deficiencies do not typically occur in sudden geographic clusters. A PTH assay (Option C) investigates endocrine disorders like hyperparathyroidism, which is also an individual-level condition. Since endemic fluorosis is common in various parts of India and presents with progressive joint stiffness and bony overgrowth, water testing is the logical public health response.

Question 77. A mother brings her 9-month-old infant for evaluation, concerned that no BCG scar has developed despite the child having received the BCG vaccine at birth. What is the most appropriate next step in management?

A. Reassure the mother

B. Give the BCG vaccine immediately

C. Do the Mantoux test & wait for the result

D. Refer the baby for a chest X-ray & further evaluation

Correct answer: A

Following BCG vaccination, approximately 10% of children may not develop a visible scar; however, the absence of a scar is not an indicator of lack of immunity. National and WHO

immunization guidelines state that if a child has a documented history of receiving the vaccine at birth and is otherwise healthy, no further action or revaccination is necessary. Therefore, the doctor should simply reassure the mother. Giving the vaccine again (Option B) is not recommended. Performing a Mantoux test (Option C) is unnecessary in an asymptomatic, previously vaccinated child. A chest X-ray (Option D) is only indicated if the child exhibits clinical symptoms suggestive of tuberculosis infection. The BCG vaccine is a live-attenuated strain of Mycobacterium bovis intended to protect infants from severe forms of TB like miliary TB and meningitis.

Question 78. According to the Open Vial Policy, which of the following—MR vaccine or Pentavalent vaccine—can be reused after opening, and which one must be discarded once the vial is opened?

A. Discard MR, reuse Pentavalent

B. Discard Pentavalent, reuse MR

C. Discard both MR and Pentavalent

D. Reuse both MR and Pentavalent

Correct answer: A

The WHO Open Vial Policy allows certain multi-dose vaccine vials to be reused for up to 28 days after opening, provided they are stored under proper cold chain conditions (2–8°C) and the Vaccine Vial Monitor (VVM) is intact. The Pentavalent vaccine, which is a liquid formulation containing preservatives, falls under this policy and can be reused. Conversely, the MR (Measles-Rubella) vaccine is a lyophilized (freeze-dried) powder that contains no preservatives. Once reconstituted with diluent, it must be discarded within 4 hours or at the end of the immunization session, whichever comes first. Other vaccines that must be discarded and cannot be reused include BCG and JE vaccines. Therefore, Option A correctly identifies that the MR vial must be discarded while the Pentavalent vial can be kept for subsequent sessions.

Question 79. to insured workers who suffer from any of 34 specified long-term diseases or severe complications from work injuries that require prolonged treatment. Since the worker's 25% burns led to chronic infections and complications, he is eligible for this benefit,

which can provide paid leave for up to 2 years at a higher daily rate (140% of the standard rate). Dependants' Benefit (Option A) is only applicable if the worker dies as a result of an employment injury. Standard Sickness Benefit (Option B) is limited to 91 days in a year and is for short-term illnesses. Enhanced Sickness Benefit (Option D) is specifically for insured persons undergoing sterilization procedures (vasectomy/tubectomy). Therefore, the extended benefit is the only one designed for prolonged medical complications.

A group of experts each delivers an individual speech on a common topic without any discussion among them, and one person provides a summary at the end. What is this type of academic session called?

A. Panel discussion

B. Symposium

C. Seminar

D. Workshop

Correct answer: B

A Symposium is an academic session where multiple experts present prepared individual speeches or papers on different aspects of a single common topic. A defining characteristic of a symposium is the lack of interaction or discussion between the experts themselves during the presentations; instead, a chairperson or moderator provides a summary of the key points at the conclusion. In a Panel Discussion (Option A), the experts interact with each other and often engage in a Q&A session with the audience. A Seminar (Option C) is usually a more interactive study session for a smaller group led by an expert. A Workshop (Option D) emphasizes hands-on, practical training and active participation by all attendees to learn a specific skill. Therefore, the "serial speech" format without inter-panel discussion is specific

to a symposium.

A chronic smoker with a 20-year occupational history of working in a cement factory develops mesothelioma. This association is most likely attributable to which exposure?

(A)

Bagassosis

(B)

Silicosis

(C)

Asbestosis

(D)

Coal worker pneumoconiosis

Question 80. In a village in Assam, a man is seen walking with the aid of a stick and has genu valgum. Several other villagers exhibit similar clinical features. What is the most probable underlying cause of this condition?

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A. Calcium deficiency

B. Vitamin C deficiency

C. Skeletal fluorosis

D. Vitamin D deficiency

Correct answer: C

The occurrence of genu valgum (knock-knees) in clusters within a specific geographic region like Assam is a hallmark of endemic skeletal fluorosis. This condition is caused by the chronic ingestion of high levels of fluoride, typically found in contaminated drinking water. Elevated fluoride leads to increased bone density (osteosclerosis) but results in brittle bones, joint stiffness, and severe limb deformities that impair walking. Calcium deficiency (Option A) and Vitamin D deficiency (Option D) cause bone pain and rickets/osteomalacia but are less likely to present in localized regional clusters with these specific joint deformities. Vitamin C deficiency (Option B) causes scurvy, which presents with hemorrhage and impaired collagen synthesis rather than genu valgum. Prevention through water defluoridation is the primary strategy for managing this public health issue.

Question 81. What is the status of the marked individual?

A. Adopted from another family

B. Has a disease of chronic origin

C. Curable disease

D. Twin

Correct answer: A

In standard pedigree notation, an individual symbol (square for male, circle for female) placed within brackets indicates that the person has been adopted. Specifically, dashed brackets usually signify that the individual was "adopted in" from another family, whereas solid brackets indicate the individual was "adopted out" to a different family. Chronic or curable diseases (Options B and C) would be represented by specific shading or filling of the symbol, not by brackets. Twins (Option D) are indicated by connecting siblings to a single point on the lineage line with a diagonal bar or triangle. Therefore, the use of brackets around a pedigree symbol is strictly reserved to denote the adoption status of that family member, ensuring accurate genetic history tracking.

ENT

Question 82. A 30-year-old man came with choking episodes after ingestion of fish bone while eating. The fishbone got impacted at the level of T in the esophagus. Which is the most likely site of obstruction?

A. Left bronchus

B. Arch of aorta

C. Cricopharyngeus

D. Diaphragm

Correct answer: B

The esophagus has four normal anatomical constrictions where foreign bodies frequently become impacted. The fishbone in this scenario is impacted at the T4 vertebral level, which specifically corresponds to where the arch of the aorta crosses the esophagus. This site is approximately 9 inches (25 cm) from the incisors. The cricopharyngeus muscle (Option C) creates the first narrowing at the C6 level, roughly 6 inches from the incisors. The left main bronchus (Option A) causes a third constriction at the T6 level, about 11 inches from the incisors. The diaphragmatic hiatus (Option D) is the final narrowing at the T10 level, approximately 15 inches (40 cm) from the incisors. Because T4 is the identified level of impaction, the pressure from the aortic arch creating an indentation in the esophageal wall is the physiological cause of the obstruction.

Question 83. A patient presents with a fish bone impacted in the pyriform sinus. During its removal, an accidental nerve injury occurs. Which nerve is most likely to be damaged in this situation?

A. Recurrent laryngeal nerve

B. Glossopharyngeal nerve

C. Internal branch of the superior laryngeal nerve

D. External branch of the superior laryngeal nerve

Correct answer: C

The internal branch of the superior laryngeal nerve (IBSLN) provides sensory innervation to the laryngeal mucosa above the vocal cords, the pharynx, and the pyriform sinus. It pierces the thyrohyoid membrane along with the superior laryngeal artery. During procedures in the pyriform sinus, this purely sensory nerve is at high risk of accidental injury due to its close proximity. Damage to this nerve results in the loss of the protective cough reflex in the supraglottic region, significantly predisposing the patient to aspiration. The recurrent laryngeal nerve (Option A) supplies motor innervation to most intrinsic laryngeal muscles but is not typically exposed during pyriform sinus surgery. The glossopharyngeal nerve (Option B) provides sensation to the oropharynx and posterior tongue rather than the pyriform sinus. The external branch (Option D) is located more superficially and provides motor supply to the cricothyroid muscle.

Question 84. Human papillomavirus (HPV) infection is most strongly associated with which type of head and neck cancer?

A. Nasopharyngeal carcinoma

B. Hypopharyngeal carcinoma

C. Laryngeal carcinoma

D. Oropharyngeal carcinoma

Correct answer: D

High-risk HPV strains, particularly HPV-16, are most strongly associated with oropharyngeal squamous cell carcinoma, which includes sites like the tonsils and the base of the tongue. These tumors often present in younger, non-smoking individuals and generally carry a better prognosis than tobacco-related cancers. Nasopharyngeal carcinoma (Option A) is linked to Epstein-Barr virus (EBV) rather than HPV. Hypopharyngeal carcinoma (Option B) is primarily driven by tobacco and alcohol abuse. While HPV may play a minor role in some laryngeal carcinomas (Option C), the association is significantly weaker than that seen in the oropharynx, and there is no proven prognostic benefit for HPV-positive laryngeal tumors. Because HPV oncoproteins E6 and E7 specifically target p53 and Rb pathways in the oropharyngeal mucosa, it remains the primary head and neck site for HPV-driven malignancy.

Question 85. A professional singer develops difficulty in

producing high-pitched notes after undergoing thyroid surgery. Her voice is not hoarse, but she is unable to raise the pitch effectively. Which nerve is most likely to have been injured?

A. External branch of the superior laryngeal nerve (EBSLN)

B. Internal branch of the superior laryngeal nerve (IBSLN)

C. Recurrent laryngeal nerve (RLN)

D. Glossopharyngeal nerve

Correct answer: A

The EBSLN innervates the cricothyroid muscle, which is responsible for tensing the vocal cords to produce high-pitched sounds. Injury to this nerve, often occurring during thyroid surgery within Joll's Triangle, results in an inability to raise voice pitch without causing hoarseness, as the vocal cord's ability to adduct remains intact. Professional voice users are highly sensitive to this change. The internal branch (Option B) is purely sensory and its injury leads to loss of sensation above the cords, not pitch changes. The recurrent laryngeal nerve (Option C) supplies the majority of intrinsic laryngeal muscles; damage here causes vocal cord palsy and prominent hoarseness. The glossopharyngeal nerve (Option D) is involved in oropharyngeal sensation and taste, having no role in vocal cord tension.

Question 86. An image shows a lateral view of the face with a highlighted area located anterior to the ear. Which type of abscess is most likely to occur in this region?

A. Citelli's abscess

B. Luc's abscess

C. Bezold's abscess

D. Zygomatic abscess

Correct answer: B

Luc's abscess is a subperiosteal abscess located in the region of the external auditory canal or preauricular area. It occurs when pus from the mastoid antrum erodes through the outer cortex without involving the mastoid tip. It is more common in children due to their thinner, softer mastoid bone. Citelli's abscess (Option A) tracks into the posterior belly of the digastric muscle, presenting in the upper neck behind the mandible. Bezold's abscess (Option C) results from pus eroding the mastoid tip and tracking deep to the sternocleidomastoid muscle into the neck. Zygomatic abscess (Option D) spreads to the zygomatic root cells, appearing higher in the temporal region above the ear. Based on the specific anatomical highlight toward the external

canal in the image, Luc's abscess is the most likely diagnosis.

Question 87. A patient develops enophthalmos and periorbital ecchymosis after being struck by a ball. What is the most likely diagnosis?

A. Orbital blowout fracture

B. Zygomatic fracture

C. Nasal bone fracture

D. Le Fort I fracture

Correct answer: A

Blunt trauma from an object like a ball causes a sudden rise in orbital pressure, often fracturing the thin orbital floor. This results in the herniation of orbital contents into the maxillary sinus, which causes enophthalmos (sunken eye). Patients also classically present with periorbital ecchymosis and potential infraorbital nerve anesthesia. Zygomatic fractures (Option B) typically present with cheek flattening and trismus rather than isolated enophthalmos. Nasal bone fractures (Option C) cause deformity and epistaxis but do not affect orbital position. Le Fort I fractures (Option D) are horizontal maxillary fractures involving the upper jaw and teeth. A classic radiographic sign for a blowout fracture is the "hanging drop" or "tear drop" sign on a Water's view X-ray or CT. Thus, the mechanism and enophthalmos confirm the orbital blowout diagnosis.

Question 88. A patient presents after a fall and is found to have bleeding from the ear on clinical examination. What is the investigation of choice in this situation?

A. CBC

B. MRI Brain

C. CT Temporal bone

D. X-ray Skull

Correct answer: C

Post-traumatic bleeding from the ear is a clinical hallmark of a temporal bone fracture. High-resolution CT (HRCT) of the temporal bone is the gold standard investigation because it provides the detailed imaging required to detect fine fracture lines, ossicular chain disruption, and otic capsule involvement. A CBC (Option A) helps assess overall trauma status but cannot diagnose bone injuries. MRI (Option B) is excellent for soft-tissue or intracranial injuries but lacks the bony resolution needed to evaluate the petrous bone or ossicles. Standard X-ray (Option D) has poor sensitivity for these complex fractures and is inadequate for visualizing middle ear anatomy. Early HRCT is essential to guide management, preserve hearing function, and prevent complications like CSF otorrhea or facial nerve palsy.

Question 89. A 60-year-old man reports a gradual decline in hearing over several years, with particular difficulty understanding conversations in noisy surroundings and perceiving high-frequency sounds. He denies vertigo, tinnitus, or a sensation of ear fullness. What is the most likely diagnosis?

A. Meniere's disease (B) Otosclerosis

C. Presbycusis

D. Acoustic neuroma

Correct answer: C

Presbycusis is the symmetric, bilateral, age-related sensorineural hearing loss that occurs due to the degeneration of hair cells at the cochlear base. It typically affects high frequencies first, making it difficult for patients to understand speech, particularly in noisy settings. Meniere's disease (Option A) is characterized by fluctuating low-frequency hearing loss accompanied by vertigo and tinnitus. Otosclerosis (Option B) is a conductive hearing loss that often starts in early adulthood and characterized by improved hearing in noisy environments (Paracusis Willisii). Acoustic neuroma (Option D) typically presents with unilateral progressive hearing loss and imbalance. The gradual, symmetric high-frequency loss without autonomic features described here is pathognomonic for presbycusis. Management focuses on hearing aids and auditory rehabilitation to prevent social withdrawal.

Question 90. During assisted vaginal delivery, where is the vacuum device typically applied?

A. At 3 cm behind the anterior fontanelle

B. On the posterior fontanelle

C. 3 cm anterior to the posterior fontanelle

D. Between the anterior and posterior fontanelle

Correct answer: C

In vacuum-assisted delivery, the cup must be placed over the flexion point. This point is located on the sagittal suture, approximately 3 cm anterior to the posterior fontanelle. Placing the cup here ensures that traction results in maximum flexion of the fetal head, allowing the smallest possible diameter (suboccipitobregmatic) to present to the birth canal. Applying the cup behind

the anterior fontanelle (Option A) would cause deflexion, increasing the presenting diameter and risk of failure. Placement directly on the posterior fontanelle (Option B) or generalized between the fontanelles (Option D) does not achieve optimal mechanical leverage for head flexion. Therefore, the specific 3 cm anterior position is critical for a safe and successful procedure.

Question 91. A diabetic man presents with facial pain and blackish discoloration of the nasal cavity. CT imaging reveals sinus involvement with bone erosion. What is the most likely diagnosis?

A. Acute bacterial sinusitis

B. Allergic fungal sinusitis

C. Nasal polyposis

D. Rhino-orbital-cerebral mucormycosis

Correct answer: D

Uncontrolled diabetes is a major risk factor for mucormycosis, a fulminant and angioinvasive fungal infection. The presence of a black eschar (necrotic tissue) on the nasal mucosa or palate is a hallmark clinical sign. The fungus, usually Rhizopus species, invades blood vessels causing thrombosis, infarction, and invasive bone destruction as seen on the CT. Acute bacterial sinusitis (Option A) causes purulent discharge and pain but lacks tissue necrosis and bone erosion. Allergic fungal sinusitis (Option B) is a non-invasive condition that expands rather than destroys bone. Nasal polyps (Option C) are benign mucosal growths that do not cause pain or necrotic changes. Management requires urgent surgical debridement and high-dose IV liposomal amphotericin B.

Question 92. A tympanometry tracing shows a shallow peak occurring at a pressure of 0 daPa, as indicated by the arrow. Based on this tympanometric finding, what is the most likely diagnosis?

A. Type A

B. Type B

C. Type As

D. Type Ad

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Correct answer: C

The tympanogram features a shallow peak at normal middle ear pressure (0 daPa), which is diagnostic of a Type As pattern. This indicates a state of reduced compliance or stiffening of the

tympano-ossicular system. Common clinical causes include otosclerosis (stapes fixation), tympanosclerosis, or a thickened tympanic membrane. Type A (Option A) has a normal peak height reflecting normal middle ear function. Type B (Option B) is a flat tracing indicating middle ear fluid or a perforation. Type Ad (Option D) shows an extremely high peak (hypercompliance), typically associated with ossicular discontinuity or a very thin tympanic membrane. Because the peak is centered at the correct pressure but is pathologically shallow, Type As is the correct classification for this stiffened system.

Question 93. Which of the following is not seen in Meniere's Disease?

A. Tinnitus

B. Vertigo

C. Fullness of ear

D. Ear Pain

Correct answer: D

Meniere's disease is an inner ear disorder caused by the excessive accumulation of endolymph (endolymphatic hydrops). It is classically defined by a clinical triad: episodic vertigo (lasting minutes to hours), fluctuating sensorineural hearing loss, and low-frequency, roaring tinnitus. Aural fullness or a "blocked ear" sensation is also a frequent accompanying symptom. Ear pain (otalgia), however, is notably absent in uncomplicated Meniere's disease and usually suggests secondary infections or a different diagnosis. Tinnitus (Option A), vertigo (Option B), and ear fullness (Option C) are all hallmarks of the condition. Diagnosis is typically confirmed via audiometry showing low-frequency sensorineural loss, while treatment involves low-sodium diets, diuretics, and vestibular suppressants.

Question 94. Stapedial reflex is dependent on the integrity of which cranial nerve for its motor response?

A. Trigeminal nerve (CN V)

B. Facial nerve (CN VII)

C. Glossopharyngeal nerve (CN IX)

D. Vagus nerve (CN X)

Correct answer: B

The stapedial reflex (acoustic reflex) is a protective mechanism where loud sounds trigger the contraction of the stapedius muscle to dampen ossicular movement. The motor (efferent) limb of this reflex is provided by the facial nerve (CN VII), which innervates the stapedius muscle. The trigeminal nerve (CN V) (Option A) provides motor supply to the muscles of mastication and is involved in the separate tensor tympani reflex. The glossopharyngeal nerve (CN IX) (Option C) and the vagus nerve (CN X) (Option D) have no direct role in the motor limb of the stapedial reflex. Clinically, a lesion of the facial nerve proximal to the stapedius branch will result in an

absent stapedial reflex, often causing hyperacusis (increased sensitivity to sound).

Question 95. Which of the following subunit is associated with inspiratory stridor?

A. Glottic

B. Supraglottic

C. Subglottic

D. Trachea

Correct answer: B

Stridor is a harsh sound produced by turbulent airflow in a partially obstructed airway. Inspiratory stridor occurs when the obstruction is located at or above the level of the vocal cords (the supraglottic region). This is because the subatmospheric pressure generated during inspiration causes floppy supraglottic tissues, such as the epiglottis or aryepiglottic folds, to collapse inward. Obstruction at the glottic level (Option A) or subglottic level (Option C) typically produces biphasic stridor (both inspiratory and expiratory) because these sites have fixed, narrow diameters. Tracheal obstruction (Option D) most often results in expiratory stridor or wheezing. Therefore, the specific finding of isolated inspiratory stridor strongly points toward supraglottic pathology like laryngomalacia or epiglottitis.

Question 96. After the parotidectomy operation, a patient presents with excessive sweating and redness over the parotid region. What is the diagnosis?

A. Frey's Syndrome

B. Horner's syndrome

C. Bell's Palsy

D. Glossopharyngeal neuralgia

Correct answer: A

Frey's Syndrome (gustatory sweating) is a frequent complication following parotid surgery. It occurs due to aberrant regeneration of the auriculotemporal nerve. Normally, this nerve carries parasympathetic fibers to the parotid for salivation and sympathetic fibers to sweat glands. After injury, the regrowing parasympathetic fibers mistakenly connect to the sweat glands of the overlying skin. Consequently, whenever the patient eats and stimulates salivation, they also experience localized sweating and redness. Horner's syndrome (Option B) presents with a triad of ptosis, miosis, and anhidrosis (decreased sweating). Bell's palsy (Option C) is an idiopathic facial nerve paralysis causing weakness but not gustatory sweating. Glossopharyngeal neuralgia (Option D) involves severe paroxysmal pain in the throat or ear. Given the specific post-operative presentation of sweating triggered by eating, Frey's syndrome is the correct diagnosis.

Question 97. A 5-year-old child is brought to the outpatient department with irritability, poor academic performance, and a history of recurrent ear infections. Otoscopic examination reveals a dull, retracted tympanic membrane with fluid visible behind it, without any blood clot in the ear. What is the most likely diagnosis?

A. Acute otitis media

B. Otitis externa

C. Otitis media with effusion

D. Cholesteatoma

Correct answer: C

The findings of a dull, retracted tympanic membrane with fluid accumulation in the absence of acute inflammatory signs like purulence or a bulging membrane are characteristic of Otitis Media with Effusion (OME), also known as "glue ear". This condition is common in school-aged children and often results from Eustachian tube dysfunction, frequently caused by adenoid hyperplasia. Acute otitis media (Option A) would present with sudden ear pain, fever, and a red, bulging membrane. Otitis externa (Option B) involves infection of the outer ear canal, typically causing pain when the tragus is moved. Cholesteatoma (Option D) involves a keratinizing epithelial growth in the middle ear, often presenting with foul discharge and a retraction pocket. Thus, the clinical picture specifically describes non-purulent middle ear effusion.

OPTHALMOLOGY

Question 98. A patient presents with miosis, anhidrosis, mild ptosis, and a pupil that remains constricted even in dim light. What is the most likely diagnosis?

A. Adie's tonic pupil

B. Horner syndrome

C. Marcus Gunn pupil

D. Argyll Robertson pupil

Correct answer: B

The classic triad of miosis (constricted pupil), anhidrosis (lack of sweating), and mild ptosis (due to Müller muscle weakness) defines Horner syndrome. This condition results from a disruption in the sympathetic nerve supply to the eye. The pupil remains small even in low light because the sympathetic dilator fibers are non-functional. Adie's tonic pupil (Option A) typically presents with a dilated (mydriatic) pupil that is sluggishly reactive to light. Marcus Gunn pupil (Option C), or a relative afferent pupillary defect, is characterized by paradoxical dilation when light is swung from the normal to the affected eye. Argyll Robertson pupil (Option D), associated with

tertiary syphilis, features bilateral small pupils that accommodate but do not react to light. Because the patient’s symptoms specifically include ipsilateral ptosis and anhidrosis alongside the small pupil, Horner syndrome is the most accurate clinical diagnosis.

Question 99. A patient presents with symptoms of eye strain. An image demonstrates that light rays are focused at different points along different meridians of the eye. Which refractive error best explains this finding?

A. Amblyopia

B. Hypermetropia

C. Astigmatism

D. Presbyopia

Correct answer: C

The provided image illustrates Sturm's conoid, a diagnostic optical phenomenon characteristic of astigmatism. In astigmatism, parallel light rays do not converge at a single focal point due to unequal refractive power in different meridians of the cornea or lens. Instead, they form two distinct focal lines at different planes. The area between these lines is the Sturm's conoid, and the point of relatively clear vision is the "circle of least confusion". This error leads to blurred vision and eye strain (asthenopia). Amblyopia (Option A) is a developmental reduction in vision unrelated to acute focusing errors. Hypermetropia (Option B) involves light focusing at a single point behind the retina. Presbyopia (Option D) is an age-related loss of accommodation affecting near vision but does not create multiple focal lines. Thus, the presence of two focal planes confirms astigmatism.

Question 100. A myopic patient presents with complaints of flashes of light and floaters. Ocular examination reveals a deep anterior chamber. What is the most likely diagnosis?

A. Exudative retinal detachment

B. Rhegmatogenous retinal detachment

C. Tractional retinal detachment

D. Central serous retinopathy

Correct answer: B

The combination of myopia, sudden flashes (photopsia), and floaters is highly suggestive of a rhegmatogenous retinal detachment (RRD). In highly myopic eyes, the elongated globe leads to retinal thinning and lattice degeneration, predisposing the patient to retinal tears. These breaks allow liquefied vitreous to pass into the subretinal space, separating the neurosensory retina from the pigment epithelium. A deep anterior chamber is common in high myopia due to the

increased axial length. Exudative detachment (Option A) is characterized by "shifting fluid" without tears. Tractional detachment (Option C) occurs due to vitreoretinal bands pulling the retina, often without flashes or floaters. Central serous retinopathy (Option D) typically presents with metamorphopsia and central blurring in young males, rather than flashes. Therefore, RRD is the most probable diagnosis given the risk factors and acute symptoms.

Question 101. A doctor receives two court summons—one to appear as a witness in a murder case and another to give expert medical testimony. Which summons should the doctor attend as a priority?

A. Appearance in the murder case

B. Appearance for providing medical expert opinion

C. The summon received first

D. None of the above

Correct answer: A

A criminal court summons in a murder case carries a legal imperative and higher priority over other civil or expert witness duties. Legal attendance is mandatory unless a legitimate legal excuse is provided. While providing an expert medical opinion is professionally significant, a direct court order in a criminal matter represents a primary legal obligation that the doctor must prioritize. Appearance for expert opinion (Option B) is considered important but is typically subordinate to a direct criminal court summons. The timing of receipt (Option C) is irrelevant, as the chronological order of summonses does not override the legal gravity and mandatory nature of a criminal case involving a serious offense like murder. Therefore, the doctor must attend the criminal court first to fulfill their judicial duty in the murder trial, ensuring compliance with the law's highest mandates.

Question 102. A woman is found dead in a locked room, and during autopsy it is noted that a heat stove was still running inside the room. What is the most likely cause of death?

A. CO poisoning

B. Cyanide poisoning

C. H_2S poisoning

D. Aluminium phosphide poisoning

Correct answer: A

A running stove in a confined, locked space is the classic environment for carbon monoxide (CO) accumulation due to incomplete combustion. CO has an affinity for hemoglobin roughly 250 times that of oxygen, forming carboxyhemoglobin and preventing oxygen transport, which

leads to fatal tissue hypoxia. Autopsy typically reveals a characteristic cherry-red post-mortem staining. Cyanide poisoning (Option B) usually results from industrial accidents and shows brick-red staining. H2S poisoning (Option C) occurs in industrial settings or sewers and is identified by a rotten-egg odor and bluish-green staining. Aluminium phosphide (Option D) is common in agricultural suicide cases and releases phosphine gas, which causes cardiac toxicity rather than enclosed-room asphyxiation. Based on the household heating scenario and the high risk of CO buildup, carbon monoxide poisoning is the most probable cause of death.

Question 103. A person is found dead in a swimming pool. Autopsy reveals water in the stomach and lungs, along with fine mucoid froth at the nose and mouth. What is the most likely mode of death?

A. Dry drowning

B. Wet drowning

C. Near drowning

D. Cardiac arrest

Correct answer: B

Wet drowning is the mode of death in approximately 90% of drowning cases and occurs when water is actively inhaled into the respiratory tract. This aspiration leads to the washout of pulmonary surfactant, alveolar collapse, and terminal asphyxia. The pathognomonic autopsy findings for wet drowning include copious, persistent mucoid froth at the nostrils and mouth, as well as overdistended, water-logged lungs and water in the stomach from swallowing. Dry drowning (Option A) occurs due to severe reflex laryngospasm that prevents water from entering the lungs; in these cases, the lungs remain dry. Near drowning (Option C) refers to a scenario where the individual survives for at least 24 hours after the event. Cardiac arrest (Option D) is a non-specific terminal event. Thus, the presence of lung water and froth confirms wet drowning.

Question 104. A 30-year-old apparently healthy man, who was found to be carrying laxatives and an enema apparatus, develops abdominal pain at the airport. An abdominal X-ray is performed and shows the given findings. What is the most likely diagnosis?

A. Bezoar syndrome

B. Pica due to anaemia

C. Body packer syndrome

D. Constipation due to fecalith

Correct answer: C

Body packer syndrome, or "surgical mules syndrome," involves the intentional swallowing or internal planting of drug-filled packets (usually wrapped in condoms or plastic) for smuggling. The patient's history of carrying laxatives and enemas is a major clue, as smugglers use these to facilitate the expulsion of the packets. The abdominal X-ray demonstrates characteristic cylindrical, radio-opaque objects within the GI tract. Bezoar syndrome (Option A) involves an indigestible mass, such as hair, but would not appear as multiple discrete cylindrical containers. Pica (Option B) involves eating non-food items like soil but doesn't present with this specific packaging or medical kit. Fecalith (Option D) is a hard mass of stool that can cause obstruction but typically shows generalized bloating on X-ray rather than distinct containers. Thus, the X-ray findings and airport context confirm body packing.

Question 105. A patient presents with lung injury and rupture of the tympanic membrane following exposure to a blast. These findings are characteristic of which category of blast wave effect?

A. Level I

B. Level II

C. Level III

D. Level IV

Correct answer: A

Blast injuries are categorized by the physical mechanism of trauma. Primary (Level I) blast injuries result directly from the overpressure shock wave impacting the body. This wave most severely affects air-filled organs due to their unique density compared to surrounding tissues. Therefore, tympanic membrane rupture and blast lung injury (alveolar-capillary disruption) are pathognomonic Level I injuries. Level II injuries are caused by flying debris hitting the body. Level III injuries occur when the individual is physically thrown by the wind of the blast. Level IV injuries encompass all other effects, such as burns, toxic gas inhalation, or building collapse. Because the pressure wave itself is responsible for rupturing the eardrum and damaging the lung parenchyma, these findings specifically categorize the effect as a primary or Level I blast injury.

Question 106. During an explosion, a patient sustains a crushed injury to the lower limb due to collapse of a building. Which type of blast injury does this represent?

A. Primary

B. Secondary

C. Tertiary

D. Quaternary

Correct answer: D

Blast injuries are classified by their physical mechanism. Quaternary injuries are miscellaneous trauma resulting from the blast, including crush injuries from building collapses, burns, and traumatic asphyxia. Primary blast injuries (Option A) result directly from the air compression wave (overpressure) and typically damage hollow organs like the ears (tympanic membrane), lungs, and GIT. Secondary blast injuries (Option B) are caused by flying missiles or projectiles propelled by the blast hitting the body. Tertiary blast injuries (Option C) occur when the individual is physically lifted and thrown against the ground or walls, often leading to fractures or dislocations. A quinary injury category (Option E) also exists for injuries from environmental contaminants like radiation or chemicals. Since this specific patient suffered a crush injury from a structural collapse, it is definitively classified as a quaternary injury.

MEDICINE

Question 107. An alcoholic patient presents with palpitations, dizziness, and episodes of syncope. On examination, the pulse is irregularly irregular. What finding is most likely to be observed on jugular venous pressure (JVP) examination?

A. Absent a wave

B. Large a wave

C. Cannon a wave

D. Steep y descent

Correct answer: A

The clinical presentation of an irregularly irregular pulse in a chronic alcoholic is highly suggestive of atrial fibrillation (AF), often referred to as "Holiday Heart Syndrome" in this context. The jugular venous pulse (JVP) reflects pressure changes in the right atrium; specifically, the 'a' wave is produced by active atrial contraction. In atrial fibrillation, the atria do not contract effectively in a coordinated manner; instead, they undergo rapid, disorganized electrical activity. Consequently, there is a complete loss of the organized atrial systole required to produce the 'a' wave, leading to its disappearance on the JVP tracing. Large 'a' waves (Option B) occur during resistance to atrial emptying, such as in tricuspid stenosis. Cannon 'a' waves (Option C) are seen when atria contract against a closed tricuspid valve, as in complete heart block. A steep 'y' descent (Option D) is characteristic of constrictive pericarditis. Thus, the absent 'a' wave is the definitive JVP finding for AF.

Question 108. A 25-year-old woman with a past history of rheumatic fever is found on examination to have a loud first heart sound and a mid-diastolic murmur. Which valvular heart disease is most

likely present?

A. TS

B. MR

C. MS

D. AR

Correct answer: C

The patient’s history of rheumatic fever combined with the auscultatory findings of a loud S1 and a mid-diastolic murmur are classic indicators of Mitral Stenosis (MS). Rheumatic heart disease is the leading cause of MS worldwide, resulting in the thickening and fusion of valve leaflets. The S1 is loud because the stiffened valves close forcefully at the start of systole. The mid-diastolic murmur occurs due to turbulent blood flow across the narrowed mitral orifice as the left ventricle fills. While Tricuspid Stenosis (TS) (Option A) also produces a mid-diastolic murmur, it typically increases with inspiration and is rarely seen in isolation. Mitral Regurgitation (MR) (Option B) presents with a pansystolic murmur radiating to the axilla. Aortic Regurgitation (AR) (Option D) produces an early diastolic decrescendo murmur. Therefore, based on the specific location and nature of the murmur following rheumatic fever, Mitral Stenosis is the most accurate diagnosis for this patient.

Question 109. Which of the following genetic mutations is most commonly associated with familial cases of Amyotrophic Lateral Sclerosis (ALS)?

A. CFTR gene mutation

B. SOD1 gene mutation

C. HTT gene mutation

D. FMR1 gene mutation

Correct answer: B

Amyotrophic Lateral Sclerosis (ALS) is a devastating neurodegenerative disorder that destroys motor neurons. Approximately 10% of cases are familial, and the most common genetic cause identified in these instances is a mutation in the SOD1 (superoxide dismutase 1) gene. This mutation leads to a toxic gain-of-function in the SOD1 protein, triggering motor neuron death through oxidative stress and protein aggregation. The CFTR mutation (Option A) is the cause of cystic fibrosis, affecting chloride transport in epithelial cells. The HTT mutation (Option C) involves a CAG repeat expansion causing Huntington's disease. The FMR1 mutation (Option D) results in Fragile X syndrome, the leading inherited cause of intellectual disability. Therefore, SOD1 remains the definitive genetic marker for familial ALS.

Question 110. A patient presents to the emergency room with central chest pain and has a known history of heart disease. An ECG is provided. Based on the

ECG findings, what is the most likely diagnosis?

A. Anterolateral MI

B. Inferolateral MI

C. Acute pericarditis

D. Constrictive pericarditis

Correct answer: A

The provided ECG demonstrates significant ST-segment elevation in the anterior leads (V2-V4) and lateral leads (I, aVL, V5, V6). Crucially, there is reciprocal ST-segment depression in the inferior leads (III and aVF), which is a hallmark finding that differentiates a myocardial infarction (MI) from other conditions like pericarditis. This pattern indicates an acute injury involving the anterior wall (supplied by the LAD) and the lateral wall (supplied by the LCX or diagonal branches). Inferolateral MI (Option B) is incorrect because it would require ST elevation in inferior leads, whereas they show depression here. Acute pericarditis (Option C) typically presents with diffuse ST elevation across most leads and lacks localized reciprocal changes. Constrictive pericarditis (Option D) is a chronic condition characterized by low voltage QRS or nonspecific changes rather than acute ST elevation. Thus, the localized elevations and reciprocal depressions confirm an Anterolateral MI.

Question 111. A patient develops a broad QRS complex tachycardia following a myocardial infarction. His blood pressure is 120/85 mm Hg, and the ECG findings are provided. What is the most appropriate management in this case?

A. Amiodarone iv

B. Labetalol iv

C. Metoprolol iv

D. Nitroglycerin iv

Correct answer: A

The patient presents with a broad QRS complex (>120 ms), regular, monomorphic tachycardia following an MI, which is diagnostic of sustained monomorphic ventricular tachycardia (VT). With a blood pressure of 120/85 mm Hg, the patient is hemodynamically stable. According to ACLS guidelines, the first-line pharmacological treatment for stable VT is IV amiodarone. Amiodarone is a Class III antiarrhythmic that suppresses ventricular ectopy and is safe in structural heart disease. Labetalol (Option B) is an antihypertensive and has no role in acute VT termination. Metoprolol (Option C), while used post-MI for prevention, is not the primary choice for terminating an active VT episode and carries a risk of hypotension. Nitroglycerin (Option D) is used for ischemic chest pain but does not treat the underlying arrhythmia. Therefore, IV amiodarone is the most appropriate intervention for this stable, post-MI tachycardia.

Question 112. A patient presents with weight gain, hair thinning, and dry skin and is diagnosed with Hashimoto’s thyroiditis. Which autoantibody is most commonly associated with this condition?

A. Anti-TPO antibody

B. Anti TSH

C. Anti TBG

D. Long-acting thyroid-stimulating antibody

Correct answer: A

Hashimoto's thyroiditis is a chronic autoimmune condition and the most common cause of hypothyroidism in iodine-sufficient regions. It is characterized by the presence of anti-thyroid peroxidase (anti-TPO) antibodies, which target the TPO enzyme essential for thyroid hormone synthesis. These antibodies mediate the autoimmune destruction of the gland, leading to the patient's symptoms of weight gain, hair thinning, and dry skin. Anti-TSH antibodies (Option B) are not a diagnostic marker for this condition. Anti-TBG antibodies (Option C) are rare and lack clinical relevance for Hashimoto’s diagnosis. Long-acting thyroid-stimulating antibodies (LATS) (Option D) are pathognomonic for Graves' disease, which causes hyperthyroidism rather than the hypothyroidism seen in Hashimoto's. Laboratory confirmation of Hashimoto's typically relies on elevated TSH, low free T4, and positive anti-TPO titers. Therefore, anti-TPO is the most relevant diagnostic antibody.

Question 113. An RTA patient has received 4 packed RBC within a few hours. Which of the following will be seen?

A. Hypernatremia

B. Hyponatremia

C. Hypocalcemia

D. Hyperkalemia

Correct answer: C

Stored packed red blood cells (PRBCs) contain citrate as an anticoagulant. During rapid or massive blood transfusions, the large volume of citrate enters the recipient's bloodstream and binds to ionized calcium. This chelation leads to acute hypocalcemia. While the liver normally metabolizes citrate, this process is often impaired in trauma patients due to shock or hypothermia. Clinical manifestations include paresthesia, muscle cramps, and a prolonged QT interval. Hypernatremia (Option A) and hyponatremia (Option B) are not typical complications of PRBC transfusion as the sodium content in the preservative is minimal. While hyperkalemia (Option D) can occur due to potassium leakage from older stored cells, hypocalcemia resulting from citrate toxicity is a more classic and specifically tested metabolic complication of rapid

PRBC administration. Therefore, monitoring ionized calcium levels is essential during emergency resuscitation involving multiple units of blood.

Question 114. A 35-year-old woman presents with progressive limb weakness over the past year. Examination reveals muscle fasciculations and increased muscle tone, with preserved sensation. What is the most likely diagnosis?

A. ALS

B. Spinal muscular atrophy

C. Multifocal motor neuropathy

D. Becker muscular dystrophy

Correct answer: A

Amyotrophic Lateral Sclerosis (ALS) is a progressive neurodegenerative disease characterized by the simultaneous involvement of both upper motor neurons (UMN) and lower motor neurons (LMN). The presence of hypertonia (a UMN sign) and muscle fasciculations (an LMN sign) in the same limb, while the sensory system remains intact, is pathognomonic for ALS. Spinal Muscular Atrophy (Option B) is a pure LMN disease and would not present with UMN signs like hypertonia. Multifocal Motor Neuropathy (Option C) typically presents with pure LMN weakness that is often asymmetric and lacks UMN features. Becker Muscular Dystrophy (Option D) is a genetic myopathy that causes proximal muscle weakness but does not involve motor neurons, meaning it lacks fasciculations and UMN signs. Because ALS relentlessly destroys both sets of motor neurons in the motor cortex and spinal cord while sparing sensory pathways, it is the only viable diagnosis for this clinical picture.

Question 115. A patient presents with symmetrical weakness of the lower limbs accompanied by areflexia. He gives a history of diarrhoea two weeks prior and is diagnosed with Guillain–Barré syndrome. What is the underlying cause of this condition?

A. Demyelination of A, B-fibers

B. Demyelination of B-fibers

C. Demyelination of the spinal cord

D. Cord inflammation

Correct answer: A

Guillain-Barré Syndrome (GBS) is an acute, immune-mediated polyneuropathy often triggered by a preceding gastrointestinal infection, such as Campylobacter jejuni. The pathophysiology involves autoantibodies attacking the myelin sheath of peripheral nerves. GBS primarily affects large-diameter myelinated fibers, including A-fibers (motor and sensory) and B-fibers

(preganglionic autonomic). This widespread demyelination disrupts motor signals and reflex arcs, leading to the classic presentation of symmetrical ascending weakness and areflexia. Option B is incorrect because B-fibers are not affected in isolation. Options C and D are incorrect because GBS is a disease of the peripheral nervous system and nerve roots, not the central spinal cord. Cord inflammation would typically present with upper motor neuron signs and a sensory level, which are absent in GBS. Thus, the demyelination of both A and B peripheral nerve fibers is the correct underlying cause.

Question 116. A patient presents with chronic cough and weight loss for three months. Biopsy of a lung mass shows tumor cells expressing chromogranin and synaptophysin. Which paraneoplastic syndrome is most likely to be associated with this condition?

A. Hypercalcemia

B. Cushing syndrome

C. Gynaecomastia

D. SIADH

Correct answer: D

The presence of chromogranin and synaptophysin on lung biopsy indicates a neuroendocrine tumor, most likely small cell lung carcinoma (SCLC). SCLC is highly notorious for producing ectopic hormones. The most common paraneoplastic syndrome associated with SCLC is the Syndrome of Inappropriate Antidiuretic Hormone secretion (SIADH), caused by ectopic ADH production. Hypercalcemia (Option A) is more classically associated with squamous cell carcinoma of the lung due to PTHrP secretion. While SCLC can cause Cushing syndrome via ectopic ACTH, SIADH is more frequently encountered in clinical practice for this tumor type. Gynaecomastia (Option C) is associated with certain germ cell tumors or liver disease, not neuroendocrine lung cancers. Therefore, given the specific neuroendocrine markers identified in the biopsy, SIADH is the most likely paraneoplastic manifestation to observe in this patient.

Examination Paper July 2025 Question

Question 117. A patient presents with episodic palpitations, headache, and excessive sweating, with a blood pressure of 180/100 mmHg. Laboratory evaluation shows elevated 24-hour urinary

metanephrine levels. What is the most likely diagnosis?

A. Carcinoid tumor

B. Pheochromocytoma

C. Carcinoid crisis

D. Neuroblastoma

Correct answer: B

The classic triad of episodic palpitations, headache, and profuse sweating in a hypertensive patient is highly suggestive of a pheochromocytoma. This is a catecholamine-secreting tumor arising from the chromaffin cells of the adrenal medulla. The measurement of 24-hour urinary metanephrines (metabolites of epinephrine and norepinephrine) is the most sensitive diagnostic test to confirm catecholamine excess. Carcinoid tumors (Option A) and carcinoid crisis (Option C) present with flushing, diarrhea, and bronchospasm, and are diagnosed by urinary 5-HIAA rather than metanephrines. Neuroblastoma (Option D) is a pediatric tumor that can arise in the adrenal medulla but is typically diagnosed in children by elevated dopamine metabolites (HVA/VMA) and presents differently than the adult paroxysmal symptoms seen here. Given the specific clinical symptoms and the elevation of metanephrines, pheochromocytoma is the definitive diagnosis.

Question 118. A 30-year-old man presents with deep-seated retro-orbital pain consistent with a cluster headache. What is the most appropriate management for this condition?

A. Verapamil

B. Oxygen

C. Lithium

D. Topiramate

Correct answer: B

High-flow 100% oxygen (12–15 L/min) administered via a non-rebreather mask is the gold standard for the acute abortive treatment of a cluster headache attack. It typically provides rapid relief within 15–20 minutes and is highly effective with a superior safety profile. Verapamil (Option A) is the first-line choice for long-term prophylaxis to prevent future attacks but is ineffective for stopping an acute episode once it has started. Lithium (Option C) and Topiramate (Option D) are also used as prophylactic agents in chronic or refractory cases rather than for acute relief. Cluster headaches are characterized by severe, unilateral, retro-orbital pain accompanied by autonomic symptoms like lacrimation or nasal congestion. Because the attacks are short-lived but excruciating, rapid-acting treatments like oxygen or subcutaneous sumatriptan are prioritized. Therefore, high-flow oxygen is the most appropriate immediate

intervention.

Question 119. A patient presents with hypertension and hypokalemic metabolic alkalosis. CT imaging reveals a renal mass, and the aldosterone–renin ratio (ARR) is elevated. What is the next best step in the management of this patient?

A. Spironolactone

B. Adrenalectomy

C. ACTH stimulation test

D. Dexamethasone suppression test

Correct answer: B

The combination of hypertension, hypokalemic metabolic alkalosis, a high Aldosterone-Renin Ratio (ARR), and a localized adrenal mass is highly suggestive of an aldosterone-producing adenoma (Conn’s Syndrome). In cases of confirmed unilateral adrenal disease in a surgical candidate, laparoscopic adrenalectomy is the definitive treatment of choice as it can cure the underlying hyperaldosteronism. Medical management with mineralocorticoid receptor antagonists like Spironolactone (Option A) is generally reserved for patients with bilateral adrenal hyperplasia or those who are not fit for surgery. The ACTH stimulation test (Option C) is used to diagnose adrenal insufficiency (Addison’s disease), which presents with hypotension and hyperkalemia. The Dexamethasone suppression test (Option D) is the standard investigation for Cushing’s syndrome, which involves cortisol excess. Given the evidence of a unilateral functional tumor, surgical removal is the most appropriate management step.

Question 120. A 35-year-old man has had persistent hypercalcemia for the past 1.5 years, with parathyroid hormone (PTH) levels within the normal range. What is the most likely underlying cause of his hypercalcemia?

A. Malignancy

B. Sarcoidosis

C. Parathyroid hyperplasia

D. C.K.D

Correct answer: B

Chronic hypercalcemia with a normal or low Parathyroid Hormone (PTH) level indicates a PTH-independent cause of calcium elevation. In Sarcoidosis, activated macrophages within non-caseating granulomas express the enzyme 1-alpha-hydroxylase. This enzyme converts 25-hydroxyvitamin D into its active form, 1,25-dihydroxyvitamin D (calcitriol), leading to increased intestinal calcium absorption and persistent hypercalcemia. Malignancy (Option A) often causes acute, symptomatic hypercalcemia through bone metastasis or PTHrP secretion, but the chronic, stable 1.5-year history is more typical of a granulomatous disease. Parathyroid hyperplasia (Option C) would result in primary hyperparathyroidism, characterized by an inappropriately elevated PTH level. Chronic Kidney Disease (CKD) (Option D) typically presents with hypocalcemia in the early stages and secondary hyperparathyroidism (high PTH) later on. Thus, the extra-renal production of calcitriol in Sarcoidosis best explains this metabolic profile.

Question 121. On examination, a person has distended neck veins, absent breath sounds, hyperresonance, and a shift of the trachea. What is the management?

A. Bedside CXR in casualty followed by chest tube insertion

B. Wide bore needle in 2nd ICS

C. Pericardiocentesis

D. Pleurodesis with doxycycline

Correct answer: B

The clinical signs of respiratory distress, distended neck veins (due to decreased venous return), absent breath sounds, hyperresonance, and contralateral tracheal deviation are diagnostic of a tension pneumothorax. This is a surgical emergency where air under pressure collapses the lung and shifts the mediastinum, potentially leading to obstructive shock. Immediate needle decompression using a wide-bore cannula in the 2nd intercostal space (midclavicular line) or the 4th/5th intercostal space (anterior axillary line) is life-saving and must be performed before obtaining imaging. Waiting for a chest X-ray (Option A) is dangerous as it delays critical treatment. Pericardiocentesis (Option C) is the treatment for cardiac tamponade. Pleurodesis (Option D) is used to prevent recurrence in stable patients but has no role in acute emergency stabilization. Definitive chest tube thoracostomy should follow the initial needle decompression.

Question 122. A woman presents with amenorrhea and galactorrhea, and laboratory testing shows elevated serum prolactin levels. MRI of the brain reveals a pituitary adenoma. What is the most appropriate management for this patient?

A. Bromocriptine

B. Letrozole

C. Tamoxifen

D. Goserelin

Correct answer: A

The patient presents with hyperprolactinemia due to a prolactin-secreting pituitary adenoma (prolactinoma). Elevated prolactin levels suppress GnRH, leading to the clinical triad of amenorrhea, galactorrhea, and infertility. The first-line medical treatment for prolactinomas is dopamine agonists, such as Bromocriptine or Cabergoline. These medications effectively inhibit prolactin secretion and can lead to significant tumor shrinkage. Bromocriptine is particularly favored in women desiring pregnancy due to its established safety profile. Letrozole (Option B) is an aromatase inhibitor used for breast cancer and ovulation induction. Tamoxifen (Option C) is a selective estrogen receptor modulator used in breast cancer management. Goserelin (Option D) is a GnRH agonist used for endometriosis and prostate cancer. Surgical resection is only considered if medical therapy fails or if there are severe compressive symptoms like vision loss. Therefore, dopamine agonist therapy remains the primary intervention.

Question 123. A 60-year-old woman presents with weakness, back pain, and recurrent infections. Evaluation reveals an M-spike on serum protein electrophoresis. Which factor is most important in determining the prognosis in this condition?

A. IgG and albumin

B. IgM and albumin

C. Albumin and LDH

D. Albumin and β2-microglobulin

Correct answer: D

The clinical presentation of bone pain, recurrent infections, and an "M spike" on electrophoresis is diagnostic of Multiple Myeloma. The International Staging System (ISS), which is the standard model for determining prognosis in these patients, relies on two specific laboratory values: serum albumin and serum beta-2 microglobulin. Beta-2 microglobulin serves as a marker for tumor burden and renal function; higher levels indicate a poorer prognosis. Albumin reflects the patient's general nutritional and inflammatory status; lower levels are associated with more

aggressive disease. IgG (Option A) is the most common paraprotein but is not a component of the ISS. IgM (Option B) is associated with Waldenström macroglobulinemia. While LDH (Option C) can be used in the Revised-ISS, the classic ISS relies primarily on the combination of albumin and beta-2 microglobulin for its three prognostic stages.

Question 124. A young man has the following hepatitis B serological profile: HBsAg positive, IgM anti-HBc negative, IgG anti-HBc positive, and HBeAg positive. Based on this serological status, what is the most appropriate treatment?

A. Lamivudine

B. Ombitasvir

C. Ritonavir

D. Abacavir

Correct answer: A

The serological profile indicates chronic active Hepatitis B virus (HBV) infection. HBsAg positivity indicates ongoing infection, while negative IgM anti-HBc and positive IgG anti-HBc confirm that the disease is in the chronic phase rather than acute. The presence of HBeAg signifies high viral replication and increased infectivity. Antiviral therapy is required to suppress viral replication and prevent liver damage. Lamivudine is an oral nucleoside analog that inhibits HBV DNA polymerase and is an effective (though older) treatment option for chronic HBV. Ombitasvir (Option B) is used for Hepatitis C (HCV), not HBV. Ritonavir (Option C) and Abacavir (Option D) are components of antiretroviral therapy (ART) for HIV and are not standard treatments for HBV monoinfection. While tenofovir and entecavir are now preferred first-line due to lower resistance rates, Lamivudine is the only appropriate HBV drug listed.

Question 125. A patient with renal tubular acidosis (RTA) presents with red-colored urine due to myoglobinuria. Which of the following findings is most likely to be observed in this patient?

A. Hypernatremia

B. Hyperkalemia

C. Hyponatremia

D. Hypokalemia

Correct answer: B

The presence of myoglobinuria following trauma indicates rhabdomyolysis, where massive muscle breakdown releases cell contents into the bloodstream. This includes myoglobin, which is highly nephrotoxic and often leads to acute tubular necrosis (ATN), and large amounts of intracellular potassium. Consequently, hyperkalemia is a hallmark feature of this condition due to both the direct release from damaged myocytes and impaired renal excretion from the subsequent kidney injury. Hypernatremia (Option A) and hyponatremia (Option C) are not typical hallmark findings in this clinical scenario. Hypokalemia (Option D) is seen in distal (Type 1) and proximal (Type 2) renal tubular acidosis (RTA), but rhabdomyolysis-induced kidney injury typically presents with hyperkalemia (often mirroring Type 4 RTA physiology). Therefore, monitoring and treating elevated potassium levels is a critical priority in patients with suspected rhabdomyolysis.

Question 126. A patient is brought after a road traffic accident and imaging reveals the fracture shown. What type of fracture is this?

A. Subtrochanteric Fracture

B. Intertrochanteric fracture

C. Femoral Neck Fracture

D. Pubic Rami Fracture

Correct answer: B

The X-ray depicts a fracture occurring in the region between the greater and lesser trochanters of the proximal femur. This is an intertrochanteric fracture, which is extra-capsular in nature. Because it is outside the hip joint capsule, the blood supply to the femoral head remains relatively well-preserved, leading to a much lower risk of avascular necrosis compared to neck fractures. Subtrochanteric fractures (Option A) occur below the lesser trochanter in the femoral shaft. Femoral neck fractures (Option C) occur superior to the trochanters and within the joint capsule (intracapsular). Pubic rami fractures (Option D) involve the pelvic ring and not the femur itself. Intertrochanteric fractures are often comminuted and result from high-energy trauma in young patients or simple falls in the elderly. Based on the specific bony landmarks, the diagnosis is confirmed.

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Question 127. An elderly woman involved in a road traffic accident presents with respiratory distress and altered sensorium. Laboratory evaluation shows elevated D-dimer levels, and the chest X-ray demonstrates suggestive findings. What is the

most likely diagnosis?

A. Gas gangrene

B. Fat embolism

C. Infection

D. Pulmonary embolism

Correct answer: B

The clinical presentation of respiratory distress and altered mental status following a high-energy accident (likely involving long bone fractures) is diagnostic of Fat Embolism Syndrome. This occurs when fat globules from bone marrow are released into the bloodstream and travel to the lungs and brain. Respiratory distress usually manifests 24–72 hours after trauma due to capillary obstruction. Gas gangrene (Option A) presents with crepitus and foul discharge. Acute infection (Option C) typically presents with fever rather than sudden post-traumatic hypoxia. While pulmonary embolism (Option D) also causes respiratory distress and elevated D-dimer, it is less likely to cause early altered mental status or the classic petechial rash often seen in fat embolism. The suggestive X-ray likely shows bilateral patchy infiltrates mimicking ARDS, which is characteristic of this syndrome. Thus, fat embolism is the most consistent post-traumatic diagnosis.

Question 128. A patient presents with a fracture visible on X-ray. In this type of fracture, which nerve is most likely to be injured?

A. Median nerve

B. Radial nerve

C. Ulnar nerve

D. Axillary nerve

Correct answer: B

The X-ray displays a spiral fracture of the humerus midshaft. This fracture type is notoriously associated with injury to the radial nerve because the nerve courses directly against the bone within the spiral (radial) groove. Trauma at this specific location frequently causes radial nerve palsy, which manifests clinically as "wrist drop"—the inability to extend the wrist and fingers. The median nerve (Option A) is situated medially and is rarely affected by midshaft humeral injuries. The ulnar nerve (Option C) runs near the medial epicondyle and is more commonly injured in distal fractures. The axillary nerve (Option D) is located near the surgical neck of the humerus and is typically injured in proximal fractures or shoulder dislocations. Given the close anatomical proximity of the radial nerve to the humeral shaft, it is the most likely structure to be damaged.

Question 129. Which ligament is tested in the following test?

A. Anterior cruciate ligament

B. Posterior cruciate ligament

C. Medial collateral ligament

D. Lateral collateral ligament

Correct answer: A

The image illustrates the Anterior Drawer Test, a common clinical maneuver used to evaluate the integrity of the Anterior Cruciate Ligament (ACL). To perform the test, the knee is flexed to 90 degrees, and the examiner pulls the tibia forward while stabilizing the femur. Excessive forward displacement of the tibia indicates an ACL tear. The Posterior Cruciate Ligament (PCL) (Option B) is assessed using the Posterior Drawer Test, where the tibia is pushed backward instead. The Medial Collateral Ligament (MCL) (Option C) is tested using the valgus stress test to check for gapping on the inner side of the knee. The Lateral Collateral Ligament (LCL) (Option D) is evaluated with the varus stress test to check the outer side of the joint. Because the image shows the tibia being pulled anteriorly, the ACL is the correct target of this specific test.

Question 130. A 9-month-old infant is brought for a routine health check-up. Which developmental milestone is most commonly expected to be achieved at this age?

A. Mature grasp

B. Creeps well on hands and knees

C. Can hop on one foot

D. Runs steadily

Correct answer: B

By 9 months of age, most infants have achieved the gross motor milestone of creeping well on their hands and knees. They are also beginning to pull themselves up to stand and typically demonstrate an immature pincer grasp. A mature grasp (Option A), specifically the ability to pick up small objects with precision, is typically achieved closer to 12 months. Hopping on one foot (Option C) is a complex gross motor skill that does not develop until approximately 4 years of age. Running steadily (Option D) is a milestone reached around 18 to 24 months as the child gains better coordination. Therefore, at the 9-month check-up, creeping is the most developmentally appropriate skill to expect. Other typical findings at this age include "waving bye-bye" and expressing stranger anxiety.

Question 131. A young patient develops shortness of breath specifically

during
physical
exertion
in
cold weather, which is relieved after using
salbutamol. What is the most likely explanation
for this condition?

A. Vagal stimulation due to cold air exposure

B. Decreased
cardiac
output
stimulates
baroreceptors

C. Exercise-induced
bronchoconstriction
triggered by cold air

D. Airway hyperreactivity due to cold-induced
asthma exacerbation

Correct answer: C

Transient airway narrowing during or after physical activity is known as exercise-induced bronchoconstriction (EIB). In winter, cold and dry air causes heat and moisture loss from the airways, triggering hyperreactivity and subsequent bronchospasm. This condition is classically relieved by short-acting beta-agonists like salbutamol. Vagal stimulation (Option A) usually causes bradycardia or nasal symptoms rather than exercise-specific breathlessness. Decreased cardiac output (Option B) is not the mechanism for respiratory symptoms that respond to bronchodilators. Cold-induced asthma exacerbation (Option D) is a general term, but EIB is the more precise diagnosis when exercise is the specific trigger described. Spirometry or an exercise challenge test is used for diagnosis, while pre-exercise salbutamol inhalation is the standard management to prevent attacks during intense activity in cold environments.

Question 132. An alcoholic patient is admitted to the hospital
48 hours after his last alcohol intake. He presents
with altered consciousness, disorientation,

and marked agitation. What is the most likely
diagnosis?

A. Delirium tremens

B. Alcohol withdrawal symptoms

C. Cocaine intoxication

D. Korsakoff psychosis

Correct answer: A

Delirium tremens (DT) is the most severe form of alcohol withdrawal, typically peaking 48–72 hours after the last drink. It is characterized by severe agitation, disorientation, altered consciousness, and autonomic instability (hypertension, tachycardia). This is a medical emergency with a significant mortality rate if untreated. Simple alcohol withdrawal symptoms (Option B) include milder tremors and anxiety that typically appear 6–12 hours after cessation. Cocaine intoxication (Option C) causes agitation but usually occurs immediately after use and presents with dilated pupils (mydriasis). Korsakoff psychosis (Option D) is a chronic thiamine deficiency complication involving permanent memory loss and confabulation rather than acute disorientation and severe agitation. Given the 48-hour timeline and the severity of the mental status changes, DT is the definitive diagnosis requiring ICU monitoring and benzodiazepine therapy.

Question 133. A patient presents with fatigue, anemia, and hepatomegaly, and hemoglobin electrophoresis demonstrates the presence of HbS. What is the most appropriate treatment for this condition?

A. Hydroxyurea

B. Blood transfusion

C. Iron supplementation

D. Vitamin B12 supplementation

Correct answer: A

The presence of Hemoglobin S (HbS) on electrophoresis confirms a diagnosis of Sickle Cell Anemia. Under low oxygen conditions, HbS polymerizes, causing red blood cells to sickle, leading to vaso-occlusion and chronic hemolysis. Hydroxyurea is the primary chronic therapy because it increases the production of fetal hemoglobin (HbF). Higher levels of HbF inhibit the polymerization of HbS, thereby reducing the frequency of painful crises and systemic complications. Blood transfusions (Option B) are reserved for acute severe anemia or emergencies rather than first-line long-term management. Iron supplementation (Option C) is contraindicated unless a concurrent iron deficiency is proven, as these patients are at risk for iron overload from hemolysis and transfusions. Vitamin B12 (Option D) treats macrocytic anemia and is not specific to sickle cell disease. Therefore, hydroxyurea remains the definitive treatment to modify the disease course.

Question 134. A young boy presents with joint swelling after a fall. Lab investigations show normal PT and raised aPTT. What is the most likely diagnosis?

A. Von Willebrand Disease

B. Hemophilia

C. Iron Deficiency Anaemia (IDA)

D. Platelet function disorder

Correct answer: B

Joint swelling (hemarthrosis) following minor trauma is a classic indicator of a coagulation factor deficiency, most notably hemophilia. Laboratory findings of a normal PT combined with a prolonged aPTT confirm a defect in the intrinsic pathway. Hemophilia A (Factor VIII deficiency) and Hemophilia B (Factor IX deficiency) both manifest with this specific pattern. Von Willebrand Disease (Option A) also shows a raised aPTT but is typically characterized by mucocutaneous bleeding (like epistaxis) rather than deep joint bleeds. Iron Deficiency Anemia (Option C) causes fatigue and pallor but has no effect on coagulation times. Platelet function disorders (Option D) lead to mucosal bleeding and petechiae, while both PT and aPTT usually remain within normal limits. Thus, the isolated aPTT elevation and hemarthrosis identify hemophilia.

Question 135. A 15-year-old boy presents with tremors, dysarthria, and behavioral changes. Examination reveals hepatomegaly and a golden-brown Kayser–Fleischer ring at the corneal limbus, raising suspicion of Wilson’s disease. Which investigation is best to confirm the diagnosis?

A. Serum ceruloplasmin

B. Liver biopsy for copper estimation

C. Serum copper

D. Copper excretion in urine

Correct answer: B

Wilson's Disease is an autosomal recessive disorder caused by a mutation in the ATP7B gene, leading to impaired biliary copper excretion and systemic copper accumulation. While low serum ceruloplasmin (Option A) and high urinary copper (Option D) are important screening tools, the gold standard for definitive diagnosis is a liver biopsy with quantitative copper estimation. This directly measures the pathological buildup of the metal in the tissue. Serum copper (Option C) is generally low in these patients because most copper in the blood is normally bound to ceruloplasmin, which is deficient. The presence of a Kayser-Fleischer ring (Option B) is highly suggestive of neurological involvement, but the tissue biopsy remains the most accurate confirmatory test. Management involves long-term chelation therapy or zinc supplements to inhibit further copper absorption.

Question 136. Which CD markers are typically positive in Chronic Lymphocytic Leukaemia (CLL)?

A. CD3, CD5, CD8

B. CD10, CD19, CD22

C. CD19, CD20, CD23, CD5

D. CD13, CD33, CD117

Correct answer: C

The hallmark immunophenotype of Chronic Lymphocytic Leukaemia (CLL) involves the expression of mature B-cell markers alongside a specific aberrant T-cell marker. CLL cells typically express CD19, CD20, and CD23. The most distinctive diagnostic feature is the aberrant co-expression of CD5, which is normally found on T-cells. This unique "B-cell plus CD5" profile helps clinicians distinguish CLL from other mature B-cell malignancies. Option A is incorrect as it contains pure T-cell markers like CD3 and CD8. Option B (CD10, CD19, CD22) is characteristic of precursor B-cell Acute Lymphoblastic Leukaemia (ALL), where CD10 represents the common ALL antigen (CALLA). Option D consists of myeloid lineage markers such as CD13, CD33, and CD117, which are used to diagnose Acute Myeloid Leukaemia (AML) rather than lymphoid neoplasms. Thus, the presence of CD19, CD20, CD23, and CD5 is definitive for CLL.

Question 137. A patient with chronic kidney disease presents with severe anemia, and laboratory evaluation shows a normocytic, normochromic anemia. What is the most appropriate treatment to manage this condition?

A. Folic acid supplementation

B. Vitamin B12 injection

C. Darbepoetin alfa

D. Iron chelation therapy

Correct answer: C

Anemia in Chronic Kidney Disease (CKD) is primarily caused by a deficiency in erythropoietin, as the damaged kidneys can no longer produce sufficient amounts of this hormone to stimulate red blood cell production. The resulting anemia is typically normocytic and normochromic. The standard treatment is the administration of erythropoiesis-stimulating agents (ESAs), such as darbepoetin alfa or epoetin alfa. Folic acid (Option A) and Vitamin B12 (Option B) are used for megaloblastic (macrocytic) anemias and would not correct the underlying hormonal deficit in CKD. Iron chelation therapy (Option D) is used for iron overload, not for treating anemia. While ensuring adequate iron stores is an important supportive step, the core therapeutic intervention for correcting the hormonal lack and associated normocytic anemia in CKD patients is the use of ESAs like darbepoetin alfa.

Question 138. What is the eye manifestation seen in HLA B27-positive patients with ulcerative colitis?

A. Uveitis

B. Conjunctivitis

C. Scleritis

D. Iridocyclitis

Correct answer: A

Patients with HLA-B27-positive inflammatory bowel disease, such as ulcerative colitis, have a significantly increased risk for extraintestinal autoimmune manifestations. The most classic ocular complication is acute anterior uveitis. It typically presents with sudden eye pain, redness (ciliary flush), photophobia, and blurred vision. Conjunctivitis (Option B) is more common in reactive arthritis and involves a more superficial inflammation. Scleritis (Option C) presents with deep, boring pain and is more often linked to systemic diseases like rheumatoid arthritis. While iridocyclitis (Option D) is a subset of anterior uveitis, the general and clinically preferred term for this broad extraintestinal manifestation in IBD is uveitis. Therefore, uveitis is the standard diagnostic answer for this autoimmune link.

Question 139. FBN gene mutation is seen in which of the following genetic disorders?

A. Ehlers-Danlos syndrome

B. Marfan syndrome

C. Homocystinuria

D. von Hippel-Lindau syndrome

Correct answer: B

Marfan syndrome is an autosomal dominant multisystem connective tissue disorder caused by a mutation in the FBN1 gene on chromosome 15q21. This gene encodes fibrillin-1, a protein essential for forming microfibrils that provide structural support to tissues. Ehlers-Danlos syndrome (Option A) is typically caused by defects in collagen synthesis, such as types III or V. Homocystinuria (Option C) results from a deficiency in cystathionine beta-synthase; while it mimics the Marfanoid appearance, its genetic basis is different . von Hippel-Lindau syndrome (Option D) is caused by the VHL gene on chromosome 3p. Classic Marfan clinical features include a tall, thin build, joint laxity, and ectopia lentis (lens dislocation). Therefore, the FBN1 mutation is the definitive genetic marker for Marfan syndrome.

OBS AND GYNE

Question 140. A young woman presents with ptosis that shows diurnal variation. CT scan of the chest reveals an anterior mediastinal mass consistent with a thymic tumor. Which receptor is most likely affected in this condition?

A. Presynaptic ACh receptor

B. Post-synaptic ACh Receptor

C. Voltage-gated calcium channels at the NMJ

D. Acetylcholinesterase

Correct answer: B

The combination of diurnal ptosis (weakness that worsens during the day and improves with rest) and a thymic mass is highly characteristic of Myasthenia Gravis (MG). MG is an autoimmune disorder where antibodies target and destroy the nicotinic acetylcholine (ACh) receptors on the post-synaptic membrane of the neuromuscular junction (NMJ). The thymus gland plays a critical role in the pathogenesis, with roughly 15% of MG patients having a thymoma. Presynaptic ACh receptors (Option A) are not the target in MG. Voltage-gated calcium channels (Option C) are targeted in Lambert-Eaton Myasthenic Syndrome, which is often associated with small cell lung cancer rather than thymoma. Acetylcholinesterase (Option D) is the enzyme that breaks down ACh; while it is inhibited by drugs used to treat MG, it is not the target of the disease's autoantibodies. Thus, the post-synaptic ACh receptor is the site of the defect.

Question 141. A patient presents with a severe headache. CT imaging of the brain shows hypodense areas in the right basal region, labeled as “X.” What is the most likely diagnosis?

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A. Subarachnoid hemorrhage

B. Meningococcal meningitis

C. Brain abscess

D. Pneumocephalus

Correct answer: A

A sudden, severe "thunderclap" headache is the classic presentation of a Subarachnoid Hemorrhage (SAH). On a non-contrast CT, acute blood appears hyperdense (bright) and typically fills the subarachnoid spaces, including the basal cisterns and Sylvian fissures. When blood fills the basal cisterns, it creates the pathognomonic “Star of Death” sign. Hypodense areas may appear later if ischemia develops. Meningococcal meningitis (Option B) usually shows meningeal enhancement but not acute hyperdense cisterns. A brain abscess (Option C) appears as a ring-enhancing lesion with edema. Pneumocephalus (Option D) would show very dark areas representing air rather than bright blood. Therefore, the hyperdense filling of the basal regions on CT, combined with the history of severe headache, confirms the diagnosis of SAH.

Question 142. 199. (C) Amyotrophic lateral sclerosis (ALS)

The SOD1 gene encodes superoxide dismutase 1, an enzyme that protects cells from oxidative damage. Mutations in this gene are responsible for approximately 20% of familial Amyotrophic Lateral Sclerosis (ALS) cases. The mutant protein misfolds and gains toxic properties, leading to the degeneration of both upper and lower motor neurons. Huntington's disease (Option A) is caused by a repeat expansion in the HTT gene. Multiple sclerosis (Option B) is an autoimmune demyelinating disease. Parkinson's disease (Option D) is typically linked to SNCA or LRRK2 genes. ALS is characterized by progressive muscle weakness and spasticity, but sensation and cognition are usually preserved. Thus, SOD1 is a specific genetic marker for the motor neuron degeneration seen in ALS.

Identify the types of sutures?

A. Vertical Mattress

B. Horizontal mattress

C. Subcuticular suture

D. Simple Interrupted suture

Correct answer: D

The image displays simple interrupted sutures, which is the most basic and commonly used suturing technique. Each stitch is placed independently, ensuring that if one suture fails or is removed (e.g., for drainage), the remaining stitches continue to hold the wound edges together. Vertical and Horizontal Mattress sutures (Options A and B) are used specifically for wound edge eversion and tension distribution and have a distinct double-pass appearance. Subcuticular sutures (Option C) are placed just beneath the epidermis for an aesthetic finish and are typically not visible on the skin surface as separate loops. The separate, individual loops shown in the image are the hallmark of the

simple interrupted technique.

A patient in the ICU undergoes an attempted subclavian vein catheterization, which is unsuccessful. Soon afterward, the patient develops hypotension with a rising pulse rate. What is the most likely diagnosis?

(A)

Pneumothorax

(B)

Displacement of endotracheal tube (ET)

(C)

Air embolism

(D)

Dislodgement of ET

Question 143. A 5-year-old boy presents with hematemesis and is found to have splenomegaly on examination. His history reveals that he underwent exchange transfusion for neonatal jaundice. What is the most probable diagnosis?

A. Splenic vein thrombosis

B. Portal vein thrombosis

C. Budd chiari syndrome

D. Liver cirrhosis

Correct answer: B

The combination of hematemesis (from esophageal varices) and splenomegaly in a young child, particularly with a history of neonatal umbilical vein manipulation (such as exchange transfusion or catheterization), is strongly suggestive of portal vein thrombosis. This is a common cause of pre-hepatic portal hypertension in children. Splenic vein thrombosis (Option A) can cause localized portal hypertension but is less common and doesn't explain the generalized portosystemic shunt as well as the history does. Budd-Chiari syndrome (Option C) involves hepatic vein obstruction and typically presents with hepatomegaly and ascites, which are not the primary features here. Liver cirrhosis (Option D) can cause portal hypertension but is rare in a 5-year-old without a known history of chronic liver disease or metabolic disorders. Thus, the neonatal history is the key to identifying portal vein thrombosis.

Question 144. A skin graft was performed on an immuno compromised patient using tissue obtained from another immuno compromised donor. Several weeks later, the recipient developed contractures along with systemic symptoms.

What is the most likely underlying cause of this complication?

A. Graft-versus-host disease

B. Graft failure

C. Rejection due to recipient T8 cells

D. Delayed wound healing

Correct answer: A

Graft-versus-host disease (GVHD) occurs when immunocompetent donor T lymphocytes recognize the recipient's tissues as foreign and mount an immune attack. This typically occurs when an immunocompromised host is unable to reject the donor cells. In the context of a graft from another immunocompromised individual, donor lymphocytes may still be present. GVHD presents with systemic features such as fever, rash, diarrhea, and liver dysfunction, along with local changes like contractures. Graft failure (Option B) is a local event resulting from poor blood supply leading to early necrosis, not systemic symptoms weeks later. Host-versus-graft rejection (Option C) requires a functioning recipient immune system, which is absent here. Delayed wound healing (Option D) is common in immunocompromised states but does not account for the systemic multi-organ involvement. Therefore, GVHD is the most probable cause.

Question 145. A woman presents with a breast lump accompanied by skin dimpling and retraction of the nipple. Involvement of which anatomical structure is most likely responsible for the skin dimpling observed in this case?

A. Lactiferous ducts

B. Suspensory (Cooper’s) ligaments

C. Pectoral fascia

D. Subcutaneous fat

Correct answer: B

Skin dimpling in cases of breast carcinoma is caused by the malignant infiltration and subsequent contraction of the suspensory ligaments of Cooper. These fibrous bands extend from the deep pectoral fascia through the breast tissue to the dermis. When a tumor invades these ligaments, they shorten and pull the overlying skin inward, creating a "dimpled" or "puckered" appearance. Lactiferous ducts (Option A) are primarily responsible for nipple retraction when they are infiltrated and shortened by a central tumor. Infiltration of the pectoral fascia (Option C) results in fixation of the breast to the chest wall, rather than skin dimpling. Malignant invasion of subcutaneous fat (Option D) contributes to the palpable mass but does not create the dimpling effect. Thus, the mechanical pulling on Cooper's ligaments is the direct anatomical cause of this specific clinical finding.

Question 146. A 2-month-old male infant has a scrotal swelling present since birth, which has now become acutely painful, erythematous, and irreducible. What is the most likely diagnosis?

A. Acute epididymo-orchitis

B. Testicular torsion

C. Strangulated inguinal hernia

D. Incarcerated inguinal hernia

Correct answer: C

The infant has a congenital scrotal mass (likely an inguinal hernia) that has suddenly become painful, erythematous, and irreducible, indicating that the blood supply to the trapped tissue is compromised. This is the definition of a strangulated hernia, a surgical emergency where delayed treatment leads to bowel necrosis. Acute epididymo-orchitis (Option A) is rare in infants and would not involve an irreducible groin mass. Testicular torsion (Option B) presents with acute pain but would not have been present from birth. An incarcerated hernia (Option D) is irreducible but does not yet have vascular compromise; therefore, it lacks the severe redness and systemic tenderness seen in strangulation. Physical examination shows a tense, extremely tender mass with no cough impulse. Immediate resuscitation followed by surgical exploration is mandatory.

Question 147. A patient undergoes split-thickness skin grafting for a burn injury of the arm. On the sixth postoperative day, he develops stiffness of the arm during physiotherapy. What is the most appropriate next step in management?

A. Surgical excision of contracture

B. Passive extension of the joint under direct visualization of the graft

C. Continue physiotherapy without intervention

D. Remove the graft and regraft the area

Correct answer: B

By post-operative day 6, a split-thickness skin graft is in the early phase of fibrovascular ingrowth. If the patient develops stiffness during movement, the most appropriate management is passive extension under direct visualization. This allows the therapist to gently increase the range of motion while ensuring that the graft is not experiencing shearing forces that could cause displacement or partial loss. Surgical excision of contractures (Option A) is only performed on mature, months-old scars, not on a fresh graft. Continuing physiotherapy blindly (Option C) risks damaging the fragile graft if the stiffness is due to improper adhesion. Removing the graft (Option D) is unnecessary unless there is clear evidence of total graft failure, such as infection or necrosis. Thus, cautious supervised movement is the preferred rehabilitation strategy.

Question 148. Which of the following is a recommended treatment for esophageal varices?

A. Endoscopic ligation

B. Transjugular intrahepatic portosystemic shunt (TIPS)

C. Intravenous labetalol

D. Oral amoxicillin

Correct answer: A

Endoscopic variceal ligation (EVL) is the first-line treatment for both the management of acute variceal hemorrhage and secondary prophylaxis. It involves placing elastic bands around the varices to cause thrombosis and eventual obliteration. TIPS (Option B) is an effective procedure but is reserved as a salvage therapy when endoscopic and pharmacological treatments fail to control bleeding. Intravenous labetalol (Option C) is not used; instead, non-selective beta-blockers like propranolol are used for primary prophylaxis to reduce portal pressure. While prophylactic antibiotics are standard in variceal bleeding (usually ceftriaxone), oral amoxicillin (Option D) is not the standard choice and has no role in the direct control of bleeding. Thus, EVL is the definitive recommended endoscopic intervention.

Question 149. Identify the type of ulcer?

A. Arterial Ulcer

B. Venous ulcer

C. Diabetic ulcer

D. Neuropathic

Correct answer: B

The ulcer shown is located in the gaiter area (the medial aspect of the lower leg), which is the classic site for a venous ulcer. These ulcers result from chronic venous insufficiency and are typically shallow with irregular, sloping edges. Arterial ulcers (Option A) are usually found on the toes or heels, are very painful, and have "punched-out" edges. Diabetic and Neuropathic

ulcers (Options C and D) typically occur on the weight-bearing pressure points of the foot, such as the metatarsal heads or the heel, and are often painless due to associated neuropathy. The location and appearance of the lesion in the image are pathognomonic for venous disease.

213. Given below what is the correct sequence of
Damage control surgery?

1. Patient selection
2. Primary exploration
3. ICU care

Question 150. What is the most appropriate treatment for an 8 cm chylolymphatic mesenteric cyst?

A. Aspiration
B. Enucleation
C. Resection of the cyst along with the adjacent bowel
D. Conservative

Correct answer: B

Chylolymphatic mesenteric cysts are benign, well-encapsulated lymphatic malformations. Because they typically do not infiltrate the intestinal wall and have a blood supply independent of the bowel, complete enucleation is the preferred treatment. This allows for total removal of the cyst while preserving the adjacent intestine. Aspiration (Option A) is inadequate due to extremely high rates of recurrence and risk of infection. Resection of the adjacent bowel (Option C) is only necessary if the cyst is firmly adherent to mesenteric vessels or has an enterogenous origin. Conservative management (Option D) is avoided because these cysts can cause complications like torsion, hemorrhage, or rupture. Therefore, surgical enucleation is the definitive standard of care.

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Question 151. A patient is planned for laparoscopic surgery under general anesthesia as a day care procedure. Which of the following factors would make him unsuitable for day care surgery?

A. Home is 45 minutes away from the hospital
B. The surgical procedure is expected to last slightly over 1 hour
C. No attendant is available at home to care for the patient postoperatively
D. The patient has had general anesthesia in

the past without complications

Correct answer: C

The presence of a responsible adult attendant at home for the first 24 hours is a non-negotiable safety requirement for day care (ambulatory) surgery under general anesthesia. Post-anesthesia patients may have impaired judgment and a risk of falls or adverse reactions to pain medication. Living 45 minutes away (Option A) is generally acceptable as it allows for timely return if complications arise. A 1-hour surgery (Option B) is well within the typical limits for day care procedures. A previous history of uncomplicated anesthesia (Option D) is a positive indicator of suitability rather than a contraindication. Without a caregiver to monitor the patient, they cannot be safely discharged on the day of surgery.

Question 152. A 30-year-old woman presents with right upper quadrant abdominal pain four days after undergoing a cholecystectomy. Ultrasonography reveals a significant fluid collection in the right upper quadrant. What should be the next step in management?

A. Re-explore laparoscopically

B. Higher antibiotics

C. MRCP

D. USG guided aspiration of content

Correct answer: D

In a stable patient presenting with a localized fluid collection post-cholecystectomy, the immediate next step is USG-guided aspiration. This is essential to confirm the nature of the fluid—specifically distinguishing between a bile leak (biloma), an abscess (pus), or a hematoma (blood). Identifying the fluid type directly guides subsequent steps; for example, if bile is found, an MRCP or ERCP (Option C) would then be indicated to locate and treat the leak. Re-exploration (Option A) is overly invasive as an initial step. While antibiotics (Option B) may be started, they cannot replace the diagnostic and therapeutic necessity of drainage. Therefore, aspiration is the most appropriate and conservative first-line diagnostic intervention.

Question 153. A patient on follow-up for gastroesophageal reflux disease (GERD) undergoes endoscopy, which reveals a nodule in the second part of the duodenum. Elevation of which hormone is most likely suspected in this case?

A. Gastrin

B. Inulin

C. VIP

D. Glucagon

Correct answer: A

A nodule in the second part of the duodenum in a patient with GERD symptoms raises strong suspicion for a gastrinoma, the hallmark of Zollinger-Ellison syndrome. Gastrinomas are neuroendocrine tumors that secrete excessive amounts of the hormone gastrin. This hypergastrinemia leads to massive gastric acid secretion, resulting in severe gastroesophageal reflux disease and refractory peptic ulcers. The "Gastrinoma Triangle" includes the junction of the 2nd and 3rd parts of the duodenum, where such nodules are frequently located. Inulin (Option B) is not a hormone but a marker used to measure glomerular filtration rate. VIP (Option C) is elevated in VIPomas, which cause watery diarrhea and achlorhydria rather than acid hypersecretion. Glucagon (Option D) is raised in pancreatic glucagonomas, presenting with diabetes and skin rashes. Therefore, given the specific location of the nodule and the presence of GERD, gastrin is the definitive hormone suspected to be elevated.

Question 154. A patient undergoing surgery develops sudden hemodynamic instability after a failed attempt at subclavian vein catheterization. On examination, the trachea is deviated to one side and breath sounds are absent on the same side. What is the most likely diagnosis?

A. Bronchospasm

B. Tension pneumothorax

C. Pulmonary embolism

D. Aspiration pneumonitis

Correct answer: B

The clinical presentation of sudden hemodynamic instability following a failed subclavian vein catheterization is highly indicative of a tension pneumothorax. This life-threatening condition occurs when a "one-way valve" effect allows air into the pleural space but prevents its escape, leading to rapidly increasing intrathoracic pressure. Key diagnostic signs found on examination include tracheal deviation away from the affected side and a complete absence of breath sounds on the side of the injury. Bronchospasm (Option A) presents with wheezing but does not cause tracheal shift. Pulmonary embolism (Option C) causes hypoxia and tachycardia but typically leaves the trachea midline and breath sounds intact. Aspiration pneumonitis (Option D) causes respiratory distress and crackles rather than an acute lung collapse with mediastinal

shift. Therefore, the combination of a procedural complication, shifted trachea, and absent breath sounds confirms tension pneumothorax as the primary diagnosis.

Question 155. A newborn is noted to have abdominal contents protruding through the abdominal wall with no protective membrane covering them. What should be the immediate next step in management?

A. Surgical correction

B. Conservative management with higher antibiotics

C. Cover the content with a Silo bag and wait

D. Cover with NS-soaked gauze

Correct answer: C

A neonate with exposed intestines without a protective sac has gastroschisis. In this condition, the bowel is often edematous and thickened due to direct exposure to amniotic fluid. If the abdominal cavity is too small for immediate primary closure, forcing the bowel back can cause life-threatening respiratory compromise or abdominal compartment syndrome. The standard next line of management is to place the protruding bowel into a sterile Silo bag. This allows for a "staged reduction" where gravity and gentle pressure gradually return the intestines to the abdomen over several days before definitive surgical closure is performed. Immediate surgical correction (Option A) is only safe if the defect is small and the bowel is not severely inflamed. Conservative management with antibiotics (Option B) is insufficient without mechanical protection. NS-soaked gauze (Option D) is only a temporary stabilizing measure.

Question 156. A 7-year-old boy is brought to the emergency department six hours after sustaining burns involving 22% of his body surface area. On examination, he has cool extremities, blood pressure of 92/50 mmHg, a pulse rate of 56 beats per minute, and a urine output of only 30 mL since the burn injury. What is the next appropriate step in management?

A. Give bolus of 10ml/kg/hr

B. Give a colloid bolus

C. Surgical Intervention

D. Give bolus at 30ml/kg/hr

Correct answer: A

This child is experiencing burn shock, characterized by hypotension, low urine output, and cool extremities. In pediatric patients, burns exceeding 15% BSA require urgent intravenous fluid resuscitation. Because the patient is already 6 hours post-injury with signs of significant dehydration, a bolus of 10 ml/kg of Ringer's lactate is the appropriate next step to stabilize circulation. Colloid boluses (Option B) are contraindicated in the first 24 hours of a major burn because increased capillary permeability causes them to leak into tissues, worsening edema. Definitive surgical intervention (Option C) must wait until the patient is hemodynamically stable. A high-volume bolus of 30 ml/kg/hr (Option D) is dangerous in children as it can rapidly lead to pulmonary edema or abdominal compartment syndrome. Therefore, cautious resuscitation with a 10 ml/kg bolus followed by maintenance fluids is the gold standard.

Question 157. After a road traffic accident, a patient sustains severe maxillofacial trauma and has an oxygen saturation of 80% on room air. The airway cannot be secured by intubation or ventilation. What should be the immediate next step in management?

A. Cricothyrotomy

B. Tracheostomy

C. ICD insertion

D. Do suction and again try intubation

Correct answer: A

The patient is in a "cannot intubate, cannot ventilate" (CICV) scenario, which is an airway emergency. Severe maxillofacial trauma often distorts anatomy to the point where standard oral or nasal intubation is impossible. In a rapidly desaturating patient (SpO2 80%), the immediate priority is bypassing the obstruction to establish an airway. Cricothyrotomy is the fastest surgical airway technique, allowing for oxygenation within seconds by accessing the superficial cricothyroid membrane. Tracheostomy (Option B) provides a definitive airway but is a much slower, more complex surgical procedure unsuitable for acute hypoxic arrest. ICD insertion (Option C) addresses chest trauma but does not correct a primary airway obstruction. Repeatedly attempting intubation or suctioning (Option D) wastes critical minutes while the patient remains hypoxic. Therefore, cricothyrotomy is the mandatory life-saving step in this trauma setting.

Question 158. A 16-year-old boy presents with recurrent episodes of abdominal pain and a history of

blood in the stools. Physical examination reveals darkly pigmented macules on the lips and oral mucosa, and endoscopy shows multiple hamartomatous polyps in the small intestine. What is the most likely diagnosis?

A. Familial Adenomatous Polyposis

B. Peutz-Jeghers Syndrome

C. Juvenile Polyposis Syndrome

D. Cronkhite-Canada Syndrome

Correct answer: B

The classic triad of hamartomatous GI polyps, mucocutaneous pigmentation (dark spots on lips and oral mucosa), and symptoms of intestinal obstruction or bleeding is diagnostic of Peutz-Jeghers Syndrome (PJS). PJS is an autosomal dominant disorder caused by mutations in the STK11/LKB1 gene. Familial Adenomatous Polyposis (Option A) involves hundreds of adenomatous polyps in the colon but lacks the characteristic oral pigmentation. Juvenile Polyposis Syndrome (Option C) presents with hamartomas in younger children but also lacks perioral spotting. Cronkhite-Canada Syndrome (Option D) is a non-hereditary condition appearing in older adults, presenting with polyps alongside alopecia and nail atrophy, which are not present here. In adolescents with PJS, intussusception caused by large polyps is a frequent cause of the reported abdominal pain. Therefore, the specific pigmentation and polyp type confirm Peutz-Jeghers Syndrome.

Question 159. A 30-year-old man presents to the emergency department with a history of penetrating chest trauma. On examination, marked tracheal deviation is noted. What is the immediate step in management?

A. Needle decompression

B. Chest X-ray

C. E-FAST

D. O2 support at 100%

Correct answer: A

Severe tracheal deviation following penetrating chest trauma is a pathognomonic sign of a tension pneumothorax. This occurs when air trapped in the pleural space shifts the mediastinum and compresses the heart and opposite lung, leading to rapid obstructive shock. Immediate needle decompression using a large-bore cannula (typically in the 5th intercostal space, mid-axillary line) is mandatory and life-saving. Waiting for a chest X-ray (Option B) or performing an E-FAST ultrasound (Option C) is dangerous because it delays critical intervention

in a clinically diagnosed emergency. While 100% oxygen (Option D) is part of general stabilization, it will not relieve the mechanical pressure causing the tracheal shift and circulatory collapse. Once the pressure is relieved by a needle, a definitive intercostal chest drain (ICD) must be placed. Thus, clinical diagnosis and immediate decompression are the priorities.

Question 160. A patient is found to have a ring-shaped lytic lesion in the bone on imaging. What is the most likely diagnosis?

A. Brodie's abscess

B. Simple bone cyst

C. Aneurysmal bone cyst

D. Osteoid osteoma

Correct answer: A

A ring-shaped lytic lesion surrounded by a thick, reactive sclerotic rim is the classic radiographic appearance of a Brodie's abscess. This is a localized, subacute or chronic form of osteomyelitis, most often found in the metaphysis of long bones like the tibia. The central lytic area represents pus, while the sclerotic rim is new bone laid down in response to the infection. A simple bone cyst (Option B) appears as a lucent area but typically lacks the thick sclerotic border. An aneurysmal bone cyst (Option C) is characterized by an expansile "soap bubble" appearance and internal fluid levels, not a simple ring shape. An osteoid osteoma (Option D) involves a very small radiolucent "nidus" within a massive area of cortical sclerosis, differing from the balanced ring lesion seen here. Therefore, Brodie's abscess is the most accurate diagnosis.

Question 161. Identify the pathology in the child.

A. Umbilical Hernia

B. Spigelian Hernia

C. Inguinal Hernia

D. Femoral Hernia

Correct answer: A

The image shows a soft swelling protruding directly through the navel, which is characteristic of an umbilical hernia. This condition occurs in children due to the incomplete closure of the umbilical ring through which abdominal contents can bulge. The protrusion typically becomes more apparent when the child cries or strains. Spigelian hernia (Option B) occurs laterally along the semilunar line and is very rare in children. Inguinal hernia (Option C) presents as a swelling in the groin or scrotum due to a patent processus vaginalis. Femoral hernia (Option D) appears below the inguinal ligament and is mostly seen in adult females. Most pediatric umbilical hernias close spontaneously by age 2 to 3 years and require only observation unless they

persist or become symptomatic. Therefore, based on the anatomical site, umbilical hernia is the correct identification.

Question 162. A 13-year-old boy presents to the outpatient department with right testicular pain following a blow from a cricket ball two hours earlier. Examination reveals severe testicular tenderness and absence of the cremasteric reflex. What should be the next step in management?

A. USG Arterial Doppler

B. NSAIDS

C. USG Venous Doppler

D. Surgical exploration

Correct answer: A

The clinical findings of sudden, severe testicular pain following trauma, combined with an absent cremasteric reflex, are highly suggestive of testicular torsion. While trauma is the inciting event, the clinical signs point toward vascular compromise of the spermatic cord. Current guidelines recommend an urgent USG Arterial Doppler as the first diagnostic step to assess blood flow. An absence of arterial flow confirms torsion and necessitates immediate surgery. NSAIDs (Option B) only provide symptomatic relief and would dangerously delay the diagnosis of a surgical emergency. Venous Doppler (Option C) is less reliable for confirming the arterial ischemia that defines torsion. Although surgical exploration (Option D) is the definitive treatment, the trauma history lowers the pre-test probability slightly, making Doppler the preferred initial confirmatory investigation. Timely detorsion within the 6-hour "golden period" is essential to ensure testicular salvage.

PEDIATRICS

Question 163. A child presents with Kawasaki disease with multiple small coronary artery aneurysms. Treatment is?

A. Aspirin lifelong

B. Aspirin for 4 weeks

C. Aspirin for 6 weeks

D. Aspirin and clopidogrel for 6 weeks

Correct answer: C

In patients with Kawasaki disease who develop small coronary artery aneurysms, low-dose aspirin therapy is typically continued for a duration of 6 to 8 weeks. This timeframe corresponds to the period of highest thrombotic risk during the vascular remodeling process, as these small aneurysms often regress over time. Lifelong aspirin (Option A) is generally reserved for patients

with large or giant aneurysms where the risk of thrombosis remains permanently high. A 4-week course (Option B) is usually too short for cases with known coronary involvement. Dual antiplatelet therapy with clopidogrel (Option D) is reserved for more severe cases with higher risks of occlusion. Additionally, the administration of IVIG during the acute phase is crucial to reducing the overall risk of aneurysm formation. Therefore, a 6-week course of aspirin is the standard management for small aneurysms.

Question 164. An infant is being evaluated for recurrent seizure episodes, and EEG findings reveal hypsarrhythmia. Which medication is preferred for the management of this condition?

A. ACTH

B. Vigabatrin

C. Valproate

D. Carbamazepine

Correct answer: A

The finding of hypsarrhythmia on an EEG is pathognomonic for infantile spasms, also known as West syndrome. This is a severe epileptic encephalopathy occurring in infants. The first-line pharmacological treatment is adrenocorticotropic hormone (ACTH), which is highly effective in stopping the spasms and improving the EEG pattern. Vigabatrin (Option B) is also an effective treatment and is considered the first-line choice specifically for cases associated with tuberous sclerosis, but ACTH remains preferred for idiopathic or other symptomatic cases. Valproate (Option C) is a broad-spectrum anticonvulsant but is less effective for this specific syndrome. Carbamazepine (Option D) is not indicated and may actually worsen the condition in infants with West syndrome. Therefore, ACTH is the gold standard for the initial management of hypsarrhythmia.

Question 165. A child is brought with complaints of multiple lesions. On examination, numerous vesicular lesions are observed on the palms, soles, and oral mucosa. Which organism is the most likely etiological agent responsible for this condition?

A. Varicella-zoster virus

B. Human-herpesvirus 6

C. Enterovirus

D. Coxsackie virus

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Correct answer: D

The presence of multiple vesicular lesions on the palms, soles, and oral mucosa in a child is pathognomonic for Hand, Foot, and Mouth Disease (HFMD). This condition is most commonly caused by Coxsackie virus A16, although other strains like A6 and A10 can be involved. Varicella-zoster virus (Option A) causes chickenpox, presenting with a generalized rash mostly on the trunk and face. Human herpesvirus 6 (Option B) causes roseola, characterized by high fever followed by a maculopapular rash rather than vesicles. While Enterovirus (Option C) is the broader genus that includes Coxsackie viruses, "Coxsackie virus" is the more specific and prototypical etiological agent for this classic clinical triad in pediatric practice. Therefore, based on the specific anatomical distribution of the vesicles, Coxsackie virus is the most likely diagnosis.

Question 166. An 8-year-old child presents with bedwetting. The parents report a single episode of falling from the bed, but there is no other significant medical history. Examination shows no evidence of urinary tract infection or neurological abnormality. What is the most appropriate next step in management?

A. Behavioral modification
B. Start anticholinergic drugs
C. Prescribe oxybutynin
D. Start desmopressin therapy

Correct answer: A

In an 8-year-old with primary nocturnal enuresis and no medical or neurological symptoms, the established first-line management is behavioral modification. This includes strategies like limiting fluid intake in the evening, scheduled voiding before bed, and positive reinforcement reward systems. Enuresis alarms can also be utilized if these simple measures are insufficient. Anticholinergic drugs (Option B) and oxybutynin (Option C) are indicated for urge incontinence rather than simple nocturnal enuresis. Desmopressin therapy (Option D) is a second-line pharmacological option reserved for cases where behavioral measures fail or when rapid, short-term control is needed for specific events like camps. Thus, starting with non-pharmacological behavioral changes is the mandated clinical standard.

Question 167. A 12-year-old child presents with short stature. Assessment shows that the bone age is delayed compared to the chronological age. The child has no dysmorphic features and is otherwise healthy. What is the most likely diagnosis?

A. Constitutional delay of growth and puberty

B. Familial short stature

C. Achondroplasia

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D. Chondrodysplasia

Correct answer: A

Constitutional delay of growth and puberty (CDGP) is the most common cause of short stature in healthy children. Its hallmark finding is a delayed bone age compared to chronological age, which means the child has a longer period of growth remaining and will eventually reach a normal adult height. These children are typically "late bloomers" with no dysmorphic features or underlying systemic disease. In familial short stature (Option B), the bone age is typically equal to the chronological age. Achondroplasia (Option C) presents with disproportionate limb shortening and characteristic facial features like frontal bossing. Chondrodysplasia (Option D) represents a group of genetic bone disorders with evident early skeletal deformities. Thus, the child's delayed bone age and healthy profile indicate a normal but shifted growth curve.

Question 168. A 10-year-old child weighing 40 kg presents with intellectual disability. On examination, the upper segment–to–lower segment (US:LS) ratio is 1.1 : 1. What is the most likely diagnosis?

A. Cretinism

B. Rickets

C. Achondroplasia

D. Hypothyroidism

Correct answer: B

In a healthy 10-year-old, the normal US:LS ratio is approximately 0.9:1, reflecting the fact that the lower segment (legs) has grown longer than the upper segment. A ratio of 1.1:1 indicates a disproportionate shortening of the lower segment relative to the upper body. This is commonly seen in childhood rickets, where defective bone mineralization leads to limb deformities and stunted long-bone growth. Cretinism (Option A) and Hypothyroidism (Option D) typically cause proportionate short stature rather than a specific US:LS disparity. Achondroplasia (Option C) results in a much more extreme ratio (often ~1.5:1) present from birth. Thus, the specific finding of moderate limb shortening in a healthy 10-year-old identifies rickets as the most likely underlying cause.

Question 169. A newborn presents

with
conjugated
hyperbilirubinemia, intrahepatic cholestasis,
elevated alkaline phosphatase levels, and liver
biopsy
showing
eosinophilic,
PAS-positive
cytoplasmic granules suggestive of alpha-1
antitrypsin deficiency. What is the most common
cause of jaundice in this condition?

A. Hypoplasia of the biliary tract

B. Neonatal hepatitis

C. Choledochal cyst

D. Physiological

Correct answer: B

Neonatal hepatitis is a primary cause of liver dysfunction in newborns, presenting with jaundice, hepatomegaly, and conjugated hyperbilirubinemia. The specific biopsy finding of eosinophilic, PAS-positive cytoplasmic granules is highly suggestive of Alpha-1 Antitrypsin deficiency, which is a significant metabolic cause of neonatal hepatitis. Hypoplasia of the biliary tract (Option A) involves underdeveloped ducts and presents with cholestasis but is not the most common neonatal cause. A choledochal cyst (Option C) involves extrahepatic bile duct dilation and would typically be identified on imaging rather than by PAS-positive granules. Physiological jaundice (Option D) is a temporary condition that presents with unconjugated bilirubinemia, not the conjugated form seen here. Thus, the clinical constellation of cholestatic markers and specific histological inclusions confirms neonatal hepatitis.

ORTHOPEDICS

Question 170. A young adult presents with a fracture of the
neck of the femur. What is the most appropriate
management for this condition?

A. External fixation

B. Internal fixation

C. Hemiarthroplasty

D. Total hip replacement

Correct answer: B

In young adults, the primary goal of managing a femoral neck fracture is to preserve the patient's native hip joint. Unlike elderly patients, young adults have a robust blood supply and

better bone healing potential, making anatomical reduction and internal fixation (e.g., using screws or a plate) the treatment of choice. External fixation (Option A) is typically reserved for temporary stabilization in severe polytrauma and is not a definitive treatment for this fracture. Hemiarthroplasty (Option C) replaces only the femoral head and is reserved for elderly, low-demand patients. Total hip replacement (Option D) is the gold standard for arthritic hips or active elderly patients with displaced fractures but is avoided in young adults due to the limited lifespan of prosthetic implants. Therefore, internal fixation is the most appropriate strategy to ensure long-term joint function in a young patient.

Question 171. A man falls onto his shoulder with his head forced to the opposite side and subsequently develops the shown deformity. Which cervical nerve root values are most likely to be involved in this injury?

A. C5 and C6

B. C6 and C7

C. C7 and C8

D. C8 and T1

Correct answer: A

A traumatic separation of the head and shoulder causes a traction injury to the upper trunk of the brachial plexus, specifically affecting the C5 and C6 nerve roots. This results in Erb's Palsy, which presents with a characteristic "waiter's tip" posture where the arm is held limp by the side, internally rotated at the shoulder, and pronated at the forearm. C6 and C7 (Option B) involve the middle trunk and do not produce this specific classic posture. C7 and C8 (Option C) affect lower plexus functions like wrist and finger movement rather than the shoulder. C8 and T1 (Option D) involve the lower trunk, typically injured by upward arm traction, resulting in Klumpke's palsy, which presents with intrinsic hand muscle weakness and sometimes Horner's syndrome. Because the mechanism involves downward shoulder traction and affects the upper limb's proximal segments, C5 and C6 are the damaged roots.

Question 172. A man sustains trauma to the lateral aspect of his right knee. Two days later, he develops difficulty in walking due to dragging of the toes and reports numbness over the upper lateral part of the leg and the dorsum of the foot. Which nerve is most likely injured?

A. Tibial nerve

B. Common peroneal nerve

C. Deep peroneal nerve

D. Femoral nerve

Correct answer: B

Trauma to the lateral knee, particularly around the fibular neck, often damages the common peroneal nerve because it is superficial and highly vulnerable at that site. Damage here results in "foot drop"—where the toes drag during walking—due to paralysis of the dorsiflexors. It also causes sensory loss over the lateral leg and the dorsum of the foot. The tibial nerve (Option A) controls plantarflexion and sensation on the sole; its injury would not cause foot drop or numbness on the foot's top. The deep peroneal nerve (Option C) is a branch that controls dorsiflexion, but injury to it alone would not explain the sensory loss over the lateral leg. The femoral nerve (Option D) innervates the anterior thigh and is unrelated to foot dorsiflexion. Therefore, the combined motor and sensory deficits specifically identify a common peroneal nerve injury.

Question 173. A patient has a history of dilation and curettage (D&C). Subsequent evaluation shows normal levels of all hormones, including estrogen and progesterone. Based on this presentation, what is the most likely diagnosis?

A. Polycystic Ovary Syndrome (PCOS)

B. Premature Ovarian Insufficiency (POI)

C. Asherman Syndrome

D. Endometriosis

Correct answer: C

A history of dilation and curettage (D&C) followed by amenorrhea with normal hormone levels (estrogen, progesterone, FSH, LH) is diagnostic of Asherman Syndrome. This syndrome involves intrauterine adhesions or scarring that obliterates the uterine cavity. Because hormone production is normal, the ovaries are functioning correctly, but the endometrium cannot bleed because it has been replaced by fibrous tissue. PCOS (Option A) would typically show hormonal imbalances like an elevated LH:FSH ratio. Premature Ovarian Insufficiency (Option B) would present with high FSH and low estrogen. Endometriosis (Option D) causes pain and infertility but not amenorrhea with normal hormone levels. Thus, the scarred outflow tract is the only viable diagnosis given the post-surgical history and normal labs.

Question 174. Oral contraceptive pill prevents all except?

A. Cervical cancer

B. Epithelial ovarian cancer

C. Endometrial cancer

D. Colon cancer

Correct answer: A

Oral contraceptive pills (OCPs) offer significant protective benefits against several malignancies but are associated with a slightly increased risk of cervical cancer, particularly with long-term use. This is likely due to hormonal influences on HPV persistence. Conversely, OCPs are well-documented to prevent epithelial ovarian cancer (Option B) by suppressing ovulation and endometrial cancer (Option C) by providing a progestin-dominant environment that counteracts estrogen's proliferative effects. Evidence also suggests a modest protective effect against colon cancer (Option D). Because the use of OCPs does not protect against cervical malignancy and may instead elevate the risk, Option A is the correct "except" choice in this profile. Regular screening remains essential for OCP users to monitor for cervical neoplasia.

Question 175. What is the importance of the following manoeuvre?

A. To protect from tearing of the perineum

B. To pull the baby out faster

C. To facilitate controlled extension of the fetal head

D. To rotate the shoulders during delivery

Correct answer: A

The image depicts the Ritgen manoeuvre (perineal support), where one hand supports the fetal head and the other applies controlled counter-pressure through the perineum. Its primary clinical importance is to protect the perineum from sudden overstretching and tearing by regulating the speed and angle of head extension during crowning. While it does involve controlled extension (Option C), the ultimate goal of that control is the prevention of trauma. This maneuver is not intended to accelerate delivery (Option B); in fact, it is used to slow down an abrupt expulsion. Shoulder rotation (Option D) is managed by distinct techniques after the head has been delivered. Thus, the maneuver is a protective strategy to minimize maternal perineal injury and neonatal scalp trauma during the final moments of the second stage of labor.

Question 176. Identify the procedure.

A. Chadwick's sign

B. Goodell's sign

C. Hegar's sign

D. Piskacek's sign

Correct answer: C

The image demonstrates a bimanual examination used to elicit Hegar's sign, a probable sign of pregnancy typically detected between 6–8 weeks of gestation. It is characterized by the softening of the lower uterine segment, which allows the cervix and the body of the uterus to feel like separate structures upon palpation. This softening results from hormonal changes increasing vascularity and edema. Chadwick’s sign (Option A) is the bluish discoloration of the cervix. Goodell’s sign (Option B) is the softening of the cervix itself. Piskacek’s sign (Option D) involves asymmetric enlargement of the uterus due to lateral implantation. The specific technique shown—pressing the cervix from below and the fundus from above to feel the thin, soft isthmus—is the definitive method for identifying Hegar's sign.

Question 177. Fetal anaemia is primarily determined by Doppler assessment of which artery?

A. Middle cerebral artery

B. Umbilical artery

C. Ductus venosus

D. Uterine artery

Correct answer: A

Fetal anemia is best assessed using Doppler to measure the peak systolic velocity (PSV) in the Middle Cerebral Artery (MCA). In anemic fetuses, decreased blood viscosity and increased cardiac output lead to a measurable increase in blood flow speed. An MCA-PSV > 1.5 multiples of the median (MoM) is a strong indicator of moderate-to-severe anemia. The umbilical artery (Option B) primarily assesses placental resistance and is used to monitor IUGR. The ductus venosus (Option C) evaluates fetal cardiac function and late-stage compromise. The uterine artery (Option D) measures maternal blood flow to the placenta to screen for preeclampsia risk. Because the MCA Doppler specifically reflects the fetal hemodynamic compensation for low hemoglobin, it is the primary diagnostic tool for fetal anemia.

Question 178. A 24-year-old primigravida presents with painful vaginal bleeding during the first trimester. Ultrasonography shows a well-formed gestational sac with central embryonic echoes and visible fetal cardiac activity, indicating a viable fetus. What is the most probable diagnosis?

A. Inevitable abortion

B. Threatened abortion

C. Incomplete abortion

D. Complete abortion

Correct answer: B

The clinical scenario of vaginal bleeding in the first trimester with a confirmed viable fetus (fetal cardiac motion) and an intrauterine gestational sac on ultrasound is diagnostic of a threatened abortion. In this condition, the internal cervical os remains closed, and the pregnancy has a high chance of continuing successfully with conservative management. In an inevitable abortion (Option A), the cervical os is open, and miscarriage is certain. Incomplete abortion (Option C) involves the partial expulsion of products of conception through an open os. A complete abortion (Option D) is characterized by the total expulsion of products followed by os closure. Since the ultrasound confirms a healthy, living embryo despite the bleeding, the diagnosis remains "threatened" rather than inevitable or complete.

Question 179. A patient with a known marginal placenta presents for follow-up evaluation. Ultrasonography reveals a 4 × 4 cm placental mass extending beyond the uterus and invading the urinary bladder. What is the most likely diagnosis?

A. Placenta previa

B. Placenta percreta

C. Placenta accreta

D. Placenta increta

Correct answer: B

Placenta percreta is the most severe grade of the placenta accreta spectrum. It occurs when chorionic villi penetrate through the entire thickness of the myometrium and the uterine serosa, often invading adjacent pelvic organs such as the urinary bladder. Placenta previa (Option A) refers only to the location of the placenta near or over the internal os without invasion. Placenta accreta (Option C) involves adherence to the myometrium without penetration. Placenta increta (Option D) involves invasion deep into the myometrium but not through the serosa. Because the ultrasound explicitly identifies invasion into the bladder, the condition has progressed beyond the myometrium, confirming the diagnosis of percreta. This requires complex surgical management, often including a hysterectomy and partial cystectomy.

Question 180. A patient develops profuse uterine bleeding following a lower segment cesarean section (LSCS). Despite administration of oxytocin,

the bleeding persists. What should be the next immediate step in management?

A. Uterine balloon tamponade

B. Uterine artery embolization

C. Internal iliac artery ligation

D. Hysterectomy

Correct answer: A

In cases of persistent atonic postpartum hemorrhage (PPH) where first-line uterotonics like oxytocin fail, the next recommended step is mechanical intervention. Uterine balloon tamponade (e.g., using a Bakri balloon) is the preferred first-line mechanical measure. It is a minimally invasive, fertility-preserving procedure that applies hydrostatic pressure to the uterine walls to control bleeding and allow for patient stabilization. Uterine artery embolization (Option B) is an alternative for stable patients but requires interventional radiology. Internal iliac artery ligation (Option C) is a more complex surgical procedure reserved for refractory cases. Hysterectomy (Option D) is the definitive last resort for life-threatening hemorrhage after conservative measures have failed. Thus, balloon tamponade is the appropriate immediate next step.

Question 181. Patient has variable deceleration. What does that indicate?

A. Umbilical cord compression

B. Fetal head compression

C. Uteroplacental insufficiency

D. Maternal hypotension

Correct answer: A

Variable decelerations are defined as abrupt decreases in the fetal heart rate (FHR) that vary in timing, duration, and shape (often appearing as a "V", "U", or "W" on the tracing). These are the most common type of deceleration and are primarily caused by transient umbilical cord compression. This compression leads to a brief state of fetal hypoxia, which triggers reflex vagal stimulation and a subsequent drop in FHR. In contrast, early decelerations (Option B) are caused by fetal head compression and mirror the uterine contractions. Late decelerations (Option C) indicate uteroplacental insufficiency and start after the peak of a contraction. Maternal hypotension (Option D) typically results in prolonged decelerations or baseline bradycardia due to reduced uterine blood flow. Therefore, the specific "variable" pattern on a cardiotocograph is the clinical signature of cord compression.

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Question 182. In a case of face presentation during labor,

which diameter is seen?

A. Mentobregmatic

B. Suboccipitobregmatic

C. Occipitofrontal

D. Submentobregmatic

Correct answer: D

In face presentation, the fetal head is in a state of complete extension, making the face the presenting part with the chin (mentum) as the denominator. The engaging diameter in a fully extended head is the submentobregmatic diameter, which measures approximately 9.5 cm. This diameter allows for a favorable vaginal delivery if the mentum is in an anterior position. Mentobregmatic (Option A) refers to a 13.5 cm diameter seen in brow presentation, which is the largest diameter and often leads to obstructed labor. Suboccipitobregmatic (Option B) is the 9.5 cm diameter associated with a well-flexed vertex presentation, which is the most common and favorable for normal delivery. Occipitofrontal (Option C) is a 11.5 cm diameter found in a deflexed vertex presentation. Consequently, the submentobregmatic diameter is the specific anatomical landmark for a face presentation.

Question 183. What is the best diagnostic test for evaluating endometrial pathology?

A. Pipelle endometrial biopsy

B. Hysteroscopy-guided endometrial biopsy

C. Dilatation and curettage (D&C)

D. Transvaginal sonography

Correct answer: B

Hysteroscopy-guided endometrial biopsy is considered the gold standard for evaluating endometrial pathology because it allows for direct visualization of the uterine cavity. This enables the clinician to identify and perform targeted sampling of suspicious areas, such as polyps, submucosal fibroids, or localized carcinomas, which significantly increases diagnostic accuracy. Pipelle biopsy (Option A) is a minimally invasive office procedure that is effective for detecting diffuse disease but can easily miss focal lesions. Dilatation and curettage (Option C) is a "blind" procedure that has a higher risk of sampling error for localized pathologies. Transvaginal sonography (Option D) is an excellent non-invasive screening tool to measure endometrial thickness but cannot provide a definitive histological diagnosis. Therefore, the ability to "see and sample" makes hysteroscopy-guided biopsy the superior diagnostic choice for suspected uterine abnormalities.

Question 184. In which of the following clinical conditions is the use of an intrauterine contraceptive device (IUCD) absolutely contraindicated?

A. Hypertension

B. Hyperlipidemia

C. Diabetes mellitus

D. HIV infection

Correct answer: D

According to WHO Medical Eligibility Criteria (MEC), active, untreated HIV infection with symptomatic AIDS is classified as a Category 4 contraindication for the insertion of an IUCD. In these immunosuppressed patients, the risk of ascending pelvic infections and subsequent sepsis is unacceptably high. However, if a patient is clinically stable on antiretroviral therapy (ART), IUCD use may be considered Category 2 (benefits outweigh risks). Hypertension (Option A), hyperlipidemia (Option B), and diabetes mellitus (Option C) are not absolute contraindications; copper IUCDs are generally safe to use in these patients unless other severe complications are present. Other absolute contraindications include current PID, pregnancy, and unexplained vaginal bleeding. Thus, in the context of the provided options, symptomatic HIV infection represents the most significant health risk for initial IUCD placement.

Question 185. Identify the image?

A. Uterine inversion

B. Uterine rupture

C. Cervical polyp

D. Vaginal vault prolapse

Correct answer: A

The image displays a classic uterine inversion, an obstetric emergency where the uterine fundus collapses into the cavity and protrudes through the cervix into the vagina. It is often caused by excessive cord traction or fundal pressure before the placenta has separated. The patient typically presents with sudden postpartum hemorrhage and shock that is often disproportionate to the visible blood loss. Uterine rupture (Option B) involves a tear in the uterine wall and usually presents with fetal distress and internal bleeding, not a protruding vaginal mass. A cervical polyp (Option C) is a small, benign growth that does not appear as a massive tissue protrusion. Vaginal vault prolapse (Option D) occurs gradually after a hysterectomy and is not an acute postpartum event. Immediate manual repositioning is required to save the patient's life.

Question 186. A 12-year-old girl presents with Tanner stage II breast development along with a white, non-foul-smelling vaginal discharge. This

physiological discharge is most likely caused by the action of which hormone?

A. GnRH

B. Estrogen

C. Inhibin B

D. B-Lynch suture

Correct answer: B

During the early stages of puberty, specifically Tanner stage II (breast budding), rising levels of estrogen from the developing ovaries stimulate the vaginal epithelium. This hormone causes the epithelium to proliferate and produce glycogen. The presence of glycogen supports the growth of lactobacilli, which create an acidic environment and result in physiological leukorrhea—a normal, odorless, white vaginal discharge that typically precedes menarche. GnRH (Option A) is the hypothalamic hormone that triggers the pituitary but does not directly act on the vaginal mucosa. Inhibin B (Option C) is involved in the feedback loop for FSH and does not produce discharge. B-Lynch suture (Option D) is a surgical technique used to control postpartum hemorrhage and is irrelevant to adolescent puberty. Thus, the discharge is a benign, estrogen-mediated developmental sign.

Question 187. A 36-year-old woman (P2L2) with severe endometriosis is found to have pelvic adhesions on laparoscopy. She has a history of prior tubal ligation and adhesiolysis. What is the most appropriate management option during the current laparoscopic procedure?

A. Observation only, no intervention

B. Total laparoscopic hysterectomy

C. Oophorectomy

D. Total hysterectomy and bilateral salpingo-oophorectomy

Correct answer: D

For a 36-year-old patient with severe, recurrent endometriosis and pelvic adhesions who has already completed her family (P2L2, tubal ligation), the gold standard for definitive treatment is a total hysterectomy and bilateral salpingo-oophorectomy (TH-BSO). This procedure is chosen because it removes the diseased tissue and eliminates the main source of estrogen (the ovaries), which is the primary driver of endometrial tissue growth. Observation (Option A) is inappropriate for severe, symptomatic disease. Hysterectomy alone (Option B) leaves the ovaries intact, leading to a high rate of disease recurrence. Oophorectomy alone (Option C) leaves the uterus and potentially diseased tissue behind and induces premature menopause

without fully addressing the uterine pathology. Therefore, TH-BSO provides the highest probability of permanent symptom relief in women without a desire for future fertility.

Question 188. A pregnant woman is found to have a short cervix and undergoes cervical cerclage. Which specific cerclage procedure is most likely to have been performed?

A. Modified McDonald’s

B. McDonald’s

C. Shirodkar

D. Modified Shirodkar

Correct answer: D

A cervical cerclage is used to treat cervical insufficiency in women with a short or incompetent cervix. The Modified Shirodkar procedure is a variation that allows for a high placement of the suture (usually Mersilene tape) at the level of the internal os. This higher placement provides better structural support than the standard McDonald's cerclage (Option B), which is a purse-string suture placed lower at the cervicovaginal junction without dissection. The original Shirodkar technique (Option C) requires extensive bladder and rectal dissection to reach the internal os; the "modified" version is often technically simpler while still maintaining the high-placement advantage. Transabdominal cerclage is reserved for cases where vaginal approaches have failed. In this specific clinical context of significant shortening, the Modified Shirodkar is the most likely definitive procedure for high-level support.

Question 189. A patient presents with obstructed labor, and abdominal examination reveals a palpable groove or band across the uterus. What is the most likely diagnosis?

A. Constriction ring

B. Schroeder's ring

C. Contraction ring

D. Bandl’s ring

Correct answer: D

A Bandl’s ring is a pathological retraction ring that develops during obstructed labor. It forms at the junction between the upper contractile segment of the uterus and the lower, pathologically thinned and stretched segment. On physical examination, it is felt as a palpable groove or band running transversely across the abdomen, and it is a grave warning sign of impending uterine rupture. Constriction rings (Option A) are localized muscle spasms that occur around the fetus rather than at the segment junction. Schroeder's ring (Option B) is a pathological ring often associated with oxytocin misuse and atony. A contraction ring (Option C) is the normal

physiological boundary between segments that is not palpable in a healthy labor. Immediate cesarean section is required when a Bandl's ring is identified to prevent rupture.

Question 190. A pregnant woman is being assessed for induction of labor. On vaginal examination: Cervical dilation: 2 cm, Effacement: 20%,

Cervical consistency: Soft, Position: Midline, Station: –2. What is the modified Bishop Score?

A. Score 7 – Favorable

B. Score 5 – Unfavorable

C. Score 6 – Borderline

D. Score 3 – Highly unfavorable

Correct answer: B

The modified Bishop score is calculated based on five cervical parameters to assess the readiness for induction:

Cervical dilation (2 cm): 1 point.

Effacement (20%): 1 point (Note: 0–30% is typically assigned 0 or 1 depending on the specific scale used in the source).

Consistency (Soft): 2 points.

Position (Midline): 1 point.

Station (–2): 0 points.

Summing these gives a total score of 5. A Bishop score of ≤5 indicates an unfavorable cervix, meaning cervical ripening agents (like prostaglandins) are generally required before initiating oxytocin induction. Scores ≥8 are considered favorable for successful induction. Options A, C, and D are incorrect as they do not match the mathematical sum of the clinical findings provided. Therefore, this patient has an unfavorable cervix for immediate induction.

Question 191. In Pap smear cytology, which of the following is the most appropriate fixative used to preserve cellular details immediately after smearing?

A. 50% formaldehyde

B. 95% ethanol

C. 70% ethanol

D. 10% buffered formalin

Correct answer: B

For a conventional Pap smear, immediate fixation is critical to stabilize cellular structures and prevent air-drying artifacts. The standard fixative used is 95% ethanol, which works by precipitating proteins and maintaining the life-like appearance of the cells for microscopic

examination. Formaldehyde (Options A and D) is a cross-linking fixative most commonly used for whole tissue preservation in histology but is not the primary fixative for cytological smears. 70% ethanol (Option C) is generally used as a disinfectant rather than a cytology fixative. Cells are collected from the cervical transformation zone, smeared onto a slide, and immediately immersed in or sprayed with 95% ethanol. This ensures the precise detail of the nucleus and cytoplasm is preserved for cancer screening.

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DERMATOLOGY

Question 192. A woman presents with multiple small, pink-colored papules on the face, each showing central umbilication. What is the most likely diagnosis?

A. Molluscum contagiosum
B. Herpes simplex
C. HPV
D. Acne vulgaris

Correct answer: A

The presence of multiple small, pink, umbilicated papules (dome-shaped with a central dimple) is the classic clinical presentation of molluscum contagiosum. This is a viral infection caused by a poxvirus and is highly common in children. Herpes simplex (Option B) presents as grouped vesicles on an erythematous base rather than umbilicated papules. Human Papillomavirus (HPV) (Option C) causes warts, which are typically hyperkeratotic and rough, lacking central umbilication. Acne vulgaris (Option D) is characterized by comedones, inflammatory papules, or pustules, but not umbilicated papules. Therefore, the characteristic "dimple" or central umbilication described in the scenario is pathognomonic for molluscum contagiosum.

Question 193. Identify the given condition and its treatment.

A. Staphylococcal scalded syndrome with Inj cephalexin
B. Epidermolysis bullosa with bandaging
C. Impetigo bullosa with antibiotics
D. Erythema multiforme with steroids

Correct answer: A

The clinical image demonstrates widespread erythema and superficial desquamation, which is the hallmark of Staphylococcal Scalded Skin Syndrome (SSSS). SSSS is caused by an exfoliative toxin produced by Staphylococcus aureus, which causes the top layer of the epidermis to detach, creating a "scalded" appearance. Treatment requires intravenous (IV)

antistaphylococcal antibiotics to target the systemic bacterial cause, alongside supportive care similar to burn management. Epidermolysis bullosa (Option B) is a genetic disorder of skin fragility rather than an infection. Impetigo bullosa (Option C) is a localized form of staphylococcal infection presenting with large blisters but not widespread peeling. Erythema multiforme (Option D) is a hypersensitivity reaction characterized by "target lesions". Therefore, given the extensive peeling and pediatric presentation, SSSS treated with appropriate antibiotics is the correct diagnosis.

Question 194. Which of the following best describes the characteristic lesion of Kaposi sarcoma?

A. A yellow lesion containing pus

B. A white, striated lesion that cannot be scraped off

C. A raised, purple-red lesion

D. Small, red erosions

Correct answer: C

Kaposi Sarcoma (KS) is a malignancy caused by Human Herpesvirus 8 (HHV-8), primarily affecting immunocompromised individuals such as those with HIV/AIDS. The characteristic lesions typically begin as flat, reddish-purple macules and progress into raised, palpable plaques and nodules. This violaceous (purple-red) appearance is a pathognomonic sign resulting from the deposition of hemosiderin and extravasated red blood cells within the tumor. A yellow lesion with pus (Option A) indicates a bacterial infection like an abscess. A white, striated lesion (Option B) describes lichen planus or oral hairy leukoplakia. Small red erosions (Option D) are non-specific findings for various inflammatory skin conditions. Therefore, the raised purple-red morphology is the definitive clinical description for Kaposi sarcoma lesions.

Question 195. A patient diagnosed with borderline tuberculoid leprosy presents with the given clinical findings. Which type of hypersensitivity reaction is involved, and which nerve is characteristically enlarged in this condition?

A. Type 1 & greater auricular nerve

B. Type 2 & greater auricular nerve

C. Type 3 & anterior auricular nerve

D. Type 4 & greater auricular nerve

Correct answer: D

The patient demonstrates a visibly thickened greater auricular nerve in the neck. In borderline tuberculoid leprosy, acute inflammation of nerves and skin lesions indicates a Type 1 (reversal) reaction. This reaction is a form of delayed-type hypersensitivity (Type IV) caused by a sudden increase in the cell-mediated immune response to Mycobacterium leprae. Type 1 reactions (Option A) are immediate IgE-mediated allergies. Type 2 reactions (Option B) are antibody-mediated. Type 3 reactions (Option C) involve immune complexes, such as Erythema Nodosum Leprosum (ENL), which is the clinical manifestation of a Type 2 leprosy reaction. Because the reversal reaction specifically involves a T-cell mediated response and commonly affects the greater auricular nerve, the pairing in Option D is correct.

Question 196. A patient reports excessive consumption of bajra (pearl millet) roti and subsequently develops symptoms of drowsiness and giddiness. What is the most likely diagnosis?

A. Epidemic Dropsy

B. Ergotism

C. Botulism

D. Fusarium Toxicity

Correct answer: B

Consumption of Bajra (pearl millet) that has been contaminated with the fungus Claviceps purpurea leads to ergotism. The fungus produces ergot alkaloids which act as potent vasoconstrictors and CNS disruptors, causing symptoms such as giddiness, drowsiness, and tingling sensations. In severe cases, this can progress to gangrene or convulsions. Epidemic Dropsy (Option A) is caused by the adulteration of mustard oil with Argemone oil, presenting with cardiac failure and edema. Botulism (Option C) results from Clostridium botulinum toxin, typically found in improperly canned foods, and causes descending flaccid paralysis. Fusarium toxicity (Option D) is associated with alimentary toxic aleukia and pancytopenia but is not the classic link for Bajra-induced CNS symptoms. Ergotism is historically prevented by removing contaminated grains using a 20% salt solution flotation method.

ANAESTHESIA

Question 197. During general anesthesia, which peripheral nerve is most commonly stimulated with a nerve stimulator to monitor the depth of neuromuscular blockade?

A. Radial nerve

B. Ulnar nerve

C. Median nerve

D. Tibial nerve

Correct answer: B

The ulnar nerve is the standard site for peripheral nerve stimulation during anesthesia to monitor neuromuscular blockade (NMB). It is preferred because it is superficial at the wrist and provides a clear, measurable motor response in the adductor pollicis muscle. This response accurately reflects the depth of muscle relaxation and helps determine the timing for reversal or extubation. The radial nerve (Option A) is deeper and less reliable for this purpose. The median nerve (Option C) is typically used for somatosensory monitoring rather than NMB. While the tibial nerve (Option D) can be monitored, it is technically more difficult and less standardized than the ulnar approach. Thus, the ulnar nerve remains the gold standard.

Question 198. A patient under general anesthesia is identified to be in a “cannot intubate, cannot ventilate” (CICV) situation. What is the most appropriate immediate next step in management?

A. Insert nasopharyngeal airway

B. Perform a cricothyroidotomy

C. Insert a laryngeal mask airway

D. Perform a tracheostomy

Correct answer: B

A "cannot intubate, cannot ventilate" (CICV) scenario is a critical anesthesia emergency that requires an immediate surgical airway to prevent hypoxic brain injury. An emergency cricothyroidotomy is the fastest and most reliable method because the cricothyroid membrane is superficial and easy to access quickly. Nasopharyngeal airways (Option A) and laryngeal mask airways (Option C) are non-invasive measures that by definition have already failed in a CICV state. A tracheostomy (Option D) is a complex surgical procedure that takes significantly more time to perform than a cricothyroidotomy and is not suitable for a rapid hypoxic emergency. Therefore, cricothyroidotomy is the mandated life-saving intervention.

289. A patient with known hyperthyroidism who is not receiving treatment is scheduled for a total thyroidectomy. Pre-anesthetic evaluation has been inadequately performed. What is the most serious complication that is most likely to occur during surgery?

(A) Hyperthermia

(B) Hypothermia

(C) Arrhythmia

(D) Hypothyroidism

(C) Arrhythmia

In a patient with uncontrolled hyperthyroidism, the body is in a hypermetabolic state with significantly increased sensitivity to catecholamines. Surgical stress or manipulation of the thyroid gland can precipitate a life-threatening "thyroid storm" (thyrotoxic crisis). The most immediate and dangerous intraoperative manifestation of this crisis is severe cardiac arrhythmia, such as atrial fibrillation or supraventricular tachycardia. While hyperthermia (Option A) is a classic sign of thyroid storm, arrhythmias pose a more acute threat to hemodynamic stability during the procedure. Hypothermia (Option B) is generally associated with prolonged surgery in cold environments, not thyrotoxicosis. Hypothyroidism (Option D) is an expected long-term consequence of a total thyroidectomy but would not occur as an acute intraoperative complication. Therefore, managing heart rate and rhythm via preoperative beta-blockade and antithyroid medications is essential to prevent these intraoperative cardiac emergencies.

RADIOLOGY

Question 199. 288. (B) Perform a cricothyroidotomy

A "cannot intubate, cannot ventilate" (CICV) scenario is a critical anesthesia emergency that requires an immediate surgical airway to prevent hypoxic brain injury. An emergency cricothyroidotomy is the fastest and most reliable method because the cricothyroid membrane is superficial and easy to access quickly. Nasopharyngeal airways (Option A) and laryngeal mask airways (Option C) are non-invasive measures that by definition have already failed in a CICV state. A tracheostomy (Option D) is a complex surgical procedure that takes significantly more time to perform than a cricothyroidotomy and is not suitable for a rapid hypoxic emergency. Therefore, cricothyroidotomy is the mandated life-saving intervention.

A patient with known hyperthyroidism who is not receiving treatment is scheduled for a total thyroidectomy. Pre-anesthetic evaluation has been inadequately performed. What is the most serious complication that is most likely to occur during surgery?

A. Hyperthermia

B. Hypothermia

C. Arrhythmia

D. Hypothyroidism

Correct answer: C

In a patient with uncontrolled hyperthyroidism, the body is in a hypermetabolic state with significantly increased sensitivity to catecholamines. Surgical stress or manipulation of the thyroid gland can precipitate a life-threatening "thyroid storm" (thyrotoxic crisis). The most immediate and dangerous intraoperative manifestation of this crisis is severe cardiac arrhythmia, such as atrial fibrillation or supraventricular tachycardia. While hyperthermia (Option A) is a classic sign of thyroid storm, arrhythmias pose a more acute threat to hemodynamic stability during the procedure. Hypothermia (Option B) is generally associated with prolonged surgery in cold environments, not thyrotoxicosis. Hypothyroidism (Option D) is an expected

Question 200. The following radiological image was taken to assess the urinary tract. Identify the investigation shown below.

A. Intravenous pyelogram (IVP)

B. Pelvic X-ray

C. Retrograde pyelogram

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D. Micturating cystourethrogram (MCUG)

Correct answer: A

The image depicts an Intravenous Pyelogram (IVP), a contrast-enhanced study used to visualize the anatomy and functional state of the urinary tract. After IV contrast injection, it is filtered by the kidneys and excreted, allowing sequential imaging of the renal calyces, pelvis, ureters, and bladder. A pelvic X-ray (Option B) is a plain film that only shows bones and gross calcifications

without visualizing soft tissue urinary structures. A retrograde pyelogram (Option C) involves contrast introduced via a catheter through the urethra, typically used when IV contrast is contraindicated. An MCUG (Option D) involves instilling contrast into the bladder to evaluate for vesicoureteral reflux during urination. Because the image shows the entire collecting system simultaneously via contrast excretion, it is a definitive IVP.

Question 201. A chest X-ray of a sand mine worker is shown.
Based on the radiographic findings and
occupational history, what is the most likely
diagnosis?

A. Sarcoidosis
B. Tuberculosis
C. Silicosis
D. Pneumoconiosis
due
to
asbestos

Correct answer: C

The chest X-ray features "eggshell calcification," which is a thin rim of calcification along the periphery of enlarged hilar lymph nodes. This finding, combined with the patient's occupational history as a sand mine worker, is diagnostic of silicosis. Silicosis results from the chronic inhalation of silica dust, leading to progressive pulmonary fibrosis and upper lobe nodules. Sarcoidosis (Option A) also presents with hilar lymphadenopathy but lacks the classic eggshell calcification pattern. Tuberculosis (Option B) typically presents with cavitation or consolidation rather than peripheral node calcification. Asbestosis (Option D) primarily involves the lower lobes and presents with pleural plaques rather than hilar eggshell signs. Thus, the occupational context and the hallmark radiologic sign confirm silicosis.

Question 202. What does a linear accelerator (LINAC) produce
in radiation therapy?

A. Alpha and beta rays
B. X-rays and gamma rays
C. X-rays and electrons
D. Neutrons and positrons

Correct answer: C

A linear accelerator (LINAC) is the standard device for external beam radiation therapy. It functions by accelerating electrons to high energies using microwave technology. These high-energy electrons can be used directly to treat superficial tumors or directed onto a metal target to generate high-energy X-rays (photons) for treating deep-seated malignancies. Alpha

and beta rays (Option A) are products of natural radioactive decay. Gamma rays (Option B) are emitted from isotopes like cobalt-60, not generated by a LINAC. Neutrons and positrons (Option D) are utilized in specialized neutron therapy or PET imaging, respectively. Therefore, the primary therapeutic outputs of a modern LINAC are precisely controlled X-ray beams and electron beams tailored to the tumor's depth.

Question 203. A patient presents with SOB and fatigue. CXR was done. What is the diagnosis?

A. TB

B. Asbestosis

C. Silicosis

D. Byssinosis

Correct answer: B

Asbestosis is an occupational interstitial lung disease caused by the inhalation of asbestos fibers. The hallmark radiologic finding is the presence of calcified pleural plaques, particularly along the parietal pleura and the diaphragm, often referred to as "peripheral pleural calcification". This is usually accompanied by interstitial fibrosis that predominantly affects the lower lobes. Symptoms include progressive shortness of breath (SOB) and restrictive patterns on pulmonary function tests. Tuberculosis (Option A) typically involves the lung apices and presents with cavitary lesions rather than pleural plaques. Silicosis (Option C) is characterized by upper lobe nodules and "eggshell" calcification of hilar lymph nodes. Byssinosis (Option D) is related to cotton dust exposure and generally does not show pleural calcifications on imaging. Given the specific visual findings of pleural plaques, asbestosis is the most likely diagnosis.

PSYCHIATRY

Question 204. A man is brought to the hospital with bizarre behavior and an inability to recall his personal identity or the events surrounding his travel over a distance of 100 km. Collateral history reveals that he experienced a traumatic earthquake a few months earlier. What is the most likely diagnosis?

A. Dissociative amnesia

B. Dissociative identity disorder

C. Schizophrenia

D. Global amnesia

Correct answer: A

The patient’s inability to recall his identity combined with purposeful travel (100 km) and no memory of the journey constitutes dissociative amnesia with dissociative fugue. This condition

is directly linked to a recent severe traumatic stressor, such as the earthquake mentioned in the history. Dissociative identity disorder (Option B) involves two or more distinct personality states, which is not described here. Schizophrenia (Option C) is a psychotic disorder characterized by hallucinations and disorganized thought rather than isolated identity loss. Global amnesia (Option D) is typically caused by organic conditions like stroke and does not specifically follow trauma. Since the amnesia is localized to personal information following an identifiable psychological trauma, dissociative amnesia is the most specific diagnosis.

Question 205. A 28-year-old software professional presents with disturbed sleep, low mood, and stress persisting for the past three months, which he relates to ongoing workplace difficulties. He has no previous psychiatric history. What is the most likely diagnosis?

A. Adjustment disorder

B. Generalized anxiety disorder

C. Acute stress disorder

D. Post-traumatic stress disorder (PTSD)

Correct answer: A

The patient’s presentation fits the criteria for adjustment disorder. This condition involves emotional or behavioral symptoms (low mood, stress) in response to an identifiable stressor (work pressure) beginning within three months of the stressor's onset. The distress is often disproportionate to the stressor and causes functional impairment. Generalized anxiety disorder (Option B) requires a minimum of six months of excessive worry regarding multiple domains. Acute stress disorder (Option C) follows a "traumatic" event (e.g., natural disaster) and lasts less than one month. PTSD (Option D) also requires exposure to a life-threatening trauma and specific symptoms like re-experiencing and hyperarousal, which are absent here. As the symptoms are a direct response to common workplace stress and within the 3-month window, adjustment disorder is the diagnosis.

Question 206. A woman presents with excessive talkativeness, increased activity levels, markedly reduced need for sleep, and impulsive spending sprees. When questioned about her behavior, she becomes irritable. What is the most likely diagnosis?

A. Bipolar I + Mania

B. Bipolar II + Hypomania

C. Obsessive-compulsive disorder

D. Schizophrenia

Correct answer: A

The symptoms described—excessive talkativeness, hyperactivity, decreased need for sleep, and impulsive spending—are diagnostic of a manic episode. These behaviors, combined with irritability when confronted, fulfill the core criteria for Bipolar I Disorder. Bipolar II with hypomania (Option B) is less severe; hypomania does not cause significant functional impairment and lasts at least four days without psychosis. This patient’s reckless spending indicates significant impairment, favoring mania. Obsessive-compulsive disorder (Option C) involves repetitive rituals to neutralize intrusive thoughts, which does not match this case. Schizophrenia (Option D) is characterized by hallucinations and delusions rather than the elevated mood and energy seen here. Therefore, the clear manic presentation confirms Bipolar I.

Question 207. A person holds a fixed false belief that he owns a large amount of property and that someone he knows is attempting to take it away from him. Which type of delusion best describes this belief?

A. Delusion of grandeur and persecution

B. Delusion of grandeur and reference

C. Delusion of nihilism

D. Delusion of grandeur and nihilism

Correct answer: A

This patient is experiencing two distinct delusions. The belief that he owns extensive property is a delusion of grandeur, which is a false and exaggerated belief in one’s own importance or wealth. The belief that someone is trying to take it away from him is a delusion of persecution, characterized by the false belief that one is being targeted, harassed, or conspired against. Delusions of reference (Option B) involve believing that neutral events (like news reports) are directed personally at oneself. Nihilistic delusions (Options C and D) involve the false belief that the self or the world does not exist. Since the patient's beliefs are focused on self-importance and being harmed by others, "grandeur and persecution" is the correct clinical description.

Question 208. What is the most likely diagnosis in a child who has persistently poor mathematical abilities despite having a normal IQ and otherwise age-appropriate learning skills, and who shows no improvement even after one year of specialized mathematics tutoring?

A. ADHD

B. Mathematics learning disorder

C. Aspergers syndrome

D. Specific learning disorder

Correct answer: D

This child’s persistent difficulty with mathematics despite normal intelligence and adequate educational interventions is diagnostic of a Specific Learning Disorder (SLD). Under DSM-5, this term covers impairments in reading, writing, and mathematics (dyscalculia). ADHD (Option A) causes academic issues through inattention or impulsivity rather than a specific skill deficit. Mathematics Learning Disorder (Option B) is the specific description, but "Specific Learning Disorder" is the broader and clinically preferred diagnostic term in standardized examinations. Asperger’s Syndrome (Option C) involves social communication deficits; children with this condition often excel in mathematics. Given the persistence of the mathematical deficit despite tutoring, SLD is the most accurate over arching diagnosis.

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